

**208 Water Quality Management Plan  
for  
Mahoning and Trumbull Counties**

May 2008

Prepared By

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This report was financed by the Ohio Environmental Protection Agency (Ohio EPA) using 604 (b) funds and through a contractual agreement between Eastgate and the Ohio EPA pursuant to Section 208 of the Clean Water Act. The contents of this report reflect the views of Eastgate, who is responsible for the facts and accuracy of the data presented herein. The contents do not necessarily reflect the official views or policy of the Ohio EPA.

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*Serving Northeast Ohio since 1973*

The Eastgate Regional Council of Governments is a multipurpose Regional Council of Governments for Mahoning and Trumbull Counties, as established by Section 167.01 of the Ohio Revised Code. Eastgate is the agency designated or recognized to perform the following functions:

- Serve as the Metropolitan Planning Organization (MPO) in Mahoning and Trumbull Counties, with responsibility for the comprehensive, coordinated and continuous planning for highways, public transit and other transportation modes as defined in the Safe Accountable Flexible and Efficient Transportation Equity Act - A Legacy for Users (SAFETEA-LU).
- Perform continuous water quality planning functions in cooperation with Ohio and U.S. EPA.
- Provide planning to meet air quality requirements under SAFETEA-LU and the Clean Air Act Amendments of 1990.
- Administration of the Economic Development District Program.
- Administration of the State Capital Improvement Program for the District 6 Public Works Integrating Committee.
- Administration, in coordination with the Mahoning Valley Economic Development Corporation, of the Department of Defense Procurement Program.
- Administer the area clearinghouse function, which includes providing local government with the opportunity to review a wide variety of local or state applications for federal funds.
- Administration of the regional Rideshare! Program for Ashtabula, Mahoning and Trumbull Counties.
- Conduct demographic, economic, and land use research.
- At General Policy Board direction, provide planning assistance to local governments that comprise the Eastgate planning area.
- Administration of the Clean Ohio Conservation & Revitalization Funds.
- Local sponsor & Regional Coordinator of the Mahoning River Dredging Project's Feasibility Study.

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## Acknowledgments

The Eastgate Regional Council of Governments (Eastgate) 208 Water Quality Management Plan (208 Plan) is a compilation of government documents and regulatory information provided by Eastgate's partnering agencies. In addition to Eastgate's General Policy Board, Technical Advisory Committee, and Citizens Advisory Board, and the Environmental Planning Advisory Committee, Eastgate would like to acknowledge the partners who have worked side by side with the Environmental Planning Department in forming a relevant, regional update to the 208 Plan. The following partners provided knowledge and assistance in molding the 208 Plan:

Ohio EPA, Northeast District Office

Mahoning and Trumbull County Sanitary Engineers

Mahoning and Trumbull County Engineers Office

Mahoning and Trumbull County Planning Commissions

Mahoning County Soil and Water Conservation District

Trumbull Soil and Water Conservation District

Mahoning County District Board of Health

Trumbull County General Health District

The Alliance for Watershed Action and Riparian Easements (AWARE)

The Mahoning River Consortium (MRC)

# **Chapter 1**

## **Introduction and Overview of the Plan**

**In the early 1970's, the Governor of Ohio under the provisions of the Clean Water Act, designated Eastgate, formerly Eastgate Development and Transportation Agency (EDATA), as the planning agency for Mahoning and Trumbull Counties. Under Section 208 of the Clean Water Act, each designated planning agency was to create and submit a plan identifying alternatives to wastewater management. Eastgate submitted their first 208 Plan in 1977. This chapter provides an overview of Eastgate Regional Council of Government's (Eastgate) current 208 planning efforts, summarizes the original 208 Water Quality Management Plan (208 Plan) submitted in 1977, and outlines information and goals for the updated plan.**

### **1.1 Introduction**

Since the inception of the 208 Plan its purpose to protect water quality has remained steady, but the focus of the plan has expanded. In the past, the 208 Plan focused on the construction of wastewater treatment plants and control of industrial, municipal and nonpoint source pollution. Today's 208 Plan continues to focus on controlling nonpoint source pollution, but expands to include discussions on home and state regulated sewage treatment systems, population and economic trends, and the protection of our area's critical resources such as drinking water sources, floodplains, and wetlands. Eastgate collaborated with its designated counties, municipalities, sewer agencies, county health departments and planning commissions, conservation and watershed groups, and representatives from the Ohio EPA to gather and incorporate relative, chapter specific information and recommendations for the plan update.

Eastgate's 208 Plan focuses on water quality management issues within Mahoning and Trumbull County's four major watersheds: (from north to south) the Grand River Watershed, in northwest Trumbull County; the Mahoning River Watershed in central Trumbull County and Mahoning County; the Pymatuning-Shenango Watershed in eastern Trumbull County; and the Little Beaver Creek Watershed spanning in and out of southern Mahoning County.

### **1.2 Clean Water Act: Section 208**

The Clean Water Act (CWA) addresses water pollution in the United States and provides measures for protecting our Nation's surface waters. The main goal of the CWA is to "restore and maintain the chemical, physical, and biological integrity of the Nation's

Waters”<sup>1</sup>. Water quality management planning is addressed within Section 208 of the CWA. Section 208 sets forth requirements to achieve the goals of the CWA on a state by state basis. Section 208 established shared responsibilities for water quality management planning for areawide and state agencies. Water quality management plans are created under this section and used to address municipal waste treatment issues and nonpoint source pollution management and control measures. These management plans direct local and regional implementation by defining implementation responsibilities specific to agencies with municipal waste treatment or nonpoint source management responsibilities who have been designated to perform specific control.

An areawide water quality management plan is one of many tools set forth by the CWA and utilized by the State of Ohio to combat water pollution and restore the water quality of the state’s waters. Other components of the CWA utilized include water quality monitoring and assessments, the administering of the National Pollution Discharge and Elimination System (NPDES) permit program to control discharges, financial assistance for wastewater treatment management facilities, and enforcement. Water quality assessments are the responsibility of the State of Ohio and help the state determine at what capacity a water body can receive pollutant loads without degrading its intended use. The Ohio EPA established the Total Maximum Daily Load (TMDL) program and other water quality effluent limits for streams to provide the foundations for permit issuance. The 208 Plan utilizes all of the aforementioned programs, gathering background information and data, to mold and support Eastgate’s 208 plan update efforts in creating an essential tool that addresses local and regional environmental needs.

### **1.3 Eastgate Regional Council of Governments: The original 208 Water Quality Management Plan**

The first 208 Plan produced by Eastgate was submitted to the Ohio EPA in 1977 and covered Mahoning and Trumbull Counties. The focus of the original 208 Plan was centered around designing and the construction of wastewater treatment plants to serve the established sewer districts. Elements of Eastgate’s 208 Plan included:

- A Municipal Collection and Treatment volume dedicated to developing a technical plan for the Eastgate 208 planning area, consistent with Section 208 of the Clean Water Act. This volume identified the sanitary sewers within the 208 study area;

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<sup>1</sup>Clean Water Act, Section 101(a).

- A Wastewater Management volume identifying and defining the management responsibilities and requirements of entities involved in the 208 planning process;
- A Storm Water Pollution Control volume consisting of education tools, a list of best management practices, and a list of continuing 208 planning functions representing a plan to abate storm water runoff pollution;
- A Nonpoint Source Pollution volume identifying potential sources and strategies to remove them from surface waters; and
- An Industrial Wastewater Control volume discussing the possibility of municipal wastewater treatment plants treating industrial waste water as well as domestic sewage. The volume suggests a performing a feasibility to determine the possibility of any Wastewater Treatment Plant (WWTP) within a 201 area treating such waste in addition to their municipal treatment load. This volume was constructed during the steel era of the Youngstown-Warren area.

#### **1.4 Implementation of the Original 208 Plan**

Over the past twenty-nine years, some of the municipal wastewater treatment plans set forth in the original plan have been completed as illustrated by the number of Publically Owned Treatment Works (POTWs) constructed, while others did not prosper due to funding constrictions. Original 201 Facility Planning Area (FPA) boundaries were separated and redefined to illustrate the service area for each newly constructed POTW and management agencies (MAs) were established for those areas. Although the recommendations of the original plan were predicted for a twenty-year time span, decades have passed before an update to the plan began. Minor updates were made to address the wastewater treatment options within recent years.

#### **1.5 Water Quality Problems in Eastgate's 208 Planning Area**

Public participation and investments in wastewater treatment have improved greatly since the 1977 plan due to the addition of extra stages to water treatment process. However, significant water quality problems continue to exist within the urbanized areas, mainly due to stormwater and combined sewer overflows (CSO).

Controlling water quality problems is a pressing issue within the developing areas of Mahoning and Trumbull Counties. Land use plays an integral role in the protection of our area's water quality. As more rural, open vegetated green spaces are sold for development and/or infrastructure upgrading, the land characteristics that once protected

our area's water quality are compromised for an increase in impervious surfaces (i.e. rooftops, buildings, parking lots, and roadways). A new group of pollution challenges emerged threatening our area's water quality and forcing new measures to be created due to changes in development and environmental trends.

## **1.6 Goals for Eastgate's Updated 208 Plan**

Goals for the original 208 Plan were developed based on needs to collect and treat municipal wastewater. Since the late 1970's water quality improved with the development of several wastewater treatment plants, leaving new goals to be established to compliment the update of the 208 Plan. The following goals have been created for the continual development and update of the 208 Plan:

- The plan should utilize a regional watershed approach to protect the region's surface waters and the watersheds that feed into them by coordinating resource agency efforts as the basis for management planning;
- The plan should be protective of the environmental gains our region has achieved and continue to reinforce the benefits of such gains by promoting the further protection of the planning area's critical resources;

The plan should incorporate and reinforce protective measures utilized by governing agencies and outline additional measures to assure the region's water resources achieve state attainment standards;

- The plan should provide a locally driven ideal for development density that supports existing infrastructure and is supportive of water quality protection and protection of the region's other critical resources; and
- The plan should serve as an educational tool for local officials and the public on regional water quality management issues.

## **1.7 Focus of the 208 Plan Update**

The focus of the plan update centers around restoring the region's watersheds to full attainment and addressing the existing water quality threats. In turn, attention shifted from establishing wastewater treatment facilities and addressing point source pollution, to sanitary sewer planning, improved management of home sewage treatment systems and semi-public sewage disposal systems, controlling nonpoint sources of pollution, and protecting the region's critical resources.

Eastgate's 208 Plan contains two forms of guidance: **recommendations** and **policies**. **Recommendations** include proposed regional actions for local and/or state agencies to implement the plan under current authorities of state law. They also include words of support for initiatives underway in our counties and encourage the continuation of such efforts within the region. **Policies** are established water quality management responsibilities of the designated areawide planning agency.

## 1.8 Planning Process to Date

This is the first major update of Eastgate's 208 Plan since 1977. Over the past few years, Eastgate has worked with local government officials, planning agencies, health departments, and watershed groups to restructure the plan's chapters and form relevant regional recommendations and/or policies. Chapters developed for this plan include:

**Chapter 1-** introduces and provides an overview of the plan.

**Chapter 2-** discusses the region's water quality conditions.

**Chapter 3-** discusses the current regional population trends and development projections.

**Chapter 4-** discusses the significant critical resources of the region and presents recommendations to promote or enhance their protection.

**Chapter 5-** provides a discussion of the current state and local home sewage and Ohio EPA regulated sewage treatment systems. It presents best management practice recommendations aimed at protecting water quality and represents state and local health department regulations.

**Chapter 6-** introduces and discusses the growing phenomenon of stormwater runoff and its affects on the region's water quality. Recommendations for alleviating the nonpoint sources of pollution introduced in Chapter 2 are provided here.

**Chapter 7-** draws a comparison between Eastgate's initial 208 plan and the updated plan. It outlines the FPA's and wastewater treatment options reflecting the growth trend of the region.

**Chapter 8-** highlights the process by which DMA's request amendments to the facility plans between official updates of the 208 Plan.

## **Chapter 2**

### **Water Quality Conditions in Mahoning and Trumbull Counties**

**Water is the DNA of all watersheds. Water can indicate the health of a watershed's ecosystem by studying and identifying the organisms found within it and it can summarize the land use activities within a watershed when analyzed for contaminants and their sources. This chapter highlights current water quality conditions of the water courses in the watersheds of Mahoning and Trumbull Counties. Information presented in this chapter was drawn from official water quality reports, community plans, and watershed action plans.**

#### **2.1 Clean Water Act Applications and Reporting**

The Clean Water Act (CWA) contains a comprehensive reporting program protecting the Nation's valuable water resources. Under Section 303 (b) and 303(d) of the CWA, states are required to create summaries of surface water conditions and develop a list of water bodies not meeting state water quality standards. In order to address impaired waters, the state creates measures to improve conditions via the development of total maximum daily loads (TMDLs), water quality specific permitting, and nonpoint source pollution control measures.

In 2002, the Ohio EPA transitioned to a watershed based style of reporting, combining the 305(b) water quality reports with 303(d) list of impaired waters. The new reporting style, the "Integrated Water Quality Monitoring and Assessment Report" (Integrated Report), was initiated in 2002 under federal guidance and satisfies CWA reporting requirements for both Section 303(b) and 303(d). Rather than produce reports summarizing water quality conditions on an individual stream, the Integrated Report provides the sampling results of large rivers and summarizes the conditions on an assigned watershed assessment units, or Hydrologic Unit Code (HUC), basis. In other words, the Integrated Report provides a summary of water quality conditions of streams on a watershed level, leaving out the name or names of streams sampled.

#### **2.2 Ohio Water Quality Standards**

Since the passage of the 1972 Federal Water Pollution Control Act, the Ohio EPA has seen substantial improvement in the overall water quality of its inland streams and rivers. Driven by the growing concern for ecosystem stability, Ohio's water quality standards are based on a set of criteria concentrating on beneficial use designations and biological indices found in Ohio Administrative Code (OAC) section 3745-1-07.

Beneficial use designations are based on how humans use a particular water system and how well the water system is able to nourish a dependant biological community. These designations are made up of two broad groups: Non-Aquatic Life Habitat and Aquatic Life Habitat. Non-Aquatic Life Habitat uses are broken down into two categories<sup>1</sup>:

1) Water Supply:

- **Public Water Supply (PWS)** are waters that, with conventional treatment, are suitable for human consumption and meet federal regulations for drinking water;
- **Agricultural Water Supply (AWS)** are waters that are suitable for irrigation and livestock watering without treatment; and
- **Industrial Water Supply (IWS)** are those waters suitable for commercial and industrial uses, with or without treatment.

2) Recreation (uses in effect only during the recreation seasons, May 1<sup>st</sup> through October 15<sup>th</sup>):

- **Bathing Waters (BW)** are waters suitable for swimming where a lifeguard and/or bathhouse facilities are present, and include any additional such areas where the water quality is approved by the director;
- **Primary Contact Recreation (PCR)** are waters suitable for full-body contact recreation such as, but not limited to, swimming, canoeing, and scuba diving; and
- **Secondary Contact Recreation (SCR)** include those waters suitable for partial body contact recreation such as, but not limited to, wading.

In July 2003, the Antidegradation Rule (OAC 3745-1-05) underwent a revision. The revised rule categorized rivers as either General High Quality Waters, Superior High Quality Waters, Outstanding State Waters, or Outstanding National Resource Waters. **General High Quality Waters** are category 2 or 3 wetlands in accordance with Ohio EPA rule 3745-1-54 of the Administrative Code and surface waters not categorized as one of the following three categories:

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<sup>1</sup>Ohio EPA Division of Surface Water OAC Chapter 3745-1-07.

- **Superior High Quality Waters** are water systems having exceptional ecological values. Ecological values are based upon the combination of the presence of federal and/or state threatened or endangered species and a high level of biological integrity;
- **Outstanding State Waters** are water systems having special significance to the state due to exceptional ecological and/or recreational values; and
- **Outstanding National Resource Waters** are water systems having a national ecological or recreational significance. National ecological significance may include providing habitat for populations of federal endangered or threatened species or displaying some unique combination of biological characteristics. National recreation significance may include designation in the national wild and scenic river system.

The Ohio EPA lists all designated Superior and Outstanding State Waters in OAC Section 3745-1-05, Tables 5-4 through 5-7. Mill Creek, a waterway traversing through Mahoning County's largest metropolitan park, is recognized as a General High Quality Water based on the fact it is not found within the Superior High Quality Waters, Outstanding State Waters, or Outstanding National Resource Waters tables located in OAC Chapter 3745-1-05 (Tables 5-4 through 5-7). According to Table 5-4, Baughman Creek, a tributary to the Grand River in Trumbull County, is listed as a Superior High Quality Water. A portion of the Grand River in Ashtabula County is designated as an Outstanding State Water based on exceptional ecological value (Table 5-5). Though this segment is not located within Eastgate's planning area, it is important to note the segment is located downstream of Trumbull County. Therefore, any activity within Trumbull County's stretch of the Grand River poses a threat to the Outstanding portion of the river.

Complimenting the Non-Aquatic Life Habitat category are Aquatic Life Habitat use designations. These designations are broken down into five categories defined by the Ohio Water Quality Standards that apply to Northeast Ohio. The following is a summary of each category<sup>2</sup>:

- **Warmwater Habitat (WWH)** - these are waters capable of supporting and maintaining a balanced, integrated, adaptive community of warmwater aquatic organisms;
- **Exceptional Warmwater Habitat (EWH)**- these waters are capable of supporting and maintaining an exceptional or unusual community of aquatic organisms characterized by a high diversity of species, especially by those

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<sup>2</sup> Complete, legal definitions of each Aquatic Life Habitat use designation are found in OAC Section 3745-1-07.

who are highly intolerant and/or rare, threatened, endangered, or of a special status (i.e declining species);

- **Coldwater Habitat (CWH)**- these waters support cold water organisms and/or those which are stocked with salmonids with the intent to facilitate a put-and-take fishery on a year round basis;
- **Modified Warmwater Habitat (MWH)**- waters in this category have been found to be incapable of supporting and maintaining a balanced, integrated, adaptive, community of warmwater organisms due to extensive modifications of physical habitat; and
- **Limited Resource Water (LRW)**- are small water systems with drainage areas less than 3 square (sq.) miles that have been irretrievably altered to the extent that no aquatic life can be supported. The Ohio EPA will apply this designation to streams having “natural background conditions” preclude other types of biology being present.

Embedded within the Ohio EPA’s Water Quality Standards are tables summarizing Ohio’s water quality and aforementioned categories on a drainage basin level. Each drainage basin table includes surveyed water body segments, a life use designation (Aquatic and Non-Aquatic), water supply, and a recreation use summary. According to the tables for the Grand River, Little Beaver Creek, and the Mahoning River (includes the Pymatuning drainage basin) drainage basins (OAC 3745-1-10, 3745-1-15, 3745-1-25 respectively), the water segments surveyed all have a non-aquatic use designation of both industrial and agricultural water supplies with primary contact recreation. All assessed river and stream segments located within the Trumbull and Mahoning County portions of the Grand River, Pymatuning, Mahoning River, and Little Beaver Creek Watersheds have Warmwater Habitat aquatic life use designations, with the exception of a Grand River stream segment located in Farmington Township, Trumbull County. An Exceptional Warmwater Habitat designation was assigned to that segment of the Grand River.

Aquatic life beneficial use designations were designed to protect aquatic life in our water bodies. When assessing stream health, biological indices are used to measure current biological communities compared to expectations for its assigned use designation. Those biological indices include the Index of Biotic Integrity (IBI), Modified Index of Well-being (MiwB), and the Invertebrate Community Index (ICI). Attainment of the streams use designation, i.e. WWH, is based on a measurement of the current biological community, by means of the indices, and is assigned one of the following:

- **Full Attainment**- all three indices meet applicable criteria specified by Ohio Water quality standards;

- **Partial Attainment-** at least one of the indices does not attain and biological community performance is fair; and
- **Non-Attainment-** all indices fail to attain, or any index indicates poor or very poor performance.

According to data derived from the 2006 Integrated Report's Appendix E.2, a combined total of 161 sites were sampled within the Grand River, Pymatuning, Little Beaver Creek, and Mahoning River watersheds. The following tables summarize the number of segments sampled found in attainment.

**Table 2-1 Water Quality Attainment Summary for Secondary Tributaries (less than 5 mi<sup>2</sup>)**

Watershed	Total Sites Sampled	Sites in Attainment	Percent Attainment
Grand River	1	1	100%
Pymatuning	0	0	no data
Little Beaver	16	8	50%
Mahoning River	16	10	62.5%

**Table 2-2 Water Quality Attainment Summary for Primary Tributaries (5-20 mi<sup>2</sup>)**

Watershed	Total Sites Sampled	Sites in Attainment	Percent Attainment
Grand River	9	9	100%
Pymatuning	4	2	50%
Little Beaver	27	17	63%
Mahoning River	18	13	72%

**Table 2-3 Water Quality Attainment Summary for  
Primary Tributaries (20-50 mi<sup>2</sup>)**

Watershed	Total Sites Sampled	Sites in Attainment	Percent Attainment
Grand River	1	1	100%
Pymatuning	10	1	10%
Little Beaver	6	2	33%
Mahoning River	6	1	17%

**Table 2-4 Water Quality Attainment Summary for  
Principle Streams (50-500 mi<sup>2</sup>)**

Watershed	Total Sites Sampled	Total River Miles Sampled*	River Miles in Attainment	Percent Attainment
Grand River	3	35.2	19.9	57%
Pymatuning	7	18.0	0.0	0
Little Beaver	16	46.2	36.9	80%
Mahoning River	21	34.7	2.6	7%

\*Results calculated in river miles

### 2.3 Water Quality Impairments

Within the past decade, a new pattern has emerged in the State regarding point and nonpoint source pollution: impairments caused by point source pollution decreased, while those caused by nonpoint sources increased. Based on results from state wide surveys, the Ohio EPA states, *“Impacts from nonpoint sources of pollution, such as combined sewer overflows (CSOs), urban storm water, siltation of substrates, and habitat degradation are becoming increasingly evident as historically more pronounced impacts from point sources (i.e municipal WWTPs, some industrial effluents) are reduced. Since 1988, there has been a 48% decline in point sources as a major source of impairment in reassessed stream and river segments... Nonpoint sources have emerged as a major source of impairment in streams and rivers during this period, with increases including 70% for agricultural sources to 123% for hydromodification related nonpoint source impairments. While successes resulting from the abatement of point sources have been documented, there are other*

*indications that impacts from nonpoint source runoff, habitat degradation, and watershed disturbances may be worsening. Siltation of substrates and habitat degradation are now the second and third leading causes of aquatic life impairment in Ohio streams and rivers, surpassing ammonia and heavy metals. These impairments are principally the result of agricultural land use, intensive urbanization, and suburban development, the latter of which is emerging as one of the most significant threats to watersheds...Increasingly, water pollution problems are associated with nonpoint sources such as construction sites, farm land, abandoned mines, landfills, pits and lagoons, oil and gas wells, domestic sewage systems, manure and treatment processing residuals”.*<sup>3</sup>

According to the Ohio EPA, the top seven major causes of impairment (state-wide), based on current, monitored-level data are habitat modification, siltation, organic enrichment/low dissolved oxygen (D.O.), flow alteration, nutrients, metals, and ammonia. The major sources of impairment include hydro-modification, agriculture, municipal (including CSOs) and industrial discharges, mining, and urban runoff<sup>4</sup>. On a local level, based on Appendix E.2 of the 2006 Integrated Report, the leading “High Magnitude Causes” of impairment in Mahoning County and Trumbull County surface water systems include:

- Direct Habitat Alterations;
- Organic Enrichment/Dissolved Oxygen;
- Nutrients;
- Flow Alteration, Siltation, Wetland Alteration, and Unionized Ammonia; and
- Unknown sources.

The sources complimenting the causes are “High Magnitude Sources”, and those include:

- Channelization Due to Development and Natural Causes;
- Major Municipal Point Sources, Dam Construction, Urban Runoff/Storm Sewers, Combined Sewer Overflows (CSO);
- Unknown sources;
- Contaminated Sediments; and
- Riparian/Stream Bank Vegetation Removal.

A complete listing of High Magnitude Causes and Sources can be found within Appendix E.2 of the 2006 Integrated Report located on the Ohio EPA’s website, <http://www.epa.state.oh.us/dsw/tmdl/2006IntReport/2006OhioIntegratedReport.html>.

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<sup>4</sup>Cause and Source are defined as “causes of impairments are the agents that damage or impair the aquatic life in a stream, while sources of impairment are the origin of the agent”. Ohio Water Resources Inventory (Ohio EPA, 2000) p. 4-1 - 4-9.

CSO systems are a major source of water quality impairment in the two counties. CSOs are systems that collect sanitary and industrial wastewater, as well as stormwater runoff. This wastewater mixture is then transported to treatment facilities during normal periods of rain. However, if the volume of stormwater and wastewater exceeds the treatment facility's or combined sewer's capacity then a portion of the raw water is directed to flow into an open ditch, stream, river, or lake. In turn, such discharges must be covered under an National Pollutant Discharge Elimination System (NPDES) Permit.

In 1994, the US EPA established a national CSO Control Policy that later became the model for the Ohio EPA's 1995 CSO Control Strategy. The national policy was made part of the Clean Water Act in 2000, when Congress passed the Wet Weather Water Quality Act. This act required all consistency in actions taken to implement CSO control measures with provisions of the national policy. The national policy established three objectives for CSOs:

- In the event CSO's occur, they are only a direct result of wet weather;
- To make all wet weather CSO discharge points compliant with technology-based and water quality-based requirements of the CWA; and
- Minimize any and all water quality, aquatic biota, and human health impacts resulting from CSOs.

The Ohio EPA's CSO Control Strategy created a set of statewide goals<sup>5</sup> for communities in Ohio with CSOs:

- Discharges from combined sewer overflows shall not cause or significantly contribute to the violations of water quality standards or impairment of designated uses;
- During wet weather, the total loading of pollutants discharged from the entire wastewater treatment system shall be minimized; and the discharge of pollutants from CSOs should not increase above current levels; and
- Combined sewer overflows shall be eliminated when this is a cost effective, economically achievable control option, and when it does not cause new or significantly increased overflows elsewhere in the system.

Under the strategy, CSO laden communities must develop and implement a Combined Sewer System Operational Plan that "incorporates the nine minimum CSO controls, maximizes the treatment of wet weather flows by a wastewater treatment plan via wet

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<sup>5</sup>Ohio EPA, *State of Ohio Combined Sewer Overflow Strategy*, March 1995.

weather stress testing, and develop and implement a long-term CSO control plan<sup>6</sup>". The nine control measures identified by the Ohio EPA include:

- Proper operation and maintenance programs for the sewer system and CSO points;
- Maximum use of the collection system for storage;
- Review and modification of pretreatment programs or other local programs to minimize the impact of nondomestic discharges from CSOs;
- Maximization of flow to POTW for treatment;
- Prohibition of dry weather overflows;
- Control of solid and floatable materials in CSO discharges;
- Required inspection, monitoring, and reporting of CSOs;
- Pollution prevention to reduce CSO impacts; and
- Public notification for any areas affected by CSOs, especially beach areas and areas where contact recreation occurs. (Ohio EPA expects communities to develop and implement an effective public advisory system that informs the public of the possible health and environmental impacts associated with CSOs, that notifies the public when discharges from CSOs occur and advises against contact recreation when elevated bacteria levels may endanger public health).

All CSO communities are required to implement the above control measures that apply to their system. Individual plans should include a section on how each of the nine measures will be implemented. All plans are incorporated into NPDES Permits each community holds.

Ohio currently has 1,340 active CSOs, a decrease of 28 from the August 2005 inventory<sup>7</sup>. Within the two counties three communities have CSOs: the City of Youngstown (101 CSOs), the City of Newton Falls (25 CSOs), and the City of Girard (4 CSOs). In conjunction with their Downtown Sewer Separation Project, the City of Warren eliminated

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<sup>6</sup>IBID. p. 2.

<sup>7</sup>Ohio EPA, Ohio CSO Inventory list, September 2006.

their four CSOs, as well as the City of Niles. The City of Youngstown, as part of a control strategy, placed health warning signs along many of their larger CSO locations.

## **2.4 Water Quality Conditions: A Watershed Perspective**

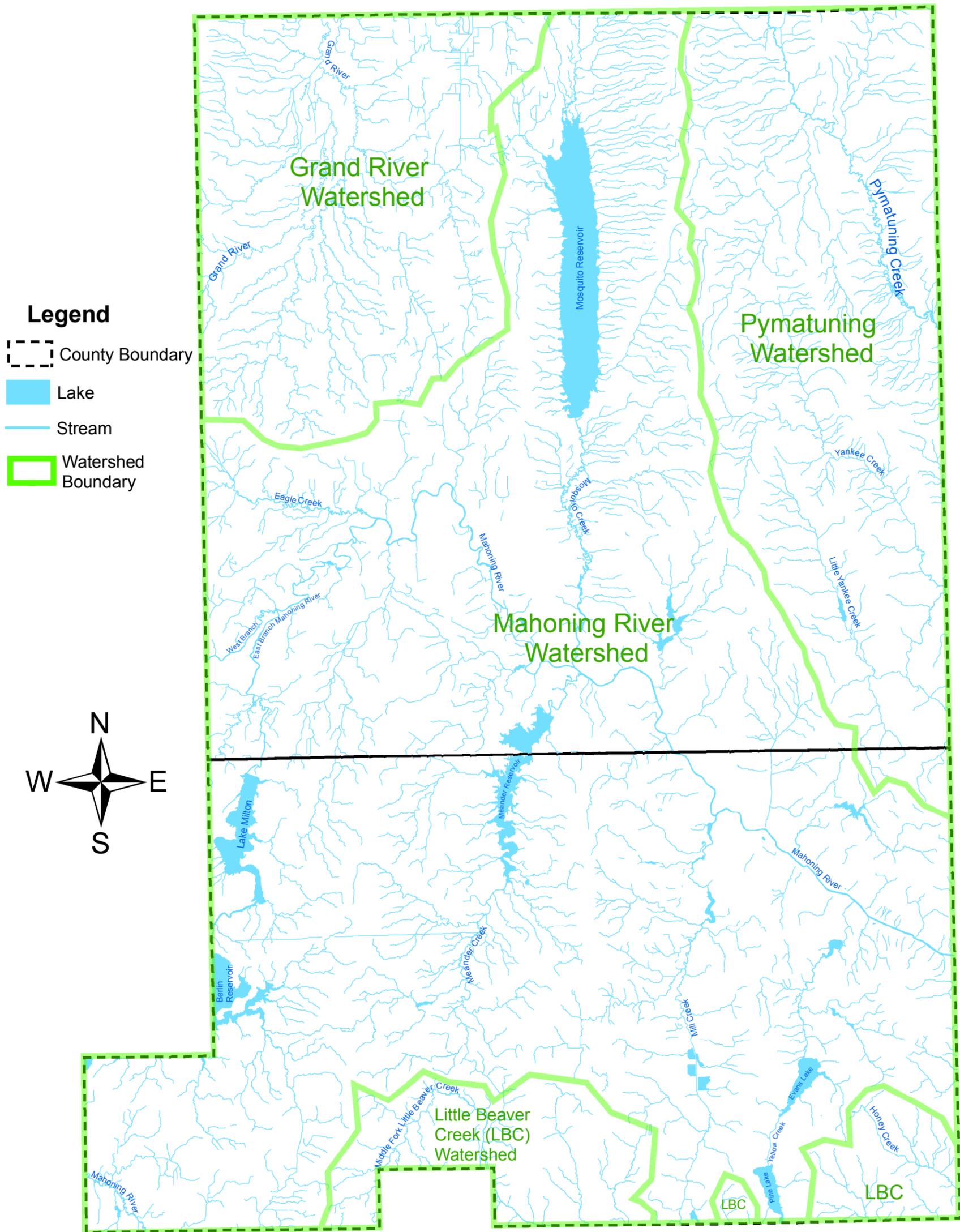
The water quality of Mahoning and Trumbull County is dependant upon activities existing within the four watersheds: Grand River Watershed, Pymatuning Watershed, Mahoning River Watershed, and the Little Beaver Creek Watershed. The following discussion takes an in depth look at the unique characteristics and water quality conditions of the watersheds within Mahoning and Trumbull County. Figure 2-1 illustrates the two-county area and delineates the boundaries of the four watersheds that reside within Mahoning and Trumbull Counties.

**2.4.1 Grand River Watershed:** The northwest portion of Trumbull County occupies 141.48 square miles of the watershed and is identified as both a Warmwater Habitat and Exceptional Warmwater Habitat by the Ohio EPA.

The 2006 Integrated Report surveyed fourteen sites within the Trumbull County portion of the Grand River. Seven of the fourteen sites sampled were located along the Grand River from its headwaters, in Geauga County, to downstream Swine Creek in Trumbull County. Those areas sampled represent primary tributaries (5-20mi<sup>2</sup>) and a principal stream (50-500mi<sup>2</sup>). Both sites reached 100 percent attainment. The remaining seven sites sampled were located along the Grand River from downstream Swine Creek to upstream Rock Creek in Ashtabula County. One secondary tributary (less than 5mi<sup>2</sup>) and four primary tributary(three 5-20mi<sup>2</sup> sites and one 20-50mi<sup>2</sup> site) sites were sampled, all of which were in 100 percent attainment of Ohio's water quality standards. Two principal stream (50-500mi<sup>2</sup>) sites were sampled along this reach of the Grand River, for a total of 25 principal streams miles sampled. The attainment status of the sampled mileage includes 9.7 miles (38.8%) in full attainment and the remaining 15.3 miles (61.2%) in partial attainment. According to comments within the appendix, the Ohio EPA attributes over 15 miles of partial attainment status "to the habitat-limiting nature of the extensive wetland stream complex (natural conditions)". According to the Ohio EPA, an intensive survey of the upper reaches (includes areas in Trumbull County) of the Grand River will be conducted sometime in 2007 and 2008 with a projected TMDL report due in 2009.

The Grand River watershed is home to a State Wild and Scenic designated river. This designation was given to segments located in Ashtabula County on January 17, 1974, marking Ohio's second wild and scenic river. To ensure preservation of water quality within the wild and scenic portions, the Ohio EPA affords wild and scenic designated rivers additional protection under the Antidegradation Rule by limiting the amount of activity within the segment that would

# Figure 2-1: Mahoning and Trumbull Counties Watershed Overview



Source:  
Ohio Environmental Protection Agency

lower water quality. Although none of the wild and scenic portions fall within the boundaries of Trumbull County, it is important to note on-going activities (i.e. agricultural, urban and/or residential development, septic system nuisances) within the county impact downstream water quality.

In the Spring of 2003, the Ohio State University Extension joined with the Grand River Partners and the Trumbull County General Health Department to conduct a survey of residents within the upper portion of the Grand River watershed. The survey was constructed to determine resident's attitudes toward water quality protection and land preservation within the watershed, specifically those lands abutting the Grand River and its tributaries. Respondents rated their views on the extent to which activities or events posed a threat to the watershed. Results from the survey indicated the perceived problems in the watershed were failing septic systems and urban sprawl. Trailing the top two concerns, but not lacking importance, were habitat alteration, industry, construction, logging, flooding, animal farming, crop farming, and mining.

**2.4.2 Pymatuning Watershed:** Mahoning and Trumbull counties occupy a combined total of 189.84 square miles (4.79 square miles in Mahoning County and 185.05 square miles in Trumbull County) of the watershed that is designated as a Warmwater Habitat by the Ohio EPA.

The mainstem of Pymatuning Creek flows through northeast Trumbull County and was included in the 2006 Integrated Report. A total of ten sites were sampled: three primary tributaries (two 5-20mi<sup>2</sup> sites and one 20-50mi<sup>2</sup> site) and seven principle stream sites (50-500mi<sup>2</sup>). Each of the three attainment statuses was well represented within this stretch of the watershed. Of the primary tributaries, 50% were found in non attainment, while remaining 50% was split between reaching full and partial attainment status. The final seven principal stream sites, comprised of 18 miles, were all found to be in non attainment. Tributaries Yankee Run and Little Yankee Run, share a wide spectrum of attainment with portions of the streams in Full, Partial, and Non-Attainment. Eleven sites were sampled, all primary tributaries (two 5-20mi<sup>2</sup> and nine 20-50mi<sup>2</sup>), with the following sampling results: 58.3% non attainment, 11.1% partial attainment, and 30.6% full attainment. According to the Integrated Report, nutrients, flow alteration, direct habitat alterations, organic enrichment/dissolved oxygen, and pathogens were cited as causes of impairment. The report further lists contributing impairment sources to include major municipal point sources, urban runoff/storm sewer, hydromodification due to development, habitat modifications other than hydromodification, channelization due to agriculture, natural and unknown sources. An intensive survey of the upper reaches of the Pymatuning River will be conducted in 2008 and 2009 with a projected TMDL report due in 2010.

Though most of the watershed is buffered by wetlands, tributaries to Pymatuning Creek are not and serve as express lanes for sediment and pollution transport. The creek and its tributaries flow through rural residential areas of Trumbull County troubled by failing septic systems. In addition, some tributaries such as Little Yankee Creek and Yankee Creek flow through commercial areas and receive point source pollution in the form of untreated discharge<sup>8</sup>.

**2.4.3 Little Beaver Creek Watershed:** Though the watershed is mainly located in Columbiana County, 60.83 square miles is within Mahoning County. The areas of the watershed extending into southern Mahoning County, the Middle Fork Little Beaver Creek and the North Fork Little Beaver Creek, are designated a Warmwater Habitat, Exceptional Warmwater Habitat, and Limited Resource Waters by the Ohio EPA.

The Middle Fork Little Beaver Creek traverses through mid-southern Mahoning County. A total of 33 stream sites were sampled within the vicinity of the Middle Fork Little Beaver Creek. Seven of the 33 sampled sites were secondary tributaries, 18 were primary tributaries (thirteen 5-20mi<sup>2</sup> and five 20-50mi<sup>2</sup>), and the remaining 8 sites (total of 21.5 miles) were principal streams. Those secondary and primary tributaries within the sampled area shared a variety of attainment: 40.1% of the combined sites were in non attainment, 23.8% reached partial attainment, and 36.1% reached full attainment status of water quality standards. The 8 principal stream sites sampled all reached either full or partial attainment status, 56.7% and 43.3% respectively. The second region within the Little Beaver Creek Watershed sampled was the Mahoning County portion of the North Fork Little Beaver Creek (referenced in the 2006 Integrated Report as the Little Beaver Creek- downstream Middle and West Forks to mouth). Thirty-two stream sites were sampled within this region and include: 24 Secondary and Primary Tributaries (fourteen 5-20mi<sup>2</sup> and one 20-50mi<sup>2</sup>) and 8 principal streams (totaling 24.7 miles). According to the Integrated Report, all Principal Streams sampled were found in attainment. The majority of Secondary and Primary Tributaries were found in full attainment (79.9%), with 5.4% in partial attainment and 14.7% in non attainment. A list of high magnitude causes of impairment includes nutrients, siltation, pesticides, organic enrichment/dissolved oxygen, unionized ammonia, flow alteration, natural limits (wetlands), and direct habitat alterations. Sources of the causes include major industrial point sources, combined sewer overflows, pasture lands, channelization (development/agriculture), removal of riparian vegetation, onsite wastewater treatment systems (septic systems), and surface mining. Though it is not known if any of the 65 sites were located in Mahoning County, it is important to note that

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<sup>8</sup>Untreated discharge is any water that is discharged directly into a stream, river, or lake without first being treated by a WWTP.

activities taking place within the county pose potential threats to downstream water quality and could have been causes/sources of impairment.

According to the Columbiana County Soil and Water Conservation District (SWCD), the leading stressors impacting the watershed's water quality are development, sediment overload, toxic substances, failing septic systems, damaged riparian areas, urban runoff, logging, and animal manure applications. The south and southeastern portion of Mahoning County contain abandoned mines with yellow, acid-laden waters draining into nearby waterways. According to a series of water sampling conducted by the Watershed Coordinator for the Columbiana SWCD, acid mine drainage is a factor affecting water quality in tributaries of the Little Beaver Creek. Among those waterways showing signs of acid mine drainage are segments of Middle Fork Little Beaver Creek, an unnamed tributary to Middle Fork Little Beaver Creek and Cherry Valley Run, located in mid-southern Mahoning County.

The Little Beaver Creek Watershed is home to a designated a State Wild and Scenic River and is included on the National Wild and Scenic River's List. The Little Beaver Creek was designated a State Wild and Scenic River on January 15, 1974 and was designated a National Wild and Scenic River in October, 1975. The Little Beaver is one of three Ohio rivers having received the National distinction. To ensure the preservation of water quality within the wild and scenic portion, the Ohio EPA affords wild and scenic designated rivers additional protection under the Antidegradation Rule by limiting the amount of activity within the segment that would lower water quality. Although none of the wild and scenic portions fall within the boundaries of Mahoning County it is equally important to note that the on-going activities (i.e. agricultural, urban and/or residential development, septic systems) within the county have impacts on downstream water quality.

**2.4.4 Mahoning River Watershed:** The Mahoning River watershed spans across six counties: Columbiana, Stark, Mahoning, Portage, Geauga, and Trumbull Counties. Mahoning and Trumbull Counties occupy 667.66 square miles of the watershed: 357.62 square miles occupied by Mahoning County and 310.04 square miles occupied by Trumbull County. According to the 2006 Integrated Report, the watershed's aquatic life use designation includes Warmwater, Coldwater, and Limited Resource Water habitats.

The watershed's stream attainment varies greatly from segment to segment. Due to the format of the Integrated Report, it is not known which tributaries to the Mahoning River and what specific river mile segments were sampled. Therefore, it is important to note that areas outside Eastgate's planning area, such as those portions of the watershed located in Columbiana, Stark, and Portage Counties, have the potential to impact the stream attainment of Mahoning and Trumbull County's

reaches. However, a general idea from the report's Appendix E.2 can provide insight to the attainment status within Eastgate's planning region.

A survey of the upper reaches of the Mahoning River (headwaters in Columbiana County to Leavittsburg in Trumbull County) was completed in 2006, but additional sampling will take place in mid-2007. A TMDL report is projected to be published in 2009. The following is a summary of the water quality conditions within the watershed, as reported in Appendix E.2:

- Mahoning River (headwaters to downstream Beech Creek): This area of the Mahoning River includes a portion of southwest Mahoning County and is designated a warmwater habitat. According to Appendix E.2 of the Integrated Report, one Primary Tributary (5-20mi<sup>2</sup>) was sampled and found to be in full attainment. Four Principle Stream sites were surveyed for a total of 11.6 miles. A majority of the mileage, 77.6%, was in non attainment and the remaining 22.4 % were in full attainment. Cited as high magnitude causes for impairment are unknown causes and metals. The sources of such impairments were identified as minor industrial and municipal point sources, spills, contaminated sediments, and unknown sources.
- Mahoning River (downstream Berlin Dam to downstream West Branch): This area extends into western Mahoning County and southwestern Trumbull County and is designated a Warmwater and Limited Resource Water Habitat. A total of nine sites were sampled within this region, seven secondary tributaries and two primary tributaries (5-20mi<sup>2</sup>). The area surveyed was mainly in full attainment, 46.5%, while 32.1% of the surveyed sites were in partial attainment and 21.4% in non attainment. Causes of impairment included organic enrichment/dissolved oxygen, flow alteration, direct habitat alterations, suspended solids, turbidity, and siltation. Sources of such causes include channelization, dam construction, flow regulation/modification, and streambank modification due to development.
- Mahoning River (downstream West Branch to upstream Duck Creek): This region of the Mahoning River Watershed extends into western Trumbull County and is designated both a coldwater and warmwater habitat. A total of twenty sites were sampled- seven secondary tributaries and thirteen primary tributaries ( twelve 5-20mi<sup>2</sup> and one 20-50mi<sup>2</sup>). Full attainment (98%) was reached in most of the segments surveyed, with the remaining 2% in partial attainment of Ohio's water quality standards. According to the Integrated Report, causes of impairment included organic enrichment/dissolved oxygen,

direct habitat alterations, and natural limits (wetlands). Sources of impairment include channelization, dam construction, and flow regulation/modification due to development.

- Mosquito Creek: Mosquito Creek, located in mid-Trumbull County, is designated as a warmwater habitat. A total of 12.5 miles of principal streams (totaling 7 surveyed sites) were sampled. The attainment status of the samples included partial and non attainment, 13.6% and 86.4% respectively. Suspended solids were identified as the major causes of impairment, while the sources of impairment included minor industrial and major municipal point source and upstream impoundment.
- Mahoning River (downstream Mosquito Creek to upstream Mill Creek), excluding the Mahoning River: This surveyed area includes streams within mid-Trumbull and Mahoning Counties, but excludes which sections of the Mahoning River were surveyed. Four principle stream sites were sampled, totaling 3.0 miles, and were in non attainment of Ohio's water quality standards. The report cited metals, unionized ammonia, nutrients, organic enrichment/dissolved oxygen, direct habitat alterations, and suspended solids as causes of the non attainment status. Two sources were identified as causing impairments- major municipal point source and dam construction.
- Mahoning River (upstream Mill Creek to mouth), excluding the Mahoning River mainstem: This surveyed area includes streams within the watershed upstream of the confluence of Mill Creek and the Mahoning River in Mahoning County to the river's mouth at the Ohio/Pennsylvania border. According to the Integrated Report, this area of the watershed is designated a warmwater habitat. A total of sixteen sites were sampled: two secondary tributaries, eight primary tributaries (three 5-20mi<sup>2</sup> and five 20-50mi<sup>2</sup>), and six principal stream sites (7.6 miles). This area within the watershed is mainly in non attainment, 100% non attainment for the principal streams surveyed and 91.7% of the secondary and primary tributaries. The remaining 8.3% of the secondary and principal streams were in partial attainment. Metals, unionized ammonia, nutrients, siltation, organic enrichment/dissolved oxygen, and unknown causes were listed as causes of impairment for the surveyed area. Additionally, major municipal point source, CSOs, nonirrigated crop production, urban runoff/storm sewers, channelization and dam construction due to agriculture, natural, unknown sources were listed as sources of the watershed's impairment.

The impairment of water quality in the Mahoning River watershed is a product of the heavy nonpoint and point source pollution problems within the two counties. Nonpoint source pollution such as agricultural practices, failing septic systems, and urban sprawl have aided in the impairment of tributaries flowing into the Mahoning River. Point source pollution from industries, waste water treatment plants, CSOs, and Sanitary Sewer Overflows (SSOs) are a major source of pollution plaguing the Mahoning River and some of its tributaries.

Nonpoint sources of pollution appear numerous and sporadic throughout the watershed. Agricultural practices along main tributaries such as Meander Creek, the southern segments of Mill Creek and Yellow Creek, in Mahoning County, and along Mosquito Creek and Eagle Creek in Trumbull County appear to contribute organic enrichment, nitrate-nitrite, nutrients, and phosphorus to the impairment of the watershed's water quality. Riparian zones along some tributaries, such as the southern portions of Yellow Creek and Mill Creek, were destroyed by unrestricted livestock access and by farming in riparian zones and urban development. Residential and commercial development sprawled out of central cities and into rural areas of southern and southeastern Mahoning County and throughout Trumbull County. The outward migration of development leads to deterioration of water quality via habitat and flow alterations and the importing of sediment and nutrients into the tributaries which decreases the amount of dissolved oxygen within the waters. Failing commercial and home septic systems are a nuisance throughout the watershed with "hot spots" occurring near Mosquito Creek Reservoir, a drinking water supply in Trumbull County and along tributaries to Yellow Creek and Mill Creek in Mahoning County.

Point source pollution, although more problematic in the past, continues to impair the water quality of the Mahoning River. Wastewater treatment plants are located throughout the watershed and, although they have improved water quality over the years, discharge into the Mahoning River or one of its main tributaries. Higher levels of nitrate-nitrite, ammonia, chlorine, total suspended solids, and effluent are often recorded incidents associated downstream of a wastewater treatment plant. In addition to treatment plants, CSO discharges contribute to water quality degradation by unloading untreated effluent and stormwater into the Mahoning River and its tributaries.

The legacy of pollution in the Mahoning River expands beyond current day polluters. For almost a century, the industrial artery of the watershed, the lower Mahoning River (from Warren to Lowellville), was bruised by industries residing alongside its banks. From the early 1900's until the late 1970's, the river served as a highway for steel and steel-related industries. These industries utilized the river's water in their cooling process, returning the pollutant laden water (by-products of the processes) to the river at higher temperatures. Contaminants such as

polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), and heavy metals were unloaded into the river. Years of contaminant buildup produced a thick layer of black goo that smothers the river bottom and is gathered up behind the river's low-head dams. Today, the Mahoning River is the center of a United States Army Corps Of Engineer's (USACE) Ecological Restoration Project. A survey of the lower portion of the river, to include the contaminated portions, is scheduled to be surveyed in 2013 and 2014, with a TMDL report due in 2015. According to the Ohio EPA, the sampling and TMDL report was pushed forward in hopes of coordinating efforts with the dredging project.

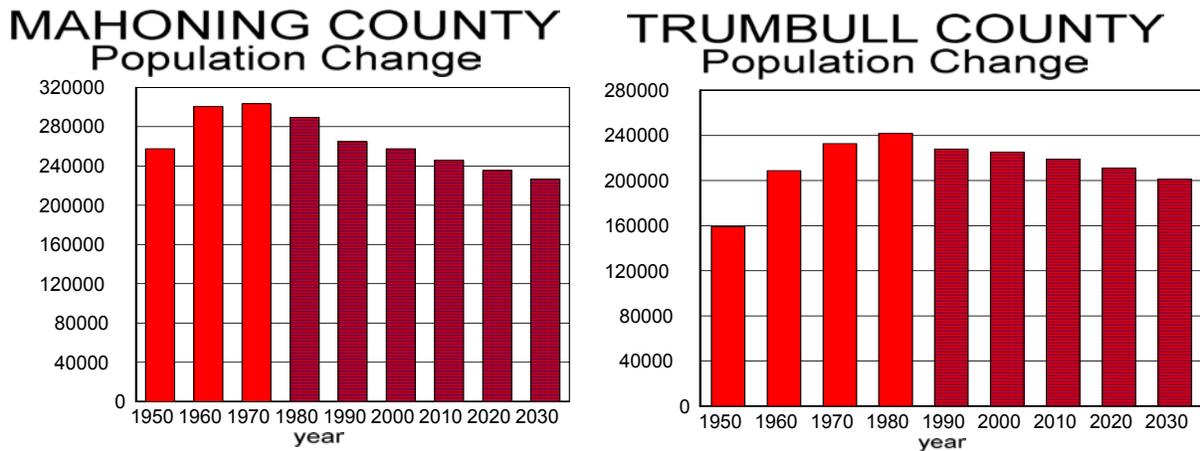
# Chapter 3 Population and Economic Profiles for Mahoning and Trumbull Counties

In updating Eastgate’s 208 Water Quality Plan a population distribution at the sub-county level was needed. When looking at the future infrastructure needs, the 208 Plan must use population projections from the Ohio Department of Development Office of Strategic Research (OSR).

## 3.1 Population Profile for Mahoning and Trumbull Counties

Mahoning and Trumbull Counties saw a significant reduction in population over the last 20-30 years, yet experienced notable growth in suburban areas. In 2003 the OSR determined Mahoning and Trumbull Counties lost population and would continue a downward trend through the year 2030. Already, from 2000 to 2004 Mahoning County lost 0.7% of its population, while Trumbull County lost 0.5% of its population. Figure 3-1 illustrates the population change for both counties.

Figure 3-1 Population Change for Mahoning and Trumbull Counties<sup>1</sup>



<sup>1</sup><http://www.odod.state.oh.us/research/files/S0/Trumbull.pdf> and <http://www.odod.state.oh.us/research/files/S0/Mahoning.pdf>

Population peaked in Mahoning County in 1970 (population of 303,424) and Trumbull County peaked in 1980 (population of 241,863). Mahoning County lost 15.1% of its residents since 1970 , bringing the population to 257,555 while Trumbull County lost 3.2% from 1970 - 2000 bringing the population to 225,116. Overall, Eastgate's planning area seen a net loss of 53,332 residents since the 1970 census.

Despite the region's shrinking population, the number of new suburban housing areas increased, implying a redistribution of regional population. Out of Mahoning County's 14 suburban townships only two lost population from 1970 - 2000: Coitsville and Smith Township. In the 30-year period, 20,520 people moved into Mahoning County's suburban areas, while 64,492 people moved out of Youngstown and three of its closest municipalities. This migration represents a population preferences for newer housing, larger lots, and rural character. The census reported Mahoning County dwelling units increasing from 96,662 in 1970 to 111,762 units in 2000. Data collected by Eastgate indicates new housing starts from 2000 to 2003 number 2,174 in Mahoning County. For Trumbull County, the census shows dwelling units increasing from 71,295 in 1970 to 95,117 in 2000. Eastgate's data for Trumbull County from 2000-2003 show 1,770 new housing starts.

Throughout the planning region are areas where sewers are desperately needed, especially in areas with failing septic systems. These areas should be a priority when looking at infrastructure needs. What should not be mistaken as a priority is housing developments further away from existing sewer lines. Mahoning and Trumbull counties have abundant open space to accommodate the increasing demands of home buyers. This move outward places stressors on the local environment. The land's ability to absorb and filter water naturally is greatly diminished due to an increase in the amount of non-pervious surfaces. Nonpoint source pollution in waterways, a by-product of developing/developed areas, places overall water quality in jeopardy. The expense to the natural environment and to citizens of the region only increases as the decreasing population moves further out into rural areas.

### **3.2 Economic Profile**

The state of this region's economy is rooted in the loss of the steel industry and overall erosion of manufacturing in the nation. After the steel mills closed in the Youngstown-Warren area the employment in the region changed from manufacturing to service based. The manufacturing industry declined between 1970 - 2000 by 66.6% in Mahoning County and 31.9% in Trumbull County. During the time period of 1970-2000 the finance, insurance, and real estate sectors increased by 30% in Mahoning County and 108% in Trumbull County. The service industry saw the most growth in the 30 year time

frame with employment increasing 232% in Mahoning County and 299% in Trumbull County.<sup>2</sup>

Over the 2004-2014 period, the Northeast Ohio (Mahoning, Trumbull and Ashtabula Counties) economy is projected to create 9,600 new jobs. Service sector industries, led by health and business services, will account for virtually all of the job growth. Only construction is expected to add significant number of jobs in the goods-producing sector.<sup>3</sup>

Employment growth slowed from the demographic makeup of the region. In Trumbull County the loss of working-age population left it with “an extremely high dependency ratio. Based on 2000 census data, 30% of the county’s population is under 18 and over 64”.<sup>4</sup> Employment growth may be slowed in this region due to the lack of a highly educated work force. Mahoning and Trumbull Counties both fall behind the State and National averages for baccalaureate and graduate degree attained work force (see Figures 3-2 and 3-3).<sup>5</sup> Because of the area’s history of heavy reliance on manufacturing, which did not require any higher education, much of the region’s citizens felt there was hardly a need for a post-secondary degree. Unfortunately this belief left a legacy, therefore reducing the chances that investment from high value added companies relying on a highly educated work force will locate in the Youngstown-Warren region.<sup>6</sup>

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<sup>2</sup> Comprehensive Economic Development Strategy (CEDs)2007 The long range development plan for the Eastgate Economic Development District - Mahoning and Trumbull Counties, Ohio. Eastgate Regional Council of Governments.

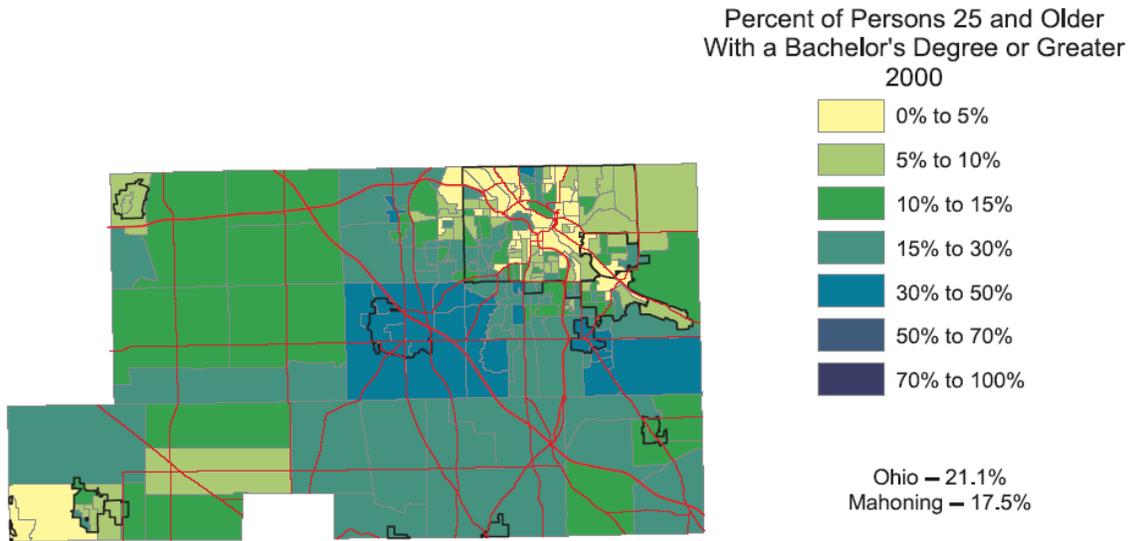
<sup>3</sup>The Ohio Department of Job and Family Services. Job Outlook to 2014 Northeast Ohio Economic Development Region 12; August 2007.

<sup>4</sup>Trumbull County Planning Commission

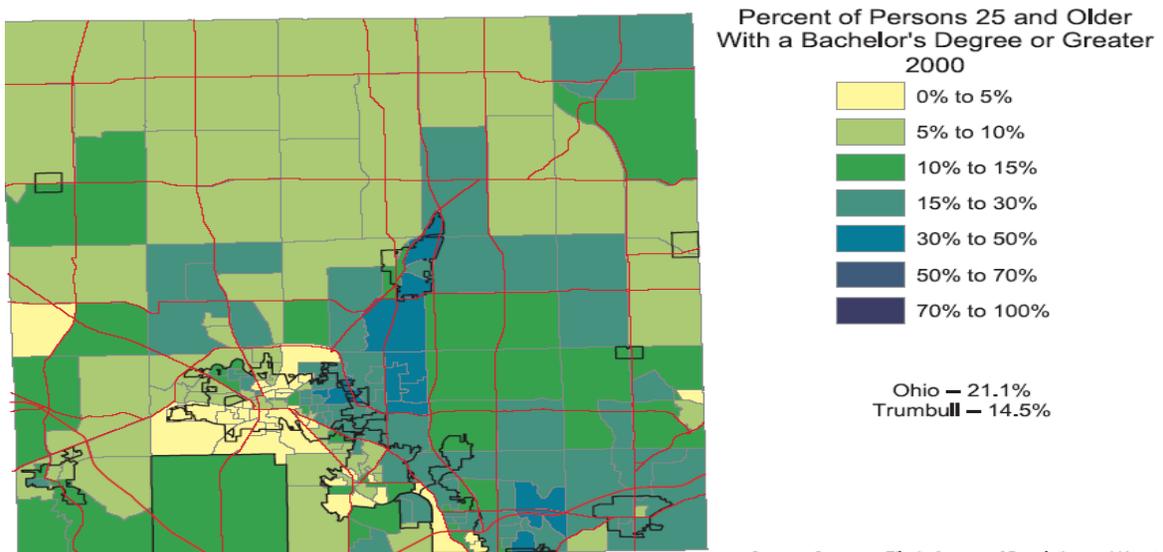
<sup>5</sup>CEDs 2007

<sup>6</sup>CEDs 2007

**Figure 3-2  
Mahoning County Educated Workforce**



**Figure 3-3  
Trumbull County Educated Workforce**



Manufacturing and service stand out as extreme examples of reduction and expansion in the region. Though the service sectors are expanding, they are not at the same rate as the rest of the state. While manufacturing has shrunk to near nonexistence from its former stature, they are still present in the area, and hoping for more investment from the industry-side sector. However, the fact remains the region is not performing as well as the state in terms of retaining or creating jobs of all types. In the sectors where there was growth in the region, the state grew at a faster percentage; and in sectors where there was decline in both the region and the state, the state's numbers showed a slower decline.<sup>7</sup>

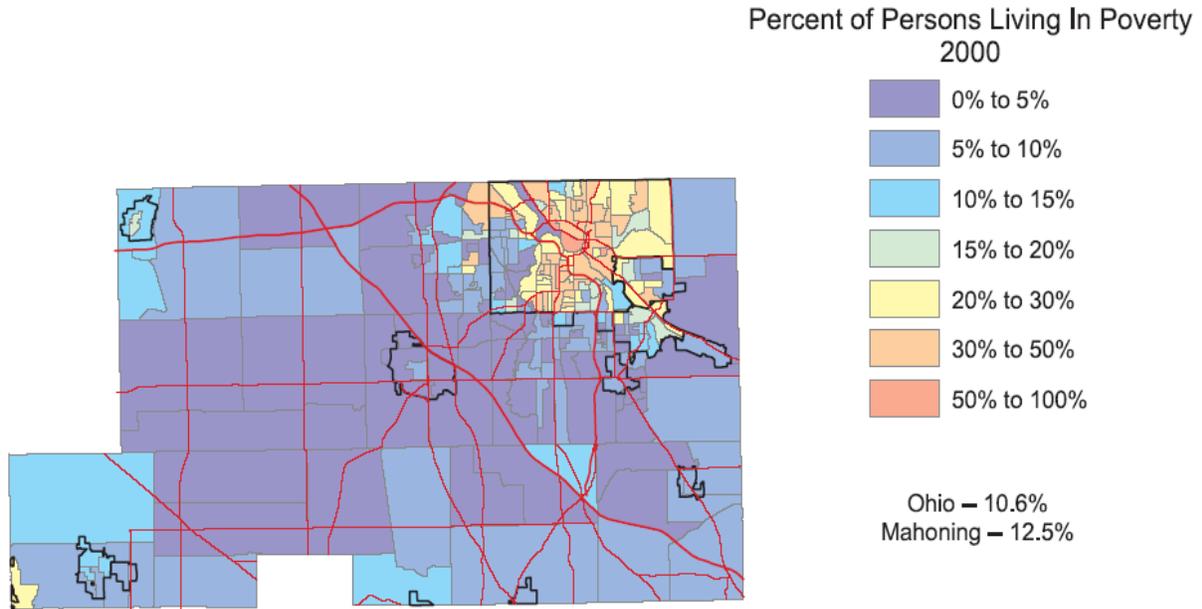
A quick look at the earnings and unemployment demographics of the region show some of the problems the population faces. In 2005 the median household income in Ohio was \$43,493. In Mahoning County in 2005 the median household income was \$36,294 with 49% of households earning below \$35,000. In Trumbull County the median household income was \$40,922 with 43% of all households earning below \$35,000. Unemployment in the region is higher than the state average. Unemployment in Mahoning County is significantly higher than the unemployment rate in Ohio and the Nation. The unemployment rate for Mahoning County in 2005 was 7.7 and Trumbull County was 6.1 (neither seasonally adjusted in 2005). The state's rate in May of 2005 was 6.1.

The population shift from the central cities to the outlying areas of the counties followed the economic shift from manufacturing to service based industries. The jobs in the real estate, insurance, and financial sectors are easily moved from town to town and can follow the population. This was not true of the heavy manufacturing jobs which remained in the same industrial location. Workers remained in the cities in close proximity to their jobs. Now the jobs and the wealthier people can easily move from location to location and those who remain in the core cities are disproportionately living in poverty (Figures 3-4 and 3-5). For example, in January of 2005, nearly one-third of Mahoning County's jobless (approx. 3,000 people) were in Youngstown which posted an unemployment rate of 9.9%. Well over half of Youngstown's population falls into the low-and-moderate income level and 24% of the city's population lives in poverty, according to the 2000 census. A full 23,000 people out of a population of 46,832 in the City of Warren are in the low-and-moderate income brackets and 19% of the population has met poverty status.

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<sup>7</sup> CEDS 2007

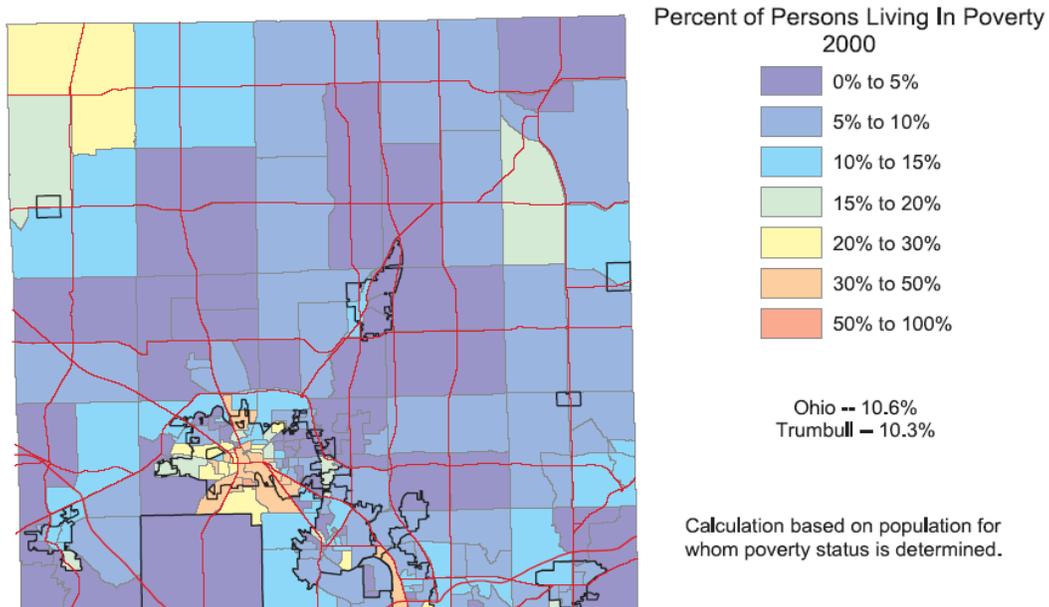
**Figure 3-4  
Mahoning County Poverty**



Calculation based on population for whom poverty status is determined.

Source: Summary File 3, Census of Population and Housing  
U.S. Bureau of the Census, 2000.

**Figure 3-5  
Trumbull County Poverty**



What Eastgate’s region offers to prospective employers is abundant, low-cost land in the cities that is ripe for redevelopment as well as an underutilized workforce. While the service sector jobs follow the population out of the cities, vacant land is plentiful and available for competitive industrial districts in the urban areas. Areas in Warren and Youngstown are ready for growth with the Mahoning River Corridor of Opportunity (MRCO) as an example. The MRCO, comprised of former steel mill sites, consists of 635 acres in Youngstown, 384 acres in Campbell and 452 in Struthers. With the existence of basic infrastructure needed for business , including rail and highway connections, the MRCO worked hard with local and regional agencies to redevelop the abandoned mill sites. The population of Youngstown and surrounding municipalities as described above has been hungry for new jobs. There are hurdles remaining in the cities, most common of which is clean-up of the contaminated brownfields. With help from the state, these issues are being dealt with. With the land, infrastructure, and workforce in place the attractiveness of the cities to businesses leave little reason to develop rural green spaces.

Water quality is affected by the new trends in rural living. Attention shifted from the water quality issues of the 1970’s, mainly controlling pollutants from point sources in surface waters, to nonpoint source pollution caused by run off from impervious surfaces

and from land disturbances from residential and commercial construction. The rapidly developing rural areas are home to sources of clean drinking water—places once thought secure from threats of pollution (upland drinking water reservoirs, headwater areas, and high quality streams). Due to encroaching populations, these sources face an unsecured future, as do all of the streams and rivers from increased water flow and velocity from non-porous surfaces and loss of clarity from soil erosion in construction sites. All of these impacts form new threats to water quality, cumulating from the outward migration trends of the new century.

## **Chapter 4**

### **Regionally Important Critical Resources**

**A list of critical resources was identified in the planning process as areas warranting protection under Eastgate’s 208 Plan. These categories represent regionally significant resources either facing harsh deterioration and needing additional support for their restoration or will face deterioration if protective measures are not adopted. This chapter emphasizes the need to facilitate proper management and protection of regionally important resources sensitive to local land use activities.**

#### **4.1 Defining Critical Resources**

Critical Resources are defined on a regional basis, but may be similar due to their recognized value. The following categories represent critical resources valuable to Mahoning and Trumbull Counties:

- Surface Drinking Water Resources;
- Ground Water Resources;
- Wetlands;
- Floodplains and Riparian Zones;
- Ohio EPA Headwater Streams;
- Green Space;
- Endangered Species and;
- Unique Water Resources.

#### **4.2 Surface Drinking Water Resources:**

The Safe Drinking Water Act defines a public drinking water system as a system providing piped water to at least 25 people or 15 service connections for at least 60 days per year. Private water supplies are defined as not originating from a public supply and serving only one or a few homes. In Ohio there are three types of public water systems: Community Public Water Systems, Non-Transient Non-Community (NTNC) Public Water Systems, and Transient Non-Community (TNC) Public Water Systems. A Community Public Water System (CWS) serves at least 15 service connections used by year round residents or regularly serves 25 year round residents (i.e. cities, villages, mobile homes, nursing homes, public utilities). An NTNC is a public water system regularly serving at

least 25 of the same people for over 6 months per year (i.e. schools, places of employment, etc.). TNC public water systems serve at least 25 people for at least 60 days per year (i.e. churches, campgrounds, gas stations). Table 4-1 illustrates the number of Public Water Supplies, as provided by the Ohio EPA , and total populations served for Mahoning and Trumbull Counties.

**Table 4-1 Public Water Systems**

County	NTNC	TNC	CWS	Total Systems
Mahoning	83 (11,275)	11 (1,966)	15 (248,526)	109
Trumbull	55 (6,657)	22 (5,819)	33 (164,783)	110

The quality of surface drinking water supplies varies by location and is dependant upon activities taking place within the watershed. Table 4-2 summarizes the active drinking water sources and their location:

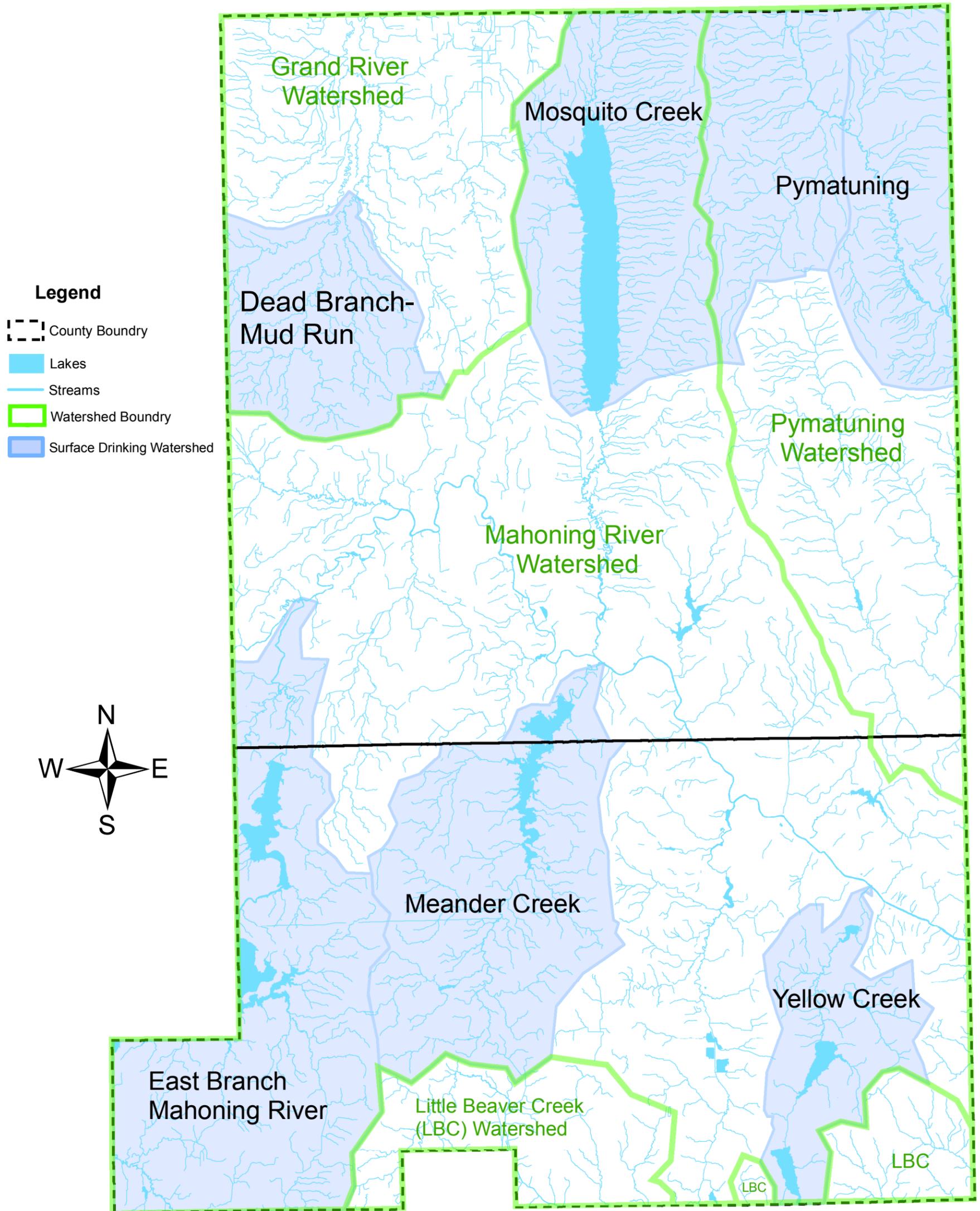
**Table 4-2 Surface Drinking Water Supplies**

Drinking Water Source	Watershed	Subwatershed	County
Meander Reservoir	Mahoning River	Meander Creek	Mahoning County
Mosquito Creek Reservoir	Mahoning River	Mosquito Creek	Trumbull County
Evans Lake	Mahoning River	Yellow Creek	Mahoning County
Lake Hamilton	Mahoning River	Yellow Creek	Mahoning County
Mahoning River	Mahoning River	N/A	Trumbull County
Grand River	Grand River	Dead Branch-Mud Run	Trumbull County

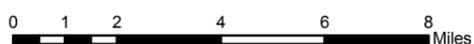
Two additional surface waters serve populations in Eastgate’s 208 Planning area, but have water intakes located outside the region. These two sources are the Shenango Reservoir, located in Mercer County, Pennsylvania, and a segment of the Mahoning River located in Columbiana County. McKelvey Lake, located in Mahoning County, is utilized by the City of Campbell as a drinking water source only during emergencies. Figure 4-1 illustrates the surface waters in Mahoning and Trumbull Counties that serve as primary public drinking water supplies and the watersheds draining into them.

Drinking water can be drawn from the surface or ground. Surface waters such as rivers, lakes, and reservoirs provide ample amounts of drinking water as they are recharged by the flow of streams leading into them. However, due to their open nature,

# Figure 4-1: Mahoning and Trumbull Counties Watersheds and Surface Drinking Watersheds



Source:  
Ohio Environmental Protection Agency



surface waters are accessible and become easily contaminated by chemicals or pathogens. Protection of drinking water sources is a critical issue across the Nation as more sources are degraded by activities within their watersheds. The need to protect our drinking water is critical.

The Ohio EPA established a Source Water Assessment and Protection Program, (SWAP)<sup>1</sup> to protect the state's drinking water sources. According to the Division of Drinking and Ground Water's SWAP website, "Ohio's SWAP program is an innovative program to protect Ohio's streams, rivers, lakes, reservoirs, and ground waters used for public drinking water from future contamination". Under the program, water assessments for public drinking water sources are created to identify possible contaminant sources and methods to reduce the potential for source contamination. The SWAPs delineate drinking water source protection areas and inventories the potential contaminant sources immediately within those areas. The protection area in SWAPs are further broken down into two categories, Corridor Management Zones (CMZ) and the Emergency Management Zones (EMZ). The CMZ is the area within 1,000 feet of the reservoir's bank (starting at the intake) and extending 500 feet from the banks of each tributary. The EMZ is within the immediate vicinity of a surface water intake. The following section discusses general characteristics of the public drinking water sources within Mahoning and Trumbull Counties and the information found within their SWAPS.

#### **4.2.1 Meander Creek Reservoir**

The reservoir serves as the primary drinking water source for numerous townships and municipalities in Mahoning and Trumbull Counties. It is owned and maintained by the Mahoning Valley Sanitary District (MVSD) and at full capacity, it can hold 1,546 million cubic feet. Berlin Reservoir, a recreational water source located in western Mahoning County, provides Meander Reservoir with water in the event of a drought Berlin Reservoir and is owned and maintained by the United States Army Corps of Engineers (USACE).

The Meander Reservoir is protected by a natural, forested buffer created from surrounding lands owned by the MVSD. The buffer acts as a filtration system, filtering pollutants such as excess nutrients, sediment, and other contaminants originating from agriculture, residential and commercial development activity. However, tributaries feeding Meander Creek and the reservoir remain unprotected.

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<sup>1</sup> In 1996, an amendment to the Safe Drinking Water Act initiated a state-by-state assessment of all surface waters that serve as public drinking water systems. In Ohio, source waters are evaluated via the Source Water Assessment and Protection Program (SWAP). The purpose of the SWAP is to identify *where* and *how* source waters are at risk of being contaminated. According to the Ohio EPA, the goal of the program is to "ensure the long term availability of abundant and safe drinking water for the present and future citizens of Ohio".

The Meander Creek watershed encompasses 54,534 acres or 85.2 square miles. Land use activities within the watershed have the potential to impair the water quality of the drinking water source. Agricultural activities, such as unrestricted livestock access to waterways, manure application, and agricultural product application (i.e. fertilizer, herbicides, pesticides) harm water quality by adding nutrients, chemicals, and sediment to the waters. As the watershed transitions to a suburban setting along its eastern boundary, activities from commercial establishments and residential developments, via storm sewer systems, add additional sediment, excess nutrients, chemicals, and litter. Construction activities from surrounding development increases sediment loads, while unsewered areas of the watershed add additional concerns for water quality. According to the Mahoning County District Board of Health, areas of failing HSTS's are located within the watershed, along tributaries to Meander Creek. Miles of roadways traverse the watershed adding litter, road salts, and other roadway-related pollutants. Two major interstate systems bisect the reservoir, I-80 and I-76, and both contain high volumes of truck traffic. Construction to widen I-76, to protect the reservoir from hazardous material spills, began in Spring of 2006.

According to the reservoir's SWAP, land use in the MVSD protection area is comprised of deciduous forest and agricultural land uses such as pasture/hay and row crop. The SWAP's summary indicated possible impacts to the surface water source from the surrounding environment include "agricultural runoff from row crops and animal feed lots, oil/gas wells, road/rail stream crossings, failing home and commercial septic systems, and new housing and commercial development that could increase runoff from roads and parking lots"<sup>2</sup>. Many of these mentioned impacts have already been detected within the CMZ area as findings of pesticides and septic system effluent are or were present in the finished water. Sulfur Run, a tributary to the reservoir has been noted to contain effluent from upstream septic systems. Although not a source of contamination, but a potential source due to its age, is a 72 inch sanitary sewer line crossing the reservoir and carrying wastewater to the Meander Wastewater Treatment Plant. Other potential sources include a number of oil and gas wells located throughout the CMZ.

#### **4.2.2 Mosquito Creek Reservoir**

The Mosquito Creek Reservoir, an impoundment in the Mosquito Creek watershed, is owned and maintained by the USACE. The reservoir drains 24,220 acres in Trumbull County and southern Ashtabula County and at full capacity, the reservoir stores 4,535 million cubic feet of water. The reservoir serves as a drinking

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<sup>2</sup> Ohio EPA, Division of Drinking and Ground Water; "Drinking Water Source Assessment for the Mahoning Valley Sanitary District", (April, 2003).

water source for the City of Warren and surrounding unincorporated areas of Trumbull County.

Many activities taking place within the Mosquito Creek Watershed, and directly adjacent to the reservoir, can impair the water quality of the reservoir. The watershed tributary to the reservoir is mainly rural in nature, but transitions to a suburban setting along its southeastern boundary. Agricultural and suburban land uses can impact water quality by introducing nutrients, sediment, and land application products into the reservoir via its tributaries. Activities from commercial establishments and roadway systems add other pollutants such as litter, road salts, and sometimes hazardous materials. The unsewered areas of the watershed are a problem as well. According to the Trumbull County General Health Department, areas of failing HSTS's are located within the watershed and within the immediate vicinity of the reservoir.

Almost all of the USACE owned land along the northern and northwestern area is leased to ODNR's Division of Wildlife for fish and wildlife management. The northern, wildlife refuge is a haven for migratory birds and host to a blue heron rookery. The refuge is closed to the public except during designated field days. The southern portion of the reservoir contains Mosquito Lake State Park and is open to recreational usage. The recreational use of the drinking water source is concentrated in the southern portion of the reservoir and just upstream of the drinking water intake. According to ODNR's website for Mosquito Creek Lake, "unlimited horsepower boating is permitted on the lake. (Watercraft) Fuel...is available". Due to the presence of recreational watercraft and their known usage of petroleum based products, the threat of petroleum leaks exist that in turn can harm the quality of the drinking water.

#### **4.2.3 East Branch Mahoning River**

The East Branch Mahoning River drains the upper reaches of the Mahoning River watershed. The upper Mahoning serves as a surface drinking water source for two communities, the Village of Sebring<sup>3</sup>, Mahoning County, and the City of Newton Falls, Trumbull County. In its entirety, the Mahoning River flows through five Ohio counties, is 108 miles in length, and drains approximately 1,133 square miles.

The Village of Sebring manages a community public water system that provides drinking water drawn from the Mahoning River to households in southwestern Mahoning County. Raw water is drawn from the river at a location upstream of the village in Columbiana County. Due to this location, any

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<sup>3</sup>The Village of Sebring distributes drinking water to the Village of Beloit.

impairments to the drinking water source would originate within Columbiana County, outside Eastgate's 208 Planning Area. Land use in this portion of the Mahoning River protection area is predominantly agricultural with pasture/hay comprising the remaining area. Additional uses include deciduous forest and row crops. According to the SWAP, possible impacts to surface water quality from the surrounding environment include "agricultural runoff from row crop agriculture, manure handling facilities and runoff from animal feedlot operations, oil and gas wells, failing home and commercial septic systems, spills and releases from recreational boating on public and private lakes, new housing and commercial development that could increase runoff from roads and parking lots, and numerous road bridges over the streams/rivers".

The City of Newton Falls withdraws water from the East Branch of the Mahoning River and within city limits. The Mahoning River flows mainly through rural, agricultural-based areas before reaching the water intake for the city. The city manages a community public water system providing drinking water drawn from the Mahoning River to households within the city, Newton Township, and southern portions of Braceville Township. Land use within this portion of the river's protection area includes agriculture, pasture/hay farms, deciduous forests, and row crops. According to the SWAP summary, possible impacts to surface water quality from the surrounding environment include "agricultural runoff from row crop agriculture, oil and gas wells, failing home and commercial septic systems, spills and releases from recreational boating on public and private lakes, new housing and commercial development that could increase runoff from roads and parking lots, numerous road crossings over the Mahoning River and its tributaries, and wastewater discharge from treatment facilities upstream of the intake". Reports from water treatment plant personnel indicate that an increase in raw water turbidity occurs after a series of heavy rainfalls and is noticeable in Kale Creek, a tributary upstream of the water intake<sup>4</sup>. The increase in turbidity is indicative of the agricultural activities and soil erosion problems upstream. Levels of Atrazine and increased algal growths around the intake increase during the summer months when the agricultural growing season is at its peak. The unsewered areas of Newton Township (i.e. Scott Street) are existing concerns for water quality. The Trumbull County has identified this area as a high priority for funding to remedy the failing septic systems by installing sanitary sewer.

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<sup>4</sup>Ohio EPA, Division of Drinking and Ground Water; "Drinking Water Source Assessment for the City of Newton Falls", (February, 2003) p. 5.

#### 4.2.4 Yellow Creek

Yellow Creek is a subwatershed of the Mahoning River and is the primary watercourse that supplies water to two drinking water sources. Beginning in Columbiana County, Yellow Creek flows through, in order of succession, Beaver Lake (Columbiana County), Pine Lake, Evans Lake, and Lake Hamilton. Pine Lake, Evans Lake, and Lake Hamilton are maintained and operated by Aqua Ohio, Inc., of which Evans Lake and Lake Hamilton, are drinking water sources for residents in Mahoning County.

The Yellow Creek watershed is mainly rural, but transitions to a suburban and urban setting as it travels to its confluence with the Mahoning River in the City of Struthers. Many activities take place within the watershed have the potential to impair the water quality of the watershed and its lakes. According to AWARE's Ad Hoc committee notes for the Yellow Creek Watershed Action Plan, nutrients, pathogens, and acid mine drainage are impairments to water quality within the watershed. Land within the watershed is rapidly developing, especially in the vicinity of Pine and Evans Lakes. Though protected by a thin natural buffer, the lakes have experienced some bank erosion and increased sedimentation loads from development. Areas of growth within the watershed are occurring, for the most part, in unsewered areas.

The Struthers/Mahoning Valley Division of Aqua Ohio provides drinking water drawn from Evans Lake to residents in mid and eastern Mahoning County. Land uses in the overall protection area of Evans Lake gradually changes from rural to suburban as the water flows north. According to Aqua Ohio's SWAP, potential sources of contamination include inactive surface mine drainage, failing septic systems, gas and oil wells, overhead power transmissions, and chemical spills. Water hardness, as a product of acid mine drainage (AMD) has become a large issue for Evans Lake and Lake Hamilton as indicated by water samples. The SWAP report indicates that numerous mines discharging into the two drinking water source lakes. Sewage is also an issue of concern. Although the report indicated that near Evans Lake, residential septic system failures is minimal, and according to the Mahoning County District Board of Health, a small area of failing HSTS's located west of Evans Lake were identified, as well as sewage discharged from two RSTS's, as problematic. The two RSTS's, located west of Evans Lake, discharge waste into the lake and have had "reported problems with high total coliform counts, high total phosphates, and nitrate-nitrogen concentrations"<sup>5</sup>. Raw sewage has also become a problem for Lake Hamilton, as it discharges from a main interceptor along Yellow Creek. Additional contaminants of concern noted in the SWAP include

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<sup>5</sup>Consumer Ohio Water Company, Struthers/Mahoning Valley Division SWAP, Phase I- Boundary Determination and Contamination Assessment, (November, 1998) p. 31.

runoff containing herbicides, pesticides, and fertilizers into Evans Lake and products of road salt applications (chloride content) within the vicinity of Lake Hamilton and Yellow Creek. Additional information on potential contaminant sources can be found in The City of Campbell's SWAP, as the SWAP covers the broader watershed.

The City of Campbell manages a community public water system providing drinking water drawn from Lake Hamilton also to residents in eastern Mahoning County. Potential contaminant sources for the protection area are based on those found within the Yellow Creek Subwatershed, which overlaps information found in Aqua Ohio's SWAP. Land use within the protection area is comprised of cropland, pasture, woodland, strip mining, and developing suburban and urban areas. According to the SWAP summary, possible impacts to surface water quality from the surrounding environment include "agricultural runoff, leaking underground storage tanks (USTs), oil and gas wells, failing home and commercial septic systems, and new housing and commercial development that could increase runoff from roads and parking lots"<sup>6</sup>.

Additionally, strip mining and mine spoil piles in Yellow Creek's protection area could impact the Lake Hamilton's source water". Lake Hamilton is one of three surface impoundments along Yellow Creek, with Pine Lake and Evans Lake being the other impoundments located upstream. Development pressures are increasing along Yellow Creek and within the subwatershed, causing more erosion and sediment loads to trickle downstream into Lake Hamilton. Areas located near Lake Hamilton are urban in nature. As such, activities from urban areas not only increase runoff, but also carry pollutants from streets, parking lots, and lawns into storm sewers that discharge directly into rivers and tributaries. Posing a greater threat to the protection area is the list of leaking UST's. An Ohio EPA review of the Bureau of Underground Storage Tank database found 40 leaking UST sites within the protection area, 17 of which were found within the CMZ. Leaking UST's pose a great threat to the drinking water source as the liquids are petroleum-based products.

#### **4.2.5 Dead Branch-Mud Run**

The Dead Branch-Mud Run is a subwatershed of the Grand River Watershed. Beginning at its headwaters in the marshlands of Southeastern Geauga County, the [Grand] river flows into Trumbull County, across a large extensive wetland complex, and then north through Ashtabula and Lake Counties.

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<sup>6</sup>Ohio EPA, Division of Drinking and Ground Water; "Drinking Water Source Assessment for the City of Campbell", (October, 2002), Summary.

The Village of West Farmington manages a community public water system providing drinking water drawn from the Grand River to residents within the village. The Grand River flows through rural, agricultural areas before reaching the water intake. Similar to the previous subwatersheds, agricultural practices such as unrestricted livestock access, land application products, and manure applications can add nutrients, sediment, and chemicals to the river either directly or via a tributary.

Land use within the protection area is comprised of evergreen and deciduous forests, pasture land, row crops, and wetlands. According to the SWAP, possible impacts to surface water quality from the surrounding environment include “livestock access to the drainage systems and streams, agricultural runoff from row crop agriculture, inadequate on-lot sewage treatment systems, oil/gas production activities, new housing and commercial development that could increase runoff from roads and parking lots, and numerous road crossings over the streams”<sup>7</sup>. A field survey, conducted by the Ohio EPA, found areas of unrestricted livestock access along the Grand River’s mainstem and tributaries. This unrestricted access can promote streambank erosion, increasing the sediment load and the amount of pathogens entering the stream. Soil surveys of the protection area conclude soils are not suitable for HSTS’s with on-lot treatment<sup>8</sup>.

#### **4.2.6 Pymatuning Creek**

The Pymatuning Watershed, located in northeastern Trumbull County and northeast Mahoning County, feeds a surface drinking water source located downstream and outside Eastgate’s 208 Planning area. The Pymatuning Watershed feeds the Shenango Reservoir, located in Mercer County, Pennsylvania, via the Pymatuning Creek and its tributaries. Drinking water from the Shenango Reservoir is distributed to a limited number of residents in eastern Trumbull County.

According to the Interstate Pymatuning/Shenango Watershed Plan, one-third of the watershed is agricultural in nature, including the portion in Trumbull County. As with the previous subwatersheds, agricultural practices such as unrestricted livestock access, land application products, and manure applications can add nutrients, sediment, and chemicals to the river either directly or via a tributary. Activities within the watershed can increase the amount of sediment within the river system in addition to pollutants such as litter and road salts from roadways traversing the watershed. According to the Trumbull County General Health

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<sup>7</sup>Ohio EPA, Division of Drinking and Ground Water; “Drinking Water Source Assessment for the Village of West Farmington”, (January, 2003) Summary.

<sup>8</sup>Ibid. p. 4

Department, areas of failing HSTS's are located within the immediate vicinity of the Pymatuning Creek and its tributaries.

### **4.3 Ground Water Resources**

Numerous residents in the City of Cortland, Trumbull County, rely on ground water as their source for drinking water. Protection of ground water systems is more difficult than surface waters as ground water ignores political boundaries.

The Ohio EPA and ODNR work together to assist local governments in managing and protecting ground water supplies on a county-wide basis. The Ohio EPA assists in the protection of community ground water supplies and its Division of Drinking and Ground Waters (DDAGW) administers the Ohio Ground Water Protection Program that serves as a guide for other state programs with groundwater responsibilities. This program, in conjunction with Ohio's Well Head Protection Program, helps protect present and future availability of uncontaminated ground water for those on a public well system. The programs monitor the quality of water and conduct studies to identify possible groundwater contaminants and ways to prevent future contamination. The DDAGW maintains an Ambient Ground Water Monitoring Network to describe the general quality of ground water in Ohio. Originally established in 1967 with 12 large production wells, the network samples raw, untreated water from the wells in the program that now consists of 212 wells (181 public well systems and 31 industrial, commercial, and/or residential systems), which includes the City of Cortland's community well system. Raw water from the wells is analyzed for a range of inorganic parameters and for volatile organic compounds (VOCs).

The Ohio EPA's Well Head Protection Program (WHP) focuses exclusively on community public water systems serving more than 500 people in a year. This program was established through an amendment of the 1986 Safe Drinking Water Act. According to the Ohio EPA, a WHP consists of "determining the area in which ground water will travel to the wells in five years (protection area), inventorying all of the potential sources of contamination located within the protection area, and developing a plan for protecting their drinking water supply". The SWAP and WHP programs share very similar components, with one exception: the evaluation of susceptibility of the drinking water source is included in a SWAP. According to the Ohio EPA, the SWAP program was expanded to include **all** public water systems- small systems, public water systems, and community public well systems- so that all public water systems assessments are consistent. Due to this inclusion, the WHP program was replaced by the SWAP in which all public, community well systems that serve greater than 25 different people per day for a period of 60 days per year are required to complete a SWAP.

The Ohio EPA completed a SWAP for the City of Cortland in December of 2002. The protection area takes into consideration a number of factors such as pumping rate of wells, hydraulic conductivity of the aquifer, and the porosity of the aquifer. The general

protection area for the city's well system consists of an area containing an inner and outer protection zone. The inner protection zone is the area providing ground water to the city's wells within one year of pumping, while the outer zone is the area providing water when the wells are pumped for five years. According to the Ohio EPA, the number of pumping years translates to the travel time for a drop of water to reach the well. Based on the Ohio EPA's modeling program, the City of Cortland has two protection areas, due to their two sets of wells and the protection areas not overlapping during the modeling process. Based on the aerial photograph included in the SWAP, land use within both protection and surrounding areas is urban in nature. The contamination susceptibility of the aquifer was determined using site-specific information (i.e. aquifer composition, topography, soils, rate of water recharge, etc.), pollution potential rating of protection areas, available groundwater quality data, and potential contaminant sources within the protection area. The results of the SWAP evaluation concluded that the aquifers in the protection area have a low susceptibility for contamination due to their 71 to 216 foot protective layer of shale and clay, the depths of the aquifers (174 and 312 feet below the surface) and the water table (145 and 160 feet below surface), and water quality results indicate that there has been no impact to the aquifer. The Ohio EPA surveyed the protection area and produced a list of potential contaminant sources including UST's (gas stations, auto repair shops), businesses with the potential to leak petroleum products (i.e. maintenance garages, auto repair shops, gas stations, etc.), cemeteries (associated with arsenic and formaldehyde in groundwater), medical facilities (pathogens and medical wastes), and photo shops (chemicals utilized in photo processing may contain metals, solvents, and organic chemicals).

A study reported in the Winter 1994 edition of *Journal of the American Planning Association*<sup>9</sup> identified that an increase in surface runoff can represent a net loss in groundwater recharge. Impervious surfaces, along with stormwater collection systems and sewers reduce residential and municipal ground water supplies and wetlands that rely on ground and soil water. Due to the increase in impervious surfaces, stormwater is directed into catch basins and storm sewer systems preventing it from permeating into the ground. Focused on the affects land use has on groundwater recharging, the journal approaches the topic by taking a look at how the loss of recharge correlates to development via a model that determines how much of a given rainfall event becomes surface runoff. This model is based on the Soil and Conservation Service's curve-number method and provides an insight to the impact development has on ground water recharge.

#### **4.4 Consumer Confidence Reports**

In accordance with the 1996 amendments to the Safe Drinking Water Act, community public water systems are required to create and distribute a Consumer Confidence Report (CCR) to the Ohio EPA and its customers. The annual reports contain

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<sup>9</sup>Vol. 60, Iss.1, p. 95

information on a community's drinking water source, contaminants detected in the finished water, probable sources of the contaminants, the availability of source water assessments, and any violations the supplier received or incurred during the previous, reporting year.

A public water supplier may receive violations due to operation and maintenance difficulties, chemical imbalances, or to water contamination. According to the Ohio EPA, when a Notice of Violation (NOV) is issued, a public water system must follow the public notification requirements adopted from the U.S. EPA's "tier" system (OAC 3745-81-32). The tier system is based on the severity of violation and is as follows:

- Tier 1: Any violation/situation that poses an acute health risk to human health must notify the public within 24 hours of the violation's occurrence. Examples of an acute violation include the occurrence of a waterborne disease outbreak or emergency and violation of the maximum contaminant level (MCL) for total coliforms, nitrate or nitrite;
- Tier 2: Non-acute violations such as failure to comply with terms and conditions associated with any variance or exemption or variance in place or any other situation as specified by the director a notification to the public must be given as soon as possible, but no later than 30 days of when the violation occurred; and
- Tier 3: Violations such as exceeding the fluoride secondary maximum contaminant level (SMCL), violations of the monitoring and testing procedure requirements, or operation under a variance or exemption requires the public to be notified as soon as possible or within 30 days to one year of when the violation occurred.

#### **4.4.1 Healthy Valley Alliance: PACE EH**

A 13-task methodology was created to assist local communities in identifying and addressing environmental health priorities. The methodology, Protocol for Assessing Community Excellence (PACE) in Environmental Health, was developed through a partnership between the National Center for Environmental Health (NCEH) of the Centers for Disease Control and Prevention (CDC) and the National Association of County and City Health Officials (NACCHO). PACE address the following challenges:

- Community-level identification of environmental health issues;
- Identification of populations at risk of environmental exposure and adverse health effects;

- Discover, collect, and analyze meaningful environmental health data; and
- Allocate resources to address community environmental health concerns.

In 2003, funds were awarded to the Mahoning County District Board of Health to serve as a PACE demonstration site, which included Trumbull County. A team of local stakeholders, including Eastgate, worked to identify local environmental health concerns, establish relevant indicators, and to coordinate significant interventions for the identified concerns. Twenty-six environmental health concerns were identified in Mahoning and Trumbull Counties. A survey was then developed and distributed to the public to gauge their perception of the 26 concerns. According to the survey results, the top concern was safe drinking water.

The PACE committee addressed the concerns in a published report, “Improving Environmental Health in the Mahoning Valley: Report of the Healthy Alliance PACE Project”. The goal shared by the committee is to protect and improve the drinking water quality of the Mahoning Valley. In order to meet this goal, the committee devised a list of recommendations of which included assisting Eastgate in completing their 208 Water Quality Management Plan Update, implement the evaluation and elimination of illicit discharges in the watersheds that drain into surface drinking water sources (Phase II Storm Water Plan), and assist smaller public water systems to implement items listed within their SWAPS. However, a program to assess whether or not public water suppliers are implementing their SWAP’s remains to be implemented.

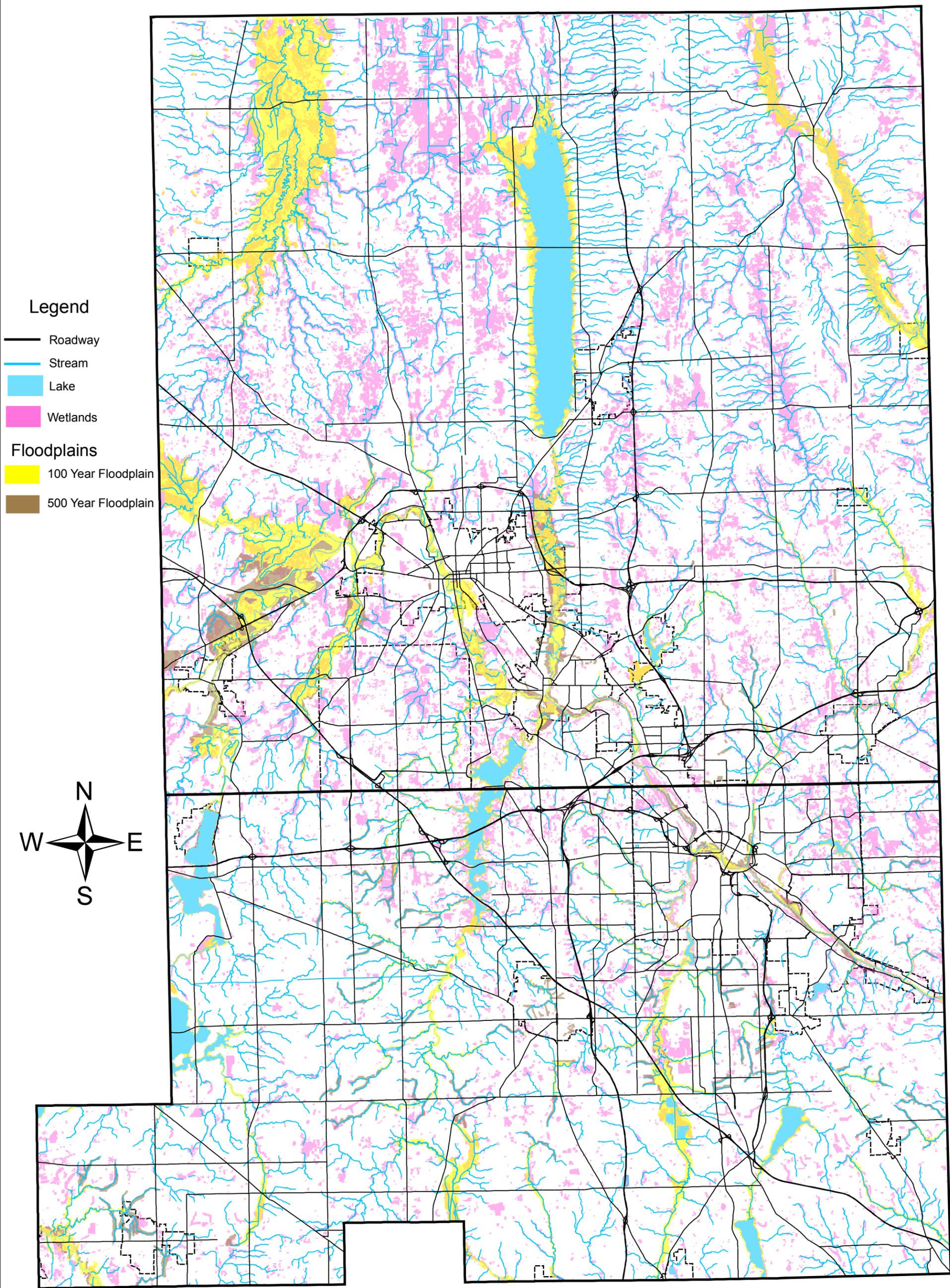
#### **4.5 Wetlands**

Wetlands are some of the most diverse, valuable areas within the United States. According to the Ohio EPA, a wetland is “an area that is inundated or saturated by surface or ground water at a frequency and duration to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions”. Figure 4-2 illustrates the remaining wetlands in Mahoning and Trumbull Counties as designated by ODNR.

Wetlands provide a land to water transition for water while filtering out pollutants during the transitional period. Wetlands are beneficial to water quality due to their ability to remove, break down, absorb, or transform pollutants before entering a water body. Other functions wetlands perform include:

- Slowing or removing sediment;
- Prevent metal pollutants (i.e. lead, zinc, cadmium) from entering waters;

# Figure 4-2: Mahoning and Trumbull Counties Wetlands and Floodplains



0 1.25 2.5 5 7.5 10 Miles

- Absorbing nutrients via the plants that live within the wetland;
- Slowing and retaining storm/flood water in order to prevent downstream soil erosion by holding water and releasing it slowly; and
- Recharging surface and groundwater supplies.

Aside from water quality benefits, wetlands support a diversity of plant, insect, wildlife, and fish species, containing one-third of all threatened or endangered wildlife species<sup>10</sup>. Wetlands provide areas for rest, spawning, nesting, and food for mammals, fish, birds, reptiles, amphibians, and other forms of wildlife. Examples of wildlife and plant species indicative of both state-wide and local wetlands include:

- Amphibians- Eastern Newt, Salamander;
- Birds- Bald Eagle, Blue Heron, Marsh Wren, Common Yellowthroat;
- Mammals- Beaver;
- Fish- Central Mud Minnow, Warmouth; and
- Plant- Poison Sumac, Skunk Cabbage, Pin Oak, Cattail.

Not all wetlands are created equal. Each wetland varies in part by its soils, landscape, climate, water characteristics, vegetation, animal species, and amount of human degradation. In Ohio they are categorized by a measure of quality according to the Ohio EPA's assessment. Adopted from the Washington State Wetland Rating System, the Ohio EPA created its Ohio Rapid Assessment Method for Wetlands (ORAM) to delineate wetland boundaries and determine the level of quality they possess. Each wetland assessment is placed into one of three categories: Category 1, Category 2, or Category 3 (corresponding to respective quality levels of low, medium, and high), with Category 3 being the most protected due to its superior habitat diversity, hydrogeological functions. Additional information on each category can be found on the Ohio EPA's Division of Surface Water's Wetlands Ecology Section website.

Wetlands are also known as fens, bogs, or swamps and are classified by their water levels, plant species, and hydric soil types. However, some wetlands may not be easily identified as some dry up during the year. Additionally, some lands may be saturated with water for extended periods of time due to hydric soils. Hydric soils are not indicative of a wetland because an area in question may lack other, pertinent wetland characteristics.

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<sup>10</sup>Ohio Wetland Restoration and Mitigation Strategy Blueprint, ODNR .

Over the past decade, Ohio lost nearly 90 percent of its original wetland coverage due to human activity. Development pressure is the largest threat to wetlands today. Fertile soils and prime locations make wetlands attractive to farmers and to developers. Developers who wish to fill in or remove a wetland or part of a wetland, they must obtain a Clean Water Act Section 404 permit and Section 401 water quality certification. According to the Ohio EPA's "Ohio Wetland Restoration and Mitigation Strategy Blueprint", permit applicants must show justification for the proposed wetland impact and must avoid and minimize impacts before a mitigation proposal is considered. Wetland mitigation involves the restoration of wetlands on the same property as it was removed, participating in a wetland bank, participating in a fee arrangement, or partnering with ODNR on a mitigation project.

Wetlands can support a strong economy. Their natural value in buffering, storing, filtering and recharging far exceeds their commercial value. Additionally, they provide the perfect environment for spawning nurseries and provide plant food for commercial and recreational fisheries. Wetlands, where limited recreational activities are permitted such as birdwatching, fishing, photography, and hunting, can add to the strength of the local economy and to the over all attractiveness of an area.

#### **4.6 Floodplains and Riparian Areas**

Floodplains are delineated areas along rivers and streams that help store flood waters during heavy rain events. Floodplains are comprised of two main boundaries, the 100 year floodplain and 500 year floodplain. The 100 year floodplain is located close to the river and indicates a 1 percent chance a flooding event will stretch to the outer boundaries of the 100 year floodplain. The 500 year floodplain is located further out from the river, indicates that a 1 percent chance a flooding event will stretch to the outer boundaries of the 500 year floodplain. Figure 4-2 illustrates the 100 year and 500 year floodplains in Mahoning and Trumbull Counties as designated by ODNR. Undisturbed, natural floodplains perform many beneficial flood management techniques at no cost. Natural floodplains can retain and absorb stormwaters peaking over top stream banks and reduce non-point source pollution by filtering stormwater. Aside from their functions, flood plains add aesthetic beauty to rivers and streams and provide vital habitats for plants and animals via the riparian area.

Riparian areas, or zones, are the vegetated lands adjacent to waterways (streams, lakes, ponds, rivers, wetlands) and located within the floodplain. Riparian zones are closely related to flood plains as riparian areas perform similar functions and may also be delineated based upon floodplain boundaries. Also known as a stream side corridor or a stream side forest, riparian zones act as natural buffers filtering out pollutants before reaching the water. According to ODNR's Division of Water, riparian zones "reduce water temperatures by sheltering and shading, provide wildlife habitat and protect and create aquatic habitat, provide detritus (leaves and woody debris), which is the basic source of

energy for the stream ecosystem, and reduces streambank erosion through the high durability of tree root mass”.

Development is the number one threat to the intrinsic functions of floodplains and riparian zones. The removal of trees and their root structures within the riparian zone weakens streambanks, promotes erosion, and prematurely widens the stream. Without vegetated streambanks, pollutants gain easy access to the water, as they are no longer absorbed by vegetation. The addition of sediment to a stream makes the stream shallow and destroys instream habitats. Programs are in place throughout the State of Ohio to protect riparian zones and flood plains and include developing riparian model ordinances and establishing conservation easements.

A Riparian Model Ordinance establishes distance lines set back from the banks of a river or stream in order to maintain proper riparian functions. They are geared toward new development, but address current land owners who want to expand their home or business within the setback area. When sized properly, a riparian setback will allow room for riparian zones to distribute the volume and force of flood waters. Numerous landowners in Mahoning and Trumbull Counties have experienced property damage from flooding or loss of land due to streambank erosion. Riparian setbacks can protect structures and reduce the damaging affects of flood waters.

Riparian setback ordinances are established at a local level and tailored to fit each community’s needs. Beaver Township, located in Mahoning County, wrote a riparian setback ordinance into their Comprehensive Land Use Plan. In November 2004, Eastgate worked with the Mahoning County Engineer’s Office, township officials, the Alliance for Watershed Awareness and Riparian Easements (AWARE), and other resource agencies to develop a riparian setback model for the county and its townships. The committee developed riparian setback regulations modeled after the Chagrin River Watershed Partner’s language. Mahoning County has adopted a county-wide riparian setback for any site regulated by the Mahoning County Erosion and Sediment Control Rules which includes sites one acre and larger or less than one acre but part of a larger common plan of development or sale which results in the disturbance of one or more acres. These sites must follow the criteria set forth in the Mahoning County Model for the Establishment of Riparian Setbacks also developed from the Chagrin River Watershed Partners Model. In addition, several townships within the county have modified and adopted township wide resolutions. Trumbull County has setbacks established in their subdivision regulations and is currently in the process of adopting a county-wide resolution.

On a watershed level, riparian setbacks have been identified within several watershed action plans. The Mill Creek Watershed Action Plan identifies the need to implement riparian setbacks for the entire watershed due to unrestricted livestock access, stream channelization, flow alteration, urban runoff impairments, and construction activities. The Grand River Watershed Action Plan identified adding riparian setbacks to

zoning regulations to prevent agricultural-related erosion. Meanwhile, the Pymatuning Plan recognizes the need to protect riparian corridors based on public health and safety and as wildlife corridors, recreation areas, and other natural areas. The draft Lower Mahoning River and Mosquito Creek Watershed Action Plan identifies using riparian setbacks to help eliminate sediment loadings into the water systems caused by construction activities, urban runoff, agricultural practices, and stream bank erosion.

A conservation easement is another tool that aids in the protection of riparian zones. In conjunction with Section 319 of the Clean Water Act, the Ohio EPA facilitates a 319 Grant Program to provide financial assistance for projects that eliminate or reduce and prevent water quality impairments caused by non-point source pollution. Priority funding is given to rivers listed under the Ohio EPA's 303(d) reports, with identified non-point source impairments, or listed within an endorsed watershed action plan. Under this grant riparian restoration and protection projects, conservation easements, and other non-point source elimination projects can be funded. An easement is a legally binding agreement that preserves a land's conservation value in perpetuity. Protection under a conservation easement limits actions taking place. Once the easement is established, ownership of the easement is passed onto a legally qualified conservation organization (i.e. land trust) or a government agency.

#### **4.7 Ohio EPA Headwater Streams**

Headwater streams are networks of smaller streams that are the origin of a river. Headwater streams with a watershed covering an area less than one square mile is considered a primary headwater stream. Primary headwater streams make up over 80 percent of the stream miles in Ohio. The health of larger streams and rivers depends upon the health and stability of primary headwater networks.

Primary headwaters are divided into three categories: ephemeral, intermittent, or perennial. Ephemeral streams are streams that contain flowing water after large rain events or for a short amount of time throughout the year. Intermittent streams flow only during wet periods of the year, while perennial streams continuously contain water. Ohio EPA field biologists have concluded that there are three different classes of primary headwater streams: Class I, Class II, and Class III Primary Headwater Habitat Streams. A Class I Primary Headwater Habitat Stream is a perennial stream with cold water conditions and supports permanent aquatic communities. A Class II contains perennial or intermittent streams with warm water conditions and has less demanding habitat requirements than a Class I. Lastly, a Class III is generally an ephemeral or intermittent stream with warm water conditions that has minimal habitat requirements than its previous classes.

Primary headwaters have a large influence on the value and future health of a river, stream, lake, and its surrounding environment. The health of our primary headwaters not

only benefits the natural environment, but also humans. A primary headwater, with an intact, vegetated buffer can help reduce the amount of sediment entering a river/stream, thus reducing sediment dredging costs, flood frequency, water treatment costs, and the siltation of in river/stream habitats. Healthy primary headwaters can help alleviate the destruction of floods by controlling the flow and force of water entering a larger stream and preventing excessive erosion. Additional benefits include increased property value, increase in biological diversity, and maintenance of flow during periods of drought.

#### **4.8 Green Space**

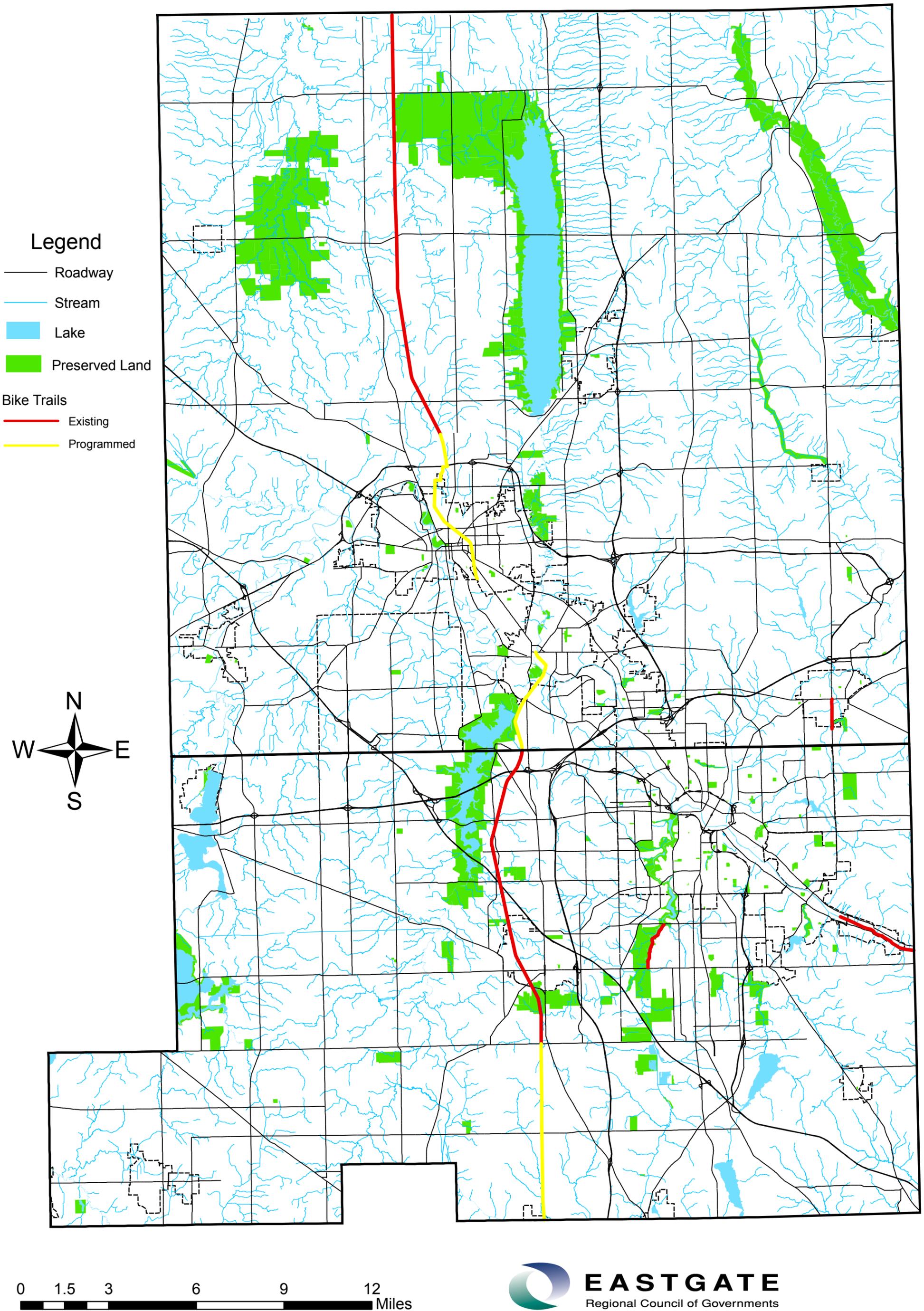
Protecting the land along waterways is a simple and cost effective way to protect the region's water quality while establishing parklands and recreational corridors. Communities are now developing plans to include extensive green space in an effort to address water quality and potential flooding issues, to maintain the good water quality they currently enjoy, or to protect the resources they value. Figure 4-3 illustrates the preserved lands throughout the 208 Facility Planning area.

The value of recreation has increased over years. Local parks play an intricate role in healthy life styles by providing opportunities for various recreational activities and by providing an outlet for educational activities. Numerous parks exist within Mahoning and Trumbull Counties. Though too numerous to mention, two of the more noted park entities are Mill Creek (Mahoning County) and Trumbull County Metro Parks.

Established in 1891 by Volney Rogers, Mill Creek Park began its legacy as the first park district in the State of Ohio. Since its redesignation to a Metropolitan Park District in 1989, the park has expanded its boundaries throughout Mahoning County with the help of county levies, grant monies, and private donations. In 1990, the park district created a "General Plan" document, summarizing the goals for the future of the park. The document identifies areas within Mill Creek, Meander, Yellow Creek, Lower Mahoning, and Little Beaver Creek watersheds that are important to preserve. More recently, the district created a map of parcels along the main stem of Mill Creek and its tributaries. The map serves as a guide for Mill Creek Park to identify parcels worth preserving, via outright purchase or conservation easement, due to the condition of the stream/riparian corridor, the location of the parcel with respect to headwaters, or the parcel's location within a high profiled developmental area.

The Trumbull County Metro Parks mission is to "preserve, conserve, protect and promote Trumbull County, Ohio's land and water resources, and provide the opportunity for people to enjoy and appreciate these open spaces". With the help of funding from grant monies, Trumbull County Commissioners, and other county funds, the metro park has been able to purchase land through out Trumbull County. Currently, the Metro Park system is comprised of 300 acres, which is divided up between five parks: Canoe City, Foster Park, Clarence Darrow Park, Western Reserve Greenway, and Mosquito Creek

# Figure 4-3: Mahoning and Trumbull Counties Preserved Lands



Nature Preserve. Managed by volunteers, the Trumbull County Metro Parks has considered future creation of other parks for the county, all of which will depend on funding from the aforementioned money sources.

#### **4.8.1 Clean Ohio Fund**

The Clean Ohio Conservation Program, one of four other programs within in the fund, was initiated by a state wide ballot vote in 2000 and scheduled for four funding rounds. The fund provided \$1,429,047 for each round in Eastgate's district, which was based on a formula that considers the population of the district's geographical area. The fund is open to all local governments, park and joint recreation districts, soil and water conservation districts, and non-profit organizations and supplies a 75 percent match as long as the applicant produces a 25 percent local match. The Clean Ohio Conservation program has been a success throughout the whole state. There has been a tremendous response to the program since its inception and can be seen in the number of acres of wetlands, floodplains, sensitive lands, and river corridors preserved. Eastgate is the administrator of Clean Ohio Conservation (green space) funds for District 6, which is comprised of Mahoning and Trumbull Counties. Thus far the fund has provided Eastgate's planning region the opportunity to preserve a total of 1,847 acres of wetlands, river corridors, flood plains, and restore approximately 230 feet of riparian corridor restoration. The fund has been popular within the planning area, but approached its final funding round in the Fall of 2006. However the need for preservation continues to grow within Eastgate's planning area as development pressures continue and water quality degradation continues to rise as a result.

#### **4.9 Endangered Species:**

The loss or destruction of critical resources has caused native wildlife to become threatened or endangered. According to ODNR, habitat loss and degradation are the most serious problems faced by wildlife. The most critical types of habitat loss include loss of wetland and forested areas, contamination by chemicals, and degradation of natural waters. Protection of critical habitats and natural and undisturbed areas is vital if we are to cease from adding any new names to the endangered list.

The first step in protecting our endangered wildlife is realizing and understanding not only the natural benefits, but the economical benefits our species provide. Our food supply relies on natural pollinators such as moths, butterflies, and bees to help maintain healthy crops and promote diversity. Extinction of valuable species restricts the medical field from finding potential medical advances that may be derived from a species. Economically, wildlife related activities such as birding and fishing, generates a healthy cash flow to businesses that support such recreational opportunities. Finally, species are perfect indicators of the ecosystem's health. A healthy ecosystem can properly regulate the water cycle, weather, temperature, decomposition of waste, flood control, and insect

pests. Although we may try, technological replication of habitats cannot duplicate the complex ecosystems we are destroying.

Rather than destroy now and replicate later, protection needs to begin at the initial planning stages. Through proper planning and land use management practices, destruction of critical habitats can be avoided. Protective measures of the Endangered Species Act and state-wide protection legislation, endangered species have been recognized and adopted by the State of Ohio. The ODNR produces a list of state endangered and threatened species that is updated every five years. A copy of this list can be found on ODNR's website: <http://ohiodnr.com/>.

#### **4.10 Distinctive Regional Water Resources**

Every watershed and subwatershed within the 208 Planning Area has characteristics deserving of regional attention and protective measures. This chapter of the 208 Plan broadly discussed, the regionally significant critical resources that pertain to all watersheds and subwatersheds within the planning area. However, this section of the chapter goes a step further to identify and discusses waterways and waterways corridors distinctive to this area due to the level of destruction, attraction to development, and high ecological diversity. The lower Mahoning River, Mosquito Creek Corridor, and Mill Creek are three distinctive water resources that exemplify the water systems that have or are undergoing the aforementioned alterations at an accelerated rate.

##### **4.10.1 Lower Mahoning River**

The lower Mahoning River is a distinctive water resource that flows through Mahoning and Trumbull County due to the heavy destruction it experienced over the years. Prior to the industrial years of the river, it flowed freely and was buffered by a lush forested riparian zone. Early naturalists and Ichthyologists, Spencer F. Baird and Jared P. Kirkland, identified species of fish unique to North America within the Mahoning River and several of its tributaries. One of the more famous fishes, the Ohio Muskellunge, was first discovered within the Mahoning River and is only one of few original species to have survived the heavy industrialization of the river. Early depictions of the Mahoning River show it as a navigable waterway for canoeing, a pristine water for swimming, and a perfect location for flour mills. However, the iron ore and related industries found their way into the heart of the planning area and began to utilize the river's waters to their benefit. As industrial development came to the water's edge, so too did transportation routes (i.e. rail and road).

The pollution legacy of the Mahoning River expands beyond current day polluters. For almost a century, the industrial artery of the watershed, the lower Mahoning River (sections Warren to Lowellville), was bruised by the industries that resided along its banks. From the early 1900's until the late 1970's, the river served

as a highway for the steel and steel-related industries and the river's water was utilized in cooling processes. Waters from the processes were returned to the river at higher temperatures and with industrial by-products. According to information posted within Chapter 2 of the Plan, the river has well over 100 CSO's discharging raw and untreated sewage.

In the words of Mill Creek's founder, Volney Rogers, "A clear, beautiful, unpolluted river flowing through our city is our rightful heritage....we must maintain the purity of the Mahoning River, and stop all deposits of old tin cans, rubbish, and filth upon its banks or into the stream. The rubbish there should be removed, grass seed sown in its stead, trees planted along the river borders, and out naturally beautiful Mahoning made an object of attraction instead of repulsion"<sup>11</sup>. The Mahoning River Dredging Project is helping to make Roger's statement a reality as we enter into new phases of the project. Several dams along the river have been removed by the Ohio Department of Transportation, returning more of the river to its free flowing state. Cities along the river have been actively seeking WRLF funds to correct the CSO problems along their stretches of the river. Additionally, an educational program for schools within communities along the river, has been created by Youngstown State University's Center for Urban Studies to educate the youth of our region about the importance of protecting the water resources we currently have and the environment that surrounds them. This program is a successful tool to help children rally around the importance of reaching the goal of cleaning up the Mahoning River and essentially recreating the vision of Volney Rogers.

#### **4.10.2 Mosquito Creek Corridor**

The Mosquito Creek Corridor is an area spanning from the southern tip of the Mosquito Creek Reservoir to the Mahoning River and is located within the midst of a developing metropolitan area. The Mosquito Creek and its corridor flow parallel to highly traveled, commercialized transportation routes and undeveloped lands are now considered attractive, prime commercial property. The corridor is covered by a lush forest system, high quality wetlands, natural stream channels, functioning floodplains, and other scarce natural amenities supporting diverse natural resources. A blue heron rookery is present within the corridor, supporting its uniqueness from other natural amenities within the 208 Planning Area. The corridor is home to federal and state rare, threatened, and endangered species such as the Indiana Bat, Clubshell Mussel, and Bald Eagle. Additionally it serves as a resting spot for many migratory birds such as Canadian geese, robins, warblers, swallows, herons, tundra swans, great egrets, goshawks, and osprey. One of Ohio's rarer species of reptiles, the massasauga rattlesnake, can also be found in the area.

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<sup>11</sup> Williams, Bridgett M., "The Legacy of Mill Creek Park- The Biography of Volney Rogers", p. 85.

### 4.10.3 Mill Creek

Formerly considered a State Resource Water, Mill Creek, a waterway traversing through Mahoning County's largest metropolitan park, is recognized as a General High Quality Water. Over the past few years, Mill Creek has experienced rapid degradation due to activities outside its borders. This degradation continues today as the subwatershed is rapidly developing, threatening the dynamics of the Creek, its tributaries, headwaters, and surrounding environment. As mentioned earlier in the chapter, development has a direct effect on the dynamics of a stream system. Due to the on-going development within the two townships, Mill Creek, its headwaters and its tributaries all have experienced increased rates of stream bank erosion. This erosion places increased amounts of unwanted sediment into the streambeds causing flood not only in the immediate vicinity, but also downstream.

The Mill Creek MetroParks District has four objectives for helping it fulfill its goal, "to participate in creating a balanced, county-wide, park/recreation and open space system". Of the four objectives, one includes being environmentally sound by giving the highest priority to protecting valuable natural resources. Many areas within the subwatershed contain diverse habitats and sensitive ecological areas. High quality wetlands, natural stream channels, streamside forests, and rare, threatened, and endangered species have been noted within the subwatershed and/or within the vicinity of Mill Creek.

## 4.11 Recommendations

Most of the threats mentioned in this chapter have been identified elsewhere in the plan and are identified as non point sources of pollution. In its many forms, nonpoint sources of pollution continue to degrade not only the critical resources of our region, but the quality of life. Recommendations for this chapter not only echo those written in other chapters, but reinforce how this plan is intertwined with other watershed plans in Eastgate's 208 planning area.

**Recommendation 4-1: Public Drinking Water Suppliers are strongly encouraged to preserve any and all lands surrounding not only their drinking water sources, but those lands immediately surrounding the rivers, streams, and tributaries to the surface water source.**

According to the SWAPs, many of the impacts to surface water are forms of nonpoint source pollution. Each SWAP provides strategies and recommendations public water suppliers can take to minimize their surface water impacts. One such recommendation includes purchasing the lands adjacent to the drinking water sources. By protecting the lands surrounding the source, a buffer is created to help filter pollution before it enters the waters.

Although protection of immediate, adjacent lands is important, many pollutants find their way into our surface drinking water via a tributary. According to Chapter 2 of this Plan, many of the problematic pollution areas are located outside the drinking water source areas and along the tributaries.

The same recommendation can apply to those communities, such as the City of Cortland, that rely on ground water for their drinking water supply. Within their SWAP, the Ohio EPA identified protective strategies that can help prevent contamination of ground water. Of the suggestions, the SWAP identified purchasing property and developing rights to guard from contamination.

**Recommendation 4-2: Located within each SWAP are recommended protective strategies for each drinking water supplier to consider enacting to protect their drinking water source. The Ohio EPA is encouraged to follow up on the actions and recommendations listed for drinking water suppliers in their Source Water Assessment and Protection (SWAP) program.**

In 1996 the Safe Drinking Act was amended to establish a national Source Water Protection Program, targeting all public water drinking sources in the United States. The program addresses both surface waters and ground water wells that are utilized as public drinking water sources. Under the amendment, public water suppliers are required to create Source Water Assessment and Protection (SWAP) reports that identify drinking water protection areas and provide possible contamination sources and information on how to reduce the contamination risk for the waters.

Each report discusses potential contaminant sources and provides a series of protective strategies. The Ohio EPA's Division of Surface Water is responsible for restoring and maintaining the quality of Ohio's rivers and streams, while the Division of Drinking and Ground Water informs citizens of where their drinking water comes from (surface or ground sources) and informs Ohio's citizens of whether or not their drinking water is safe to drink. The Ohio EPA is encouraged to develop a system that will monitor the progress of public drinking water suppliers in their ability to address the protective strategies mentioned in their SWAP. Meanwhile, each drinking water supplier is encouraged to follow the recommendations within their SWAP to protect not only their asset, but to protect the public's health and the water quality of their supply source.

**Recommendation 4-3: Both counties and their zoned communities are encouraged to adopt and implement riparian setbacks on all streams, rivers, and their tributaries within their respective communities. Because flowing water does not follow political boundaries, it is important for communities that share a common water course work together to create uniform language. Uniform language will help prevent downstream flooding and ensure the health of the watershed as a whole.**

The purpose of a riparian setback ordinance, when properly applied, is to protect the health, safety, and welfare of residents and to prevent property damage or loss due to flooding and erosion, and to protect the water quality of the creeks, streams, and rivers within a watershed system. Healthy, well-vegetated riparian zones benefit communities by:

- Decreasing the stream flow energy and reducing stream bank erosion rates, property damage, and threats to public safety;
- Storing water within wetlands and natural floodplains for protection against flooding;
- Minimizing public investment in future stormwater management and stream restoration projects;
- Improving property values, while improving aesthetic green space; and
- Protecting valuable drinking water sources by filtering out pollutants prior to entering the water system.

Riparian setback ordinances **do not** make lots unbuildable, but regulate uses of riparian areas and limit development within specific distances of streams. By creating setbacks, the riparian area is allowed to naturally slow, store, and release stormwater over time, thus providing cost effective flood and erosion control and water quality protection.

Educational programs and workshops are a crucial component to making riparian setbacks acceptable to officials and residents. Many misconceptions regarding the ordinance are common. Township officials and residents need to be assured that riparian setbacks are designed with the landowner as well as the environment in mind.

**Recommendation 4-4: Each community within the 208 Plan region is encouraged to develop land use plans that incorporate measures protecting the region's critical resources while allowing communities to grow.**

Land Use planning allows communities to grow while sustaining their identity and natural, open space areas. Land use plans help direct growth by mapping out areas of the community set aside for commercial/industrial growth, residential/agricultural growth, and natural, open space preservation.

Preserving open space through land use planning can be an economic value, as well as contribution to the quality of life for communities. Incorporating open space within a development plan not only provides recreational opportunities, via the creation of parks, but it provides a greater economic value to homes adjacent to it. Conserving large, continuous areas of land reduces and slows storm water runoff, absorbs pollutants, and

reduces flooding. On a watershed scale, open space serves as a filter and sponge that absorbs storm water carrying pollutants, debris, and trash on its way to a water course. Both scenarios provide economic values to communities via a reduction in the cost of storm water infrastructure and water treatment.

**Recommendation 4-5: The 208 Plan encourages the State to continue funding programs to help communities and agencies preserve lands integral to the health of our region's critical resources.**

Over the past few years, communities have been able to conserve more than 1,700 acres of land throughout Mahoning and Trumbull Counties thanks to the Clean Ohio Conservation Fund. Programs such as the Clean Ohio Conservation Fund, the Ohio EPA's 319 grant program, and other land preservation minded programs have afforded numerous sensitive areas protection and the chance for natural restoration.

The Ohio EPA houses the 319 Grant program through their Division of Surface Water and utilizes the program to fund projects that help curb non point source pollution. 319 grant funds have been utilized by the planning area's soil and water conservation districts and non profit groups to establish several conservation easements along impacted streams. The same grant has also provided funding for the creation of conditionally endorsed watershed action plans for several of the watersheds in our region. Endorsed watershed action plans open up other funding avenues that can be utilized to preserve additional sensitive lands within the planning area, especially within the drinking water watersheds.

**Recommendation 4-6: Watershed Action Plans need to be created for all major watersheds and sub-watersheds within the Eastgate 208 Planning Area.**

All of the major watersheds, along with one subwatershed, within Eastgate's 208 Planning Area have created and submitted for review and approval draft watershed action plans. According to the Ohio EPA, the plans have been reviewed and returned to their respective entities with comments and questions needing addressed. However, many of these plans are awaiting help with their final touches in order to be resubmitted. Once they are resubmitted and approved, the plans will need implementation assistance, as many of the entities who created the plans lack the resources and personnel to implement the plans.

Three vital subwatersheds within Mahoning and Trumbull Counties are without watershed action plans- the Meander Creek, Yellow Creek, and Mosquito Creek/Lower Mahoning watersheds. These watersheds contain our region's sources of drinking water, the Meander Reservoir, Evans Lake, and Mosquito Creek Reservoir (respectively). Without watershed action plans, funding sources to protect the land within the watershed and surrounding the sources are more difficult to obtain. This 208 Plan update

recommends those entities who manage the region's drinking water sources and local government agencies come together to create and submit watershed action plans for their respective areas. An Ohio EPA and ODNR endorsed watershed action plan can help create protective goals and measures to assure consumers that their drinking water is being protected. An endorsed watershed action plan can access funding sources for the establishment of conservation easements along tributaries and mainstems and for the protection of the lands surrounding the sources.

**Recommendation 4-7: Wetlands, whether they are low or high quality, play an integral role in the protection of our region's water quality. As more wetlands become increasingly threatened by development, it is encouraged that they are left in their natural state or incorporated into development plans.**

The economic benefits of wetlands are endless. Similar and in addition to riparian setbacks, wetlands provide a natural buffer and filtering system that intercepts pollutants before they enter surface water systems. Wetlands not only provide a gradual recharge of groundwater, but they also moderate groundwater levels. Incorporating wetlands within a proposed development can minimize development costs by utilizing nature as a detention basin. Wetlands not only provide economic benefits to a development they also add aesthetic values.

## **Chapter 5**

### **Management of Home Sewage and Regulated Sewage Treatment Systems**

**With a high concentration of existing on-site systems, it is important to understand the types of systems being authorized and how decentralized waste treatment infrastructure is governed and managed. Such an understanding enables decision makers and planners to address future wastewater needs. This chapter presents basic descriptions of the various on-site and Ohio EPA regulated systems found throughout the planning area as well as factors contributing to system failure and the impact system failure has on water quality. Identified in the chapter are current management structures and agency roles in regulating home sewage and state regulated systems. Recommendations were formed, aimed at enhancing the performance of these systems through better management and cooperative planning.**

#### **5.1 Introduction:**

While some suburban corridors are serviced by a centralized sewage treatment system, most of the unincorporated areas depend on some form of private, or decentralized, on-site systems for wastewater treatment. Both Mahoning and Trumbull Counties are unified in recognizing failing on-site septic systems pose human health and public nuisance problems and adversely affect the water quality. According to an Ohio State University's evaluation, less than five percent of Trumbull County soils can effectively support on-site leachfield sewage treatment systems. In Mahoning County, it's less than seven percent. Both local health departments are responding to regulatory needs for better management of existing on-site systems and adequate permitting standards of new on-site systems.

#### **5.2 On-Site Sewage, or Decentralized, Wastewater Treatment: An Overview:**

On-site sewage treatment describes the treatment and disposal of sewage within the property constraints as its point of origin. The concept of on-site sewage treatment is similar to a municipal wastewater treatment plant: provide adequate, cost-effective means of removing pollutants and pathogens from wastewater before sewage effluent enters the ground via an "on-lot" soil absorption system or surface water via a discharging "off-lot" system. On-site treatment must be performed in a manner avoiding odor and other nuisance conditions. On-site sewage treatment systems service both residential and commercial needs within the Eastgate 208 Planning area. In general, one-family, two-family, and three-family residential dwellings are served by Household Sewage Treatment Systems (HSTS), regulated by the local health department. Recent changes to state

regulations provide health departments the option of assuming regulatory authority of other small on-lot sewage systems, referred to as “Small Flow On-site Sewage Treatment Systems (SFOSTS)”, from Ohio EPA. All other sewage systems are regulated by the OhioEPA. In addition all off-lot discharging systems, discharging to waters of the state<sup>1</sup>, are required to be covered by a Nation Pollution Discharge Elimination System (NPDES) Permit.

In unsewered areas, the most common type of Ohio EPA regulated HSTS is the semi-public sewage disposal system (SPSDS). SPSDS’s are defined in the Ohio Revised Code (ORC Sec. 3709.085) and Ohio Administrative Code (OAC Section 3745-33) as “a disposal system that treats sanitary sewage discharged from publicly or privately owned buildings or places of assemblage, entertainment, recreation, education, correction, hospitalization, housing, or employment, but does not include a disposal system that treats sewage in amounts of more than twenty-five thousand gallons per day”. The term “Ohio EPA HSTS” can be applied to both discharging and non-discharging systems. The Ohio EPA should be contacted for more site and system specific requirements.

### **5.3 Home Sewage Treatment Systems**

According to the Ohio Department of Health, more than one million individual home septic treatment systems (HSTS) exist in Ohio and over 25 percent of new homes being built incorporate an HSTS to treat wastewater. It is estimated 49,000-50,000 home septic treatment systems exist in Eastgate’s 208 Planning Area- 32,000 in Trumbull County and 17,000-18,000 in Mahoning County.

An HSTS is designed to retain wastewater long enough on-site to allow solids to separate out through settling and flotation. However, methods of treatment and dispersal of treated effluent make every HSTS system different. In Mahoning and Trumbull Counties septic tanks with leachfields, or soil absorption systems, are traditional and widely recognized systems and used unless site constraints indicate otherwise. In those cases, an aeration or mound system is issued for treatment of wastewater.

Illustrations 5-1 through 5-3, taken from the Ohio State University Extension Fact Sheet: AEX-743-93, provide an overview of a septic system. Incoming wastewater enters the septic tank via an inlet baffle forcing wastewater down into the tank, resulting in the settling of solids and the flotation of lightweight materials (i.e. grease, waxes, etc). An outlet baffle prevents the scum layer from entering the soil absorption system as clarified effluent traverses into the leachfield system. After receiving effluent, the leachfield filters and disperses it in the soil for treatment. In Ohio, leachfields are divided into two sections

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<sup>1</sup>Waters of the state, as defined by the Ohio EPA, are water bodies ( i.e. rivers, lakes, creeks, wetlands, etc.) and systems such as ditches and storm sewers used to convey water.

with a diversion device to alternate the flow of wastewater from one side of the system to the other. This alternation alleviates possible backup problems by allowing one side's pipes to clear out while the other side accepts waste.

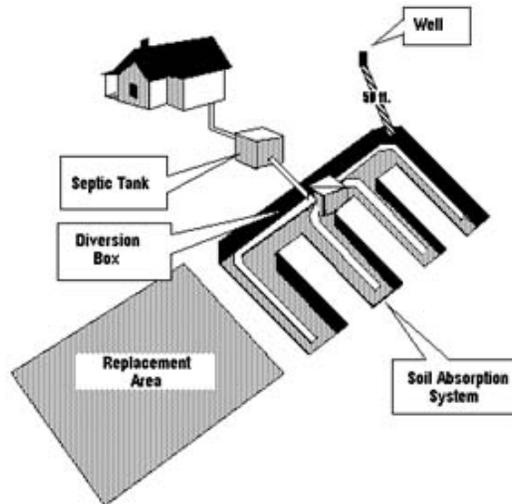


Illustration 5-1: HSTS overview

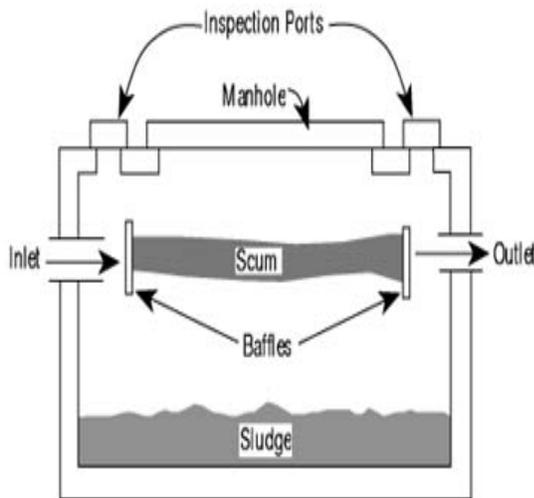


Illustration 5-2: Septic tank cross section

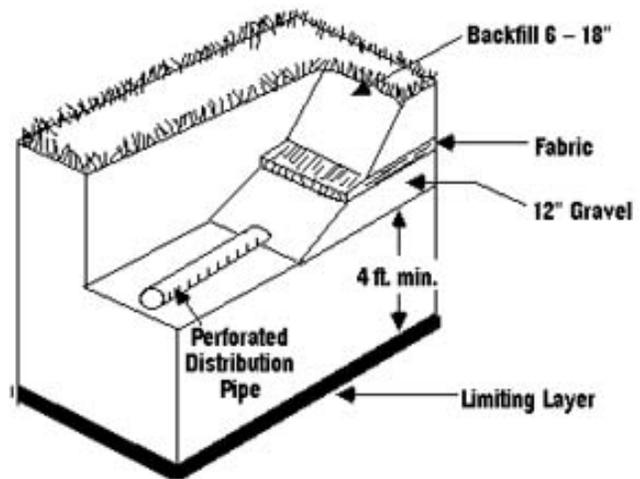


Illustration 5-3: Leachfield cross section

A residential septic tank has varying capacities determined by the number of bedrooms in a house. Table 5-1 compares the minimum capacities according to the Ohio Administrative Code (OAC), Mahoning County District Board of Health, and Trumbull County General Health District:

**Table 5-1 Number of Bedrooms and HSTS Tank Capacity Comparison**

Ohio Department of Health (OAC regs.)	Trumbull General Health District	Mahoning County District Board of Health
<b>One to Two Bedroom:</b> 1,000 gallon tanks or compartments	<b>One to Four Bedroom:</b> 2,000 gallons in two tanks or compartments	<b>One to Four Bedrooms:</b> 2,000 gallons in two tanks or compartments
<b>Three Bedrooms:</b> 1,500 gallons in two tanks or compartments	<b>Five or More Bedrooms:</b> 3,000 gallons in two tanks or compartments	<b>Five or More Bedrooms:</b> 3,000 gallons in two tanks or compartments
<b>Four to Five Bedrooms:</b> 2,000 gallons in two tanks or compartments		
<b>Six or more Bedrooms:</b> 2,500 gallons in two tanks or compartments		

\* Information is based on a single-family dwelling.

Aerobic systems are similar to traditional septic systems by treating wastewater using natural processes. Some aeration systems include a pretreatment tank or compartment prior to an aeration chamber. Pretreatment for an aeration system is similar to a septic tank- solids separate out via settling and flotation. Alternatively, aerobic systems require addition of oxygen to treat wastewater. After pretreatment, effluent flows into the aeration chamber where a mechanism injects and circulates air into the chamber via mixing device. Illustration 5-4 shows a cross section of a typical aeration chamber.

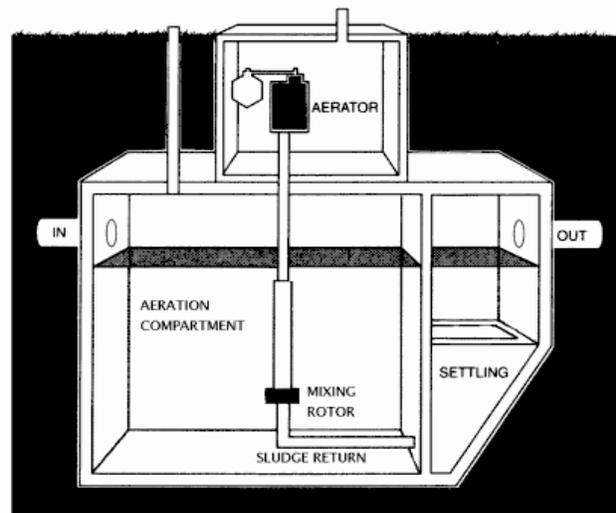


Illustration 5-4: Aeration Chamber

The addition of oxygen supports the growth of bacteria to digest the solids. A third, optional settling or filtering chamber

may exist to promote the settling of excess solids before entering the final disinfecting stage. Effluent treatment for an aerobic system can consist of several methods and includes using a leachfield, sand filter, or disinfection. Sand filters may be used to treat effluent before entering the ground environment. Wastewater pumped out to a sand filter is pumped evenly over numerous layers of sand and gravel, located above or below ground. Purification of effluent is assisted by the natural bacteria existing within the sand. Disinfection, via chlorination or Ultraviolet (UV) light is a costly, yet effective method to treat effluent before it enters the environment. After disinfection, treated effluent either percolates into the ground or is discharged on-lot to a lake or pond or off-lot to a ditch, stream, pond, or lake.

In many areas of Ohio, soils with shallow depth to limiting substrate layers and a high percolation rate are not compatible with traditional septic systems. For these sites, the local health department can issue a permit for an Ohio Department of Health (ODH) approved alternate treatment system such as the mound or drip distribution system. Mound systems are utilized in the 208 Planning Area, but the pretreatment stage differs by county and can include a septic tank, a trash trap, aerobic aeration system, and/or an effluent filter. After the initial stage(s) the effluent travels into a dosing chamber where a pump delivers the effluent to the mound for distribution in the soil. The mound system uses sand placed on top of natural soil to treat and dispose of septic tank effluent. The depth of sand is determined by the depth of the natural soil layer above the limiting layer and varies by county regulation due to soil constraints. The distribution pipes are placed on top of the sand layer and a layer of gravel is placed around the pipes. The pipes are then covered with a construction fabric and a layer of soil is placed over the entire mound to allow grass and non-woody plants to grow and prevent erosion.

The drip distribution system is another alternative treatment system used in the region. Drip irrigation systems apply treated wastewater slowly and uniformly through a network of narrow tubes. Wastewater flows through a primary treatment stage to settle out solids and floatable materials via a traditional or aerobic septic system. Primary treatment is followed by a filtration to filter out fine particles so as to protect the tubing from clogging. Wastewater is then stored until a predetermined volume is reached and is then pumped, under pressure, through the network of narrow tubes that are either at ground surface level or below the ground at a predetermined depth. The wastewater drips slowly out from the tubes through evenly-spaced holes.

#### **5.4 Home Sewage Treatment System Failure**

Regardless of age, numerous problems and failures with individual HSTS systems have been documented across Ohio. In Eastgate's 208 Planning area soil suitability, the age of the system, and the establishment of subdivision and environmental regulations are leading causes of system failure.

Soil suitability has become a prevalent failure factor in the region. If effluent cannot percolate efficiently, then it remains in the leachfield and can cause a system backup or improper discharge. Effluent percolates faster in soil composed of sand and gravel than in clay-like soil. Numerous systems in the planning area are old and predate subdivision and environmental regulations. The elevation of a site's water table will also have a direct affect on the percolation of effluent. Other factors that can prohibit the proper HSTS function include:

- Shallow depth to bedrock;
- Slope exceeding 15 percent;
- Frequency of flooding- both counties state that an HSTS shall not be placed in a one hundred (100) year flood plain (delineated using FEMA maps);
- Improper installation and lack of maintenance (i.e. switching leachfield distribution baffle);
- Excessive water use in the home;
- Change in property drainage i.e. position of down spouts or rain gutters, or the installation of paved areas that drain to excess water to yard area of the septic system; and
- Failure to pump the septic tank.

Failing septic systems are a nuisance in Mahoning and Trumbull Counties. Inspections of septic systems occur in both counties either prior to the sale of a house, land re-plats, home additions, owner repair request, or if a nuisance report has been filed. According to county health departments, systems with minor problems are allowed to continue functioning under the condition the problem is fixed through maintenance, servicing, or alternative system permit. Systems brought back into compliance require proper documentation of compliance to be submitted to the appropriate board of health.

The Trumbull County General Health District created and approved a "Temporary Home Sewage Nuisance Abatement Policy" on January 17, 2007 for residents currently serviced by HSTSs and receiving sanitary sewers within a ten year time frame. Sanitary sewer projects slated beyond ten years are not applicable. This policy allows residents to forgo complete septic system upgrades and to continue utilizing existing systems. In Mahoning County, failing septic systems in areas designated to be sewered within 12 months may be considered for a Board of Health approved holding tank variance and other

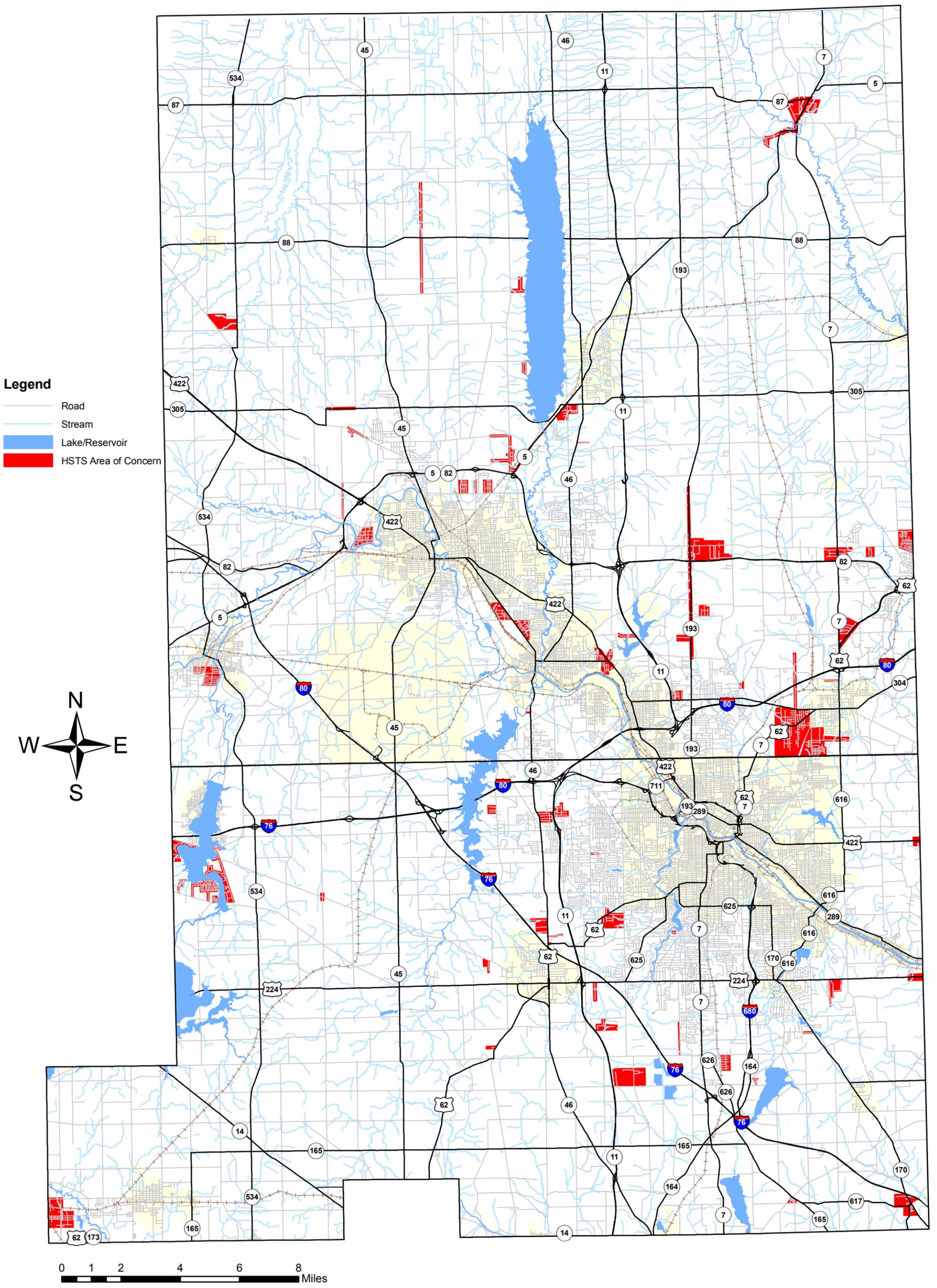
interim controls. However, once sanitary sewer is accessible, the system must be properly abandoned and a sanitary sewer tie in is required.

Both Mahoning and Trumbull Counties continue to address infrastructure needs of communities with areas of concentrated failing septic systems. Along with state and federal governing agencies, the counties continue to secure funds from various sources to provide sanitary sewer service to these areas. Table 5-2 was compiled from information provided by the Trumbull County Planning Commission, and both county health departments and sanitary engineers. The table highlights known areas that have documented septic system failures either identified by the Ohio EPA and/or the local health department. The locations of these areas are mapped in Figure 5-1.

**Table 5-2 HSTS Areas of Concern**

<b>Political Boundary</b>	<b>Area(s) of Concern</b>
<b>Trumbull County:</b> Bazetta Twp.	Lakeshore Allotment Elm Rd./Johnson Plank/Hoagland Blackstub SR 305/McCleary Jacoby/Northview Dr.
Brookfield Twp.	Brookfield Cntr. Phase I Brookfield Cntr. Phase II
Champion Twp.	Center St. West Sunnyfield Estates
Farmington Twp.	Phalan Lakes
Howland Twp.	Bolindale Morgandale
City of Hubbard	Bellwick/Shadydale Dr. Kurmound Hts./White Oak Dr. Maplewood Park
Village of Kinsman Liberty Twp.	Kinsman Village March & Vienna Ave. Lucretia Dr. Wilson Ave.
Mecca Twp.	Lakeview Dr.
City of Newton Falls	Scott St.
Vienna Twp.	SR 193&82/Belmont (Little Squaw Creek)
Warren Twp.	Templeton Rd. (S of Rt. 422) Meadowbrook
Weathersfield Twp.	McKinley Hts. Phase II Gilbert St. Anderson Morris/McKinley Hts. Hilltop Heaton Shute
<b>Mahoning County:</b> Austintown Twp.	Finland / Meander / Bowman East&West Radio/ Rockwell/ E. Viola/Virginia Burkey Rd. (Ax Factory)
Beaver Twp.	Woodworth Rd. Phase II Callawoods Haus/ Granview/ Paradise
Boardman Twp.	West Glenn Hitchcock/Lockwood
Canfield Twp.	Revere Run Whispering Meadow/ Deer Spring Run/ Gibson Caymen Bluff & Ct/ Calico Summit Rd. Sugarbush/Spring Lake Meadowood/ Briarwood/ Lydia Shields Rd. (E of SR 46) Youngstown-Salem/ Messerly/ McCarty/ Joyce/ Ann/ Fawn/ Alladin/ Alvacardo/ Clear View/ Fox Haven
Coitsville Twp.	US 422, near PA State border
Green Twp.	Greenford/SR 165
Jackson/Milton Twps.	South Duck Creek
Milton Twp.	Lake Milton/Craig Beach
Poland Twp.	SR 224, near PA State border Spitler Rd. Lutheran
Smith Twp.	E. Alliance Maple Ridge
Springfield Twp.	Grant/ Maple/ Woodworth Petersburg New Springfield

# Figure 5-1: Mahoning and Trumbull Counties Home Sewage Treatment System (HSTS) Areas of Concern



Source:  
Ohio Environmental Protection Agency  
Mahoning County District Board of Health  
Trumbull County General Health District



### 5.4.1 Blueprint Trumbull County

The Blueprint Trumbull County Committee was formed in the summer of 2006 to address failing home sewage treatment systems within Trumbull County and the cost associated with system replacement. The committee included representation from Eastgate, state and local government officials (state congressmen representation and county commissioners, planning commission, and health department), wastewater treatment plant operators, and the county realtor association. The goal of the committee was to address the failing septic areas stated in the county's consent order with the State of Ohio (#2006-CV-2248). Under the order, Trumbull County agreed to construct sanitary sewers in 11 defined areas by 2022. Several subcommittees were established to identify funding avenues to help alleviate some if not all of the septic grade costs, create homeowner education pamphlets regarding septic system maintenance and the sanitary sewer petition process, identify regulatory and legislative measures regarding septic systems and funding sources, and map out existing and future needs for sanitary sewers and areas with failing septic systems.

### 5.5 Ohio EPA Regulated Sewage Treatment Systems (RSTs)

There are approximately 1,402 RSTs in the Eastgate 208 Planning area: 514 in Mahoning County and 888 in Trumbull County. Of the 514 RSTs in Mahoning County, 18 are Ohio EPA regulated package plants and in Trumbull County 97 of the 888 RSTs are Ohio EPA permitted package plants. Table 5-3 offers an RSTs summary of both Mahoning and Trumbull Counties.

**Table 5-3 Summary of Regulated Sewage Treatment Systems**

Ohio EPA Regulated Sewage Treatment Systems			
Area	Total # Systems	Semi-public	Package Plants
Mahoning County	514	496	18 (0 County Owned) <sup>2</sup>
Trumbull County	888	791	97 (7 County Owned)
<b>Totals</b>	<b>1402</b>	<b>1287</b>	<b>115</b>

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<sup>2</sup> Three county plants under 100,000 gpd.

### **5.5.1 Semi-Public Disposal System (SPDS)**

An SPDS is “a disposal system that treats the sanitary sewage discharged from publicly or privately owned buildings or places of assemblage, entertainment, recreation, education, correction, hospitalization, housing, or employment, but does not include a disposal system that treats sewage in amounts of more than twenty-five thousand gallons per day; a disposal system for the treatment of sewage that is exempt from the requirements of section 6111.04 of the Ohio Revised Code pursuant to division (F) (6) of that section; or a disposal system for the treatment of industrial waste”<sup>3</sup>. A nondischarging SPDS generally includes two septic tanks followed by either a leaching tile field or a mounded subsurface sand filter followed by an evapotranspiration tile field. A discharging SPDS generally includes a package aeration plant followed by surface sand filters, chlorination and dechlorination facilities. However, older models constructed prior to the early 1970's or systems that have malfunctioned, may discharge effluent quality that does not meet water quality standards. The regulation of these systems falls upon the Ohio EPA although most of these systems currently lack an NPDES permit. The local health department, through contract with the Ohio EPA, inspect these systems and record and maintain inspection results. Through this cooperation, the Ohio EPA is able to gather more state-wide information about Ohio's SPDSs and identify those systems functioning without the owner of the system having to acquire an NPDES permit.

On May 31, 1984 House Bill (HB) 110 amended sections 3709.085 and 6111.01 of the ORC. HB110 allows local boards of health the authority to perform, via a contractual agreement with the Ohio EPA, operation and maintenance, education, inspections and informal enforcement on SPDSs treating sanitary only flows of 0-25,000gpd throughout their respective jurisdiction. Local health departments annually inspect SPDS RHSTS facilities for compliance with Ohio's water pollution control laws and regulations. In the event an SPDS is found in violation of Ohio's water pollution laws, a notice of violation is generally sent to the Ohio EPA for enforcement as done by the Mahoning County District Board of Health. Taking enforcement a step further, the Trumbull County General Health Department adopted a county-wide program in which enforcement is resolved through the health department. Applicable inspection fees are paid by the facility to the respective local health department, but include one exception, “recreational vehicle park, recreation camp, or combined park-camp that is licensed under ORC Section 3729.05 or at any manufactured home park that is licensed under ORC Section 3733.03”<sup>4</sup>.

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<sup>3</sup>OAC 3745-33.

<sup>4</sup>ORC Section 3709.085

### **5.5.2 Package Plants**

A package plant is a prefabricated, discharging treatment facility typically treating wastewater volumes less than 100,000 gpd. An extended aeration system is a typical system utilized in Mahoning and Trumbull County. With this system, incoming wastewater is initially screened to remove large suspended solids. Solids not caught in this process are ground to reduce the particle size. Wastewater continues flowing into an aeration chamber where, similar to the home aeration system, oxygen is added to the microorganisms. If the flow is required to be regulated, wastewater will pass through equalization tanks to regulate peak wastewater flows before proceeding to the aeration chamber. After leaving the aeration chamber, the mixed liquor (the combination of wastewater and microorganisms) flows into a clarifier where microorganisms settle to the bottom and a portion of them are pumped back into the wastewater at the beginning of the process. This returned material is called return activated sludge, while the material that is not removed is called waste activated sludge. The waste activated sludge is removed from the treatment process and is disposed of. The clarified water is sent over a weir and into a collection channel prior to entering the dosing chamber and sand filters. Prior to discharge, disinfection of wastewater is carried out by either chlorination/dechlorination or UV technology.

Problems with extended aeration plants can generally be traced to improper operation, maintenance, or management of the system. The following is a list of some advantages and disadvantages:

#### *Advantages:*

- Package Plants are staffed on limited time scale;
- Package Plants are easy to install as they usually come preassembled and are mounted on a concrete pad or above or below grade; and
- With proper maintenance, systems are generally odor free and perform well and meet effluent quality standards.

#### *Disadvantages:*

- Extended aeration plants do not achieve denitrification or phosphorus removal without additional processes;
- There is limited flexibility in the systems adapting to effluent criteria changes due to regulatory changes;
- The extended aeration process increases energy demand; and

- Require a year-round flowing stream which allows Water Quality Standards to be maintained with the treated discharge.

Both on-site nondischarging and discharging RHSTs are regulated by the Ohio EPA and may be considered for approval provided a detailed plan of the system is certified by a professional engineer (P.E.), a Permit-To-Install is approved by the Director of the Ohio EPA, the plans have been through an anti-degradation review, and a NPDES permit has been issued to a proposed discharge to Waters of the State. **All applications must conform with the 208 Plan.**

### **5.5.3 National Pollution Discharge Elimination System (NPDES) Permit**

Under the jurisdiction of local health departments, HSTs are approved and installed based upon site conditions. In cases where leachfield systems are not applicable, off-lot discharging systems may be acceptable allowing the discharge of wastewater treatment system effluent into a nearby waterway. Under the Clean Water Act, a receiving stream is protected by an NPDES permit which is required of all point sources. The NPDES permit creates a means of operating, monitoring, reporting, and sets numerical limitations on the amount of specified pollutants authorized for discharge. The Ohio EPA issues two types of NPDES permits: individual and general. An individual NPDES permit is unique to each facility. The individual permit set limitations on pollutants based on the applicant's operations, type and amount of discharge, receiving stream and other factors<sup>5</sup>.

The implementation of HB 231 required the Ohio EPA to create a general permit for all residential systems that discharge to Waters of the State. On February 17, 2006, the Ohio EPA introduced a draft General NPDES Permit (No. OHK000001) to be issued for new and replacement discharging sewage treatment systems. The general permit received final approval in December of 2006. On January 1, 2007 the Ohio EPA adopted the general permit, authorizing wastewater discharges for selected new and replacement HSTs's under the NPDES program. Both county health departments signed a memorandum of understanding (MOU) with the Ohio EPA to administer the General NPDES permit program. According to the Ohio EPA, the general permit is issued to dischargers that will have a minimal impact on the environment and covers a one, two, or three family or residential dwelling. In order to ensure compliance with the discharge standards of each permit and proper system operation, the Ohio EPA requires each permit holder to annually sample and test the discharge from the system. The sampling results are then submitted to the jurisdictional local health department and available at the Ohio

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<sup>5</sup>Of Ohio EPA Division of Surface Water, "Types of NPDES Permits".

EPA's request. A second General NPDES permit is scheduled to be in place by March of 2008 for existing discharging HSTs that do not need replaced, modified, or updated.

## **5.6 Impacts to Water Quality**

Inadequate sewage treatment impacts surface water as well as ground water quality. The three primary pollutants in raw sewage are nitrates, phosphates, and parasitic organisms. Fecal coliform bacteria is a standard measure of microbial pollution and is an indicator of disease potential of a water source. The following is a summary of water quality impairments probable by septic systems failure.

Mahoning River Watershed: A Watershed Action Plan for the Lower Mahoning River and Mosquito Creek including Mosquito Creek Reservoir, the City of Warren's drinking water supply, is currently in its draft stages. Within the plan, numerous water quality impairments are identified, including failing septic systems. The Mill Creek Watershed Action Plan identified several tributaries along the mainstem of Mill Creek as not meeting their water quality standards. The plan identifies failing septic systems as one factor contributing to the decrease in water quality.

Elsewhere in the watershed, a developing area located along the southern banks of Lake Milton utilizes septic systems. However, due to site constraints, a limited leach field with a straight pipe is utilized, discharging semi-treated effluent into Lake Milton, a recreational water resource. This area has been identified as an area of concern based on documented effluent that is black or grey in color, indicating incomplete treatment.

Pymatuning Watershed: The Interstate Pymatuning/Shenango Watershed Action Plan, through public forums, has identified failing septic systems as a major concern. According to data presented by the Trumbull County Soil and Water Conservation District, "Pymatuning Creek has experienced elevated fecal coliform and E. Coli bacteria counts downstream from the Kinsman area". It is not known whether or not failing septic systems had an impact on the creek below Kinsman, but factors such as recorded older septic systems (20+ years), lack of available sanitary sewers, and clay soils, can indicate impeding water quality.

Grand River Watershed: The Grand River Watershed encompasses the northwest portion of rural Trumbull County. Public participation in a recent survey for the watershed action plan's development indicated residents felt failing septic systems were a major threat to the health of the watershed.

## 5.7 Domestic Septage Disposal

HSTS's failure can be attributed to many factors, one of which is a lack of homeowner education regarding their system and the maintenance required to keep the system functioning properly. In order for an HSTS to function, regularly scheduled maintenance needs to be administered within the planning area. Such maintenance would include pumping the septic tank when the tank is 1/3 full of each: scum/grease, liquid, and sludge. The Ohio State University Extension has produced Fact Sheet AEX-740-98, "Septic Tank Maintenance", that recommends the frequency at which a septic tank should be pumped based on the tank size and number of people within a household.

As maintenance and education programs begin to expand and households begin to follow a regular maintenance pumping schedule, additional domestic septage will be generated and need to be properly disposed. The disposal or treatment of septage from HSTS's is regulated under the U.S. EPA's Part 503 provision, "Standards for the Use or Disposal of Sewage Sludge". This provision establishes a list of acceptable options for state and local health departments to consider. Disposal methods include:

- Discharge to an accepting licensed Wastewater Treatment Plant;
- Land Application;
- Discharge to an approved waste lagoon or drying bed;
- Discharge to a permitted incinerator; and
- Discharge to a permitted sanitary landfill that has a Permit-To-Install authorization to accept such waste.

In both Mahoning and Trumbull Counties, septic tank cleaners are required to hold valid registrations issued by the respective local health department and are required to be renewed on an annual basis. The registration can be suspended or revoked by the health commissioner if the tank cleaner is found to be in violation of the respective county's Septage Disposal Rules. In addition, septic tank cleaners are required to keep records of each septic tank pumped and the volume removed, and submit the records to the appropriate local health department.

The methods of disposal vary by County- Trumbull County only allows disposal via an Ohio EPA NPDES Permitted Publically Owned Wastewater Treatment Plant. Currently, only the City of Warren waste water treatment plant (WWTP) is an approved septage receiving facility. Mahoning County expands the possibility for disposal. Mahoning County has three septage receiving facilities (Campbell, Struthers, and Boardman). Additionally,

the Mahoning County District Board of Health allows land application of treated sewage, a technique prohibited in Trumbull County.

### Land Application

Land application of treated sewage is a process that reuses treated sewage in a manner that reduces or eliminates the discharge of pollutants into the waters of the state. Generally, land application is done by spray irrigation and is applied to farmland. However, other application areas can include golf courses and recreational fields.

The Ohio EPA is in the process of establishing a new rule for land application systems, OAC 3745-42-13. This rule creates a permit application and operation and maintenance requirements for land application of treated sewage systems. The rule, once adopted, will create a uniform design and permitting process throughout Ohio for existing and new facilities.

A site cannot be utilized for land application without prior approval from the health commissioner. Prior to approval, the political subdivision in which the site is located is notified, a site inspection is conducted by the health commissioner, and a fee established by the board of health. The land applier must state that he/she is applying only domestic septage to the proposed land. Adopted from "Part 503", the land applier must notify the land owner of the following harvesting restrictions<sup>6</sup>:

- Food crops with harvested parts that touch the surface and are totally above the ground (i.e. melons, tomatoes, cucumbers, etc.) shall not be harvested for 14 months after application of domestic septage;
- Food crops with harvested parts below the surface (i.e. potatoes, onions, etc.) shall not be harvested for 20 months after application of domestic septage when the domestic septage remains on the land surface for four months or longer prior to incorporation into the soil;
- Food crops with harvested parts below the surface (i.e. potatoes, onions, etc.) shall not be harvested for 38 months after application of domestic septage when the domestic septage remains on the land surface for less than four months prior to incorporation into the soil;

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<sup>6</sup>Mahoning County District Board of Health, "Regulation of Servicing and Disposal of Septage", Section 4.3 (C).

- Animal feed, fiber, and those food crops that do not touch the soil surface (i.e. corn, apples, peaches, wheat, oats, etc.) shall not be harvested for 30 days after application of domestic septage; and
- Turf grown on land where domestic septage is applied shall not be harvested for one year after application of domestic septage when the harvested turf is placed on either lawn or land with a high potential for public exposure, unless otherwise specified by the board of health.
- Due to the fact that land application has a tendency of forming a nuisance to the surrounding environment, a series of isolated distances<sup>7</sup> have been established:
- Field drainage swale, wet weather streams, intermittent streams, open field drain tile - 33 ft;
- Lakes, ponds, rivers, creeks - 500 feet, unless specified otherwise;
- Occupied dwellings - 500 feet;
- Potable water supplies (i.e wells, cisterns) - 500 feet; and
- Property lines, roads, and streets- 50 feet.

Lagoons or holding ponds are used as an alternative storage method in the event that the capacity of spreading or saturation has been affected by heavy rainfall, snow, or other weather conditions. According to county regulations, the facilities are to be built to prevent surface water runoff, ground water contamination, and nuisance conditions while the septage is being stored or retrieved for land application.

The Mahoning County District Board of Health requires the maintenance of records for businesses handling the disposal of domestic septage for a period of five years. Information required within each record includes, but is not limited to, method of disposal and location of disposal site. If the disposal method includes land application, then further information must be provided such as acreage of application site, date and time of application, and methods used for vector control.

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<sup>7</sup>Mahoning County District Board of Health, "Regulation of Servicing and Disposal of Septage", Section 4.14.

## **5.8 Regulation and Management of On-Site or Decentralized Wastewater Treatment Systems**

A majority of the responsibility of regulating residential on-site sewage treatment systems rests with the Ohio Department of Health (ODH), ODH's Public Health Council, and with the local health department. The local health department can further refine rules to engage stricter standards and are responsible for enforcement and the development of maintenance programs. The Ohio EPA provides initial review of plans for certain development types. The following paragraphs briefly explain the roles of the agencies in their regulating and management of on-site sewage treatment systems.

### Ohio Environmental Protection Agency (Ohio EPA)

The Ohio EPA initially reviews wastewater treatment options in the unsewered areas of the 208 planning area that do not involve one, two, or three-family dwellings as authorized under the ORC, Sections 6111.44 and 6111.45. The Ohio EPA reviews the wastewater design plans of new commercial, industrial, and institutional facilities in addition to and any expansion plans of existing structures.

### Ohio Department of Health (ODH)

Regulation of HSTs and small flow on-site sewage treatment systems are just two of many programs the state department oversees. Under OAC Section 3701-29, ODH has the authority to regulate one, two, or three-family dwellings. However, the department's role in managing and regulating household sewage treatment systems is best described by taking a closer look at its rule making bodies, the Public Health Council and Technical Advisory Committee.

### Technical Advisory Committee

Members of ODH's TAC are appointed by the director and consist of representatives from educational institutions, public health professionals, members of the wastewater industry, soil scientists, engineers, and a designee from the ODH. The Technical Advisory Committee (TAC) aids in developing standards and guidelines to assist the Director in approving or disapproving systems or related components differing in design and function from those mentioned in the sewage regulations. The committee makes recommendations to the Director for the approval or disapproval of such systems or components and functions under authority provided by ORC Sections 3718.03 and 3718.04.

## Public Health Council

A seven member council comprises the rule-making arm of ODH. The Council adopts, amends, or rescinds rules applicable to public health and forms them into laws. According to ORC Chapter 3701.34, the Council "...prescribes by rule the number and functions of divisions and bureaus and the qualifications of chiefs or divisions and bureaus within the department" and "considers any matter relating to the preservation and improvement of the public health and advises the director thereon with such recommendations as it considers wise". However, the Council does not have executive or administrative duties.

Rules created by the Council are filed with the Secretary of State Legislative Services Commission Joint Committee on Agency Rule Review (JCARR) and the office of Small Business. Following JCARR's procedures, subject to ORC 119, a public review and hearing on the proposed rule must be carried out. Once the public review period has expired the rule is heard by JCARR and is sent to those on the Council's mailing list and to local health departments if passed.

In October of 2006, the council adopted new sewage treatment system rules with an effective date of January 1, 2007. The new rules created stricter requirements for installers, service providers and pumpers, system approval and installation, and included rules for small flow on-site sewage treatment systems compatible with the Ohio EPA's rules. However, Substitute HB 119, passed in July of 2007, suspended the new rules for two years so "*further work and research will be done to assess the available technologies, consider the current types of systems and rates of failure across Ohio and determine the best ways to ensure that future systems achieve treatment of sewage to protect the public health, the environment, and homeowners' investment in their property in a cost effective manner*"<sup>8</sup>. In the meantime, each county health department has reverted to their post January 1, 2007 regulations. Additionally, each department has the option to create more stringent rules based on the prior set of ODH rules.

## Local Health Departments

On a county-wide level, Household Sewage Treatment Systems for single, two, and three-family dwellings are regulated under OAC Section 3701-29, through the management of the local health department via the ODH. Local health department's are required to enforce the code, investigate nuisance complaints, and perform mandated inspections. Further demonstrating their authority is ORC Section 3709-21, which states:

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<sup>8</sup>Ohio Department of Health's Home Sewage Treatment Website, [www.odh.ohio.gov/odhPrograms/eh/sewage/sewage1.aspx](http://www.odh.ohio.gov/odhPrograms/eh/sewage/sewage1.aspx)

*“the board of health of a general health district may make such orders and regulations as are necessary for its own government, for the public health, the prevention or restriction of disease, and the prevention, abatement, or suppression of nuisances. Such board may require that no human, animal, or household wastes from sanitary installations within the district be discharged into a storm sewer, open ditch, or watercourse without a permit therefore having been secured from the board under such terms as the board requires....all orders and regulations not for the government of the board, but intended for the general public, shall be adopted, recorded, and certified...”*

Backed by OAC Sections 3701-29-01 through 3701-29-18, local health departments have the duty of approving HSTS systems for individual dwellings and subdivisions, and registering installers and septage haulers. In unsewered areas, should sewer become accessible, local health departments mandate homeowners to tie into the system in accordance with their regulations<sup>9</sup>.

Local health departments have authority over proposed subdivisions within their respective counties. Under OAC Section 3701-29-03, plans for a proposed subdivision must pass through the local health department. Under Section 3701-29-03 (B), an HSTS cannot be installed unless it has been deemed impracticable or inadvisable by the department and the Ohio EPA to install a central sewage system. In the event HSTSs are proposed, the plans must also show information including:

- Total land size;
- Location and size of all lots;
- Properties and characteristics of soils in subdivision;
- Depth to normal ground water table and rock strata; and
- Location of all bodies of water, streams, ditches, sewers, drain tile, and proposed potable water supply sources and lines on this or adjacent lots within one hundred feet of the proposed subdivision, or any other information which may affect the installation or operation of household sewage disposal systems or the enforcement of OAC rules 3701-29-01 to 3701-29-18.

The Mahoning County District Board of Health expanded on the OAC’s subdivision regulations. The Mahoning County District Board of Health defines a major subdivision as a parcel of land divided into 10 or more lots (regardless of size). However, if the 10 lots are

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<sup>9</sup>OAC 3701-29-02(M).

divided up into lots larger than 5 acres in size and do not require review of the Planning Commission, the lots are now considered acreage and will not require District Board of Health involvement until the lot owner requires a septic system approval prior to creation of the lot. Additionally, all property splits involving the creation of a parcel less than 5 acres is evaluated to determine septic suitability prior to the lot being recorded. The Trumbull County General Health District defines a major subdivision as any parcel of land shown as a unit or continuous unit that is divided up into two or more parcels of less than five acres. Under their definition, an HSTS system will only be considered if a letter is received by the Trumbull County General Health District from the Ohio EPA and Trumbull County Sanitary Engineer stating that sewer or a centralized system (i.e. package plant) is not feasible for the proposed new subdivision. If such letter is received, a review of riparian setbacks and hydric soils review is performed by the Trumbull County Soil and Water Conservation District (TCSWCD). With TCSWCD's help, the General Health District is able to design and approve an HSTS suitable for the subdivision.

In their respective regulations, both require soil evaluations prepared by a professional soil scientist certified by the American Registry of Certified Professional in Agronomy, Crops, and Soils or by the Association of Ohio Pedologists. Within each soil evaluation soil permeability, soil-gravel interface area, and slope must be documented. If the subdivision plans include service by a sanitary sewer system, then the plans are forwarded to the Ohio EPA as per Section 6111.44 of the Ohio Revised Code (ORC).

## **5.9 FINANCIAL ASSISTANCE**

There are financial assistance programs at the federal, state, and local levels of government that provide communities with the financial and technical aid needed to provide sanitary sewer service to areas experiencing the effects of failing septic systems or off-lot systems and to assist low income families with tap-in fees.

### U.S. Army Corps of Engineers' Section 594 Ohio Infrastructure Program

Section 594 of the Federal Water Resource Development Act (WRDA) established a financial assistance program, under the direction of the U.S. Army Corps of Engineers, specifically for Ohio communities who may be seeking assistance for water related environmental infrastructure projects. Projects may include: wastewater treatment; combined sewer overflows; water supply, storage, and treatment; environmental restoration; surface water resource protection; and acid mine drainage.

### U.S. Department of Agriculture Rural Development

The USDA Rural Development's Home Repair Loan and Grant Programs or Section 504, offers low interest loans to low income families and individuals living in rural America to install new septic systems. To qualify, the applicants' income must fall below 50 percent

of the area's median household income. Grants up to \$7,500 are available for residents over 62 who may be unable to afford a loan. The USDA's Rural Utilities Service's Water and Waste Disposal Program makes available guaranteed loans, loans, and grants for sewer facilities in cities with up to 10,000 people and to rural areas.

### Ohio Department of Development's (ODOD's) Office of Housing and Community Partnership

Community Development Block Grant's Water and Sanitary Sewer and Formula Allocation programs provides grants to communities that need to address infrastructure needs of low to moderate income neighborhoods. The Water and Sanitary Sewer Program provides grants to communities faced with mandates relating to the correction of unsanitary conditions due to septic system failures. The goal of the Water and Sanitary Sewer Program is to fashion a safe and sanitary living environment for all Ohio communities.

### Ohio Water Pollution Control Loan Fund (WPCLF)

The WPCLF is a state revolving loan fund administered jointly by the Ohio Water Development Authority and the Ohio EPA. The program provides funds to communities for sewage treatment facilities, interceptor sewers, and collection systems. Applications to this fund are made to the Ohio EPA's Division of Environmental and Financial Assistance. Visit their website for details [http://www.epa.state.oh.us/defa/wpclf\\_new.html](http://www.epa.state.oh.us/defa/wpclf_new.html).

Reduced interest rates are available to communities that qualify based on economic need. Interest rate reductions can also be realized through an innovative program offered by the Ohio EPA and linked to the WPCLF. A community applying for financial assistance through the WPCLF can choose to sponsor a restoration or preservation project. The sponsoring community must officially nominate such a project through the Water Resource Restoration Sponsor Program (WRRSP). The WRRSP is a statewide competitive program that is allocated \$15,000,000 annually. If the sponsored project ranks within funding capabilities, the sponsoring community will be given a reduction in their interest rates on the WPCLF project resulting in a net savings with two water quality enhancing projects moving forward rather than just the WPCLF project.

The linked deposit program is an alternative funding solution for financing certain WPCLFs. Rather than borrowing from the WPCLF, an eligible applicant receives loan funds through a participating private lender at below market interest rates. The loan is guaranteed by the WPCLF through a certificate of deposit. Both county health departments, provide a low interest loan option to homeowners which is administered by local banking institutions.

## State Capital Improvement Program (SCIP)

The State Capital Improvement Program (SCIP) is administered at the state by the Ohio Public Works Commission. Applications are submitted to the District 6 Public Works Integrating Committee (Mahoning/Trumbull) who then discuss and recommend qualifying projects for funding. The SCIP receives monies from bond issuance. Eligible projects include wastewater treatment and water supply systems, solid waste disposal facilities, storm water and sanitary collection, storage and treatment systems and facilities. The SCIP requires a local match equaling **a minimum of 10%** for repair or replacement projects, 50% for new or expansion projects, and 0% for loans. To apply for SCIP, subdivisions within Mahoning and Trumbull counties must apply to the District 6 Public Works Integrating Committee (D6PWIC). D6PWIC evaluates and scores pre-applications using a locally developed methodology based on criteria listed in Chapter 164 of the Ohio Revised Code. These evaluation criteria focus on the financial need of the subdivision, the project's strategic importance to the district and subdivision, and emphasize the repair and replacement of infrastructure rather than new or expansion of infrastructure.

### **5.10 Recommendations**

This chapter's recommendations encourage all appropriate, governing entities to coordinate and support efforts to create a solid and effective HSTS program for not only the State, but for Mahoning and Trumbull Counties. Overall, this Plan supports the cooperative efforts by the local and regional entities that are working and have worked to create strategies and plans addressing and fixing the nuisance and failing HSTS areas in Mahoning and Trumbull Counties.

**Recommendation 5-1: This plan encourages the counties and their respective governmental entities, along with the Ohio EPA, to continue to prioritize and update areas in need of sanitary sewer service. In addition, the Counties and their government entities are encouraged to continue seeking and/or creating funding sources to address areas of failing septic systems and/or assist homeowners with system upgrades or sanitary sewer connection.**

Costly septic system upgrades or replacements are becoming more prevalent due to new septic design standards, state and local regulations, and the sanitary sewer infrastructure cost. However, the cost to upgrade, replace, or tie into sewer does not have to be solely born by the homeowner. As outlined by this chapter and provided by local health departments, numerous funding sources are available to the regulating or governing entities and homeowners to help absorb the cost of sanitary sewer infrastructure or septic system upgrades.

**Recommendation 5-2: The ODH is encouraged to establish an educational component, supportive of local initiatives that can be staffed at the local level.**

Without proper resources or funding, educational components cannot be carried out. Aside from an initial information packet and hand outs, homeowner education is needed in both counties. Whether it is hands on or via a series of workshops, education can be a tool that prevents a septic system from failing by increasing homeowner awareness. Funding and resources should be created at the state level that support the local health department's initiatives to promote homeowner education. Additionally, an educator position should be established within each health department to work closely with homeowners on educating them on their system and the benefits of proper maintenance.

**Recommendation 5-3: Local health departments are encouraged to continue sending reminders to HSTS owners regarding the importance of septic system maintenance. In addition, homeowners are strongly encouraged to have their HSTS pumped and maintained according to their respective county health department's regulations.**

Lack of maintenance and failure to pump an HSTS are two factors that were identified within the chapter that prohibit an HSTS from functioning properly. Both county health departments aid residents with HSTS maintenance by either mailing out pumping reminders, septic system general information, or permit to operate regulations.

Under Trumbull County's annual permit to operate program, HSTSs are required to be pumped on a regular basis and a pumping receipt sent to the department for filing<sup>10</sup>. The Mahoning County District Board of Health requires septic tanks to be pumped as part of their real estate inspection prior to property transfers, if the tank has not been pumped on a regular basis with a pumping receipt or report sent to the board of health for filing. Additionally, Mahoning County mails reminders to county residents, on a township rotational basis, reminding of the time to have their septic tanks pumped.

**Recommendation 5-4: Whether identified as an Ohio EPA Phase II community or not, each county, municipality, township, or village with HSTS's present should invest time in identifying, mapping, and correcting illicit discharges.**

Discharges from an HSTS into a ditch or stream without an NPDES permit or from an HSTS illegally connected to a storm sewer system are considered illicit discharges. Such discharges have slowly emerged over the last few years and have added to the deterioration of water quality in our streams. These illicit discharges find their outlet via roadside ditches or illegal connections to storm sewer systems. For those communities

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<sup>10</sup> OAC, Section 3701-29-16.2(A)

that have been designated by the Ohio EPA as a Phase II Community, addressing illicit discharges is required as one of their six minimum control measures identified in their Storm Water Management Plan (SWMP). As required, each individual or joint SWMP must develop, implement, and enforce a program that detects and eliminates illicit discharges. Both Mahoning and Trumbull County have SWMPs that identify partnerships amongst the county, municipalities, townships, villages, and the local health departments in regards to addressing the HSTS's illicitly discharging. Through the support and cooperative efforts of the counties and government entities, such discharges can be eliminated or corrected. The importance of such programs will hold those entities accountable for illicitly discharging and prevent unhealthy conditions from forming within our streams and roadside ditches.

**Recommendation 5-5: In an effort to improve HSTS performance, homeowners are encouraged to install water conserving devices when building or repairing existing sanitary infrastructure.**

The life span of a septic system, on average, is 20-30 years. In order to ensure the maximum life, the Ohio EPA and both local health departments encourage the proper use of septic systems. Simple, low cost water conservation techniques can ensure a homeowner gets the most out of their septic system by decreasing the amount of water, organic load, and waste strength entering it. Overloading the system with water, organics, and wastes can cause a leachfield to fail and a system to malfunction. Simple techniques such as washing full loads of laundry or dishes, quickly repairing leaky faucets and other plumbing parts, and eliminating exterior draining (i.e. roof drains, down spouts, swimming pools) can prevent a system overload. Conservation devices such as low flow shower heads, low flow toilets, and front loading washers can decrease the amount of water used within a household, thus minimizing the amount going into a septic system. Both local health departments discourage the use of garbage disposals in homes served by an HSTS. Using a garbage disposal increases the amount of organic waste entering a system, and in turn increases the frequency of HSTS pumping and maintenance.

## **Chapter 6**

### **Management of Nonpoint Source Pollution and Stormwater Runoff**

**Nonpoint source pollution has become an overbearing problem to all water bodies across the Nation. Due to their dispersed nature, nonpoint sources are not easily identified and have become the fastest growing threat to the health and stability of our surface waters. This chapter expands on the sources of nonpoint pollution identified in Chapter 2 of the 208 plan and explores the phenomenon of stormwater that overwhelms our waterways with runoff pollution.**

#### **6.1 Introduction**

The Clean Water Act defines pollution as “man-made or man-induced alterations of the chemical, physical, biological, and radiological integrity of the water”<sup>1</sup>. Nonpoint source pollution is a direct result of activities taking place on land or from a disturbance of a natural stream system. Natural pollutant agents such as flow alteration, loss of riparian zone, physical habitat alteration, and the introduction of nonnative species to a water system produce nonpoint source pollution byproducts directly correlated to man-made alterations. According to the Ohio EPA’s Division of Surface Water, nonpoint sources are classified into two categories: polluted run-off and physical alterations, a result of how water moves over land surfaces or infiltrates into the ground.

All land use activities have the potential to pollute our critical water resources. Loose sediment, pesticides and fertilizers, petroleum products, harmful bacteria, pet waste, septage from failing HSTS’s, and trash are all common sources of nonpoint source pollution. As water moves across our changing land surfaces, the aforementioned pollutants are carried away and deposited in our surface waters via storm sewers or direct deposition.

The amount of impervious surfaces increases as land transitions into urbanized settings. Associated with development, roadways, parking lots and household driveways prohibit the infiltration of stormwater into the ground, forcing rainwater to linger on the surface. Eventually the water will run off the surface and carry with it pollutants, such as gasoline, vehicle oil, diesel fuel, and other toxic chemicals, on its way to a storm sewer. Once in the storm sewer system, stormwater gathers velocity as it is channeled through straight conduits, and empties into a nearby surface water.

Landscaping and poor housekeeping practices produce potential nonpoint sources of pollution in urban runoff. Fertilizers, herbicides, and pesticides contain nitrogen and phosphorous that both lead to water quality impacts. When applied incorrectly and/or

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<sup>1</sup>Section 502(19)

abundantly, these chemicals can easily wash away during a rain event and flow into storm sewers and receiving surface waters. Although aquatic plants thrive on phosphorus, too much phosphorus can cause algal bloom formation, which in turn can harm fish populations. These blooms decrease the amount of light entering the water and eventually decreases the amount of food available for some organisms.

Agricultural practices have never been exempt from falling under the nonpoint source pollution category. Historically, the agricultural community has been cited as a leading contributor of sediment, nutrients, and chemicals (fertilizers and pesticides) in surface waters. Unrestricted livestock access to streams has forced stream banks to erode, adding extra sediment to streams. Land application of manure and the use of pesticides, fertilizers, and herbicides, when carried away by water, add excess nutrients and organics that impact surface water quality. However, with better conservation practices in place, their contribution has moderately decreased.

The lack of adequate erosion control measures at construction sites has also increased the amount of sediment entering our surface waters. Because soil is exposed during the stages of development, it is easily carried away during a rain event, collecting other pollutants on its way to a storm sewer system. Increasing the sediment load into water systems has been proven to be detrimental to the aquatic ecosystems. When sediment is suspended in water, it prohibits light penetration, thus impairing photosynthesis, modifies oxygen demands, and reduces the food supply for many organisms. As sediment settles, it destroys fish populations by covering spawning beds, and increases the potential for flooding by reducing a water body's holding capacity.

## **6.2 Summary of Nonpoint Sources in Mahoning and Trumbull Counties**

Over the years, a new pattern has emerged in Ohio regarding point and nonpoint source pollution. Impairments caused by point source pollution are decreasing, while those caused by nonpoint sources are increasing. Based on results from state wide surveys, the Ohio EPA asserts that nonpoint source impacts, such as:

*“urban storm water, siltation of substrates, and habitat degradation are becoming increasingly evident as historically more pronounced impacts from point sources (i.e municipal WWTPs, some industrial effluents) are reduced. Since 1988, there has been a 48% decline in point sources as a major source of impairment in reassessed stream and river segments... Nonpoint sources have emerged as a major source of impairment in streams and rivers during this period, with increases including 70% for agricultural sources to 123% for hydromodification related nonpoint source impairments. While successes resulting from the abatement of point sources have been documented, there are other indications that impacts from nonpoint source runoff, habitat degradation, and watershed disturbances may be worsening. Siltation of substrates and habitat degradation are now the second and third leading*

*causes of aquatic life impairment in Ohio streams and rivers, surpassing ammonia and heavy metals. These impairments are principally the result of agricultural land use, intensive urbanization, and suburban development, the latter of which is emerging as one of the most significant threats to watersheds...Increasingly, water pollution problems are associated with nonpoint sources such as construction sites, farm land, abandoned mines, landfills, pits and lagoons, oil and gas wells, domestic sewage systems, manure and treatment processing residuals”.*

According to the Ohio EPA the top seven major causes of impairment (state-wide) are habitat modification, siltation, organic enrichment/low dissolved oxygen (D.O.), flow alteration, nutrients, metals, and ammonia. The major sources of impairment include hydro-modification, agriculture, municipal (including CSOs) and industrial discharges, mining, and urban runoff<sup>2</sup>. According to Appendix E.2 of the 2006 Integrated Report, the leading “High Magnitude Causes” of impairment in Mahoning County and Trumbull County surface water systems include:

- Direct Habitat Alterations;
- Organic Enrichment/Dissolved Oxygen;
- Nutrients;
- Flow Alteration, Siltation, Wetland Alteration, and Unionized Ammonia; and
- Unknown sources.

The sources complimenting the causes are “High Magnitude Sources”, and those include:

- Channelization Due to Development and Natural Causes;
- Major Municipal Point Sources, Dam Construction, Urban Runoff/Storm Sewers, Combined Sewer Overflows (CSO);
- Unknown sources;
- Contaminated Sediments; and
- Riparian/Stream Bank Vegetation Removal.

The water quality of Mahoning and Trumbull County is dependant upon land use activities that exist within four watersheds: Grand River Watershed, Pymatuning Watershed, Mahoning River Watershed, and the Little Beaver Creek Watershed. Figure 2-1 illustrates the two-county area and the four watershed boundaries. The following is a summary of the nonpoint sources of pollution existing within the watersheds based on the Ohio EPA’s 2006 Integrated Report and existing watershed action plans. Pollution sources mentioned are of those found within Eastgate’s 208 Planning region. However, it is important to note that pollution originating outside and downstream of the planning region

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<sup>2</sup>Cause and Source are defined as “causes of impairments are the agents that damage or impair the aquatic life in a stream, while sources of impairment are the origin of the agent”. Ohio Water Resources Inventory (Ohio EPA, 2000) p. 4-1 - 4-9.

can and does find its way into the watersheds shared by Mahoning and Trumbull Counties (i.e. Mahoning River Watershed).

### **6.2.1 Grand River**

The Grand River watershed is located in rural, northwest Trumbull County. The 2006 Integrated Report surveyed fourteen sites within the Trumbull County portion of the Grand River. Seven of the fourteen sites sampled were located along the Grand River from its headwaters, in Geauga County, to downstream Swine Creek in Trumbull County. According to comments within the appendix, the Ohio EPA attributes the over 15 miles of partial attainment status “to the habitat-limiting nature of the extensive wetland stream complex (natural conditions)”. According to the report, agricultural practices make up the majority of the watershed’s nonpoint source polluters. Animal and crop farming practices lend some of the heaviest nonpoint sources within the watershed. Runoff of agricultural chemicals (i.e. fertilizer, pesticides) have affected the health of aquatic life, while unrestricted livestock access to streams has contributed to stream bank erosion, depositing sediment into the waters. Land application of manure has been identified by the Watershed Action Plan as a runoff concern for the abutting surface waters. According to the draft Grand River Watershed Action Plan, habitat destruction has removed valuable riparian cover that is utilized to keep exposed sediment in place. According to the Ohio EPA, an intensive survey of the upper reaches of the Grand River, including those in Trumbull County, will be conducted sometime in 2007 and 2008 with a projected TMDL report due in 2009

In the Spring of 2003, the Ohio State University Extension joined with the Grand River Partners and the Trumbull County General Health Department to conduct a survey of residents within the upper portion of the Grand River watershed. The survey was constructed to determine resident’s attitudes toward water quality protection and land preservation within the watershed, specifically those lands abutting the Grand River and its tributaries. Respondents rated their views on the extent to which activities or events posed a threat to the watershed. Results from the survey indicated the perceived problems in the watershed were failing septic systems and urban sprawl. Trailing the top two concerns, but not lacking importance, were habitat alteration, industry, construction, logging, flooding, animal farming, crop farming, and mining.

### **6.2.2 Pymatuning Watershed**

The Pymatuning watershed covers the rural, northeast portion of Trumbull County, but transitions to an urban setting as it stretches south towards Mahoning County. Though the mainstem of Pymatuning Creek is buffered by the Pymatuning Wildlife Area, tributaries to it are not and serve as express lanes for sediment and pollution transport. According to the Integrated Report, nutrients, flow alteration, direct habitat alterations, organic enrichment/dissolved oxygen, and pathogens have been cited as causes of impairment. The report further lists contributing impairment sources include major municipal point sources, urban runoff/stormsewer, hydromodification due to development, habitat modifications other than hydromodification, channelization due to agriculture, natural and unknown sources. Additionally, the creek and its tributaries flow through several rural townships of Trumbull County troubled by failing septic systems. An intensive survey of the upper reaches of the Pymatuning River will be conducted in 2008 and 2009 with a projected TMDL report due in 2010.

### **6.2.3 Little Beaver Creek Watershed**

The Little Beaver Creek watershed weaves in and out of southern Mahoning County. Though mainly located in Columbiana County, land activities upstream in Mahoning County can be detrimental to downstream water quality. The 2006 Integrated Report lists nutrients, siltation, pesticides, organic enrichment/dissolved oxygen, unionized ammonia, flow alteration, natural limits (wetlands), and direct habitat alterations as high magnitude causes of impairment within the watershed. Sources of the causes include major industrial point sources, combined sewer overflows, pasture lands, channelization (development/agriculture), removal of riparian vegetation, onsite wastewater treatment systems (septic systems), and surface mining. According to the Columbiana County Soil and Water Conservation District, the leading nonpoint sources that impact the watershed's water quality include development, sediment, toxic substances, failing septic systems, damaged riparian areas, urban runoff, logging, and animal manure applications.

### **6.2.4 Mahoning River Watershed**

The Mahoning River watershed spans across six counties (Columbiana, Stark, Mahoning, Portage, Geauga, and Trumbull Counties) and is the largest watershed within the two county area. Nonpoint sources of pollution appear numerous and sporadic throughout the watershed. Agricultural practices along main tributaries such as Meander Creek, the southern segments of Mill Creek and Yellow Creek, in Mahoning County, and along Mosquito Creek and Eagle Creek in Trumbull County appear to contribute organic enrichment, nitrate-nitrite, nutrients, and phosphorus to the impairment of the watershed's water quality. Riparian zones

along some tributaries, such as the southern portions of Yellow Creek and Mill Creek, have been destroyed by unrestricted livestock access and by farming in riparian zones and urban development. Residential and commercial development have sprawled out of the central cities and into the rural areas as seen happening in southern and southeastern Mahoning County and throughout Trumbull County. The outward migration of development leads to deterioration of water quality by habitat and flow alterations, the importing of sediment and nutrients into the tributaries, and by decreasing the amount of dissolved oxygen within the waters. Failing commercial and home septic systems have become a nuisance throughout the watershed with “hot spots” occurring near Mosquito Creek Reservoir, a drinking water supply in Trumbull County and along tributaries Yellow Creek and Mill Creek in Mahoning County. The Integrated Report cites numerous nonpoint sources that impair the watershed’s water quality including (but not limited to) metals, suspended solids, siltation and urban runoff/storm sewers.

### **6.3 Policy Implementations**

Two laws exist to aid in controlling runoff: one focusing on point source pollution and the second focusing on nonpoint sources. Under the Clean Water Act’s (CWA) National Pollution Discharge Elimination System (NPDES) Program, stormwater runoff and point sources are addressed. Meanwhile, nonpoint source programs are covered under Section 319 of the CWA. According to the Ohio EPA, the “Total Maximum Daily Load (TMDL) Program focuses on identifying and restoring polluted rivers, streams, lakes, and other surface waterbodies”.

#### **6.3.1 NPDES Program**

The Clean Water Act (CWA) of 1972 was established to enforce regulations under the Federal Water Pollution Control Act of 1948. The CWA was written with the intent to “restore and maintain the chemical, physical, and biological integrity of our nation’s waters<sup>3</sup>” by achieving two goals<sup>4</sup>:

- to eliminate the discharge of pollutants into surface waters; and
- to achieve a level of water quality that allots the protection and propagation of fish, shellfish, and wildlife and for recreation in and on the water.

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<sup>3</sup>CWA, Section 101(a).

<sup>4</sup>CWA, Section 101(a)(1).

The CWA also contains a national policy measure that states the “discharge of toxic pollutants in toxic amounts” is prohibited<sup>5</sup>.

The CWA’s original intent was to combat industrial and municipal waste discharging into surface waters. The Act prohibits any discharge of pollutants into waters of the United States, unless authorized by an NPDES permit. The NPDES program tracks point sources, monitors discharges from permitted sources, and minimizes the amount of pollutants discharged. However, as pollution measures were implemented and redefined, newer, more diffuse sources of water pollution were emerging and causing significant water quality impairments. Stormwater runoff, in connection with urban land use practices and construction site activity, and agricultural practices have been identified as the new causes of water quality impairments.

In 1987, the CWA was amended by Congress to establish regulations and issue permits for addressing non-agricultural stormwater discharges. The amendment created a phased implementation strategy for the NPDES Permit. In 1990, Phase I of the plan was activated, followed by Phase II in 2002.

### 6.3.2 Phase I

Phase I of the two-phase strategy was established in 1990 and depends on the NPDES permit coverage to address storm water runoff from:

- Medium or Large Municipal Separate Storm Sewer Systems (MS4s) serving a population of 100,000 or more;
- Construction activity disturbing 5 acres of land or more; and
- Ten categories of industrial activity listed in 40 CFR Subpart 122.26(b)(14).

Phase I entities are required to obtain an NPDES stormwater permit and implement stormwater pollution prevention measures or management programs that efficiently reduce or prevent the discharge of pollutants to surface waters. Under Phase I, Best Management Practices (BMPs) are encouraged to help achieve site-specific NPDES requirements.

### 6.3.3 NPDES Phase II

The second phase of the stormwater water regulation expands Phase I to require small sized MS4s in urbanized areas as well as construction site operators to apply for NPDES permitting. Phase II was designed to create programs and practices to curb stormwater runoff. The phase covers two classes of stormwater dischargers:

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<sup>5</sup>CWA, Section 101(a)(3).

- Operators of small MS4s located in “urbanized areas” as defined by the Bureau of Census; and
- Operators of construction sites that disturb 1-5 acres of land.

In addition, the following federal, state, local, and tribal agencies are regulated under this phase:

- US Department of Defense;
- State Hospitals;
- State Prisons;
- State Departments of Transportation (not previously covered under Phase I);
- Universities; and
- Tribal Areas identified as a small MS4owner/operator.

Phase II of the program was finalized in December 1999 and the Ohio EPA passed the final permit requirements to meet the Phase II rule in December 2002. Under the finalized phase, 6 minimum control measures must be addressed as requirements of the program. The 6 measures include:

- Public Education and Outreach;
- Public Involvement and Public Participation/Involvement;
- Illicit Discharge Detection and Elimination;
- Construction Site Runoff Control;
- Post- Construction Runoff Control; and
- Pollution Prevention/Good Housekeeping.

Many of the communities in the Eastgate 208 Planning Area have begun implementing Stormwater Management Plans (SWMPs) to fulfill their Phase II requirements. Table 6-1 summarizes the entities within Mahoning and Trumbull Counties having SWMPs, with both counties having regional programs in place that include joint permittees.

**Table 6-1: Phase II Stormwater Regulated Entities**

<b>Mahoning County</b>	<b>Trumbull County</b>
Mahoning County*	Trumbull County**
Austintown Township*	Bazetta Township**
Beaver Township*	Brookfield Township**
Boardman Township*	Champion Township**
Canfield Township*	Howland Township**
Coitsville Township*	Hubbard Township**
Poland Township*	Liberty Township**
Springfield Township*	Newtown Township**
Mill Creek MetroPark*	Vienna Township**
City of Struthers	Warren Township**
City of Campbell	Weathersfield Township**
City of Canfield	City of Cortland**
Village of New Middletown	City of Girard**
Village of Poland	City of Hubbard**
	City of Newton Falls**
	Village of McDonald**
	City of Niles**
	City of Warren

\* Joint, regional plan with the Mahoning County Engineers Office as the lead role.

\*\* Joint, regional plan with Trumbull County with Trumbull County Soil and Water implementation.

Under the State of Ohio's Phase II regulations, operators of construction sites are required to implement site BMPs as required by the Ohio EPA General Permit for Storm Water Discharges Associated with Construction Activity. In addition, Phase II designated communities are required to adopt a local ordinance or regulatory mechanism as stringent or more stringent than OEPA requirements addressing storm water runoff from earth disturbing construction projects resulting in the disturbance of one or more acres of land. The Boards of Commissioners in Mahoning and Trumbull Counties, by the authority given under O.R.C 307.79, as modified by H.B. 411, adopted Erosion and Sediment Control Rules applicable to the entire unincorporated area of each county. Administration of the Rules was assigned to the County Engineers office in Mahoning County and the Soil and Water Conservation District Office in Trumbull County. Subsequently, each zoned, Phase II designated township began adopting local zoning legislation requiring compliance with the Rules prior to the issuance of a zoning permit.

An Erosion and Sediment Control (E&SC) Manual is a tool created by counties and utilized to assist developers with compliance in storm water management regulations at construction sites . The purpose of an E&SC manual is to provide detailed and supportive information and examples allowing developers, designers, contractors, builders, and planners the appropriate information necessary to address state and local requirements for construction site runoff and post-construction stormwater management. BMPs are a component of an E&SC and must be discussed thoroughly (standards and specifications) and submitted with a construction site E&SC plan. A BMP's goal is to prevent the discharge of pollutants into a surface water. In addition, the Ohio Department of Natural Resources Division of Soil and Water created the 2006 edition of the Rainwater and Land Development Manual as a guide for BMP selection and preparation of E&SC plans.

The Illicit Discharge Detection and Elimination minimum control measure is central and interrelated and a component of the other five. This control measure requires regulated communities develop a storm sewer system map detailing the locations of MS4 discharges into natural drainageways or "waters of the state". In addition, communities must provide a map and a list by address of residences operating a home sewage treatment system that discharges to the MS4 otherwise referred to as off-lot septic systems. Communities are required to adopt ordinances prohibiting non-storm water discharges to their MS4. However, many communities such as county and township government lack the legal authority to adopt such regulations. Therefore in Mahoning and Trumbull Counties, a protocol has been established utilizing existing authority given by the state legislature. Discharge of septic or grey water from HSTS's is currently enforced under ORC 3745, 3701.352 and OAC 3701-29, illicit plumbing connections are enforceable under 4104.41, 4104.43 and Chapter 6 of the Ohio Plumbing Code, litter is enforceable under ORC 3767, solid waste and open dumping by ORC 3734 and OAC 3745 and spills by ORC 3745 and ORC 6111. Finally, as mentioned above, sediment discharge is regulated under ORC 307.79 for the unincorporated area of the counties.

MS4 outfalls must be mapped and observed for flow. Each outfall location must be observed once throughout the permit term in a dry weather screening process following 72 hours without a rain event. Flows composed entirely of storm water such as sump pump discharge or infiltration into the storm sewer system are possible during such an observation. Sampling of flows is not required by the permit but will be performed in potential enforcement cases.

The Ohio Agricultural Pollution Abatement Rules, passed by the legislature in 1979, handles nonpoint source sediment pollution from agricultural communities. Additionally, the 1987 Water Quality Act exempted nonpoint source pollutants from agricultural activities, (i.e. runoff from orchards, cultivated crops, pastures, and range lands) from storm water regulations. The Chief of the Ohio Department of Natural Resources's (ODNR) Division of Soil and Water Conservation is responsible for handling the agricultural community's. Through an agreement with local Soil and Water Conservation Districts (SWCD), the local Districts's Board of Supervisors have the ability to address agricultural nonpoint source pollution complaints from landowners.

Due to the fact the Ohio EPA is empowered to regulate urban stormwater, the agricultural communities in our region work with the Mahoning County Soil and Water Conservation District and the Trumbull Soil and Water Conservation District (respectively) to address and manage sediment and nutrient issues through various BMPs. Several BMPs encouraged include conservation tillage, contour strip cropping, the establishment of buffer or filter strips along streams, and exclusionary fencing for livestock. Numerous governmental programs, such as the Ohio EPA's 319 Grant and funds from the U.S. Department of Agriculture, are accessible to help farmers design and pay for BMPs that prevent and control nonpoint source pollution on their lands.

## **6.4 Ohio Nonpoint Source Pollution Control Program**

### **6.4.1 CWA Section 319**

The CWA was amended in 1987 to include Section 319, which established a Nonpoint Source (NPS) Management Program that recognized the need for greater leadership to focus on State and local NPS efforts. Section 319 enables states to receive grant money to support a variety of activities such as providing technical and financial assistance, education, training, technology transfer, demonstration projects, and monitoring to assess the success of specific nonpoint source implementation projects.

The Ohio EPA is the designated water quality agency in Ohio and is responsible, through the Division of Surface Water, for administering the 319 Grant Program. Since 1990, Ohio EPA has annually applied for, received and distributed 319 Grant funds to correct water quality impairments to Ohio's surface and groundwater resources caused by nonpoint sources. Education, public participation, and implementation based on

innovation, cost-sharing and voluntary compliance with locally developed watershed management plans are the focal point of the Ohio 319 Grant Program.

In the Eastgate 208 Planning area, numerous entities are actively engaged in Ohio's 319 Grant Program. Through this program, watershed action plans for the Grand River, Pymatuning, Lower Mahoning River and Mosquito Creek, and Mill Creek (subwatershed of the greater Mahoning River Watershed) watershed have been created and submitted to the Ohio EPA for review and approval. AWARE, in conjunction with the Mahoning County Soil and Water Conservation District, has utilized the 319 Grant monies to purchase various conservation easements within the Mill Creek and Yellow Creek watersheds. The Trumbull County Soil and Water Conservation District has utilized 319 Grant money for agricultural exclusionary fencing alongside streamside agricultural lands. Additionally, volunteer stream monitoring and educational components have been initiated with grant monies from the program.

#### 6.4.2 Total Maximum Daily Load (TMDL)

Established under the CWA's Section 303(d), the TMDL program emphasizes identifying and restoring polluted rivers, streams, lakes, and other surface waters. A TMDL is a "written, quantitative assessment of water quality problems in a waterbody and contributing sources of pollution"<sup>6</sup>. It specifies the amount a pollutant needs to be reduced to meet water quality standards (WQS), allocates pollutant load reductions, and provides the basis for taking actions needed to restore a waterbody. The TMDL Program is a watershed approach to quantifying and reducing point and nonpoint sources of pollution in impaired surface waters. The program builds on current "monitoring, modeling, permitting, and grant programs and works"<sup>7</sup> within their "five-year monitoring strategy"<sup>8</sup>.

Ohio is required to submit a list of prioritized impaired waters to the U.S. EPA for approval. This list identifies the waters in Ohio that are currently impaired and require TMDL development to achieve Ohio's water quality standards. Based on information provided in the Ohio EPA's 2006 303(d) List of Impaired Waters, the following surface waters are scheduled for field monitoring and projected TMDL reporting:

- Upper Mahoning River: 2006-2007 (field survey), 2009 (projected TMDL report);
- Lower Mahoning River: 2013-2014 (field survey), 2015 (TMDL report);

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<sup>6</sup>Ohio EPA, Division of Surface Water, TMDL Program.

<sup>7</sup>Ibid.

<sup>8</sup>Ibid.

- Upper Grand River (headwaters to upstream Rock Creek): 2007 (field monitoring), 2009 (projected TMDL);
- Pymatuning River: 2008-2009 (field survey), 2010 (TMDL Report) .

The Mahoning River Watershed has a fecal coliform TMDL report that was approved by the US EPA in 2005.

## 6.5 Regional Policy Recommendations

Several nonpoint source management programs have been identified for implementation and continuation by local and county agencies in the Eastgate planning area. Recommendations for this chapter echo those found within other chapters of the 208 Plan and reinforces action items found within the region's watershed action plans.

**Recommendation 6-1: Both counties and their zoned communities are encouraged to adopt and implement riparian setbacks on all streams, rivers, and their tributaries. Because flowing water does not follow political boundaries, it is important for communities that share a common water course work together to create uniform language. Uniform Language will help prevent downstream flooding and ensure the health of the watershed as a whole.**

Riparian setbacks have been identified as non-structural BMPs in the aforementioned SWMPs. When the NPDES Phase II regulations were finalized in December of 1999, 6 minimum control measures were required, of which "post-construction runoff control" measures were identified. Section 3.2.5.2.3.1 of both county's Phase II, SWMPs, require "policies or ordinances that provide requirements and standards to direct growth to identified areas, **protect sensitive areas such as wetlands and riparian areas, maintain and/or increase open space** (including dedicated funding source for open space acquisition), **provide buffers along sensitive water bodies**, minimize impervious surfaces, and minimize disturbance of soil and vegetation". Riparian setbacks are just one tool utilized to fulfill this requirement.

The purpose of a riparian setback ordinance is two fold. When properly applied, a setback protects the health, safety, and welfare of residents, prevents property damage or loss due to flooding and erosion, and protects the water quality of the creeks, streams, and rivers within a watershed system. The second purpose of riparian setback ordinances is **not** to make lots unbuildable, but to regulate uses of riparian areas and limit development within specific distances of streams. By creating setbacks, the riparian area is allowed to naturally slow stormwater, store this water, and release it over time, thus providing cost effective flood and erosion control and water quality protection.

Educational programs and workshops are a crucial component to making riparian setbacks acceptable to officials and residents. Many misconceptions regarding the ordinance are common. Township officials and residents need to be assured that riparian setbacks are designed with the landowner as well as the environment in mind.

**Recommendation 6-2: Developing communities within the Eastgate 208 Planning Area are encouraged to consider incorporating conservation design development techniques within their subdivision or zoning regulations to enhance stormwater management within the watersheds.**

A well designed conservation development benefits the whole community and the watershed it resides in via its built-in stormwater management techniques. Through the practice of reducing the amount of impervious surface cover (road surfaces) and land preservation, natural, stormwater infiltration is able to occur. By instilling these requirements in a development, the amount of stormwater runoff exiting a conservation development is reduced, decreasing the chances the new development will add to downstream flooding problems. The preserved open space areas set aside within a conservation development naturally help control the flow of stormwater by reducing the volume of stormwater runoff and by cleaning the stormwater during infiltration. Unlike traditional subdivision construction, where engineered sediment and erosion control measures are utilized, a conservation development relies on grassy swales (as road ditches) instead of curb and gutter techniques to catch soil runoff from land disturbing activities.

Subdivision regulations are created, adopted, and enforced by county planning commissions for unincorporated areas and by the municipalities for incorporated areas. Conservation design developments can be required by both city and village zoning districts. Zoned townships within the counties can adjust their zoning regulations to include conservation design development.

**Recommendation 6-3: The Ohio EPA is encouraged to follow up on the actions and recommendations drinking water suppliers list in their Source Water Assessment and Protection (SWAP) program as steps to be taken to reduce the risk of contaminating public drinking water source.**

The Ohio EPA's Division of Surface Water is responsible for restoring and maintaining the quality of Ohio's rivers and streams, while the Division of Drinking and Ground Water informs citizens of where their drinking water comes from (surface or ground sources) and informs Ohio's citizens of whether or not their drinking water is safe to drink. The Ohio EPA is encouraged to develop a system to monitor the progress of public drinking water suppliers in their ability to address the protective strategies mentioned in their SWAP. Meanwhile, each drinking water supplier is encouraged to follow the recommendations within their SWAP to protect not only their asset, but to protect the public's health and the quality of their supply source.

**Recommendation 6-4: Watershed Action Plans need to be created for all major watersheds and sub-watersheds within the Eastgate 208 Planning Area.**

Several watersheds within Eastgate's 208 Planning Area have watershed action plans and received conditional endorsement from the Ohio EPA. However, these plans are awaiting help to address the Ohio EPA's comments. Once they are resubmitted and approved, the plans will need implementation assistance.

Three vital subwatersheds within Mahoning and Trumbull Counties are without watershed action plans- the Meander Creek, Yellow Creek, and Mosquito Creek watersheds. These watersheds contain our region's sources of drinking water, the Meander Reservoir, Evans Lake, and Mosquito Creek Reservoir (respectively). Without watershed action plans, funding sources to protect the land within the watershed and surrounding the sources are more difficult to obtain.

**Recommendation 6-5: Public Drinking Water Suppliers are strongly encouraged to preserve any and all lands surrounding not only their drinking water sources, but those lands immediately surrounding the rivers, streams, and tributaries to the surface water source.**

Many impacts to surface water are in the form of nonpoint source pollution. Each SWAP provides strategies and recommendations public water suppliers can take to minimize impacts to their surface water. One such recommendation includes purchasing the lands adjacent to the drinking water sources. By protecting the lands surrounding the source, a buffer is created to help filter pollution before it enters the waters. Although protection of immediate, adjacent lands is important, many pollutants find their way into our surface drinking water via a tributary.

**Recommendation 6-6: Although agricultural activities are exempt from stormwater regulations, a number of BMPs should be carefully selected to not only protect the water bodies, but to allow farmers to continue with their respective business.**

As noted in this chapter, many of the waterways located in the rural portions of each county have been impacted by agricultural activity. It has been recognized by the watershed action plans that through funding, cooperative agreements, and education a balance between water quality and agricultural activity can be reached. This plan encourages the local SWCD to continue educating local farmers on the BMPs that are available to them at no cost. Additionally, where a cost to implement a BMP is involved, local SWCDs are encouraged to continue reapplying for Section 319 Grant funding to help farmers implement BMPs. In the same turn, the Ohio EPA is encouraged to continue the 319 program to offer cost sharing benefits for farmers for the purchase of conservation tillage equipment, riparian planting, and animal exclusionary fencing. Other funding

sources available for BMPs include the Environmental Quality Incentives Program (EQIP) from the Natural Resource Conservation Service (NRCS) for farmers to install conservation practices.

## **Chapter 7**

### **Wastewater Management Facility Planning**

**This chapter updates Eastgate’s wastewater management facility planning areas (FPAs). It confirms FPA boundaries and identifies wastewater management and treatment planning options within each FPA. Treatment planning options were established for each county by management agencies (MA), or the agencies responsible for the operation and maintenance of a wastewater treatment system with the input and concurrence of any affected local jurisdiction. These options reflect current decisions regarding sanitary sewer extension and identify wastewater treatment methods for areas where sanitary sewer infrastructure is not available.**

#### **7.1 Introduction**

The MA’s, their 201 FPA boundaries, and the wastewater treatment planning options are a vital component to the region’s certified water quality management plan. The Ohio EPA bases decisions to grant National Pollutant Discharge Elimination System (NPDES) permits, Permits-To-Install (PTIs), and State Revolving Fund (SRF) loans for wastewater treatment on the consistency with the 208 Plan.

This chapter presents policies governing the regional coordination of local wastewater management planning addressing:

- MAs and their FPA boundaries for wastewater management planning;
- Modifications to FPA boundaries;
- Development of Local Wastewater Treatment Planning options;
- Ohio EPA and United States EPA 208 Plan Consistency Actions;
- Utilization of Areawide Population Projections;
- Modifications to MA information;

#### **7.2 A History of the Clean Water Act and the Water Quality Management Plan**

The Federal Water Pollution Control Act, or Clean Water Act (CWA) was created in 1948 to govern pollution affecting our Nation’s surface waters. However, the 1972 revision and amendments of the CWA shaped the Act as we know it today. The CWA established programs such as the NPDES program and municipal wastewater treatment programs, and created federal financial assistance for the construction of municipal sewage treatment plants. The objective of the Act is to “restore and maintain the chemical,

physical, and biological integrity of the Nation's waters"<sup>1</sup>. To achieve this objective the CWA established the following goals:

- create uniform, enforceable standards for clean water and establish regulations for such standards;
- establish a national permitting program to adequately control discharges from all point sources: industrial, municipal, commercial, agricultural, and other facilities releasing discharges via pipes and sewers;
- generate federal funds for the creation of sewage treatment systems; and
- form state and areawide water quality planning programs to coordinate pollution control decisions and implement methods to improve water quality conditions over the long term.

The Act underwent additional reauthorizations and amendments in 1977, 1981, and 1987. Changes to the Act included a shift in management and funding responsibility from the federal government to state and local agencies. Under Section 201, original Areawide Water Quality Management Plans of the 1970's were utilized to issue federal grant monies for construction of wastewater treatment facilities and sanitary sewer systems. Since then, federal construction grants were replaced by State Revolving Loan programs.

Areawide water quality planning and management efforts fall under Section 208 of the CWA. Section 208 requires each State Governor to identify areas within their state experiencing significant water quality control problems. Once identified, the boundaries are delineated for those areas and entities designated to develop wastewater treatment management plans.

Ohio's Governor identified six urban areas for regional pollution control planning in the 1970's. Regional Councils of Government, such as Eastgate, were designated as lead planning agencies for developing water quality management plans, also known as 208 Plans. The Ohio EPA was designated the water quality management agency for all undesignated areas in Ohio. Each agency, along with the State, is charged with maintaining a local water quality plan. All 208 Plans from the State, with their significant updates and amendments, are included in a State Water Quality Management Plan, a requirement under the CWA.

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<sup>1</sup>Clean Water Act, Section 101(a).

When the 208 Water Quality Management Plans were first introduced, they were updated every five years. Due to a shift in priorities, federal funding was not available to maintain an updating schedule. However, as a result from a court challenge to an Ohio 208 Plan, the Ohio EPA now requires regular updating of 208 Plans.

Eastgate submitted its first Areawide Water Quality Plan to the Ohio EPA in 1977. The purpose of the original plan was to “develop a technical plan for municipal collection and treatment of wastewater in the EDATA 208 Study Area that is consistent with Section 208 of the Federal Water Pollution Control Act Amendments of 1972”<sup>2</sup>. The original plan created an evaluation process for any and all proposed sewerage plans. As the 208 Wastewater Management Planning Agency for Mahoning and Trumbull Counties, Eastgate studied the municipal, industrial, and nonpoint source pollution for the area, and developed a 208 Plan suggesting the best process or method to remove or control nonpoint source pollution.

### **7.3 Eastgate’s Management Agencies Under the Original 208 Plan**

The 1977 plan created an evaluation process for proposed sewerage plans over a twenty-year time frame. In the areas where sewers were planned a local management agency, responsible for facility planning, was identified. These agencies became known as management agencies (MA’s) and include municipalities, counties, and sanitary sewer districts as authorized by Ohio law. Integrated into the designation process, owners/operators of Publicly Owned Treatment Works (POTWs) were identified to have authority for sewer-related planning within their respective 201 FPA. Local wastewater management agencies became the Primary MA for sewer plans within their delineated FPA. In cases where unincorporated areas are inside and/or outside 201 FPAs, the Mahoning and Trumbull County Sanitary Engineers were recognized as the Primary MA. In instances where unincorporated areas lie within the 201 FPA, county wastewater plans were incorporated into the Primary MA’s facility plans. Either MA type was recognized in the original 208 Plan as a lead agency within its respective FPA and was empowered with identifying plans to solve existing wastewater treatment problems and to accommodate for projected growth over a twenty year time frame.

Several FPAs encompass areas lying outside political, jurisdictional boundaries of the MA responsible for wastewater planning. Eastgate’s 208 Plan acknowledges service agreements between the POTW owner/operator and the adjacent jurisdiction it serves. Each entity named in an agreement is recognized as an MA for wastewater management planning in accordance with a POTW owner/operator service agreement.

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<sup>2</sup>EDATA Areawide Water Quality Plan, Volume 1, “Municipal Wastewater Treatment”, P.1.

## **7.4 Facility Planning Areas Under the Original 208 Plan**

Eastgate delineated the 208 Planning area into regional sewer districts: Mosquito Creek, Meander Creek, Warren-Newton Falls-Craig Beach, McDonald-Girard-Niles (MGN), Hubbard- Brookfield, Campbell-Struthers-Lowellville, and Youngstown (including Boardman). These seven districts were delineated based on the sewershed concept: sewer areas tributary to an integrated sewer system and surrounding areas that were likely to connect within the planning period. According to the original 208 Plan, all the regional districts were the same as 201 FPAs with the exception of the Warren-Newton Falls-Craig Beach and Campbell-Struthers-Lowellville districts. The plan further explains the Warren and Newton Falls 201 planning areas combined to form the Warren-Newton Falls-Craig Beach Regional District, while the Campbell-Struthers 201 planning area combined with Lowellville's 201 planning area to form the Campbell-Struthers-Lowellville Regional District. Though the aforementioned districts perform the same function as the rest of the 201 FPAs, the 208 Plan did not cite why they were not official 201 FPAs.

Several outlying areas or sub-regional systems were identified due to future sewer plans or because of existing sewer systems. Those outlying areas identified included New Middletown and Petersburg in Mahoning County and Kinsman and West Farmington in Trumbull County. Of these four areas, New Middletown had an existing POTW. At the time, the Sebring-Beloit area, located in southwestern Mahoning County, was identified as part of the Alliance 201 Planning Area.

Areas within the 201 FPAs and regional districts were divided into three categories: existing facilities, short range future facilities, and long range future facilities. Short range construction schedules were 1977-1984 and the long range construction schedule was established for 1984-1995. The decision to classify such areas was made by the appropriate MA in accordance with planning guides established by the USEPA. Each MA was required to prepare a plan, based on perceived population growth and available wastewater treatment options, to provide adequate wastewater treatment for their area over a twenty year time frame.

The delineation decisions were evaluated by the Ohio EPA before adoption into the 208 Plan. The suggested wastewater treatment options were based on best available information from either previous engineering reports or from the Ohio EPA's requirements and policies on varied discharged effluent limitations. Expansions of existing service areas beyond a demarcated area was permitted as long as applicable water quality standards were met and the expansion was allowed by affected communities.

## **7.5 Consistency Reviews Under the Original 208 Plan**

Although an official consistency review was not created for Eastgate's original 208 Plan, there were methods of assuring future sanitary sewer plans were consistent with the 208 Plan's vision. Eastgate, via ORC 167.03, had the authority to "...review, evaluate,

comment upon, and make recommendations relative to the planning and programming, and the location, financing, and scheduling of public facility projects within the region and affecting the development of the area” and “act as an areawide agency to perform comprehensive planning for the programming, locating, financing, and scheduling of public facility projects within the region and affecting the development or uses of the area and for other proposed land development or uses, which projects or uses have public metropolitan wide or interjurisdictional significance”. The 208 Plan also cites “EDATA will ultimately be responsible for coordinating the activities of these agencies and evaluating the Plan, and will conduct the continuing planning process to adjust the Plan from time to time as progress is made and local criteria dictate. Additionally, Eastgate in its capacity as a regional planning organization and Council of Governments, will work closely with each political subdivision to insure that the plan remains cost-effective and avoids duplication of effort”<sup>3</sup>. According to Volume 1 (p.3) of the 208 Plan, “Any alternative for collection and treatment other than those presented herein may be considered consistent with the 208 Plan if they are shown to be cost effective, environmentally sound and politically feasible”.

## **7.6 Updating Eastgate’s Designation of Management Agencies, Facilities Planning Areas, and Creating a Consistency Review Policy**

### **7.6.1 Definition of Primary MA and Secondary MA**

Management agencies were separated into two categories: Primary MAs and Secondary MAs. Primary MA’s have the authority to plan for wastewater treatment and conveyance within their respective FPA. Such entities, according to Section 208 (c)(1), consist of existing or newly formed local, regional, or state agency or political subdivision. Section 208 (c)(2)(H) requires the Primary MA to be capable to “refuse to receive any waste from any municipality or subdivision thereof, which does not comply with any provisions of the Clean Water Act”. Other requirements<sup>4</sup> of a Primary MA are as follows:

A Primary MA must have the authority to:

- have legal authority to provide service to its area;
- carry out appropriate portions of an area wide waste treatment management plan;
- manage waste treatment works and related facilities effectively in order to serve such areas in conformance with the 208 Plan and effectively manage POTW and related point and nonpoint source

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<sup>3</sup>EDATA Areawide Water Quality Plan, Volume 2, “ Wastewater Management”, p.15.

<sup>4</sup>CWA, Section 208 (c)(2)(A-G)(I).

facilities and practices in conformance with the Plan;

- directly or by contract, design and construct new works, and operate and maintain new and existing works as required by the Plan;
- accept and utilize grants, or other funds from any source, for waste (water) treatment management purposes or nonpoint source control purposes;
- raise revenues, including the assessment of waste treatment charges or other necessary funding, to implement its assigned portion of the Plan. Needed revenues may include staff funding, or for MAs that own or operate POTWs, assessments of wastewater treatment charges;
- cooperate with and assist the Eastgate staff in performance of Plan responsibilities;
- incur short- and long-term indebtedness;
- assure implementation of an areawide waste treatment management plan that each participating community pays its proportionate share of treatment costs; and
- accept treatment of industrial wastes (wastewater).

The Primary MA is typically the county or municipality who owns and operates the central POTW. In some instances where an MA utilizes the services of a Primary MA's POTW or where a 6119/6117 township and county sewer district exists, these entities are considered Secondary MAs. Under a 6119/6117 (ORC 6119) agreement the county may establish areas of one or more contiguous counties or municipalities and are able to form a regional sewer district. A Secondary MA can be a county, municipality, or a political entity that builds, operates, and maintains the sewers within their jurisdiction, but transports the generated waste to the Primary MA's POTW. Oftentimes, there may be more than one Secondary MA within an FPA due to the size of the FPA boundary. Like a Primary MA, a Secondary MA has the ability to propose modifications to the Eastgate 208 WQMP, within the boundaries covered by their respective sewer district. For unincorporated areas, within or outside an FPA, the respective county is the wastewater planning agency. Tables 7-1 and 7-2 outline the management agencies within Eastgate's planning area.

TABLE 7-1: Management Agencies (MA) with Facility Planning Areas

Facilities Planning Area (FPA)	Primary Management Agency (MA)		Secondary Management Agency(s)	Area(s) Serviced	Receiving Waterway (watershed)
	Owner/Operator	Wastewater Destination			
Youngstown	City of Youngstown	Youngstown POTW*	MCSE TCSE	City of Youngstown, Boardman Twp. (p)***, Austintown Twp. (p), Canfield Twp. (p), Liberty Twp. (p) in Trumbull County	Mahoning River
Struthers	City of Struthers	Struthers POTW	MCSE	City of Struthers, Boardman Twp. (p), Poland Twp. (p), Poland Village (p), Springfield Twp. (p), Beaver Twp. (p).	Mahoning River
Campbell	MCSE**	Campbell POTW		City of Campbell	Mahoning River
Lowellville	Village of Lowellville	Lowellville POTW		Village of Lowellville	Mahoning River
Craig Beach	MCSE	Craig Beach POTW		Craig Beach, Milton Twp. (p).	Mahoning River
New Middletown	MCSE	New Middletown POTW		New Middletown (p), Springfield Twp. (p), Petersburg.	Honey Creek (Beaver Creek)
Boardman	MCSE	Boardman POTW		Boardman Twp. (p), Canfield Twp. (p), Beaver Twp. (p).	Mill Creek (Mahoning)
Meander	MCSE	Meander POTW	TCSE	City of Canfield, Austintown Twp. (p), Canfield Twp., (p), Jackson Twp., (p), Weathersfield Twp (p) in Trumbull County	Meander Creek (Mahoning)
		Diehl Lake POTW		Ellsworth Twp. (p)	Meander Creek (Mahoning)
Alliance (NEFCO)	City of Alliance	Alliance POTW		Smith Twp. (p).	Beech Creek Tributary to Berlin Reservoir
Damascus	MCSE	Damascus POTW		Goshen Twp. (p), Perry Twp. (p) in Columbiana County.	Unnamed Stream draining to Westfield Lake

Facilities Planning Area (FPA)	Primary Management Agency (MA)		Secondary Management Agency(s)	Area(s) Serviced	Receiving Waterway (watershed)
	Owner/Operator	Wastewater Destination			
Warren	City of Warren	Warren POTW	Village of Lordstown TCSE	City of Warren, Village of Lordstown, Champion Twp. (p), Warren Twp. (p), Howland Twp. (p).	Mahoning River
Niles	City of Niles	Niles POTW	Village of McDonald TCSE	City of Niles, Weathersfield Twp. (p), Howland Twp. (p), Village of McDonald (p)	Mahoning River
Girard	City of Girard	Girard POTW	TCSE	City of Girard, Weathersfield Twp. (p), Liberty Twp. (p)	Little Squaw Creek (Mahoning River)
Hubbard	City of Hubbard	Hubbard POTW	TCSE	City of Hubbard, Hubbard Twp. (p)	Little Yankee Run (Pymatuning Creek)
Newton Falls	City of Newton Falls	Newton Falls POTW	TCSE	City of Newton Falls, Newton Twp. (p), Braceville Twp. (p)	Mahoning River
Mosquito Creek	TCSE**	Mosquito Creek POTW	City of Warren City of Niles City of Cortland	City of Warren (p), City of Niles (p), City of Cortland, Howland Twp. (p), Mecca Twp. (p), Bazetta Twp. (p), Vienna Twp. (p).	Mosquito Creek (Mahoning River)
Brookfield	TCSE	Brookfield POTW		Brookfield Twp. (p), Hubbard Twp. (p).	Little Yankee Run (Pymatuning Creek)

Updated: 11/07

\*POTW- Publically Owned Treatment Works

\*\* MCSE/TCSE- Mahoning County/Trumbull County Sanitary Engineer

\*\*\*(p)- Portion

**TABLE 7-2: MA's without Facility Planning Areas Servicing Areas with Sanitary Sewer Infrastructure**

<b>Management Agency</b>	<b>Owner/ Operator</b>	<b>Wastewater Destination</b>	<b>Areas Serviced</b>	<b>Receiving Waters</b>
City of Sebring	City of Sebring	Sebring POTW	Sebring	Fish Creek
Village of Beloit	Village of Beloit	Beloit POTW	Beloit, Smith Twp. (p)	Unnamed Trib to Mahoning River
City of Columbiana	City of Columbiana	Columbiana POTW	City of Columbiana (Mahoning County)	Mill Creek
Village of Washingtonville	Village of Washingtonville	Washingtonville POTW	Washingtonville (Mahoning County)	Cherry Valley Run

Updated: 11/07

## 7.6.2 Updating the Eastgate's FPAs and Wastewater Treatment Planning Options

In the early 1990's, Eastgate received a grant to update its 208 Plan in which three reports were created, summarizing the region's wastewater treatment facility construction efforts. Many of the POTWs from the original plan were either upgraded or expanded, and several 201 FPAs had POTWs constructed within their boundaries. Facility updates, expansions, and/or additions were identified in volume one, "Assessment Report to Review Local Efforts to Construct Facilities". Since the new POTW facilities serviced areas within an original 201 FPA, Eastgate felt it necessary to revisit the FPA boundaries and redefine them.

Beginning in 1999, Eastgate, with help from the MAs, updated the FPA's of the planning region. The MGN 201 FPA was separated into three FPAs, the Meander 201 FPA, Girard 201FPA, and Niles 201 FPA, with each FPA having their own POTW and service area. Likewise, the Hubbard-Brookfield, Campbell-Struthers-Lowellville, and the Warren-Newton Falls-Craig Beach FPAs were separated into individual FPAs with each FPA having an individual POTW. Additional MA's were identified for the created FPAs.

Continuing the update process, each MA identified wastewater treatment options available for their serviced areas using the following criteria:

- Areas currently serviced by sanitary sewers (yellow);
- Areas programmed for sewers within the next 20 years (blue);
- Areas that will be serviced by a POTW or by on-site non-discharging systems (green);
- Areas for which no sewerage plans exist (white); and
- Trumbull County only - Areas that will be served by on-site non-discharging systems (pink).

In 2001, Eastgate's General Policy Board Resolution (GPB) #024-2001, amended the 208 Plan adopting the revised 201 FPA boundaries and aforementioned wastewater treatment options.

Since 2001, environmental issues, such as failing septic systems, have surfaced and development trends exploded further from the region's urban areas. Such trends warranted a revision of the wastewater treatment planning options. In 2005, Eastgate began updating the wastewater treatment prescription language for the 208 Planning Area. Eastgate worked with each respective county Sanitary Engineer, Health Department, Planning Commission, and the Ohio EPA to update the language according to each county's environmental issues and development trends. In keeping with the prescription language trend of other 208 areawide planning agencies in Ohio, the following treatment options were designed for

Eastgate's region:

- Areas currently sewerred (yellow);
- Areas serviced by sewer only (orange); and
- Areas that may be serviced by POTW or OSND (green).

The 201 FPA maps were adjusted, according to each county's sanitary sewer plans, utilizing the new options and color coding. General Policy Board (GPB) Resolution #036-2006 adopted the language for Trumbull County, while GPB Resolution #008-2007 adopted Mahoning County's language. The new language for each county and correlating maps are included as Appendix A and B respectively.

## **7.7 Recommended Policies for Determining Consistency with the Eastgate 208 WQMP**

This section presents recommended policies for managing changes to the MAs, FPAs, and 208 Plan consistency procedures. These policies include:

- 7-1 MAs and their current FPA boundaries for wastewater management planning;
- 7-2 Endorsement of modifications to FPA boundaries;
- 7-3 Development of local wastewater management and treatment options;
- 7-4 208 Plan consistency actions for the Ohio EPA and USEPA;
- 7-5 Updating/Revising the FPA's of the MA's; and
- 7-6 Nomination of New Management Agencies.

### **Policy 7-1 MAs and their current FPA boundaries**

**With the adoption of this plan update by Eastgate's General Policy Board, the local entities identified in Table 7-1 are the acknowledged MAs for wastewater management planning within the FPAs.**

Management agencies were given copies of their respective FPA boundaries and requested to make adjustments according to changes that occurred since 2001 and to account for any future sewer plans. This process allowed the MAs to redefine sewer expansions and those areas where sanitary sewer service is not programmed.

Several FPAs extend into other political jurisdictions lying outside the political jurisdictional boundary of the MA responsible for wastewater planning (Table 7-1). In such instances, Eastgate's 208 Plan recognizes the service agreements existing between the

POTW owner and the jurisdictions serviced by that POTW. These agreements define which wastewater planning functions are assumed by the MAs involved. All plans developed for the MAs are recognized by this 208 Plan.

Eastgate's GIS Department maintains detailed mapping files of the Eastgate 208 Plan. With the adoption of each update by Eastgate's GPB, the files are the determined boundaries unless an MA produces a more detailed map. In the event an MA produces a map of its boundaries that has been submitted to and approved by the Ohio EPA, Eastgate will accept the boundary with the consent of all affected jurisdictions. A request for a boundary change must be submitted to Eastgate by the requesting MA. Such request will follow the adopted amendment procedure discussed in Chapter 8 of the plan and will be recognized in the 208 Plan once Eastgate's Technical Advisory Committee (TAC), Citizens Advisory Board (CAB) and GPB review and approve the change. Eastgate will provide the appropriate Ohio EPA's Northeast District Office (NEDO) staff with all approved updates.

Each MA should develop and update individual wastewater treatment plans (201 Plans) on a regular basis. The best time for development of such plans is correlated to the life expectancy of each treatment plant. Should the existing facility plan upgrade or expand, a review of the wastewater needs for those areas within the facility's FPA should be included as part of the planning process. Eastgate will submit results of the planning to the Ohio EPA for approval and inclusion into the State Water Quality Management Plan.

#### **Policy 7-2: Endorsement of Modifications to FPA boundaries**

**The TAC, CAB, and ultimately the GPB must approve changes to the FPA boundary definitions. The GPB must also approve any new FPAs. These changes are effective upon GPB approval and are reflected in the following updates submitted for certification.**

After updates to the 208 Plan have been certified, any FPA change requests must be submitted to Eastgate by the FPA's respective MA for governing board approvals. The MA is required to follow Eastgate's adopted amendment process. This request will require the MA to solicit comments from affected parties (Primary MAs, Secondary MAs, cities, villages, townships, and counties) and any other MA that may be affected by such changes.

#### **Policy 7-3: Development of Local Wastewater Management and Treatment Planning Options**

**Eastgate's MAs are encouraged to develop and update their wastewater management and treatment planning options within their FPA in conjunction with affected government agencies. The options must comply with provisions set forth by the CWA. In the event a treatment option involves the enlargement of an existing POTW, the construction of a new POTW, or the extension of sewers, the option must conform with this plan.**

Currently, the Primary MAs develop sewerage plans considered cost effective within their FPAs. Many of these plans are addressing state and local environmental issues and fulfilling the needs of local communities. Because Eastgate's two-county planning area is highly diversified in regards to wastewater needs, communication between affected governing agencies is critical for wastewater planning. Disagreements between multi-jurisdictional entities regarding sewerage plans are encouraged to be worked out prior to Eastgate's review.

Both county health and sanitary engineering departments have communicated effectively to produce wastewater treatment options for areas currently not seweraged. In cases where planning identified wastewater treatment can only be on-site systems, several conditions must be met:

- 1) The county or municipal health departments responsible for managing home sewage treatment systems (HSTS) must authorize their use for the area in discussion; and
- 2) The provisions of ORC 6111 and/or applicable local city or county regulations (Trumbull County General Health District and Mahoning County District Board of Health, HSTS Regulations Sec. 3701-29-02 (L)(M)) require connection to sanitary sewer when they become available by order of the respective county health department or the Ohio EPA.

Some governmental units within the planning area are serviced by neighboring sewer systems owned by a different government entity. The preferences expressed by these units of government are subject to the acceptance of the MA providing service.

Existing policies of state and local management agencies that have legal responsibility and authority to influence wastewater treatment are recognized under this proposed policy. The policies of the Trumbull General Health Department and Mahoning County District Board of Health are specifically recognized.

This plan recognizes all documented wastewater related problems currently existing or occurring in the future need remediated in a timely manner and by the best means available. In areas where wastewater related problems do not exist, MA's with authority can decide if they want to protect water quality via on-site HSTSs or sanitary sewer. By identifying areas that may be serviced by a POTW or OSND (green option), jurisdictions are notifying landowners of the need for the installation, operation, maintenance, and replacement of HSTS systems until sanitary sewers become available, if they do become available. Under this wastewater treatment prescription, the option for sanitary sewer is still available for the outlying areas and can be built/extended if feasible. In areas where sanitary sewers are likely to be extended, a repair or maintenance and/or complete system upgrade may be warranted for problematic HSTSs, depending on the governing county health department's decision. The FPA maps indicate the generalized preferences of local officials regarding the future of sanitary sewer service for Mahoning and Trumbull Counties. In all cases, landowners are encouraged by this Plan to consult with local governing entities before proceeding with wastewater plans.

## **Policy 7-4: 208 Plan consistency actions for the Ohio EPA and USEPA**

Consistency reviews of the current 208 Plan, by the Ohio EPA will be required when an application is submitted to the Ohio EPA for (1) a permit to discharge pollutants into the waters of the state (NPDES) or (2) a PTI. In addition, a consistency review will be performed for applications for grants and/or loans under the Clean Water Act, as per Ohio EPA's Division of Environmental and Financial Assistance (DEFA) policy.

## **Policy 7-5: Updating/Revising the FPAs of the MAs**

**MAs owning POTWs for wastewater treatment are the lead responsible parties for sewerage plans that include revising and updating FPA boundaries. The county sanitary engineer continues to have responsibility for sewer planning, in accordance with the MA and 201 Facility Plan, for all unincorporated areas either outside or inside an FPA, and where sanitary sewer agreements with the county exist. Additionally, the county sanitary engineer must submit sewer plans to the affected MAs in order for the plans to be incorporated into their 201 Plan. However, all the aforementioned processes must go through the appropriate Eastgate 208 Amendment Process and are subject to Eastgate's General Policy Board approval, as mentioned under this Policy.**

This process discusses the responsibility of sewer planning and the procedure that must be taken to update sewer plans. It also provides affected jurisdictions direction for challenging MA decisions. The Ohio EPA will not issue a permit for any sewerage action inconsistent with a 208 Plan. Disputes regarding FPA boundaries are encouraged to be resolved prior to review by Eastgate staff.

**Policy 7- 5a: In the event of a challenge, the Primary MA in each established FPA has the responsibility for sewer planning when it can demonstrate any of the following:**

- 1) The existing POTW or its collection system affordability would be negatively impacted by the proposed change;**
- 2) The POTW would not be able to meet its NPDES permit requirements;**
- 3) The rated capacity of the sewer system would be exceeded;**
- 4) If the MA illustrates it would suffer significant hardship, or if it can demonstrate that the proposed change will affect the integrity of the system, then it must be given the opportunity to retain primacy; or**
- 5) That the current Primary or Secondary MA has expended funds to construct infrastructure for their sewer systems (POTW or collection system) to service the requested area change in the FPA. No change will proceed without just compensation for the expended capital improvements.**

Conflicts may arise from time to time related to established FPA boundaries. When this happens, FPA boundaries may take on new dimensions not recognized during the development of the original Plan. For instance, an MA may want to extend sewers into an area where the POTW owner does not have plans to allow the request for sanitary sewer service. To resolve this conflict, an MA can request a boundary change in which the amendment process would have to be followed.

Under this policy, the MA for the approved FPA will continue to have primacy over sewer planning, but to a limited extent. The requests of any MA to remove an area from an established FPA may be considered. A process to address the evaluation of each application must follow established guidelines. For example, an existing MA can continue to provide sewer service to the designated area provided they can demonstrate that they will not be harmed by the redesignation. The MA will need to demonstrate the proposed change will cause significant economic harm to the existing or future affordability, as set forth by federal guidelines for wastewater treatment affordability. Should an disagreement occur between the MAs involved, an approval for the FPA boundary change will be dependant upon any existing prorated capital (POTW or sewer collection system) for established or future servicing of the requested area being reimbursed to the existing Primary/Secondary MA. System efficiency and integrity concerns must be tied to reasonable expectations that a POTW will be unable to meet their compliance standards with its discharge limitations. The USEPA or Ohio EPA must certify the cases where 201 Facility Grant or State Revolving Loan Fund conditions prevent a requested FPA boundary change.

In cases where central sewers are needed and are the only resources available to comply with an Ohio EPA order to correct existing water quality issues, the Primary and/or Secondary MA's primacy standing would be dependant upon its ability and willingness to extend sanitary sewer and expand its plant capacity if necessary. In the event the Primary and/or Secondary MA is not ready to or able to proceed in a timely manner, the MA applicant for change can request a redrawing of the FPA boundary in order to accompany its request. However, the Primary MA will have the authority to extend sanitary sewers and make any capacity upgrades should the Secondary MA be unable to or unwilling to make such extensions or upgrades.

**Policy 7-5b: Planning responsibility for limited areas can be transferred from the MA in an established FPA in cases of challenge when a MA applicant for change can demonstrate all of the following:**

- 1) None of the conditions in Policy 7-5a are applicable;**
- 2) The existing MA is unprepared or unwilling to extend sanitary service to the area of challenge, or they have conditions that are unreasonable for the MA applicant community;**
- 3) An alternative sewerage plan exists that protects the environment, is technically achievable, economically feasible, and politically acceptable; and**

#### **4) The proposed MA has the authority to act.**

All transfers must be approved by the Ohio EPA and an amendment to the Eastgate 208 Plan adopted. A MA's planning standing would be dependant upon its ability and willingness to extend sanitary sewer and expand its plant capacity if necessary. In the event the Primary and/or Secondary MA is not ready or able to proceed in a timely manner, the MA applicant for change can request a redrawing of the FPA boundary in order to accompany its request. A request for a redraw of an FPA boundary would indicate the intention of identifying alternative wastewater alternatives. The applicant for change would be required to show evidence an alternative exists and the alternative is technically achievable, economically feasible, and politically acceptable. When required, Eastgate will facilitate a forum for all affected parties to reach a consensus.

Should no other acceptable alternatives be available, a community that is part of another community's FPA can request to develop plans to direct their wastewater to an alternative treatment works, such as an existing POTW, or to a newly constructed POTW (if feasible). All applications requesting a redraw of an FPA boundary must be accompanied by plans that demonstrate environmentally acceptable and affordable alternatives exist. These plans must demonstrate that the receiving POTW will not jeopardize the conditions set forth in it's NPDES permit by accepting additional waste. The plans must also estimate the impacts on the existing rate structure of the POTW.

#### **Policy 7-6: Nomination of New Management Agencies**

**New MAs can be created to provide sanitary sewer service to a newly created FPA. Both the proposed MA and FPA, if applicable, are to be submitted to the Ohio EPA for review, comment, and approval. An amendment to the Eastgate 208 Plan is required in order for the new MA and FPA to be recognized in the plan. Once amended, the new MA and FPA will be incorporated into the 208 Plan.**

Government entities not designated as MAs, but seeking such designation, must apply for such status before their permit application can be processed. Applicants must have adequate legal authority under Ohio law and must clearly identify the geographical boundary of the proposed facility planning and sanitary sewer service area. The proposed MA must demonstrate it has consulted with all affected local governments involved in the development of the projects. Comment letters by all affected jurisdictions (municipalities for incorporated areas and county government for unincorporated areas) must be requested and copies submitted to Eastgate at the time of application. Any FPA infringements are encouraged to be resolved with the approval of the infringed upon MA, prior to Eastgate's amendment process.

Applicants may propose an FPA area larger than the current or proposed projected service area in order to accommodate future sewer plans. Eastgate staff will seek comment from the Ohio EPA on all new MAs and FPAs. Following the amendment procedure and Eastgate GPB approval, the Ohio EPA will utilize the new designation in its permitting process.

## **Chapter 8**

### **Facility Planning Area Amendment Process and Process for State Certification**

**The amendment process was created out of a collaborative effort among local and state governing agencies. Adopted in 2003, the amendment process assures a thorough procedure for future amendments to Eastgate's 208 Plan. Aside from local processes, this chapter outlines the process by which Eastgate's 208 Plan is certified by the State of Ohio.**

#### **8.1 Management Agency (MA) - Defined:**

In each Facilities Planning Area (FPA), a single government entity is designated as the Management Agency (MA), and as such, possesses the right to plan for wastewater conveyance and treatment within their designated FPA boundaries. According to Section 208 of the Clean Water Act, an MA must have the capacity to:

- Carry out appropriate portions of the Areawide Water Quality Management Plan;
- Manage effectively waste treatment works and related facilities serving areas in conformance with the Plan and effectively manage POTW and related point and nonpoint source facilities and practices in conformance with the Plan;
- Directly or by contract, design and construct new works, and operate and maintain new and existing works as required by the Plan;
- Accept and utilize grants, or other funds from any source for waste treatment management purposes;
- Raise revenue, including the assessment of waste treatment charges;
- Incur short and long term indebtedness;
- Assure in the implementation of an Areawide Water Quality Management Plan that each participating community pays its proportionate share of treatment costs;
- Refuse to receive wastes from any municipality or subdivision thereof, which does not comply with provisions of the Plan; and

- Accept industrial wastes for treatment.

The MA's are further identified as a Primary or Secondary MA. The Primary MA is the county or municipality owning and operating the central wastewater treatment plant, while Secondary MA's are those entities that forged sewer agreements with another MA to utilize their treatment facility or where a 6119/9188 township exists. Often times there is more than one Secondary MA within a single FPA. The Primary and Secondary MA's for each facility planning area are identified in Chapter 7, Table 7-1, "*Management Agencies with Facility Planning Areas*" and Table 7-2, "*Management Agencies without Facility Planning Areas Servicing Areas with Sanitary Sewer Infrastructure*". Mahoning and Trumbull Counties are the wastewater planning agencies for all unincorporated areas within their respective county, whether located inside or outside an FPA.

## **8.2 Facility Planning Area Amendment Process**

Both Primary and Secondary MA's are authorized to propose modifications to the 208 Plan within the boundaries covered by their sewer district. MA's shall follow the amendment process when seeking to modify existing FPA boundaries, wastewater treatment options/prescriptions, or when establishing a new FPA.

### **Application Packet**

The MA proposing a 201 modification will submit the following items with the proposed 201 modification application to the Eastgate Regional Council of Governments (Eastgate):

- A brief statement of why the 201 needs to be updated;
- A description of the existing 201 FPA boundary including a map;
- A description of existing wastewater prescriptions;
- A map of proposed 201 changes -include 25 color copies for distribution at Eastgate's Technical Advisory Committee (TAC) meeting;
- Any updated wastewater treatment planning prescriptions (contact Eastgate for the language and corresponding map);and
- Any associated correspondence including comment letters or letters of concurrence.

## **Process for Review**

The MA requesting a 201 modification must submit the proposed 201 modification by certified mail to the MA having primacy over the area in question (if other than the requesting MA), Eastgate, and to all local governments affected by the proposed 201 modification. The MA (other than the requesting MA) and affected local governments will have a **maximum of 45 days** upon receipt of the certified mail to review and respond to the MA requesting the modification.

The MA requesting the modification shall request comment letters from the primary MA and any local governments within the proposed 201 FPA affected by the modification. In order to allow Eastgate to conduct a 201/208 consistency review, the MA will submit the proposed 201 modification application packet with any letters to Eastgate for review **at least two weeks prior to** Eastgate's next scheduled TAC and Citizens Advisory Board (CAB) meetings (contact Eastgate for meeting dates).

## **Eastgate Staff 201/208 Consistency Review**

Eastgate staff will conduct a 201/208 Consistency Review of the proposed 201 modification and prepare a recommendation for TAC and CAB on the proposed modification based on the following criteria:

- Is the proposed 201 FPA boundary consistent with the current boundaries?
- Is the selected treatment alternative(s) consistent with Eastgate's approved wastewater treatment planning prescriptions?

## **Eastgate TAC, CAB, and General Policy Board (GPB) Review.**

Eastgate staff will present the proposed 201 modification, along with Eastgate's consistency review, to Eastgate's TAC and CAB (it is recommended that the MA requesting the 201 update be present at the TAC and CAB meetings to answer any questions that the TAC or CAB may have). The TAC and CAB will conduct a review of the proposal and forward their recommendation to the GPB, via Eastgate staff. Eastgate will present the consistency review results and the TAC and CAB recommendations to the GPB. The GPB will then make a decision on the proposed modification. Eastgate staff will notify the applicant of the GPB's recommendation.

Upon GPB approval, the 201 amendment will be incorporated into Eastgate's 208 Water Quality Management Plan. Additionally, the 201 amendment will be forwarded to the Ohio EPA - Northeast District Office and Central Office for inclusion in the 208 Areawide Water Quality Management Plan for Mahoning and Trumbull Counties. After receiving the documentation, the Ohio EPA will immediately use the amended plan in their

review of all new Permit-to-Install and National Pollution Discharge Elimination System (NPDES) applications.

### **8.3 State Certification Procedures**

Following Eastgate's GPB approval, the amendments or updates to the 208 Plan are submitted to the Ohio EPA for inclusion in the State Water Quality Management Plan. The Ohio EPA provides a public review period and hearing on all Water Quality Management Plan updates and amendments each year. Based on an internal review and the outcome of the public review, the director of the Ohio EPA will make a recommendation to the Governor for state certification. The basis of the director's recommendation is determined by a plan's adequate technical basis, local government involvement, and public participation. The final plan is certified by the Governor, pending it meets the following conditions:

- geographical relevance;
- addresses specific water quality management functions;
- the plan will undergo annual updates or amendments as needed; and
- sufficient technical content and public and local jurisdictional involvement.

Upon certification by the Governor, the plan is sent to Region V of the US EPA for final approval.