



**Prepared by the Ecorse Creek
Inter-Municipality Committee (ECIC)**

City of Allen Park
City of Dearborn Heights
City of Ecorse
City of Inkster
City of Lincoln Park
City of Melvindale
City of Romulus
City of Southgate
City of Taylor
City of Westland
City of Wyandotte
Wayne County
Wayne County Airport Authority

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Executive Summaryi

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The Ecorse Creek Watershed is a relatively urban watershed within Wayne County in southeast Michigan. Originally, combined sewers serviced the area, which contributed to water quality impairments of the creeks. The Michigan Department of Environmental Quality (MDEQ) required the separation of combined sewers in the 1980's and improvements to the Downriver Sewage System in the 1990's. Even after implementation of the required improvements, the water quality of the watershed continues to be threatened, and in some cases impaired, by urban storm water runoff.

Many of the drains within the watershed were originally designed to accept agricultural flows. However, as urbanization of the watershed occurred, with concurrent increase in impervious surfaces, storm water runoff increased. The capacity of many of the small drains was insufficient to handle the new, higher peak flows. This resulted in increased frequency and severity of flooding and erosion. Conversely, the increase in impervious surfaces also resulted in less rainwater being infiltrated into the ground, which contributes to lower groundwater levels and in lower creek base flows. The combination of these two effects, higher peak flows during storm events and lower base flows, is devastating to the aquatic life in the streams. Consequently in 2003, the Michigan Department of Environmental Quality developed a Total Maximum Daily Load (TMDL) for biota or aquatic life for the entire Ecorse Creek Watershed to address impairments of the watershed's creeks and drains. Previous studies and sampling, and the results of this Watershed Management Plan work, point to the impairment as being caused by unstable flows and excessive sedimentation, which are resulting in the loss of stable habitat for aquatic life. It is apparent that implementing methods to reduce the effects of urban storm water runoff are essential to further improving the water quality of the Ecorse Creek Watershed.

Background

The Ecorse Creek Watershed drains an area of approximately 43.4 square miles in a heavily urbanized region (especially along the eastern half of the watershed) and has a watershed population of roughly 161,000 people. The Ecorse Creek Watershed includes 11 communities as well as Wayne County and the Wayne County Airport Authority. These entities are listed below:

Allen Park	Southgate
Dearborn Heights	Taylor
Ecorse	Westland
Inkster	Wyandotte
Lincoln Park	Wayne County
Melvindale	Wayne County Airport Authority
Romulus	

The Ecorse Creek Watershed can be subdivided into 3 main subwatersheds. These include the North Branch of Ecorse Creek, LeBlanc Drain, and the Sexton-Kilfoil Drain. The North Branch and the Sexton-Kilfoil Drain are open drainage courses while the LeBlanc Drain is an enclosed storm sewer. Each of these subwatersheds contains many small tributaries.

According to the Southeast Michigan Council of Governments (SEMCOG), nearly 77% of the land is developed with only 23% remaining as open space. The urbanization of the watershed is

expected to continue with 97% of the land being developed and only 3% remaining as open space by the year 2030.

Flooding due to urbanization has long been a problem in the Ecorse Creek Watershed with the first documented event in June of 1968. While flooding continues to be a main focus for the watershed, a secondary focus has turned to water quality. This water quality focus not only includes the TMDL for aquatic life, but is focused on achieving much broader goals for the watershed - including achieving MDEQ identified designated uses and watershed specific desired uses.

Purpose of the Ecorse Creek Watershed Management Plan

On March 10, 2003 the entities within the Ecorse Creek Watershed applied for National Pollutant Discharge Elimination System (NPDES) permit coverage under Michigan's Phase II Storm Water regulations. These regulations require certain "small" municipal separate storm sewer system entities that are located in urbanized areas to obtain a storm water permit. An initial requirement of the permit is the development of a comprehensive Watershed Management Plan that addresses the following elements:

Elements of the Watershed Management Plan

- o Watershed Condition
- o Challenges and Goals
- o Identify Management Alternatives
- o Watershed Action Plan
- o Methods and Milestones to Measure Progress.
- o Future Organizational Structure
- o Public Involvement

The goal of the Watershed Management Plan is to create a tool that the entities within the watershed can use to guide implementation of action items that will help achieve long-term goals of the watershed, including addressing the TMDL for aquatic life.

Formation of the Ecorse Creek Watershed Inter-Municipality Committee (ECIC)

The entities within the Ecorse Creek Watershed needed to legally establish a mechanism in order to fund the development of the Watershed Management Plan. The entities worked to develop a Memorandum of Agreement (MOA) to formalize the group and establish financial responsibilities and by-laws. Each entity adopted the MOA and the Ecorse Creek Watershed Inter-Municipality Committee (ECIC) was formed on September 9, 2003 through the Inter-Municipality Committee Act (PA 200, 1957; MCL 123.631, et seq.)

Ecorse Creek Watershed Condition

The current condition of the Ecorse Creek Watershed was determined through a review of existing reports, water quality sampling data and field investigations. The information reviewed came from the Michigan Department of Natural Resources, the Michigan Department of Environmental Quality, the U.S. Army Corps of Engineers, the U.S. Geological Survey, Wayne County Department of Environment and other sources. Field surveys utilizing the MDEQ's Stream Crossing Watershed Survey Procedure were also conducted at 61 locations throughout the Ecorse Creek Watershed to provide habitat, water quality data and culvert/bridge structure information.

The Ecorse Creek Watershed is identified on Michigan's list of water-quality limited or threatened waters as failing to meet Michigan water quality standards for pathogens and for the protection of warm water aquatic life. The TMDL, which the MDEQ has developed, identifies water quality indicators, and quantifiable pollutant load reductions to protect aquatic life. It is anticipated that the MDEQ may develop an Ecorse Creek Watershed TMDL for pathogens at a later date.

The water quality indicators used to assess the health of the aquatic life and a summary of the Ecorse Creek Watershed rating/observation for each are listed below:

Water Quality Indicator	Rating/Observation
o Biological communities	Fair to Poor
o Sedimentation/total suspended solids	Highly turbid flows even in dry weather
o Hydrology	Flashy flows/extremely unstable hydrology
o Imperviousness	North Branch: ex 26.4%, future 45.7% LeBlanc: ex 27.8%, future 41.7% Sexton-Kilfoil: ex 30.6%, future 46.2%
o Phosphorus	2 to 4 times the recommended value of 0.05 mg/l TP
o Dissolved oxygen	1 mg/l to 5 mg/l , recommended min value is 5 mg/l
o Conductivity	As high as 5,887 µS/cm, recommended value < 800 µS/cm
o Pathogens (e.coli)	3 to 8 times the recommended maximum of 130 cts/100 ml

Field surveys were performed in August and September of 2004 to gain a hands-on assessment of the watershed. The field surveys focused on “areas of concern” identified by the ECIC, 61 stream crossings and additional areas along the drains to obtain a general understanding of the creeks’ condition. In total, 10 different drains were evaluated at various locations. General findings revealed minimal riparian buffers, significant sedimentation and turbid water, evidence of flashy flows, eroded banks and debris piles.

Designated and Desired Uses and Pollutants

All surface waters in Michigan are designated for and protected for a variety of uses. The designated uses that are applicable to the Ecorse Creek Watershed are shown in the following table. In addition to the designated uses, the ECIC identified certain desired uses for the watershed. The desired uses are also shown in the table below.

Some of the uses are considered impaired, meaning the use is not being met. Threatened indicates that the use is being met, however, there is a good likelihood that the use could become impaired in the future. For those uses recognized as impaired, the ECIC identified known (k) and suspected (s) pollutants. Sources and causes for the pollutants were also identified by the ECIC.

Uses	Impaired	Threatened	Unknown	Known and Suspected Pollutants
Designated Use				
Total Body Contact Recreation (between May and Oct)	X			E.coli and other pathogens (k) Lack of stable flow (k)
Partial Body Contact		X		
Warmwater Fishery		X		
Other Indigenous Aquatic Life and Wildlife	X			Lack of stable flow (k) Sedimentation (k) Low dissolved oxygen (k) Nutrients (k) Lack of habitat (k)
Agriculture			X	
Industrial Water Supply			X	

Uses	Impaired	Threatened	Unknown	Known and Suspected Pollutants
Desired Use				
Flood Control	X			Lack of stable flow/excessive surface runoff (k) Lack of hydraulic capacity (k) Inadequate protective measures (k)
Aesthetics		X		
Open Space Preservation		X		
Greenway Preservation		X		
Wetland Preservation		X		
Recreational Areas		X*		*designated as threatened because more recreational areas are desired
Native Vegetation/Unique Habitat/Natural Buffers		X		

Goals and Objectives

Once the ECIC identified the designated and desired uses, determined pollutants and their sources and causes, and considered plan maintenance and sustainability issues, goals and objectives for the watershed were developed. A goal is a long-term qualitative description of a desired future condition stated in general terms without criteria of achievement. An objective is an action that can be either short-term or long-term that will reduce pollution from a source to protect or restore a designated or desired use. The ECIC's 8 goals and the associated objectives are shown in the following table.

Goals	Objectives
<p>Reduce Flooding</p>	<p>Both Short- and Long-Term Objectives:</p> <ul style="list-style-type: none"> ▪ Preserve and restore wetlands and open space ▪ Reduce runoff volume/rate <p>Long-Term Objective:</p> <ul style="list-style-type: none"> ▪ Improve understanding of stream flow volumes and distribution ▪ Improve drain capacity in streams
<p>Reduce Stream Flow Variability</p>	<p>Both Short- and Long-Term Objective:</p> <ul style="list-style-type: none"> ▪ Reduce runoff volume/rate ▪ ▪ Preserve and enhance native vegetation/naturalization <p>Long-Term Objective:</p> <ul style="list-style-type: none"> ▪ Preserve and restore wetlands and open space
<p>Watershed Management Sustainability</p>	<p>Short-Term Objective:</p> <ul style="list-style-type: none"> ▪ Establish institutional relationships to ensure plan implementation <p>Long-Term Objective:</p> <ul style="list-style-type: none"> ▪ Develop long-term funding methodologies ▪ Develop adaptive and iterative management
<p>Improve Water Quality</p>	<p>Short-Term Objective:</p> <ul style="list-style-type: none"> ▪ Eliminate/reduce illicit discharges <p>Both Short- and Long-Term Objective:</p> <ul style="list-style-type: none"> ▪ Protect, expand, and restore the riparian corridor ▪ Improve erosion and sedimentation controls ▪ Preserve and restore wetlands and open space <p>Long-Term Objective:</p> <ul style="list-style-type: none"> ▪ Meet TMDL mandated 50% total suspended solids reduction ▪ Reduce directly connected storm water discharges to sanitary systems

Goals	Objectives
<p>Protect, Enhance, and Restore Riparian and In-Stream Habitat</p>	<p>Short-Term Objective:</p> <ul style="list-style-type: none"> ▪ Integrate storm water management in planning and land use approval process <p>Long-Term Objective:</p> <ul style="list-style-type: none"> ▪ Restore warmwater fishery ▪ Restore diverse aquatic community
<p>Preserve, Increase, and Enhance Recreational Opportunities</p>	<p>Short-Term Objective:</p> <p>Both Short- and Long-Term Objective:</p> <ul style="list-style-type: none"> ▪ Protect and improve riparian corridor aesthetics <p>Long-Term Objective:</p> <ul style="list-style-type: none"> ▪ Obtain land for wetlands and passive parks ▪ Meet partial body contact requirements ▪ Increase public access to stream corridors ▪ Encourage recreation and open space planning in site plan/land use approval process
<p>Protect Public Health</p>	<p>Both Short- and Long-Term Objective:</p> <ul style="list-style-type: none"> ▪ Reduce secondary health concerns related to flooding <p>Long-Term Objective:</p> <ul style="list-style-type: none"> ▪ Meet partial body contact requirements ▪ Meet total body contact requirements
<p>Increase Public Education, Understanding, and Participation Regarding Watershed Issues</p>	<p>Short-Term Objective:</p> <ul style="list-style-type: none"> ▪ Improve media coverage ▪ Create partnerships with institutions, schools, and the private sector ▪ Foster relationships with the County and neighboring communities ▪ Manage expectations of the public for an improved watershed <p>Both Short- and Long-Term Objective:</p> <ul style="list-style-type: none"> ▪ Improve education and awareness of watershed successes and failures

Management Alternatives

Management Alternatives are specific actions that a community or entity can take toward achieving the goals and objectives of the watershed plan, and toward improving the water quality of the Ecorse Creek Watershed. Based on the specific problems identified in the Watershed, implementation of significant urban storm water source controls is projected to provide a significant benefit. Management alternatives for reducing urban storm water peak runoff flow rates would include construction of regional storm water detention basins. These basins can be an effective means for reducing urban storm water runoff rates. However, based on budgetary constraints facing local governments, and the many Phase II NPDES Permit mandated requirements such as Public Education Plans (PEPs) and Illicit Discharge Elimination Plans (IDEPs) activities, there is very little money available for significant source control or other storm water management construction projects. Accordingly, to work toward achieving the goals of the watershed, the ECIC focused on a myriad of potential management alternatives. These management alternatives, or storm water best management practices (BMPs), were selected by the communities/entities through taking into consideration actions already being performed and/or committed in their individual PEPs and IDEPs to be implemented in the short term (less than 3 years), as well as desired actions which may be implemented in the intermediate-term (less than 5 years) and long-term (greater than 5 years). Phase II Actions are “commitments” for the watershed and are individual community commitments if listed as currently doing or short-term. Other Non-Phase II Actions are considered “wish list” actions.

The management alternatives or storm water best management practices (BMPs) selected were developed through the following means:

- ECIC Meetings and Workshops (15 ECIC meetings, 2 workshops)
- Public Meetings (3 total)
- Individual Community/Entity Interviews
- Management Alternative Selection Sheet
- Code & Ordinance Worksheet (COW)

One-hundred, twenty-seven BMPs were identified by the ECIC, 38 of which are currently being performed or will be performed by a number of entities as part of their individual Phase II storm water permits. The remaining BMPs are in addition to the requirements of the Phase II storm water regulations and thus may qualify for future Clean Michigan Initiative funding and EPA Section 319 funding.

The BMPs are categorized as structural, vegetative, or managerial. Managerial BMPs were further categorized as ordinances and policies, managerial practices, studies and inventories, public education and coordination and funding. Some of these BMPs include specific desired projects for replacing undersized bridges and culverts, bank stabilization and restoration, improving hydraulic capacity, increasing the floodplain and constructing storm water detention/retention basins. Chapter 6 includes a detailed summary of the BMPs, their anticipated cost, level of effort and schedule. In addition, individual summary sheets listing all the BMPs each entity has selected are included to facilitate implementation.

The results of this study found that implementing a variety of BMPs will be necessary for the ECIC to reach their identified goals. A number of specific BMPs appear to be cost-effective and also to have the biggest impact in reducing the top 3 pollutants; sediment loads, urban storm water runoff and e.coli and other pathogens. These BMPs include the following:

- Improving street sweeping coverage and efficiencies
- Implementing storm water detention standards to control both water quality and quantity (Wayne County Storm Water Ordinance)

- Reducing impervious surfaces in future development and re-development
- Stabilizing stream banks to reduce erosion
- Treating storm water through floodplain enhancements and regional detention
- Revising zoning ordinances and master plans to protect open space
- Identifying and eliminating illicit discharges
- Public Education and Awareness efforts

Applying these BMPs, as well as others, will help the Ecorse Creek Watershed work toward achieving the TMDL goal of 50% reduction in total suspended solids (lb/year). It is important to note that these BMPs need to be utilized throughout the watershed, and especially in the critical areas identified by ECIC members, in riparian areas denoted for preservation and conservation, and in the critical areas based on existing pollutant loads.

Partnering with the general public, Wayne County Department of Environment, the Stream Team and other entities and agencies active within the region will help stretch available funding and maximize the benefit to the Watershed. Activities that these organizations can accomplish at relatively low cost to the communities include volunteer monitoring, bank stabilization, wetland plantings, IDEP activities and the promotion of watershed education and awareness.

There are other related initiatives for reducing urban storm water runoff occurring in the Watershed. One such initiative is the Flood Control Study for the North Branch of the Ecorse Creek, being conducted through Wayne County. It is anticipated that the actions identified/recommended by that study may mirror some of the long-term actions from this Watershed Management Plan. Implementation of those recommendations will assist in achieving the goals and objectives identified for the Watershed.

Measuring Progress

The Watershed Management Plan includes ideas on how to measure the effectiveness of the various BMPs. Measuring progress will be done by both qualitative and quantitative techniques. Qualitative measures include: public surveys, ordinances passed, stream surveys, written evaluations following watershed activities, visual documentation, complaint records and citizen participation. Quantitative techniques include: aquatic life, suspended solids, pathogens/bacteria, dissolved oxygen, flow stability and method and frequency of monitoring activities.

Future Organizational Structure

Sustainability is a required element of the Watershed Management Plan. It is important that implementation of the action items or BMPs occurs throughout the watershed, and that the effectiveness of the implemented activities is measured and evaluated. The evaluation results will help determine if future modification to the Plan are needed, so that revisions can be accomplished in a timely manner.

Working together as a team for the development of this Watershed Management Plan, the communities, Wayne County and the Wayne County Airport Authority have realized many benefits. Sharing technical and financial resources resulted in development of a more affordable and comprehensive plan addressing the goals of all involved. Similarly, when implementing the plan, it is anticipated that the entities will continue to realize the many positive benefits. Several options exist for the ECIC members to formalize their continued efforts in working together for the benefit of the watershed and for compliance with their permits. Formation of a Watershed Alliance organization has been identified as one effective way to facilitate the ongoing implementation of the Plan.