



**DRINKING WATER SOURCE
PROTECTION PLAN
for the
CITY OF NORWALK**

PWS ID# 3901111

July 2014 – Updated January 2015



This document presents the Drinking Water Source Protection Plan for the City of Norwalk in Huron County Ohio. The 1996 Amendments to the Safe Drinking Water Act established the Source Water Assessment and Protection Program. The Source Water Assessment and Protection Program was established to help public water systems develop plans to protect their drinking water resources. This document is based on Ohio EPA's "Developing Local Drinking Water Source Protection Plans in Ohio (2003)."

TABLE OF CONTENTS

Introduction.....	Page 4
Source Water Protection Planning Process.....	Page 6
Planning Team.....	Page 7
Description of Public Water System.....	Page 9
Description of Source Water Area.....	Page 10
Potential Contaminant Control Strategies.....	Page 14
Education and Public Outreach Strategies.....	Page 20
Drinking Water Shortage/Emergency Response.....	Page 23
Water Quality Monitoring.....	Page 24
Protection Plan Updates.....	Page 26

Appendices

- Appendix A: Drinking Water Source Assessment Report for the City of Norwalk
- Appendix B: Drinking Source Water Protection Siting Prohibitions and Setbacks in Ohio Rules
- Appendix C: City Council Source Water Protection Resolution
- Appendix D: Norwalk Source Water Protection Brochure
- Appendix E: Norwalk Additional Testing Requirements
- Appendix F: Water Treatment Map
- Appendix G: Huron River Watershed TMDL Program Fact Sheet
- Appendix H: Open House Sign-In Sheet and Placemat
- Appendix I: Algae Treatment Summary
- Appendix J: Intake Locations

INTRODUCTION

The goal of this document is to summarize strategies that are ongoing and/or will be pursued in the future to minimize the threats of contamination or water shortage to Norwalk's source of drinking water—the Norwalk Creek. Although Norwalk treats the water to meet federal and state drinking water standards, conventional treatment does not fully eradicate all potential contaminants, and beyond-conventional treatment is often very expensive. By completing this plan, the City of Norwalk acknowledges that implementing measures to prevent spills and releases into the Norwalk Creek watershed area can be a relatively economical way to help ensure the safety of the city's drinking water, while also improving creek and river water quality for other uses.

Why should a community do a source water protection plan?

Water is a vital part of all facets of our communities. It is essential for agriculture, washing, cooling for industry and power stations, moving wastewater away from populated areas, and above all, drinking. In addition to being a basic necessity of life, clean, affordable water can be an important economic driver. Many manufacturing plants use significant amounts of water and can even decide plant locations based on the availability of quality water. Clean water, provided at a reasonable cost, can attract new business and residents which help fuel economic growth and prosperity.

Governments already invest a significant amount of money and time in their water treatment and distribution, *so keeping the water source clean keeps costs as low as possible*. When contamination occurs, it can have a huge financial impact on governments and communities. Contaminations also disrupt lives and businesses, creating a negative economic effect for the local community. Most importantly, when drinking water is contaminated, the health of our families and fellow citizens is put at risk.

The key to source water protection is to prevent costly contamination in order to save the health and financial resources of communities, while ensuring a long-term supply of safe and affordable drinking water remains available for future generations.

Because it only takes one major event to drastically change the quality of your water source, it is critical to plan ahead. Protection planning can prevent a future event entirely, minimize a potential threat, or simply prepare the community for when something does happen to the water supply. A source water protection plan can also be used when evaluating potential development opportunities that may affect drinking water supplies in the future.

- ✓ It helps the city provide the safest and highest quality drinking water to its customers at the lowest possible cost.
- ✓ It establishes strategies to minimize the potential threats to the source of drinking water.

- ✓ It helps to plan for expansion, development, zoning, and emergency response issues.
- ✓ It can provide more opportunities for funding to improve infrastructure, purchase land in the protection area, and other improvements to the water system.

Program History

Source water assessment and protection (SWAP) is a non-regulatory state program administered by the Ohio Environmental Protection Agency. The program started as the Wellhead Protection Program, which was part of the 1986 amendments to the federal Safe Drinking Water Act. These amendments required states to administer a source water protection program for their systems using ground water.

In 1996, the Safe Drinking Water Act was amended again. Section 1453 was added, providing states with the necessary federal funding to complete source water assessments for their public water systems. At that time, the program was extended to include surface water systems and was renamed "Source Water Protection." Starting in 2000, Ohio EPA staff began assessing Ohio's water systems and by January 2006, this phase was complete for almost all of Ohio's public water systems. It was the intent of Congress that public water systems use the information in their source water assessment to develop a drinking water source protection plan.

SOURCE WATER PROTECTION PLANNING PROCESS

Process Outline

1. *Assessment*: Completed by the Ohio EPA in December, 2003 It is attached as Appendix (A) and includes:
 - Delineation: This is a map of the portion of the watershed that drains into the area around the reservoirs.
 - Potential contaminant source inventory: This identifies potential contaminant sources within the delineated area that could pose a threat to drinking water.
 - Susceptibility analysis: This is a determination of the susceptibility of the source water to contamination. (Norwalk is a *High Susceptibility system*)

2. *Development of Protection Plan*: The plan may be completed by the system or in consultation with the Ohio EPA, Ohio Rural Water Association, or a private consultant.
 - Start a planning team: The first step to effective planning is to collect the proper people to help design it and do future implementation. Team members can include local government officials, community members, other government agency representatives, consultants, business representatives, watershed groups, or other interested parties.
 - Update protection area and potential contaminant list: The planning team should review the assessment and see if any additions or corrections need to be looked at. They should also prioritize which potential contaminants pose the greatest threat.
 - Identify protective strategies: For each prioritized contaminant source, a protective strategy should be identified with implementable goals.
 - Design local outreach and public education effort: All good protection planning requires public participation. An outreach and education effort can help instill good environmental stewardship and ensure the plan addresses all the community's needs.
 - Update emergency and contingency plans: An emergency plan provides information and procedures for local responders in case something happened to the drinking water supply. A contingency plan looks at alternative drinking water supplies to ensure water is available during an emergency.
 - Seek Ohio EPA endorsement.

3. *Implement Protection Plan*: Implemented by the community with assistance from state agencies and the Ohio Rural Water Association.
 - Work with contaminant sources to mitigate threats.
 - Continue outreach and education efforts.
 - Apply for potential funding sources.
 - Update plan annually.

CITY OF NORWALK PLANNING TEAM

Officials at the City of Norwalk acknowledge the importance of protecting the drinking water supply. They recognize the importance of developing a drinking water source protection plan and selected a drinking water source protection planning team (Protection Team) to develop and implement this plan. The city held the initial source water protection planning meeting on June 6, 2013. The city designated Bill Albrecht to oversee development and implementation of this Protection Plan.

System Decision Makers Meeting

Date of initial planning meeting: June 6, 2013

Person in charge of oversight of the protection plan development:

Name: Bill Albrecht Title: Superintendent of Water

Protection Team

Name	Organization	Title	Phone Number
Bill Albrecht	City of Norwalk	Superintendent	419-663-6755
David Ackerman	City of Norwalk	Assistant Superintendent	419-663-6755
Rick Schaffer	City of Norwalk	Chief Operator	419-663-6725
James Frado	City of Norwalk	Planning and Zoning	419-663-7711
Josh Snyder	City of Norwalk	Public Works Director	419-663-6735
Alyssa Heater	City of Norwalk	Account Clerk	419-663-6755

The City of Norwalk is waiting for OEPA endorsement before submitting the plan to the Norwalk City Council for a resolution. Once passed, it will be included in Appendix C.

List of Partners

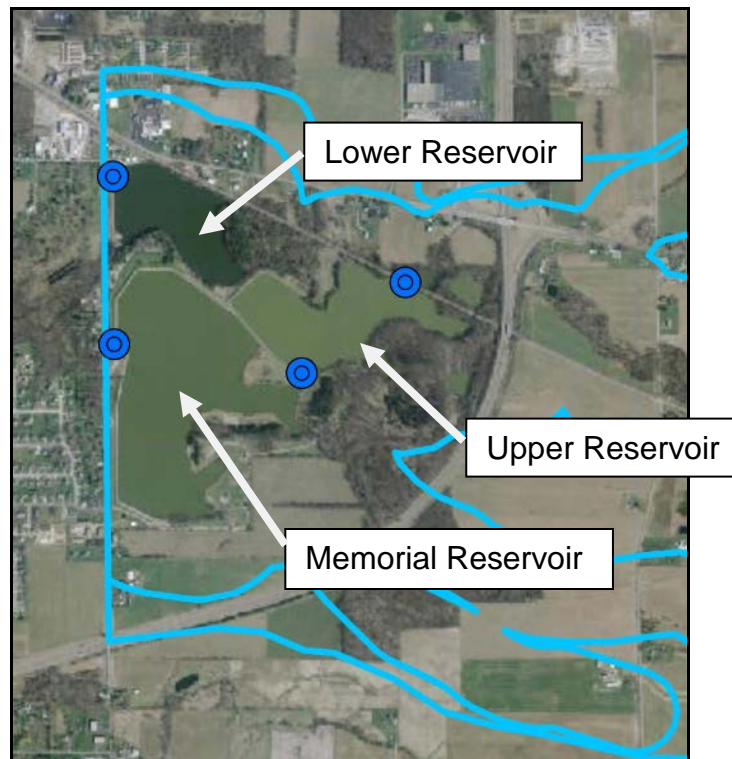
Name	Organization	Title	Phone Number
Jason Roblin	Huron County EMA	Director	419-663-5772
Diana Strouse	Huron/Erie Farm Service Agency	Executive Director	419-668-4113
Amanda Eaton	Huron County Public Health	Deputy Director	419-668-1652
Andy McDowell	Western Reserve Land Conservancy	Vice President of Western Operations	440-774-4226

Chad Stang	Huron County Soil and Water Conservation District	District Manager	419-668-4113
Val Stebel	Huron County Planning Commission	Administrative Assistant	419-668-3092
Mike Gastier	OSU Extension-Huron County	Extension Educator	419-668-8218

DESCRIPTION OF PUBLIC WATER SYSTEM

The City of Norwalk operates a community public water system that serves a population of approximately 16,931 people through 6,680 service connections. A community public water system is a system that regularly supplies drinking water from its own sources to at least 15 service connections used by year-round residents of the area or regularly serves 25 or more people throughout the entire year. The water treatment system obtains its water from Norwalk Creek. The system's treatment capacity is approximately 4.0 million gallons per day, but current average production is 1.7 million gallons per day.

Water flows from the Norwalk Creek Watershed to three reservoirs: Upper Reservoir (177 million gallons), Memorial Reservoir (350 million gallons), and Lower Reservoir (169 million gallons). The reservoirs do act as a recreational amenity for local residents, but current city code only allows for electric motor boats and no swimming.



The City of Norwalk's class 3 water treatment system consists of coagulation, sedimentation, filtration, adsorption, stabilization, fluoridation and disinfection. The city has two elevated storage tanks of 400,000 gallons and 750,000 gallons and two clear wells with a total storage of 1,100,000 gallons. Total storage is 2,250,000 gallons, or about 32 hours' worth of storage.

The City of Norwalk has an agreement with Northern Ohio Rural Water to purchase an average of 150,000 gallons of treated drinking water per day, but can purchase up to 500,000 gallons per day.

DESCRIPTION OF SOURCE WATER AREA

The **Drinking Water Source Protection Area** (protection area) for an inland stream is defined as the drainage area upstream of the point where the water is withdrawn from a surface source such as a stream, lake or reservoir. The protection area is subdivided into corridor and emergency management zones. An illustration of the protection area and corridor management zone for the City of Norwalk Public Water System is shown in Figure 1. The emergency management zones are the immediate areas around the intakes and can be seen in the Assessment (see appendix A).

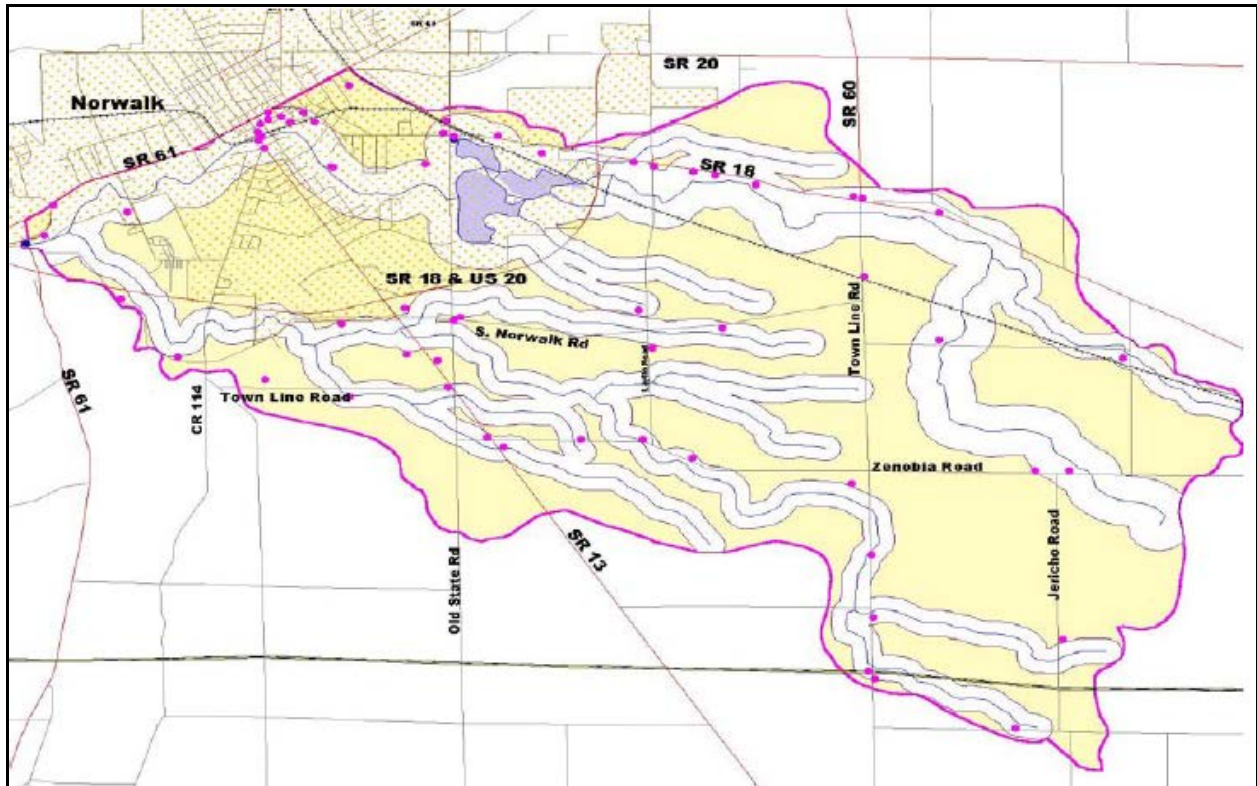


Figure 1: The corridor management zones are light colored around the streams and the entire source water protection area is contained within the purple boundary.

The **Corridor Management Zone, (CMZ)**, is an area along streams and tributaries within the source water assessment area that warrants delineation, inventory, and management. Typically, this zone runs a total of ten miles upstream from the intake, and includes the tributaries that drain into it. The zone is 1,000 feet wide on each side of the Norwalk Creek mainstem and 500 feet wide on each side of any tributaries.

The **Emergency Management Zone, (EMZ)**, is defined as an area in the immediate vicinity of the surface water intakes in which the public water system operator has little or no time to respond to a spill. The boundary of the emergency management zone is delineated in cooperation with the water supplier and typically is a semi-circle that extends 500 feet upstream and 100 feet downstream of the intake. The EMZ can be seen in the Assessment (Appendix A). The City of Norwalk's Emergency Management

Zones (EMZ) are areas in the immediate vicinity of the Norwalk Creek intake structures. The corridor and emergency management zones were the focus of field and windshield surveys to inventory potential contaminant sources. Information was also collected during interviews with water treatment plant personnel.

Area of Focus

While the entire source water area in Figure 1 contributes to Norwalk's water supply, it is impractical to focus on such a large area. First, the city only pulls water from the westernmost intake about every three years, during dry months. Because of this and the number of potential contaminates in that area, the western and southern portion of the overall protection area was not addressed at this time. Instead, the planning team decided to focus efforts on the streams and tributaries that directly feed their reservoirs on a daily basis. This revised protection area can be seen in Figure 2.

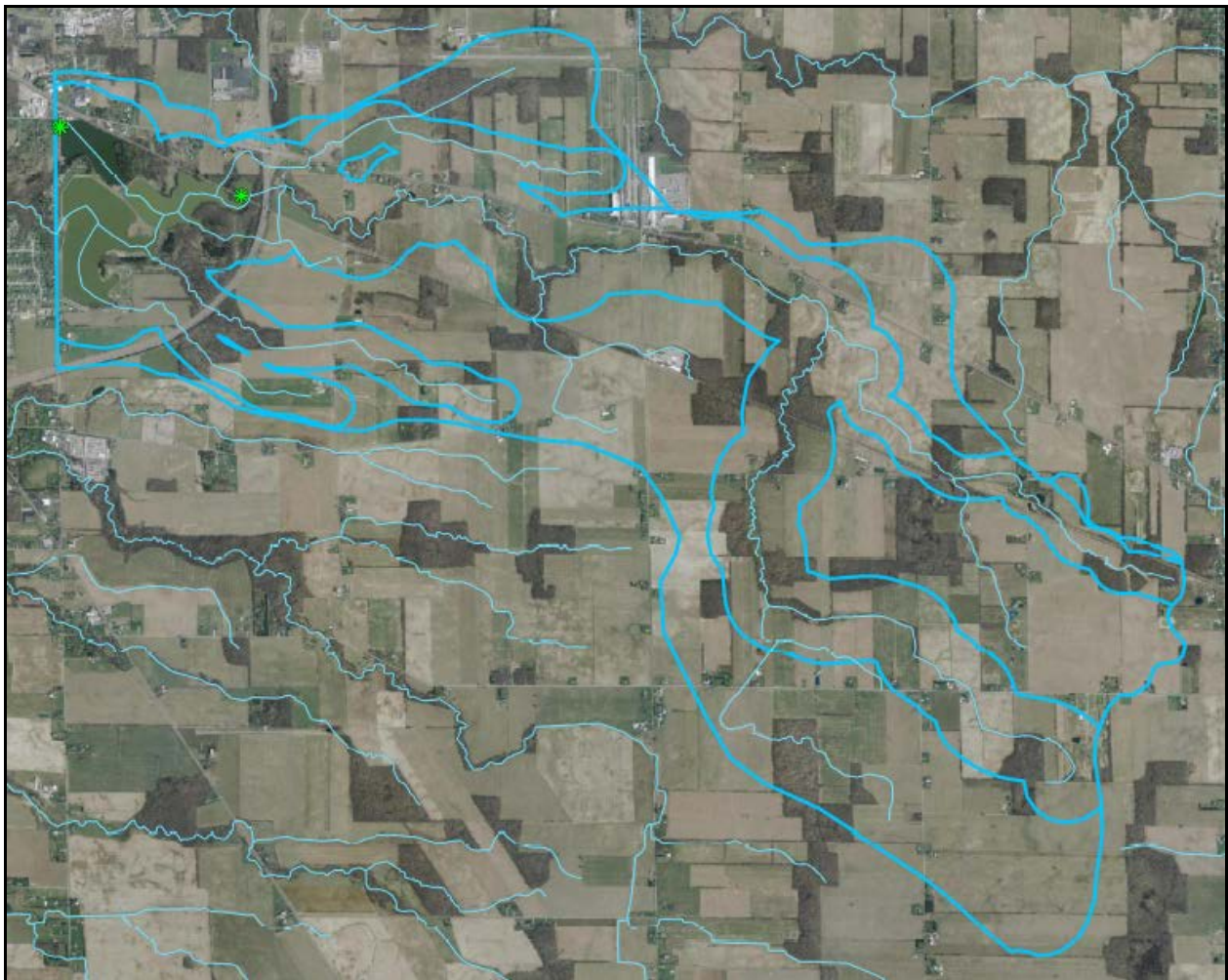


Figure 2: Revised protection area concentrating on Norwalk Creek

Hydrologic Setting

Norwalk Creek serves as the surface water source for the City of Norwalk. Norwalk Creek is a tributary to the East Branch of the Huron River. The East Branch is

approximately 46 miles in length with a drainage area of 87.8 square miles and an average fall of 10.8 feet per mile. The Norwalk Creek and Lower Reservoir intakes are located 0.11 and 0.61 miles, respectively, from the mouth of Norwalk Creek (i.e., where Norwalk Creek empties into the East Branch of the Huron River). The overall protection area comprises approximately 20.9 square miles; however, *the prioritized area is only about 8 square miles*. Annual average precipitation in the protection area is approximately 35-36 inches, of which 10-11 inches become surface runoff. Figure 4 in the Assessment (see Appendix A) shows the land use for the protection area. The predominant land use is agriculture with 74.90% of the total area. The percentage for other land uses includes: 21.62% wooded, 1.30% Shrub, 0.55% nonforested wetlands, 0.41% urban/impervious, 0.26% open water, and 0.09% barren.

Drinking Water Quality Monitoring Summary

A review of recent Consumer Confidence Reports (CCR) for the City of Norwalk's public water system show no recent issues in water quality or Maximum Contaminant Level (MCL) violations.

When the Assessment was completed in 2003, the Ohio EPA reviewed available sampling results from finished water to characterize water quality for the previous decade. A review of the City of Norwalk's compliance monitoring data from 1991-2003 did reveal one Maximum Contaminant Level (MCL) violation for atrazine, an herbicide used in agriculture. In addition, several pesticides (alachlor, atrazine, metolachlor, metribuzin, simazine, cyanazine, acetochlor, dalapon) were also detected during this timeframe. While these results do not present a picture of the water quality today, the historical results indicate an impact from land use activities within the watershed. Readers should consult the most recent Consumer Confidence Reports for current information on water quality.

Biological and Chemical Monitoring in Norwalk Creek and its Tributaries

Water quality data are available for four sites in the Norwalk corridor management zone. These four sites were sampled in 1998 and 2002 as part of the Biological and Water Quality Study of the Huron River and Selected Tributaries. Unfortunately, more recent water quality testing data in the watershed is not available.

Norwalk Creek at Laylin Rd, which is located upstream of the reservoirs, was in non-attainment of the Warm Water Habitat (WWH) aquatic life use designation. This means that the habitat is impaired for the typical fish and invertebrates that live in the water. The other two Norwalk Creek sites, downstream of the reservoirs, were in partial attainment of the WWH use. Nutrient enrichment from agricultural and urban sources, and segments of limited habitat were



listed as impairments to the aquatic life use in Norwalk Creek. The tributary to Norwalk Creek was in full attainment of the WWH use.

In Norwalk Creek, levels of manganese, aluminum and iron occasionally exceeded the Ohio EPA Water Quality Criteria (OAC 3745-1) established for the protection of human health in drinking water. Human health criteria are actually only directly applicable to waters within 500 yards of a drinking water intake. There were two elevated levels of total phosphorus in 1998, but not in 2002. Primary contact recreation criteria for fecal coliform bacteria were exceeded in one sample from Norwalk Creek and one sample from the tributary. Both samples were collected on the same date.

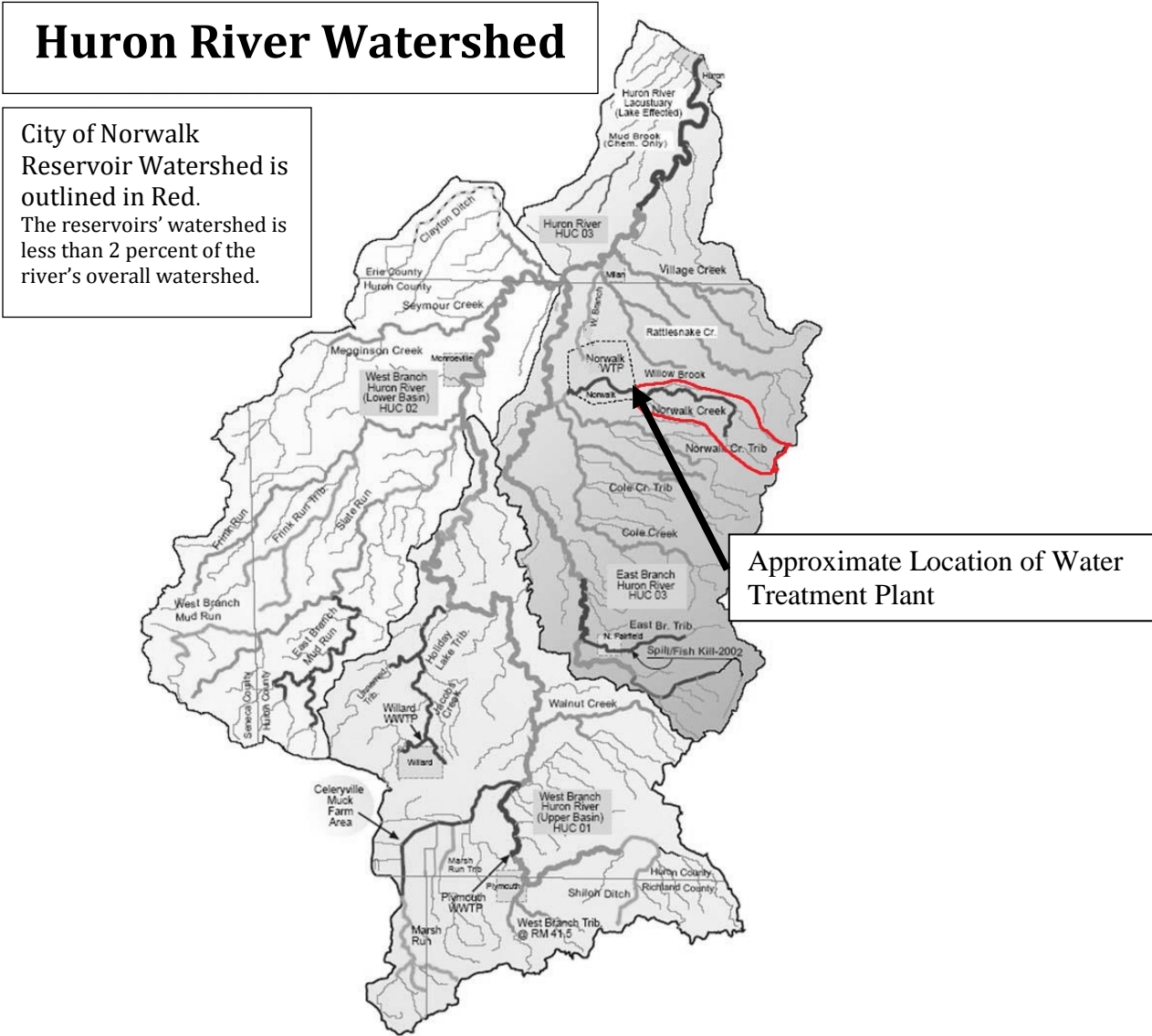


Figure 3: Location of Source Water Protection Area.

The Norwalk protection area is location in the East Branch of the Huron River Watershed area, which is part of the Lake Erie Watershed.

POTENTIAL CONTAMINANT CONTROL STRATEGIES

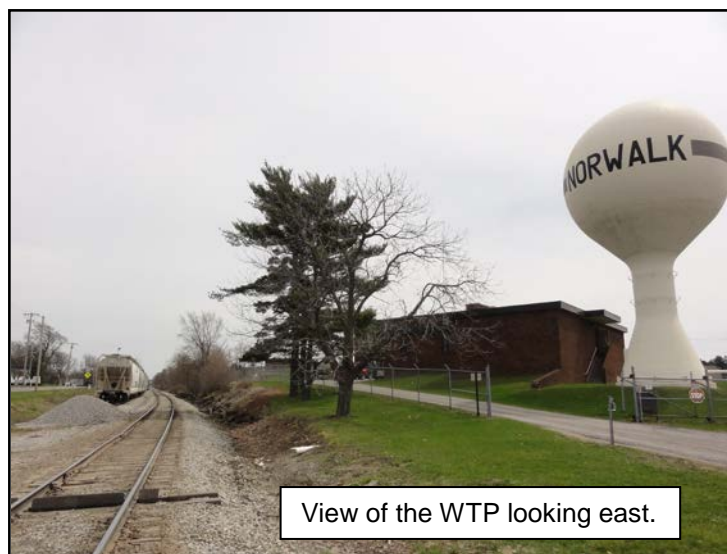
The goal of this section is to present protective strategies for specific potential contaminant sources in the protection area. The inventory from the 2003 Assessment Report was prioritized. Given the high number of contaminants, the planning team decided to concentrate on the high priority contaminants only at this time. Low and medium priority contaminants will be addressed at a later date.

Potential Contaminant Sources

Railways

Chemical spills from trains are a significant threat to the Norwalk public water system, because the Wheeling and Lake Erie tracks run adjacent to the reservoirs, just a few yards away from the water treatment plant. Fortunately train accidents are relatively rare, but can be catastrophic when they do occur. (There was a recent train derailment in Willard, Ohio in November 2013 that included a chemical spill.) In order to reduce the risk of contamination, The City of Norwalk will:

- Provide map of protection area to Wheeling and Lake Erie Railway Company
- Add local fire departments and Huron County EMA to the railways' emergency response plan
- Coordinate with Huron County EMA on how a release/spill should be handled in the source water protection area
- Encourage the railroad company to avoid parking railcars with chemical cargo known to be hazardous to human health within the source water area
- Coordinate with the railroad company on herbicide spraying throughout the protection area



Highways

State Route 18 and 20 are major highways dissecting the source water protection area and is heavily traveled. It is more distant from the reservoirs than the railway, and trucks do not carry as large volumes of chemicals as tank cars; on the other hand, there is a higher probability of an accident on State Route 20 or 18 than a railway accident. Also, application of road salt for de-icing during winter months can lead to elevated levels of chlorides in surface water. Chloride is not a human health concern, but at levels of 250 mg/L most people can taste it and find it unpleasant to drink. The protection team will work with the Ohio Department of Transportation to post source

water protection signs along major industrial routes. The team will also work with the local law enforcement agencies, Huron County EMA, the City of Norwalk Fire Department, and the Townsend Township Fire Department to ensure coordination with the water treatment officials in the event of an accidental release.

Agricultural Land Practices

About 75% of the protection area is agricultural land, including row crops, pasture, and small animal lots. Given the history of algal blooms, atrazine and pesticide detections, and non-attainment of the Norwalk Creek water way, the protection planning team is concerned about agricultural land practices in the source water protection area. The protection planning team has already taken the following implementation steps:



Farm field with tributary

- Partnered with the Huron County Farm Service Agency to prioritize outreach to farmers in the updated source water protection area.
- Partnered with the Western Reserve Land Conservancy (WRLC) to prioritize their outreach and education efforts in the protection area. WRLC will also prioritize their conservation easement program within the protection area.
- Partnered with the Huron County Soil and Water Conservation District to help them inform area farmers of their Great Lakes Restoration Initiative Grant. The Huron County SWCD will also look for future funding opportunities that could benefit the source water protection area.
- Partnered with Ohio State University Huron County Extension Office to educate farmers on

revised nutrient application rules (SB 150). The planning team will pursue an Ohio Environmental Education Fund (OEEF) grant to help fund outreach efforts.

During the planning process, it was noted that cover crops and filter strips would be effective conservation practices for the area.

Above Ground and Underground Storage Tanks

In light of the 2014 chemical spill in the Elk River in West Virginia, new laws are currently being drafted in Congress to regulate above ground storage tanks. The protection planning team will monitor these efforts and work with the appropriate agencies once the rules have been finalized. In the meantime, the protection planning team will also take a visual inventory of the current above ground storage tanks in the area and provide best



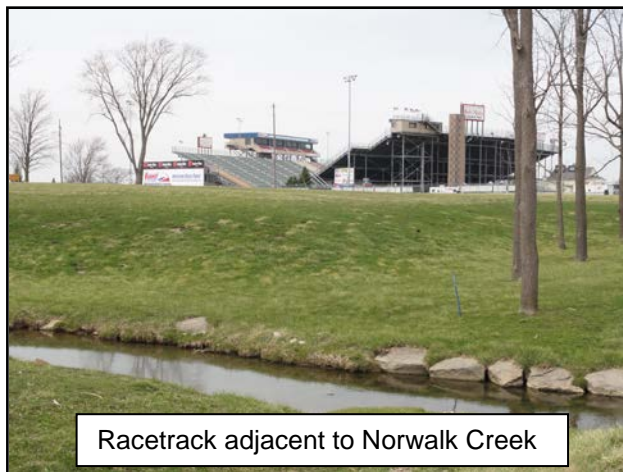
Above ground storage tanks near Norwalk Creek

management practices to the owners. The planning team will also request immediate notification in the event of an accidental release.

USTs are primarily used for petroleum products, such as underground gasoline storage tanks at gas stations. They are historically among the most frequent sources of ground water contamination by volatile organic compounds (VOCs) and can also affect surface water. The Bureau of Underground Storage Tank Regulation (BUSTR), which regulates these tanks, has a database going back to 1989. In 2003, the BUSTR database indicated the presence of forty-one leaking underground storage tanks within or near the source water protection area. The protection planning team will work with BUSTR to update the list and see if any of the tanks have been listed as 'no further action', which means they were investigated for soil or ground water contamination and ruled out, or were properly remediated. Also, in the last two decades UST owners have been required by BUSTR to provide double-walled containment and leak detection for USTs located in sensitive settings; this effort has significantly reduced the threat posed by USTs.

Future Development and Other Commercial Sources

In 2011, a fracking waste injection well was proposed just outside of the protection area. Although there is very little local control for fracking activities, this injection well highlighted the need for source water protection to be a priority when assessing future development in the source water protection area. The planning team met with the Huron County Planning Commission on January 16, 2014. The planning team informed the commission of the source water protection planning process and highlighted the area of focus. The planning team also suggested that a team member meet with the commission at least once per year to provide updates on the protection planning process. In addition, the planning team requested notification of any new developments that could have a significant impact on drinking water quality.



Racetrack adjacent to Norwalk Creek

Currently, there are a few commercial sources already in the protection area that present concerns to the protection planning team. These include: an airport, auto/farm machinery repair, silage storage, agricultural chemical production and storage, asphalt/cement/concrete plants, gas/petroleum transmission lines, and an auto race track. The protection planning team will contact these businesses to inform them of their location

in the protection area and request notification of spills. The protection team will also provide best management practices and work with any applicable state or federal agencies in charge of regulating each entity. The planning team should also try to identify what hazardous chemicals are being used in production or in storage so the water treatment staff is prepared in the event of a contamination. The planning team

will reach out to the agricultural chemical production facility to work with them to decrease the risk of a chemical release inside the protection area.

The planning team met with Mr. Jason Roblin, Director of Huron County EMA on June 10, 2014. The planning team informed the Director of the purpose of the source water protection plan and Mr. Roblin agreed to notify the City of Norwalk of any dangerous or hazardous situations to the source water protection area.

The planning team will also contact the local Fire Departments to inform them of the source water protection plan and areas of concern so utility staff can be notified in the event of a chemical release.

The planning team will also identify the best containment points on the map in the event of a release so the chemical can be stopped before it reaches the drinking water reservoirs.

Septic Systems

The source water area is mostly unsewered, so most residential properties have septic systems. Septic systems need ongoing maintenance to properly dispose of household waste. Septic systems can release nutrients (phosphorous and nitrogen), bacteria, metals, toxic chemicals, chlorides, and microorganisms (E coli, Giardia, Cryptosporidium, Hepatitis A, and helminths) into surface and groundwater. The state is currently finalizing new rules pertaining to septic tank maintenance and inspection. The protection planning team has met with the Huron County Health Department to prioritize inspections and enforcement inside the source water protection area.

Nutrient Loading

In August 2014, an harmful algae bloom occurred in Upper Reservoir. It was the first known large-scale blue-green algae (also known as cyanobacteria) bloom to occur in any of Norwalk's reservoirs. Fortunately, the bloom was able to be isolated in Upper Reservoir. Phosphorus is the limiting nutrient for the growth of blue-green algae. In other words, blue-green algae cannot grow without an abundance of phosphorus.

In response, the city will conduct an extensive survey of the watershed in 2015 to identify potential sources of high levels of phosphorus. Due to the harmful algae bloom, its high probability of re-occurrence and the serious threat to the drinking water supply, this survey is now the highest priority of this plan in 2015. The survey will include extensive water sampling throughout the watershed.

Summary Table

Potential Contaminant Source (All High Priority)	Protective Strategies	Timeline for Implementation	Who Will Implement? [Name/Title]
Railways	<p>Provide map of protection area to the railway company.</p> <p>Add local fire department to railway company's emergency response plan.</p> <p>Coordinate with Huron County EMA on how a release/spill should be handled in the source water protection area.</p> <p>Encourage railway company to avoid parking railcars with chemical cargo within the source water area.</p> <p>Develop and implement a land use ordinance that would prohibit specific practices within the source water protection area.</p>	<p>To be complete by Dec. 2015</p> <p>To be complete by Dec. 2015</p> <p>To be complete by Dec. 2015</p> <p>To be complete by Dec. 2015</p> <p>2016, if deemed necessary</p>	David Ackerman, Assistant Superintendent
Highways	<p>Install signs along roads throughout protection area.</p> <p>Work with the Huron County EMA, law enforcement agencies, and city and townships fire departments to provide notification in the event of a spill.</p>	<p>To be complete by Dec. 2015</p> <p>To be complete by Dec. 2015</p>	<p>Rick Schaffer, Chief Operator</p> <p>Bill Albrecht, Superintendent</p>
Agricultural Land Practices	<p>Partner with the Huron County Farm Service Agency to prioritize outreach to the source water protection area.</p> <p>Partner with the Western Reserve Land Conservancy (WRLC) to prioritize their outreach and education efforts in the protection area.</p> <p>Partner with the Huron County Soil and Water Conservation District to help them inform area farmers of funding opportunities for various agricultural practices.</p>	<p>Ongoing</p> <p>Ongoing</p> <p>Ongoing</p>	<p>Protection Planning Team</p> <p>Protection Planning Team</p> <p>Protection Planning Team</p>

	Partner with Ohio State University Huron County Extension Office to educate farmers on revised nutrient application rules.	Ongoing	Protection Planning Team
Above Ground and Underground Storage Tanks	Inventory all above and underground storage tanks.	By December 2015	Rick Schaffer, Chief Operator
	Provide outreach and educational materials to owners of storage tanks and request notification of spills.	By December 2015	Rick Schaffer, Chief Operator
Future Development and Other Commercial Sources	Distribute Source Water Protection brochure with protection area outlines and appropriate best management practices.	By December 2015	Rick Schaffer, Chief Operator
	Meet personally with highest priority potential contaminants (agricultural chemical distributor, race track, etc).	By December 2016	Protection Planning Team
	Meet with the Huron County Planning Commission yearly to update them on source water activities.	Yearly in January	Protection Planning Team
Septic Systems	Distribute Source Water Protection brochure and outreach materials to homeowners.	By December 2015	Rick Schaffer, Chief Operator
	Work with the Huron County Health Department to prioritize inspections in source water protection area.	Ongoing	Protection Planning Team
Nutrient Loading	Send introductory letter and brochure to all landowner announcing survey of entire watershed to identify possible sources of high levels of phosphorus	March 2015	Protection Team
	Conduct survey of streambanks of entire watershed	July 2015	Rick Schaffer and WTP staff

EDUCATION AND PUBLIC OUTREACH STRATEGIES

The purpose of the Protection Team’s education and outreach efforts is to inform people who live and work in the City of Norwalk’s drinking water source protection area about where their drinking water comes from and why it is important to protect this valuable resource. Education and outreach efforts will also inform the community how their activities can potentially impact surface water and what they can do to prevent contamination.

Target Audience: Customers (CU), General Public (GP), Students (ST), Other (write out)

Education and Outreach Strategies	Target Audience	Time line for Implementation	Who (name and title) will implement this strategy?
Consumer Confidence Report: include information about source water protection	CU	Annually in June	Rick Schaffer, Chief Operator
Contact the Huron County SWEET team to do educational outreach	GP	Annually	Bill Albrecht, Superintendent
Arrange to post source water protection signs along State Route 18 and 20 and other roads deemed necessary by the protection planning team	GP	Before December, 2014	David Ackerman, Assistant Superintendent
Post map of protection area and educational materials at water treatment plant, city offices, and on the website	CU	Upon delivery from OEPA	Bill Albrecht, Superintendent
Continue offering plant tours and fields trips to school aged children, Boy Scout, BGSU Firelands students, and any groups or individuals that request	ST/GP	As requested	Rick Schaffer, Chief Operator
Attend the Norwalk Home and Business Show	GP	Annually	Bill Albrecht, Superintendent
Produce slideshow for Channel 15	GP	Before December, 2016	David Ackerman, Assistant Superintendent
Produce video about source water protection for website	GP	Before December, 2016	David Ackerman, Assistant Superintendent
Attend the water festival at the Huron County Fairgrounds	ST	Annually	Bill Albrecht, Superintendent
The protection planning team held a public meeting on April 15, 2014 and will hold additional meetings as needed	GP	As needed.	Protection Planning Team
Distribute educational materials annually at Huron County Home and Business Expo	GP	Annually in February	David Ackerman, Assistant Superintendent

DRINKING WATER SHORTAGE/EMERGENCY RESPONSE

A well-formulated contingency plan enables a utility to prepare for, respond to, and recover from crisis conditions without wasting time on futile or unnecessary efforts or spending funds unnecessarily. The plan defines the duties, responsibilities, and functions of all water system personnel with respect to each specific emergency condition. Norwalk has developed procedures to address specific situations that can be expected to arise, and these are documented in their contingency plan.

The following are issues that are specific to drinking water source protection. This information has been included in the water plant contingency plan.

DRINKING WATER SHORTAGE – SHORT- OR LONG-TERM LOSS OF SOURCE

If the City of Norwalk experiences a loss of its drinking water source where there is not enough storage to compensate, it will:

- If the contaminant is in the Lower Reservoir, the Lower Reservoir can be bypassed and water can be pulled from the Memorial and Upper Reservoirs.
- If the Memorial Reservoir is contaminated, it will be isolated and the city will pull water from the Lower and Upper Reservoirs.
- Norwalk can purchase up to 500,000 gallons of water per day from Northern Ohio Rural Water. In the event of an emergency, the city will purchase additional water from NORW if they have the extra capacity.
- Finally, Norwalk could call in water haulers to supplement existing storage. The mayor can order a water emergency, banning all non-humanitarian use of water.

Norwalk can provide water from existing storage for up to 32 hours, provided it is not necessary to flush out the entire distribution system.

FUNDING FOR WATER EMERGENCIES

The City of Norwalk has \$25,000 set aside for emergencies. All additional expenditures must be approved by the city council.

PLANNING FOR THE FUTURE

Current average daily pumpage = 1.7 million gallons per day Current daily system design capacity = 4.0 million gallons per day Current reservoir withdraw capacity = 8.32 million gallons per day

The City of Norwalk is currently pumping about 42.5% of its design capacity. Census figures indicate that The City of Norwalk has maintained a steady population over the

past 15 years. In 2000 there were about 16,238 residents in Norwalk and in 2010 there were about 17,012 residents in the city. The outlying areas have also not seen significant population growth. Currently, no significant growth or decline of population is anticipated. Since the plant is currently only operating at 42.5% of its design capacity, the city could handle additional residential customers or larger industrial customers in the future.

EMERGENCY RESPONSE TO A TOXIC SPILL/RELEASE IN PROTECTION AREA

The City of Norwalk contingency plan addresses accidental chemical spills and releases in the protection area. A copy of this information is shown in section 3-8 of their Emergency Response Plan.

1. () Determine the following information:
 - Who made the first observation? What is their phone number and location?
 - When did it happen?
 - What is it?
 - Where is it? Is it isolated to one area or is it wide spread?
 - Has the spill been reported to Ohio EPA?
 - Has the fire department or hazardous materials response team been notified?
 - Has the property owner been notified?
2. () If no notifications have been made, immediately contact emergency personnel and agencies (i.e. fire dept., Ohio EPA, etc.) using the phone number(s) found in the "Notification" section of the Emergency Response Plan. Notify them of the situation.
3. () Contact the following work personnel, city officials, and contractors using the phone number(s) found in the "Chain of Command" section of the Emergency Response Plan.

Bill Albrecht
David Ackerman
Rick Schaffer
4. () If it is safe to do so visit the scene to make contact with on-scene emergency personnel and agencies. The local fire department is generally the lead response agency.
5. () Complete the following activities as soon as possible:
 - a. () Perform a physical check on the system and its structural integrity.
 - b. () If it is determined that the spill resulted in the probable introduction of contaminants into the reservoirs, proper precautions must be taken during sampling to prevent exposure to the contaminant and/or daughter products.
 - c. () If repairs are needed, coordinate with the lead response agency and Ohio EPA to ensure the safety of the repair crew. Proper precautions must be taken to prevent exposure to the contaminant and/or daughter products.
 - d. () If the system needs to be temporarily shut down as a result of the spill, the procedures can be found in the "Plans" section of the Emergency Response Plan. Plans for short term loss of source can be found in the "Plans" section of the Emergency Response Plan.
6. () If the reservoirs are secure, coordinate with the lead response agency and Ohio EPA on actions being taken to mitigate the spill. At a minimum, obtain the following information:
 - Who is responsible for the cleanup? What is their phone number and other contact information?
 - What contractors or consultants have been sent by the responsible party?
 - What actions have they taken?
 - How long is clean-up expected to take? How long must water use be stopped or reduced? (If greater than one week, options for long-term loss of source may be initiated. See page 8 of Contingency Plan.)
7. () Follow-up with the on-scene responders and contractors to determine if additional, long-term actions (such as water treatment and/or additional raw water monitoring) are required or recommended. If so, determine:

- What kind of monitoring is needed, at what frequency
- What levels will trigger return to normal operations
- What kind of additional treatment may be needed

WATER QUALITY MONITORING

- The City of Norwalk conducts water quality monitoring of treated and raw water in accordance with the requirements of the Ohio EPA. This includes:
 - Distribution System: test one site every day for bacteria, chlorine, pH, and turbidity
 - Raw Water: turbidity, fluoride, alkalinity, manganese, copper, stability, and pH
- The city also tests the raw water daily for dissolved oxygen
- The city recognizes the need for additional quality data for Norwalk Creek but has not had the funding or staff to carry out this testing. Due to the harmful algae bloom in 2014, resources will be re-allocated for monitoring in the watershed to begin in 2015.
- At this time, there is no watershed group working on Norwalk Creek.

PROTECTION PLAN UPDATES AND REVIEW

A protection plan is not a static document. Over time many issues related to protection planning will change- existing potential contaminant sources will close, new education and outreach opportunities will become available, new partners in protecting the drinking water source will be identified. The protection plan needs to plan for these and other events.

The City of Norwalk commits to reviewing the Drinking Water Source Protection Plan annually, beginning with January 2015.

Updating the SWAP Assessment

Each review of this plan will include consideration of the following questions:

Water Treatment Plant Updates

- Has the water usage increased or decreased since the last review?
- Have any new treatment protocols been added?
- Has a reservoir or intake been added or removed, or will wells be installed?
- Have there been any significant changes in flow in the Norwalk Creek and/or the Huron River?

Changes to the intakes will be reported to Ohio EPA's source water protection program so that the source water assessment can be adjusted (if necessary) to reflect new sources of drinking water.

Potential Contaminant Source Inventory

- Has the extent of the protection area changed?
- Has the community developed rapidly?
- Have land uses in and around the protection area changed?
- Has management of businesses in the protection area changed?

If the answer to any of the above questions is yes, Norwalk will update the inventory or conduct a new inventory. Norwalk may contact Ohio EPA's Source Water Protection staff in the district office for guidance or assistance in conducting the inventory.

Evaluating the Effectiveness of the Protective Strategies

In order to evaluate if the protective strategies in this Source Water Protection Plan are achieving the desired outcomes, Norwalk will consider the following types of questions and write any changes into the Protection Plan.

- Do we have reason to be concerned about how the drinking water source protection area may be used in the future?
- Should we consider trying to better protect it through a county resolution or township ordinance?

Pollution Source Control Strategies

- Have we followed our own schedule of implementation/timeline for each of the pollution source control strategies?
- Are there new potential contaminant sources that need to be addressed with new pollution source control strategies?
- Have we implemented any new protective strategies that are not documented here?
- Did any of our strategies result in removal or elimination of a potential source?
- Did any of our strategies result in individuals modifying practices to decrease the risk of contaminating the drinking water source?
- Did our coordination with other groups (SWCDs, county EMAs, local health dept., local watershed group, etc.) contribute to the implementation of protective strategies?
- Have the partnerships developed during plan implementation been productive?

Education and Outreach

- Have we followed our own schedule of implementation/timeline for each of the educational strategies?
- Are there any new groups in the population that we need to target with education and outreach strategies?
- Have we implemented any new educational strategies that are not already documented here?
- Has education and outreach targeting any specific group resulted in actions that reduced or could potentially reduce the risk of contaminating the drinking water source (e.g., septic system owners conducting regular maintenance, farmers adopting best management practices)?
- Have we received additional funding to continue any particular education and outreach strategy?
- Have we received any accolades, awards or recognition from outside entities or organizations for our educational efforts?
- Have we had any unsolicited requests for SWAP-related education (such as requests for plant tours, requests for presenters/speakers at events, etc.)?
- Did our coordination with other groups (SWCDs, SWEET Team, local health dept., local watershed group, etc.) contribute to the successful development and dissemination of SWAP-related information?
- Did we have sufficient staff and resources to complete all the planned educational efforts?
- Have educational efforts been cost effective? Efficient? (Consider level of attendance, attentiveness and participation by audience, comments received, etc., vs. the cost to facilitate the event) Should the frequency of the outreach be increased, decreased, or remain the same?

- Have the partnerships developed during plan implementation been productive?
- Have any of the target groups contacted the public water system for additional information about something they saw or heard about through these activities?

Drinking Water Shortage/Emergency Response

- Are there any updates to the Drinking Water Shortage/Emergency Response Plan?
- Did our coordination with emergency responders at the local and county level result in better communication and handling of spill incidents that could impact our drinking water?

Raw Water Monitoring

- Have we followed our raw water monitoring plan (i.e., sampled at the specific frequency, analyzed for the appropriate parameters, etc.)?
- Have there been any significant changes to our water quality?
- Do we have sufficient water quality data or other reasons (e.g., the source was removed) to conclude that water quality monitoring can be cut back or is no longer needed?
- Are there new water quality, potential contaminant source, or land use issues that would influence the need to expand our water quality monitoring network?
- Does our raw water monitoring plan need to be updated for any reason?

Revising the Plan

Upon review, if any revisions of the SWAP Assessment Report are needed, The City of Norwalk will contact Ohio EPA's Northwest office and the Ohio Rural Water Association for guidance. Also, if the local planning team makes any substantial changes to The City of Norwalk's Protection Plan, a copy will be forwarded to Ohio EPA for concurrence. The revision will be documented on the front cover by adding "Revised [date]" beneath the date at the bottom of the page.

Appendices

Appendix A: Drinking Water Source Assessment Report for the City of Norwalk

Appendix B: Drinking Source Water Protection Siting Prohibitions and Setbacks in Ohio Rules

Appendix C: City Council Source Water Protection Resolution

Appendix D: Norwalk Source Water Protection Brochure

Appendix E: Norwalk Additional Testing Requirements

Appendix F: Water Treatment Map

Appendix G: Huron River Watershed TMDL Program Fact Sheet

Appendix H: Open House Sign-In Sheet and Placemat

Appendix I: Algae Treatment Summary

Appendix J: Intake Locations

Appendix A

Drinking Water Source Assessment Report for the City of Norwalk

Drinking Water Source Assessment for the City of Norwalk



SUMMARY

Source Water Assessment and Protection. The following report for the City of Norwalk was compiled as part of the Source Water Assessment and Protection Program for Ohio. This program is intended to identify drinking water protection areas and provide information on how to reduce the risk of contamination of the waters within those areas. 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 Safe Drinking Water Act Amendments of 1996 established the national Source Water Assessment and Protection Program, targeting drinking water sources for all public water systems in the United States. A public water system is a facility that provides drinking water to 15 or more service connections or that regularly serves at least 25 people a day for at least 60 days a year, whether from an underground well or spring, or from an above ground stream, lake, or reservoir. The requirement does not address residential wells or cisterns. In Ohio there are approximately 5,800 public water systems.

Background. The City of Norwalk operates a community public water system that serves a population of approximately 16,200 people. The source is surface water taken from Norwalk Creek. The system's treatment capacity is approximately 4.0 million gallons per day, but current average production is about 1.72 million gallons per day.

Protection Areas. The drinking water source protection area for the surface water source is shown in the following figure. This report includes the results of an inventory of all known or identified potential contaminant

sources within the drinking water protection area. The inventory was conducted by Ohio EPA with the assistance of Rick Brown, Superintendent of the City of Norwalk Water Treatment Plant. Possible threats to the surface water source include agricultural runoff, pesticide/ fertilizer/ petroleum storage, fertilizer plant, above ground storage tanks, auto repair and car dealerships, silage, pasture, confined animal feedlots, industrial storm water, home construction, gas line rupture, laundromats, construction and demolition debris and golf courses.

Protective Strategies. The ultimate goal of source water assessment is implementation of protective strategies that will better protect the drinking water source. Strategies for protecting Norwalk Creek should include controlling runoff from agricultural areas, establishment of an early warning and emergency response plan for spills, controlling home and commercial septic system discharges from failing systems, coordination with local emergency response agencies, and evaluation of the potential impacts from wastewater treatment plant sludge application within the protection area.

The City of Norwalk and other jurisdictions comprising the protection areas are encouraged to develop a local protection plan to protect the source of drinking water or to update current emergency management plans as applicable. Local watershed planning efforts may already be underway to guide stream restoration and protection activities. For example, the North Central Ohio Land Conservancy, Inc. (419-522-6262) is active in local watershed protection. Efforts such as theirs contribute to the protection of drinking water sources.

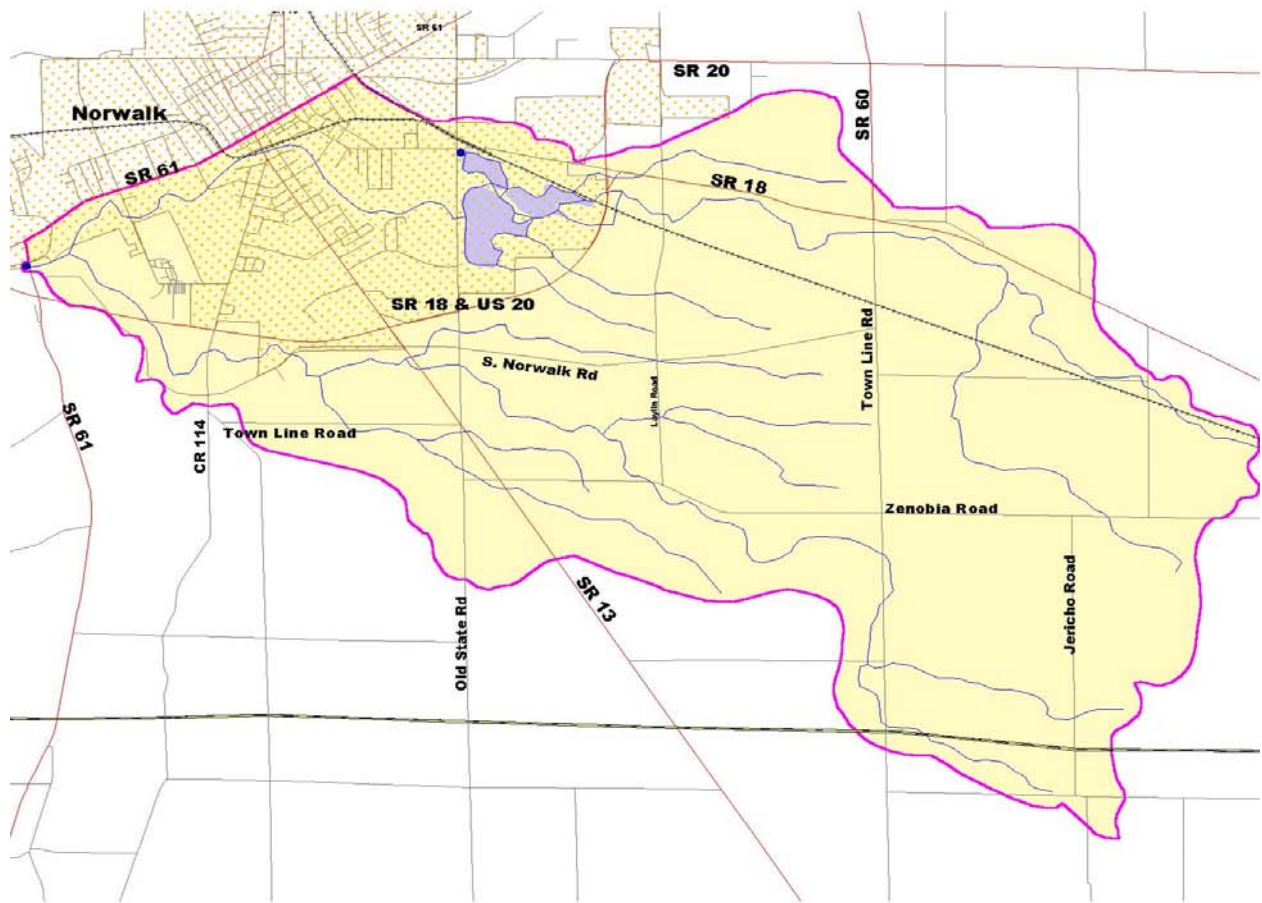
Guidance on how to form a Drinking Water Protection Team and protection plan is available from Ohio EPA by calling (614) 644-2752.

For More Information. Additional information on protective strategies and how this assessment was completed is included in the detailed Drinking Water Source Assessment Report for the City of Norwalk.

For information on how to obtain a copy of this report, please visit Ohio EPA's Source Water Assessment and Protection Program Web page at

<http://www.epa.state.oh.us/ddagw/pdu/swap.html> or contact the City of Norwalk for a copy.

Current information on the quality of the treated water supplied by the City of Norwalk is available in the Consumer Confidence Report (CCR) for the City of Norwalk Public Water System. The CCR is distributed annually and reports the most current detected contaminants and any associated health risks from data collected during the past five years. Consumer Confidence Reports are available from the City of Norwalk.



- WTP Intake
- Stream
- Municipal Road
- County Road
- State Road
- Gas Pipe Line
- Rail Road
- Counties
- Cities
- Lake
- SWAP Area



OhioEPA

7000 0 7000 Feet

Summary Figure - City of Norwalk Drinking Water Source Protection Area

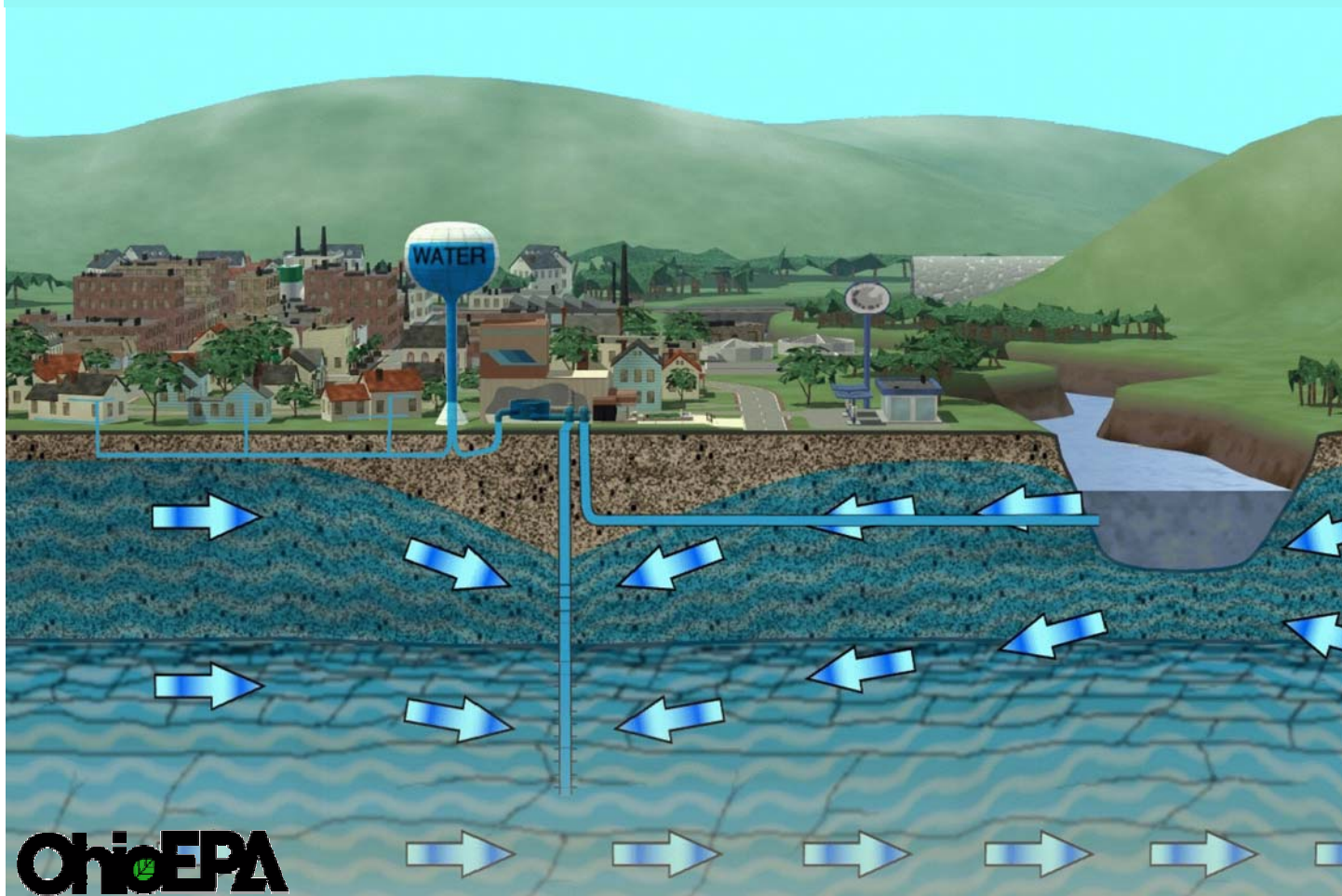
Drinking Water Source Assessment for the City of Norwalk

Public Water System # 3901111

Huron County

Prepared by:
Ohio Environmental Protection Agency
Division of Surface Water
Division of Drinking and Ground Waters
Northwest District Office

December, 2003



How to Use this Assessment

Clean and safe drinking water is essential to everyone. Protecting the source of drinking water is a wise and cost effective investment. The purpose of this drinking water source assessment is to provide information your community can use to develop a local Drinking Water Protection Program. The Drinking Water Source Assessment benefits your community by providing the following:

A basis for focusing limited resources within the community to protect the drinking water source(s).

The assessment provides your community with information regarding activities within the Drinking Water Source Protection Area that directly affect your water supply source area. It is within this area that a release of contaminants, from a spill or improper usage, may travel through the watershed and reach the surface water intake. By examining where the source waters are most sensitive to contaminants, and where potential contaminants are located, the assessment identifies the potential risks that should be addressed first.

A basis for informed decision-making regarding land use within the community.

The assessment provides your community with a significant amount of information regarding where your drinking water comes from (the source) and what the risks are to the quality of that source. This information allows your community planning authorities to make informed decisions regarding proposed land uses within the protection area that are compatible with both your drinking water resource and the vision of growth embraced by your community.

A start to a comprehensive plan for the watershed and source water area.

This assessment can be the beginning of a comprehensive plan for the water resource, one that addresses all of the uses the water resource provides. An ecologically healthy lake, stream and watershed will provide a stable, high quality resource for drinking water.

For information about developing a local Drinking Water Source Protection Program, please contact the Ohio EPA Division of Drinking and Ground Waters at (614) 644-2752 or visit the Division's web site at <http://www.epa.state.oh.us/ddagw/pdu/swap.html>.

1.0 INTRODUCTION

The 1996 Amendments to the Safe Drinking Water Act established a program for states to assess the drinking water source for all public water systems. The Source Water Assessment and Protection (SWAP) Program is designed to help Ohio's public water systems protect their sources of drinking water from becoming contaminated.

The purpose of this assessment is to identify where and how the City of Norwalk's source waters are at risk of contamination. The report

- identifies the drinking water source protection area,
- examines the characteristics of the watershed and the water quality,
- inventories the potential contaminant sources within that area, and discusses the susceptibility of the system to contamination.

Finally, the report suggests actions that the public water supplier and local community may take to reduce the risk of contaminating their source of drinking water and ensure the long term availability of abundant and safe drinking water resources.

Results and recommendations presented in this report are based on the information available at the time of publication. Ohio EPA recognizes that additional information may become available in the future that could be used to more accurately determine the drinking water source protection area. Also, changes in land use may occur after Ohio EPA completes the potential contaminant source inventory. This report should be used as a starting point to develop a plan to protect drinking water resources.

This report was prepared by Dana Martin-Hayden and Janet Hageman of Ohio EPA Division of Surface Water.

2.0 PUBLIC WATER SYSTEM DESCRIPTION

The City of Norwalk operates a community public water system that serves a population of approximately 16,200 people through 6,120 service connections. A community public water system is a system that regularly supplies drinking water from its own sources to at least 15 service connections used by year-round residents of the area or regularly serves 25 or more people throughout the entire year. The water treatment system obtains its water from Norwalk Creek. The system's treatment capacity is approximately 4.0 million gallons per day, but current average production is 1.72 million gallons per day. Water is pumped from the river to three reservoirs: Upper Reservoir (169 million gallons), Middle Reservoir (250 million gallons), and Lower Reservoir (175 million gallons). The City of Norwalk's water treatment system consists of coagulation, sedimentation, filtration, adsorption, stabilization, fluoridation and disinfection.

3.0 DRINKING WATER SOURCE PROTECTION AREA

The **Drinking Water Source Protection Area** (protection area) for an inland stream is defined as the drainage area upstream of the point where the water is withdrawn from a surface source such as a stream, lake or reservoir. The protection area is subdivided into corridor and emergency management zones. An illustration of the protection area and corridor management zone for the City of Norwalk Public Water System is shown in Figure 1. The emergency management zone is shown in Figures 2 and 3.

The **Corridor Management Zone, (CMZ)**, is an area along streams and tributaries within the

source water assessment area that warrants delineation, inventory, and management. Typically, this zone runs a total of ten miles upstream from the intake, and includes the tributaries that drain into it. The zone is 1,000 feet wide on each side of the Norwalk Creek mainstem and 500 feet wide on each side of any tributaries.

The **Emergency Management Zone, (EMZ)**, is defined as an area in the immediate vicinity of the surface water intakes in which the public water system operator has little or no time to respond to a spill. The boundary of the emergency management zone is delineated in cooperation with the water supplier and typically is a semi-circle that extends 500 feet upstream and 100 feet downstream of the intake. Figures 2 and 3 show the boundary of the emergency management zones for the City of Norwalk Public Water System. The City of Norwalk's Emergency Management Zones (EMZ) are areas in the immediate vicinity of the Norwalk Creek intake structures and the upland reservoir.

The corridor and emergency management zones were the focus of field and windshield surveys to inventory potential contaminant sources. Information was also collected during interviews with water treatment plant personnel.

4.0 HYDROLOGIC SETTING

Norwalk Creek serves as the surface water source for the City of Norwalk. Norwalk Creek is a tributary to the East Branch of the Huron River. The East Branch is approximately 46 miles in length with a drainage area of 87.8 square miles and an average fall of 10.8 feet per mile. The Norwalk Creek and Lower Reservoir intakes are located 0.11 and 0.61 miles, respectively, from the mouth of Norwalk Creek (i.e., where Norwalk Creek empties into the East Branch of the Huron River). The protection area comprises approximately 20.9 square miles. Annual average precipitation in the protection area is approximately 35-36 inches, of which 10-11 inches become surface runoff.

Figure 4 shows the land use for the protection area. The predominant land use is agriculture and lawns at 75.77%, of the total area. The percentage cover for other land uses includes: 21.62% wooded, 1.30% Shrub, 0.55% Nonforested Wetlands, 0.41% Urban/impervious, 0.26% Open Water, and 0.09% Barren.

Drinking Water Quality Monitoring Summary

Available chemical and biological water quality data collected from the streams in the protection area, and sampling results from finished water reported to Ohio EPA by the public water supplier were evaluated to characterize water quality. A review of the City of Norwalk's compliance monitoring data (for treated drinking water) from 1991-2003 revealed that the City of Norwalk has had a Maximum Contaminant Level (MCL) violation for atrazine. Table 1 lists contaminants where at least one result was above the level of detection, and does not include all contaminants tested for by the public water system. Several pesticides (alachlor, atrazine, metolachlor, metribuzin, simazine, cyanazine, acetochlor, dalapon) have been detected within the City of Norwalk's finished water supply. The MCL violation for atrazine as well as the detection of other pesticides within the City of Norwalk's finished water indicates an impact from land use activities within the watershed.

It should be recognized that sampling results presented in this report can only provide information on the quality of the water at the time the sample was collected. Water quality may

change over time due to a number of reasons. Therefore, it is recommended that the reader also consult the most recent Consumer Confidence Report (CCR) for the City of Norwalk public water system. All public water systems are required to annually prepare and distribute the CCR to their customers. The report is a good source of information on health effects associated with detected contaminants and contains information on the community's drinking water, including the source of the water, contaminants detected, the likely sources of detected contaminants, and the potential health effects of contaminants at levels above the drinking water standards.

Biological and Chemical Monitoring in Norwalk Creek and its Tributaries

Water quality data are available for four sites in the Norwalk corridor management zone. These four sites were sampled in 1998 and 2002 as part of the Biological and Water Quality Study of the Huron River and Selected Tributaries. Results of stream samples can be obtained from Ohio EPA's Northwest District Office - Division of Surface Water.

Norwalk Creek at Laylin Rd (RM 5.56), which is located upstream of the reservoirs, was in non attainment of the Warmwater Habitat (WWH) aquatic life use designation. The other two Norwalk Creek sites, downstream of the reservoirs (RM 1.90 and RM 0.13), were in partial attainment of the WWH use. Nutrient enrichment from agricultural and urban sources, and segments of limited habitat were listed as impairments to the aquatic life use in Norwalk Creek. The tributary to Norwalk Creek (at RM 0.38) was in full attainment of the WWH use.

In Norwalk Creek levels of manganese, aluminum and iron occasionally exceeded the Ohio EPA Water Quality Criteria (OAC 3745-1) established for the protection of human health in drinking water. Human health criteria are actually only directly applicable to waters within 500 yards of a drinking water intake. There were two elevated levels of total phosphorus in 1998, but not in 2002. Primary contact recreation criteria for fecal coliform bacteria were exceeded in one sample from Norwalk Creek and one sample from the tributary. Both samples were collected on the same date.

In 1998, samples were also collected at selected sites in the Huron River Basin to characterize new age pesticide concentrations in the vicinity of the Monroeville and Norwalk Water Treatment Plants. The results of these samples can also be obtained from Ohio EPA's Northwest District Office - Division of Surface Water.

5.0 POTENTIAL CONTAMINANT SOURCES

A review of available regulated facility data bases and a field survey of the corridor management zone indicate that 61 potential contaminant sources are present in the drinking water source protection area. Only 50 of these sources are within the corridor management zone and none are within the emergency management zone. Table 2 provides a list of the identified potential contaminant sources in the drinking water source protection area. The locations of potential contaminant sources in the protection area are shown in Figures 5 and 6.

It is important to note that this inventory represents *potential* contaminant sources, and includes any source that has the *potential* to release a contaminant to surface or ground waters in the protection area. It is beyond the scope of this study to determine whether any specific potential source is actually releasing a contaminant, or to what extent any potential source(s) may be contributing to the overall pollutant load.

The transportation network is a potential source of contamination through vehicular accidents that release hazardous materials. Approximately 66 miles of roads and eight miles of rail lines

traverse the protection area, creating a total of 49 road and five rail crossings of Norwalk Creek or its tributaries.

Approximately 2.5 miles of roads and 0.5 miles of rail are within 100 feet of a stream. Approximately 49 of the road crossings and five of the rail crossings occur within the corridor management zone. Figure 7 shows the locations where road and rail lines cross Norwalk Creek or tributaries.

Extensive petroleum and natural gas production within the protection area and the corridor management zone is also considered a potential source of contamination to surface and ground waters. A total of 15 oil/gas wells are located in the City of Norwalk protection area, of which seven are found within the corridor management zone. Approximately 66 miles of gas lines are within 100 feet of a stream. One gas line crossing occurs within the corridor management zone. Figure 7 also shows the locations where the gas lines cross Norwalk Creek. Figure 8 shows the locations of oil and gas wells located within the City of Norwalk's Drinking Water Source Protection Area.

6.0 SUSCEPTIBILITY ANALYSIS

For the purposes of source water assessments, all surface waters are considered to be susceptible to contamination. By their nature surface waters are accessible and can be readily contaminated by chemicals and pathogens, with relatively short travel times from source to the intake. Based on the information compiled for this assessment, the City of Norwalk's drinking water source protection area is susceptible to agricultural runoff, pesticide/ fertilizer/ petroleum storage, fertilizer plant, above ground storage tanks, auto repair and car dealerships, silage, pasture, confined animal feedlots, industrial storm water, home construction, gas line rupture, laundromats, construction and demolition debris and golf courses.

It is important to note that this assessment is based on available data, and therefore may not reflect current conditions in all cases. Water quality, land uses and other activities that are potential sources of contamination may change with time. The MCL violation for atrazine as well as the detection of other pesticides within the City of Norwalk's finished water indicates an impact from land use activities within the watershed.

7.0 PROTECTIVE STRATEGIES

Source water protection efforts for the City of Norwalk should focus on controlling agricultural runoff and runoff from cattle grazing pastures, with particular attention to sources of pesticides, nitrates, phosphorus, and microorganisms such as fecal coliform bacteria. This can be accomplished via educational efforts. County Extension agents are an excellent resource for assisting the agricultural community with controlling agricultural runoff, and staff from local and County health offices can instruct homeowners in proper maintenance of their septic systems.

Other source water protection efforts may include:

Education and Outreach: Informing people who live, work, or own property within the protection area about the benefits of drinking water protection is very important. Although some communities develop their own educational outreach resources, assistance is available at no cost from various agencies. For example, staff from Ohio EPA's Office of Pollution Prevention can visit businesses (free of charge) and provide recommendations on how they can modify their processes, materials and practices to generate less pollution in a cost-effective and

technically feasible manner. An effort should be made to educate homeowners and businesses of the potential threat their activities can pose to the water supply. Education could also focus on increasing public awareness of illegal dumping and drinking water protection, particularly in recreational boating areas.

Coordination with Existing Activities: Many local groups are engaged in programs that complement a public water system's drinking water source protection efforts. Working with groups such as the Natural Resources Conservation Service, the Soil and Water Conservation District, the Farm Bureau, or a local watershed planning organization ensures coordination of their respective programs. Local watershed planning organizations include the North Central Ohio Land Conservancy, Incorporated located at Suite 300, 24 West 3rd Street in Mansfield, Ohio 44903 contact Eric Miller-Trustee by phone at (419) 522-6262.

Oil and Gas Production: Provide education (material/meetings) to owners and land owners on proper operation and maintenance. Develop an early warning system for accidental spills and releases.

Agricultural Activities: Provide education to local farmers on the use of best management practices to reduce agricultural and animal feedlot runoff, use of proper manure handling facilities, proper handling and road safety with agricultural chemicals, and other methods to control or reduce impacts to surface waters.

Transportation Routes: There is a potential for spills along roads within the protection area. The City of Norwalk may want to consider contacting the local fire department and local emergency planning agency about the location of the drinking water source protection area, so that strategies can be developed to prevent spilled materials from impacting Norwalk Creek.

Emergency Response Planning: The City of Norwalk should prepare a plan that includes early warning of spills and coordination of response and remediation activities for spills that may enter Norwalk Creek. This plan should include emergency response actions for Norwalk Creek, such as the placement of absorbent booms to control oil spills, or the ability to mechanically add oxygen to oxidize chemicals with a high oxygen demand. Different response plans could be developed for different types of contamination. The emergency response plan may also contain strategies for dealing with unexpected levels of runoff containing chemicals such as fertilizers and pesticides from adjacent land uses. Though it may be less catastrophic than a major spill, this kind of contamination is more prevalent and is harder to detect and contain.

Water Quality Monitoring: Monitoring does not directly prevent contamination, but the protection plan will be more effective if the City of Norwalk conducts periodic monitoring of raw water quality and quantity from Norwalk Creek. For example, monitoring data can be used to (1) determine optimal conditions or seasons for pumping water to the reservoirs; (2) estimate time-of-travel for a chemical to reach the water treatment intake from various locations in Norwalk Creek; (3) track water quality trends; and (4) evaluate the effectiveness of selected protective strategies. Sampling locations and schedules could be modified on an emergency basis to monitor spills or the runoff of contaminants that may enter the reservoirs.

Zoning Ordinances: A water protection zoning ordinance is a regulatory control that typically places some restrictions or standards on activities conducted within a specified zone (such as the corridor management zone and/or the emergency management zone). Such ordinances enable the municipality to require people who live or work in this area to avoid contaminating the

source of the municipality's drinking water. Ordinances can help ensure best management practices are being employed at local businesses and can help reduce the volume of contaminants stored within the protection area. The City of Norwalk may want to consider working with the counties, townships, and municipalities in the protection area to develop zoning overlays that require specific standards for chemical storage, handling of waste materials, and other source control strategies. Several communities in Ohio have enacted very successful drinking water source protection ordinances. Copies can be obtained by contacting Craig Smith at (614) 644-2752.

Regulatory Compliance: Where possible, the City of Norwalk can monitor the compliance of potential contaminant sources with existing regulations through inspections and/or contact with regulatory agencies. If routine inspections are a regulatory requirement, they provide an excellent opportunity to educate an important segment of the community about the importance of drinking water source protection. Inspections also provide an opportunity to encourage improved materials handling procedures, hazardous materials training, waste and disposal assessments, facility spill/contingency planning, and pollution prevention initiatives.

Ohio EPA encourages the City of Norwalk to incorporate the types of protective strategies listed above into a drinking water source protection plan. For more information on drinking water source protection please contact the Drinking Water Protection staff at (614) 644-2752.

References

Chow, Ven Te, et al. Handbook of Applied Hydrology, A Compendium of Water-Resources Technology. McGraw-Hill, 1964. Page 21-10.

Gazetteer of Ohio Streams, Second Edition, Ohio Department of Natural Resources, Division of Water. 2001.

Harstine, Leonard J.. 1991. Hydrologic Atlas for Ohio. Water Inventory Report No. 28. State of Ohio Department of Natural Resources. Columbus, Ohio.

EAS Division of Surface Water aquatic life attainment status table for Huron River study area, Ohio EPA, 2000.

NWDO Division of Surface Water Monitoring Data, Ohio EPA 1998, 2000.

Year 2000 Ohio Water Resource Inventory. Appendix D1- 2000 305(b): Rivers and Streams, Ohio EPA, 2000.

**Table 1. Water Quality Monitoring Summary of Treated Water
City of Norwalk Public Water System**

*Ohio EPA Public Water System Compliance Monitoring Database (1991- 2003)
Ohio EPA Pesticide Special Study (May 1995 - March 1999)*

Contaminant (units)	Levels Found	Primary MCL	MCL Violation ¹	Typical Source
Inorganic Contaminants				
Barium (mg/l)	0.019 - 0.032	2	No	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Fluoride (mg/l)	0.9 - 1.14	4	No	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories
Mercury [inorganic] (µg/l)	0.2 - 0.5	2	No	Erosion of natural deposits; Discharge from refineries and factories; Runoff from landfills; Runoff from crop land
Nitrate (mg/l)	0.327 - 2.76	10	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Sulfate (mg/l)	61	none	NA ²	Erosion of natural deposits; decomposition product of organic matter; discharge from mining and industrial waters; detergents in sewage; component of precipitation in metropolitan areas
Radioactive Contaminants				
Beta/photon emitters (pCi/L)	4.0 - 12.6	AL=50	No	Decay of natural and man-made deposits
Alpha emitters (pCi/L)	4.0	15	No	Erosion of natural deposits
Synthetic Organic Contaminants including Pesticides and Herbicides				
Alachlor ³ (µg/l)	0.25 - 0.8	2	No	Herbicide runoff
Atrazine ³ (µg/l)	0.14 - 9.6	3	Yes	Herbicide runoff
Metolachlor ³ (µg/l)	0.3 - 2.25	none	NA	Pesticide runoff
Metribuzin ³ (µg/l)	0.05 - 0.07	none	NA	Pesticide runoff
Simazine ³ (µg/l)	0.08 - 0.73	4	No	Herbicide runoff
Cyanazine ³ (µg/l)	0.3 - 6.54	none	NA	Pesticide runoff
Acetochlor ³ (µg/l)	0.22 - 0.68	none	NA	Herbicide runoff
Dalapon (µg/l)	12.4	200	No	Runoff from herbicide used on rights of way
Volatile Organic Contaminants				
Carbon tetrachloride (µg/l)	0.70	5	No	Discharge from chemical plants and other industrial activities
TTHMs [Total Trihalomethanes] (µg/l)	17.5 - 318	80	No ⁴	By-product of drinking water chlorination
Bromodichloromethane (µg/l)	2.5 - 31.6	none	NA ⁴	By-product of drinking water chlorination
Chloroform (µg/l)	17 - 294	none	NA ⁴	By-product of drinking water chlorination
Bromoform (µg/l)		none	NA ⁴	By-product of drinking water chlorination
Dibromochloromethane (µg/l)	0.6 - 4.8	none	NA ⁴	By-product of drinking water chlorination
Dibromoacetic Acid (µg/l)	1.3 - 2.2	none	NA ⁴	By-product of drinking water chlorination

**Table 1. Water Quality Monitoring Summary of Treated Water
City of Norwalk Public Water System**

*Ohio EPA Public Water System Compliance Monitoring Database (1991- 2003)
Ohio EPA Pesticide Special Study (May 1995 - March 1999)*

Contaminant (units)	Levels Found	Primary MCL	MCL Violation ¹	Typical Source
Dichloroacetic Acid (µg/l)	2.5 - 54.9	none	NA ⁴	By-product of drinking water chlorination
Trichloroacetic Acid (µg/l)	0.629 - 45.6	none	NA ⁴	By-product of drinking water chlorination
Monobromoacetic Acid (µg/l)	1.04 - 1.67	none	NA ⁴	By-product of drinking water chlorination
Monochloroacetic Acid (µg/l)	2.2 - 22.9	none	NA ⁴	By-product of drinking water chlorination

MCL = Maximum Contaminant Level (AL = Action Level).

¹ MCL set by federal or state drinking water standards. **A sampling result that exceeds the MCL value does not necessarily indicate a violation by the public water system.** MCL violations for many contaminants are based on a running annual average.

² Secondary Maximum Contaminant Level (SMCL) for this parameter. SMCLs are non-health-related limits.

³ Data includes Ohio EPA Pesticide Special Study results (1995-1999). For the study, samples were analyzed using an immunoassay (IA) method and by USEPA Method 507, a gas chromatograph (GC) method. The immunoassay results are only estimations of the actual concentration values. The IA test kits tend to overestimate concentrations, due to cross reactivity of chemically similar pesticides (e.g. atrazine and simazine).

⁴ Total Trihalomethanes (TTHMs): (MCL = 80 µg/l) calculated as the sum of the concentrations of Bromodichloromethane, Dibromochloromethane, Bromoform, and Chloroform. Five Haloacetic Acids (HAA5): (MCL = 60 µg/l) calculated as the sum of the concentrations of Monochloroacetic acid, Dichloroacetic acid, Trichloroacetic acid, Monobromoacetic acid, and Dibromoacetic acid.

Table 2. Potential Contaminant Source Inventory for the City of Norwalk Corridor Management Zone

[Map ID Corresponds to Figure 6]

Map ID	UNIQUE ID	COUNTY	SOURCE DESCRIPTION	DATA SOURCE
0	LUST397091200	Huron	Leaking Underground Tank	BUSTR: LUST database (geocoded)
0	LUST039816000	Huron	Leaking Underground Tank	BUSTR: LUST database (geocoded)
0	LUST039816001	Huron	Leaking Underground Tank	BUSTR: LUST database (geocoded)
0	AIR0539	Huron	airport	USGS Geonames
0	AIR0130	Huron	airport	USGS Geonames
0	LUST394106700	Huron	Leaking Underground Tank	BUSTR: LUST database (geocoded)
0	LUST390199200	Huron	Leaking Underground Tank	BUSTR: LUST database (geocoded)
0	LUST390255100	Huron	Leaking Underground Tank	BUSTR: LUST database (geocoded)
0	LUST390304200	Huron	Leaking Underground Tank	BUSTR: LUST database (geocoded)
0	LUST391026500	Huron	Leaking Underground Tank	BUSTR: LUST database (geocoded)
0	LUST391114200	Huron	Leaking Underground Tank	BUSTR: LUST database (geocoded)
0	LUST391168500	Huron	Leaking Underground Tank	BUSTR: LUST database (geocoded)
0	LUST391285100	Huron	Leaking Underground Tank	BUSTR: LUST database (geocoded)
0	LUST391296600	Huron	Leaking Underground Tank	BUSTR: LUST database (geocoded)
0	LUST391303800	Huron	Leaking Underground Tank	BUSTR: LUST database (geocoded)
0	LUST391331200	Huron	Leaking Underground Tank	BUSTR: LUST database (geocoded)
0	OHD986969947	Huron	Excavation	US EPA Envirofacts - AIRS/AFS
0	HOS0086	Huron	Hospital	USGS Geonames
0	LUST392316100	Huron	Leaking Underground Tank	BUSTR: LUST database (geocoded)
0	UI500951		Underground Injection Well - Class 5	OEPA-DDAGW UIC5 GIS Layer
0	LUST393220100	Huron	Leaking Underground Tank	BUSTR: LUST database (geocoded)
0	LUST393243300	Huron	Leaking Underground Tank	BUSTR: LUST database (geocoded)
0	LUST394001100	Huron	Leaking Underground Tank	BUSTR: LUST database (geocoded)
0	LUST394043200	Huron	Leaking Underground Tank	BUSTR: LUST database (geocoded)
0	LUST394060700	Huron	Leaking Underground Tank	BUSTR: LUST database (geocoded)
0	LUST394061400	Huron	Leaking Underground Tank	BUSTR: LUST database (geocoded)
0	LUST394084700	Huron	Leaking Underground Tank	BUSTR: LUST database (geocoded)
0	LUST394103000	Huron	Leaking Underground Tank	BUSTR: LUST database (geocoded)
0	LUST398260800	Huron	Leaking Underground Tank	BUSTR: LUST database (geocoded)
0	OHD982068389	Huron	Commercial/Industrial	US EPA Envirofacts - RCRIS
0	OHD987049103	Huron	Gas transmission	US EPA Envirofacts - RCRIS
0	LUST395077500	Huron	Leaking Underground Tank	BUSTR: LUST database (geocoded)
0	LUST396001900	Huron	Leaking Underground Tank	BUSTR: LUST database (geocoded)
0	LUST396156800	Huron	Leaking Underground Tank	BUSTR: LUST database (geocoded)
0	LUST396156801	Huron	Leaking Underground Tank	BUSTR: LUST database (geocoded)
0	OHD987041852	Huron	Trucking	US EPA Envirofacts - RCRIS
0	OHD981948664	Huron	Truck Leasing	US EPA Envirofacts - RCRIS
0	LUST398030000	Huron	Leaking Underground Tank	BUSTR: LUST database (geocoded)
0	LUST398081700	Huron	Leaking Underground Tank	BUSTR: LUST database (geocoded)
0	LUST398108200	Huron	Leaking Underground Tank	BUSTR: LUST database (geocoded)
0	LUST398248900	Huron	Leaking Underground Tank	BUSTR: LUST database (geocoded)
0	OHD076893635	Huron	Medical services	US EPA Envirofacts - RCRIS AIRS/AFS
0	OH0000028563	Huron	Auto sales	US EPA Envirofacts - RCRIS
0	OHD987036290	Huron	Commercial/Industrial	US EPA Envirofacts - RCRIS
0	OHD064094147	Huron	Trucking	US EPA Envirofacts - RCRIS
0	OH0001369941	Huron	Water treatment	US EPA Envirofacts - RCRIS PCS
0	OHD000676759	Huron	Power plant	US EPA Envirofacts - RCRIS DOCKET
0	OHD120304738	Huron	Auto services	US EPA Envirofacts - RCRIS
0	OHD004170791	Huron	Commercial	US EPA Envirofacts - TRIS
0	OHD018244780	Huron	Commercial	US EPA Envirofacts - RCRIS
0	OHD018245605	Huron	Commercial	US EPA Envirofacts - RCRIS
0	OHD986977627	Huron	Gas Station	US EPA Envirofacts - RCRIS
11	LUST392117100	Huron	Leaking Underground Tank	BUSTR: LUST database (geocoded)
12	OH0001192020	Huron	Gas Station	US EPA Envirofacts - RCRIS
15	LUST390169400	Huron	Leaking Underground Tank	BUSTR: LUST database (geocoded)
16	LUST397115600	Huron	Leaking Underground Tank	BUSTR: LUST database (geocoded)

Table 2. Potential Contaminant Source Inventory for the City of Norwalk Corridor Management Zone

[Map ID Corresponds to Figure 6]

Map ID	UNIQUE ID	COUNTY	SOURCE DESCRIPTION	DATA SOURCE
16	LUST397115601	Huron	Leaking Underground Tank	BUSTR: LUST database (geocoded)
22	OHD004448718	Huron	Commercial	US EPA Envirofacts - RCRIS
27	OHD987053576	Huron	Commercial/Industrial?	US EPA Envirofacts - RCRIS
28	LUST394178900	Huron	Leaking Underground Tank	BUSTR: LUST database (geocoded)
29	LUST394191200	Huron	Leaking Underground Tank	BUSTR: LUST database (geocoded)
30	LUST393143400	Huron	Leaking Underground Tank	BUSTR: LUST database (geocoded)
30	339-1279	Huron	Former storage/disposal site for hazardous materials	Ohio EPA-DERR MSL GIS layer
35	LUST390032500	Huron	Leaking Underground Tank	BUSTR: LUST database (geocoded)
37	LUST390007800	Huron	Leaking Underground Tank	BUSTR: LUST database (geocoded)
40	SIM0973	Huron	Sludge lagoon	OEPA-DSW Surface Impoundment GIS Layer
44	LUST392165200	Huron	Leaking Underground Tank	BUSTR: LUST database (geocoded)
45	OHD089889380	Huron	Commercial	US EPA Envirofacts - RCRIS
52	OHD986991487	Huron	Commercial	US EPA Envirofacts - AIRS/AFS
53	OHD982613994	Huron	Petroleum/gas transmission line	US EPA Envirofacts - RCRIS
54	OHD000684183	Huron	Gas Station	US EPA Envirofacts - RCRIS
55	CEM3928	Huron	Cemetery	JSGS Geonames
56	OH0000616292	Huron	Commercial	US EPA Envirofacts - SSTS
57	OHD057255911	Huron	Auto Sales	US EPA Envirofacts - RCRIS
62	CEM4950	Huron	Cemetery	JSGS Geonames
69	D3901111069	Huron	Other Commercial Sources	field survey
70	D3901111070	Huron	Above Ground Storage Tanks	field survey
73	D3901111073	Huron	Above Ground Storage Tanks	field survey
73	D3901111173	Huron	Lagoon/Pond/Pit	field survey
76	D3901111076	Huron	Above Ground Storage Tanks	field survey
76	D3901111176	Huron	Silage storage (bulk)	field survey
78	D3901111078	Huron	Silage storage (bulk)	field survey
78	D3901111178	Huron	Above Ground Storage Tanks	field survey
79	D3901111079	Huron	Above Ground Storage Tanks	field survey
80	D3901111080	Huron	Silage storage (bulk)	field survey
81	D3901111081	Huron	Farm machinery repair areas	field survey
82	D3901111082	Huron	Construction and demolition debris landf	field survey
82	D3901111182	Huron	Above Ground Storage Tanks	field survey
83	D3901111383	Huron	Confined animal feedlots	field survey
83	D3901111083	Huron	Silage storage (bulk)	field survey
83	D3901111183	Huron	Pasture	field survey
83	D3901111283	Huron	Above Ground Storage Tanks	field survey
87	D3901111087	Huron	Silage storage (bulk)	field survey
90	D3901111090	Huron	Above Ground Storage Tanks	field survey
91	D3901111091	Huron	Pasture	field survey
95	D3901111095	Huron	Above Ground Storage Tanks	field survey
96	D3901111196	Huron	Silage storage (bulk)	field survey
96	D3901111096	Huron	Above Ground Storage Tanks	field survey
96	D3901111296	Huron	Farm machinery repair areas	field survey
97	D3901111197	Huron	Silage storage (bulk)	field survey
97	D3901111297	Huron	Confined animal feedlots	field survey
97	D3901111097	Huron	Above Ground Storage Tanks	field survey
99	D3901111099	Huron	Underground Storage Tanks: Unknown Status	field survey
100	D39011110100	Huron	Pasture	field survey
100	D39011111100	Huron	Confined animal feedlots	field survey
101	D39011110101	Huron	Farm machinery repair areas	field survey
104	D39011110104	Huron	Golf courses	field survey
106	D39011110106	Huron	Other Industrial Sources	field survey
107	D39011110107	Huron	Other Commercial Sources	field survey

Table 2. Potential Contaminant Source Inventory for the City of Norwalk Corridor Management Zone

[Map ID Corresponds to Figure 6]

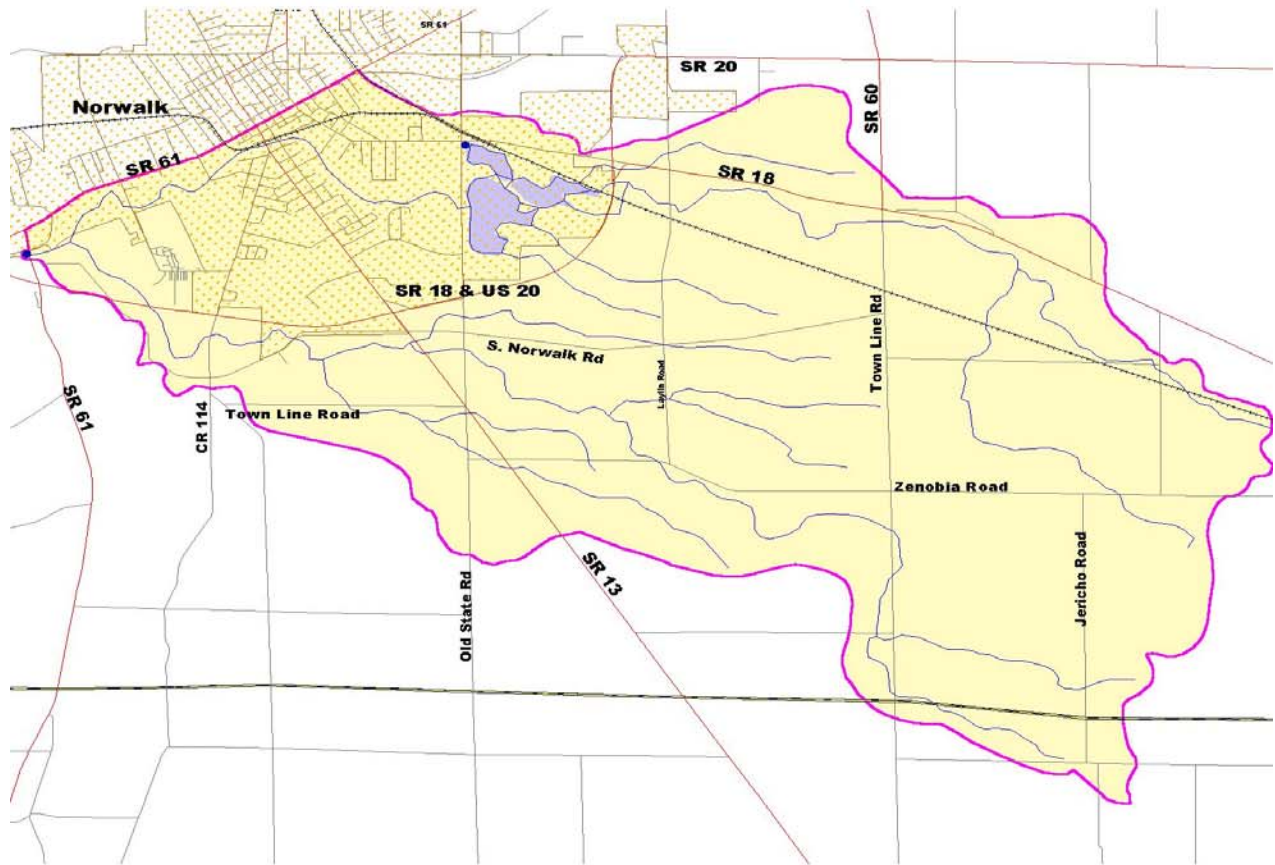
Map ID	UNIQUE ID	COUNTY	SOURCE DESCRIPTION	DATA SOURCE
111	D39011110111	Huron	Auto repair shops/body shops	field survey
112	D39011110112	Huron	Laundromats	field survey
113	D39011110113	Huron	Fleet/truck/bus terminals	field survey
114	D39011110114	Huron	Auto repair shops/body shops	field survey
116	D39011110116	Huron	Airport/Abandoned Airfield	field survey
119	D39011110119	Huron	Auto repair shops/body shops	field survey
120	D39011110120	Huron	Cemetery	field survey
121	D39011110121	Huron	Barber and beauty shops	field survey
123	D39011110123	Huron	Above Ground Storage Tanks	field survey
123	D39011112123	Huron	Confined animal feedlots	field survey
123	D39011111123	Huron	Silage storage (bulk)	field survey
139	D39011110139	Huron	Fleet/truck/bus terminals	field survey
141	D39011111141	Huron	Silage storage (bulk)	field survey
141	D39011110141	Huron	Above Ground Storage Tanks	field survey
161	D39011112161	Huron	Pesticide/fertilizer/petroleum storage &	field survey
161	D39011111161	Huron	Silage storage (bulk)	field survey
161	D39011110161	Huron	Above Ground Storage Tanks	field survey
162	D39011110162	Huron	Above Ground Storage Tanks	field survey
164	D39011110164	Huron	Other Commercial Sources	field survey
164	D39011110164	Huron	Farm machinery repair areas	field survey
165	D39011110165	Huron	Auto repair shops/body shops	field survey
166	D39011110166	Huron	Asphalt/cement/concrete plants	field survey
168	D39011110168	Huron	Car/boat/camper dealerships	field survey
169	D39011110169	Huron	Auto repair shops/body shops	field survey

*Map ID = 0 indicates location was not field verified.

Database Explanation

- AFS** Airborne Emissions (AIRS) Facilities report releases of pollutants into the air. Airborne pollutants can be deposited in surface waters.
- DOCKET** Facilities that have been involved in an action filed by the U.S. Department of Justice for U.S. EPA. These actions may relate to one or more U.S. EPA program.
- PCS** Facilities that hold a National Pollutant Discharge Elimination System (NPDES) permit. The NPDES permit program controls water pollution by regulating point sources such as pipes or man-made ditches that discharge pollutants into waters of the United States.
- RCRIS** Facilities regulated by U.S. EPA under the Resource Conservation and Recovery Act (RCRA) as hazardous waste generators or handlers. These types of facilities may be associated with potential releases of hazardous materials.
- SSTS** Facilities that produce pesticide, active ingredients, and devices. These types of facilities may be associated with potential releases of pesticides or other hazardous materials.

- TRIS Toxics Release Inventory (TRI) facilities are industrial facilities that manufacture, process, or import any of over 300 listed toxic chemicals that are released directly into the air, water, or land, or are transported off-site.
- MSL Sites that have been investigated by or are under investigation by Ohio EPA's Division of Emergency and Remedial Response. These types of facilities may be associated with soil, ground water, and surface water contamination from releases of hazardous materials.
- LUST Facilities that have reported a leaking underground storage tank (LUSTs) to Ohio's Bureau of Underground Storage Tank Regulations (BUSTR). Leaking underground storage tanks have been associated with soil and water contamination related to leaks and spills of gasoline and other petroleum products. Unused underground storage tanks may be used for the improper disposal of wastes.



- WTP Intake
- Stream
- Municipal Road
- County Road
- State Road
- Gas Pipe Line
- Rail Road
- Counties
- Cities
- Lake
- SWAP Area



OhioEPA

7000 0 7000 Feet

Figure 1 - City of Norwalk Drinking Water Source Protection Area

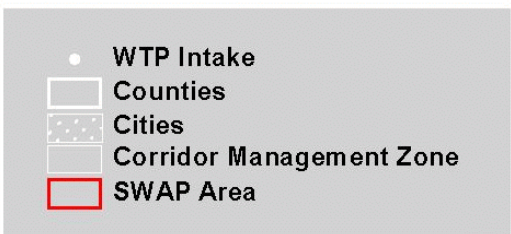


Figure 2 - City of Norwalk Emergency Management Zone

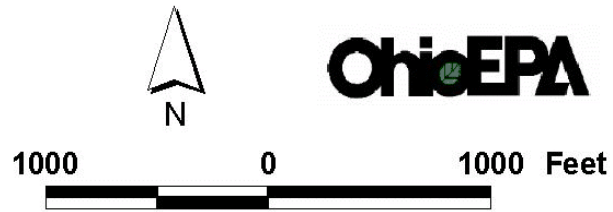
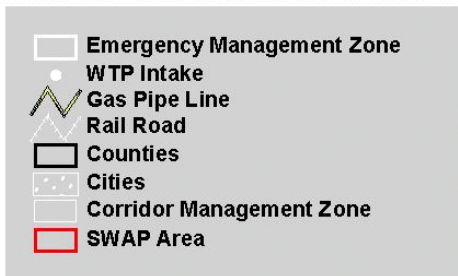
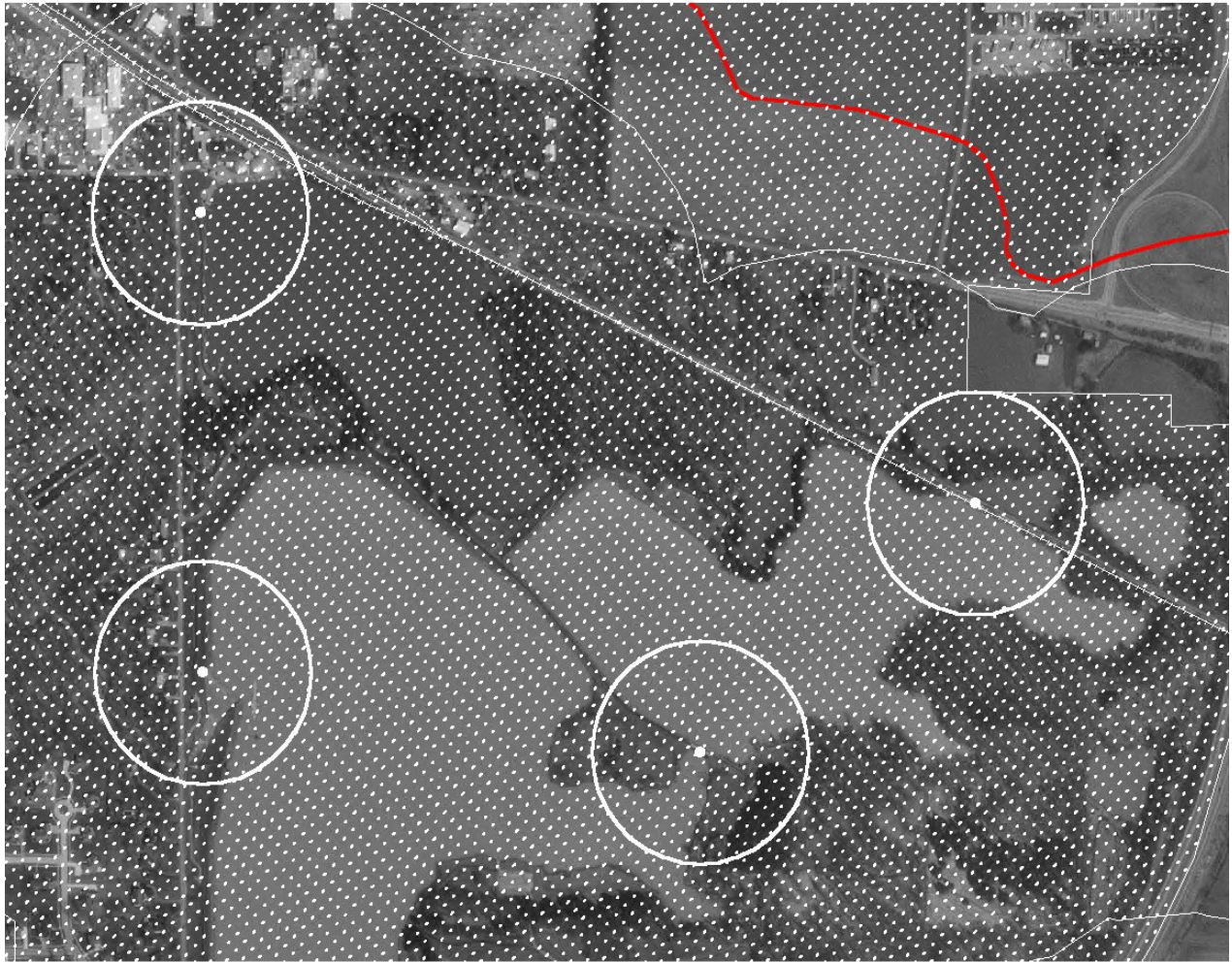
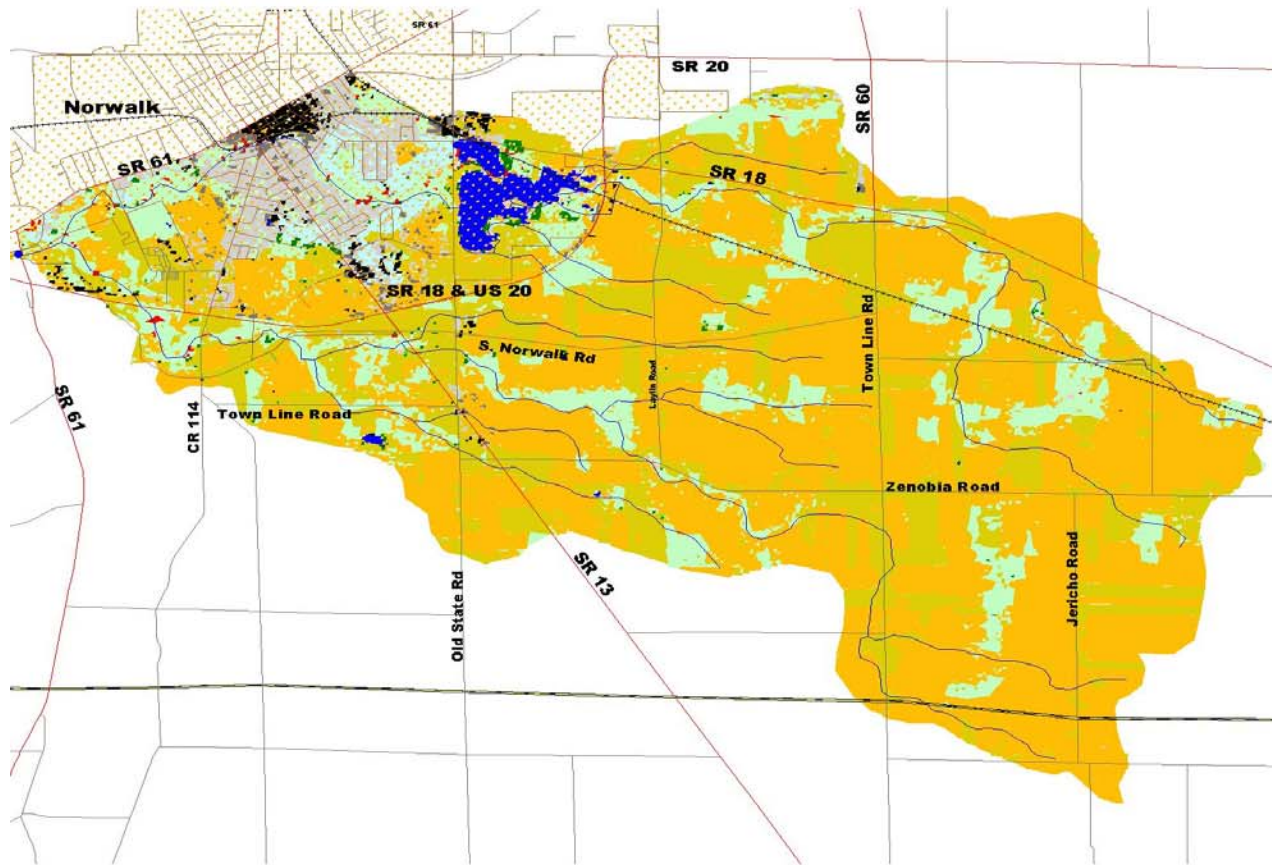


Figure 3 - City of Norwalk Emergency Management Zone



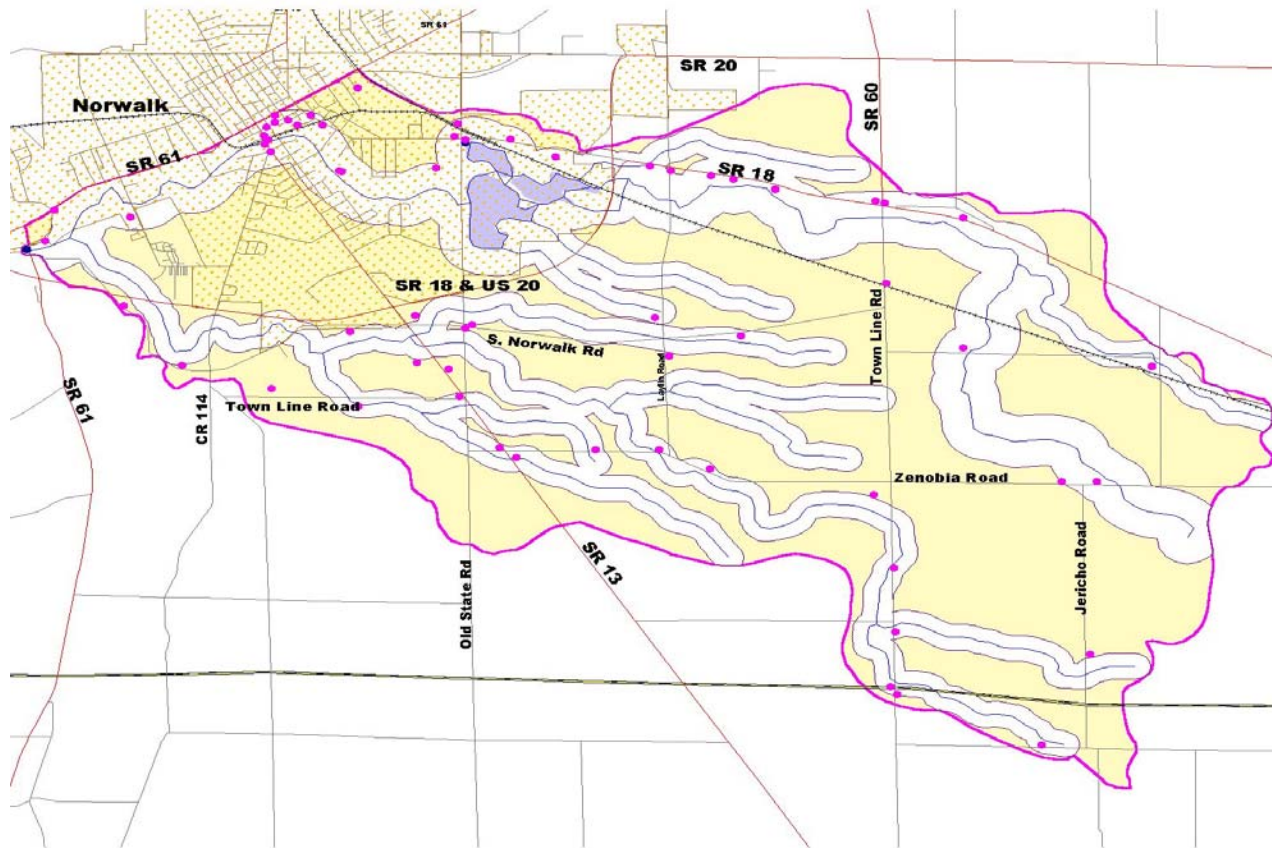
- WTP Intake
- Stream
- Municipal Road
- County Road
- State Road
- Gas Pipe Line
- Rail Road
- Counties
- Cities
- Land Use
- 51.9% - Row Crops
- 23.0% - Pasture/Hay
- 15.4% - Deciduous Forest
- 4.3% - Low Intensity Residential
- 1.4% - Open Water
- 1.3% - Urban/Recreational Grasses
- 0.9% - Commercial/Industrial/Transportation
- 0.8% - High Intensity Residential
- 0.5% - Evergreen Forest
- 0.2% - Emergent Herbaceous Wetlands
- 0.2% - Woody Wetlands
- <0.1% - Mixed Forest



OhioEPA

7000 0 7000 Feet

Figure 4 - Land Use within the City of Norwalk's Drinking Water Source Protection Area



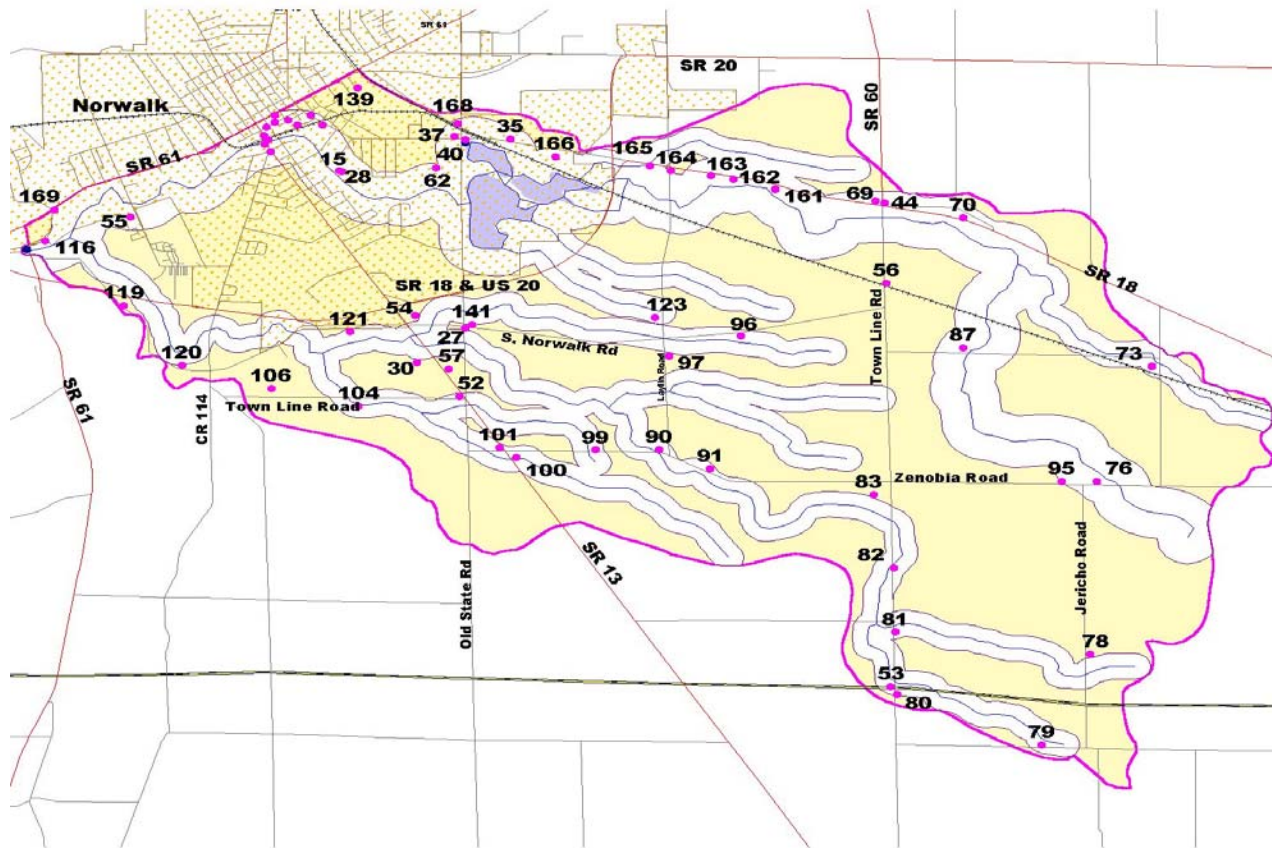
- Potential Contaminant Source
- WTP Intake
- ~ Stream
- ~ Municipal Road
- ~ County Road
- ~ State Road
- ~ Gas Pipe Line
- ~ Rail Road
- ▭ Counties
- ▭ Cities
- ▭ Lake
- ▭ Corridor Management Zone
- ▭ SWAP Area



OhioEPA

7000 0 7000 Feet

Figure 5 - Potential Contaminant Sources located within the City of Norwalk's Drinking Water Source Protection Area



- Potential Contaminant Source
- WTP Intake
- ~ Stream
- ~ Municipal Road
- ~ County Road
- ~ State Road
- ~ Gas Pipe Line
- ~ Rail Road
- Counties
- Lake
- Corridor Management Zone
- SWAP Area



OhioEPA

7000 0 7000 Feet

Figure 6 - Potential Contaminant Sources located in the City of Norwalk's Drinking Water Source Protection Area

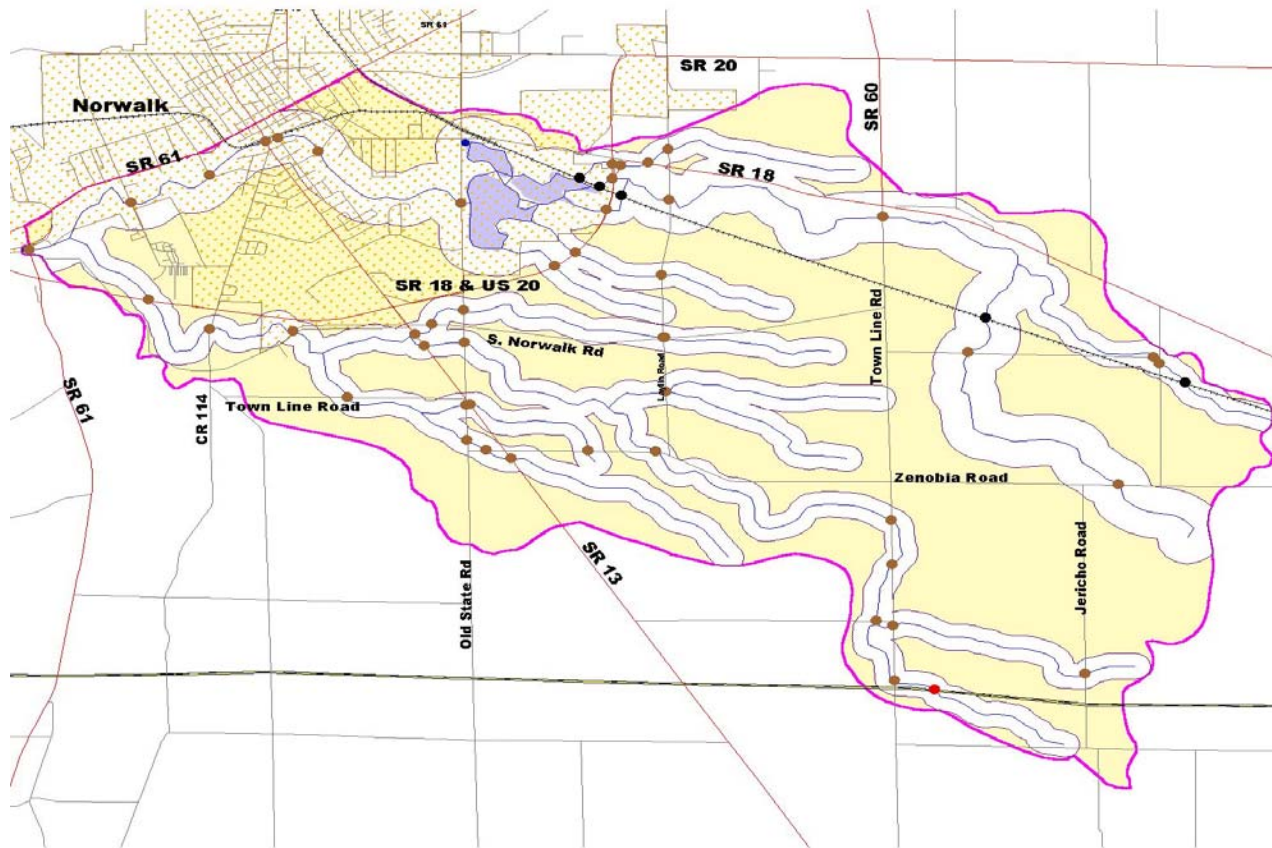
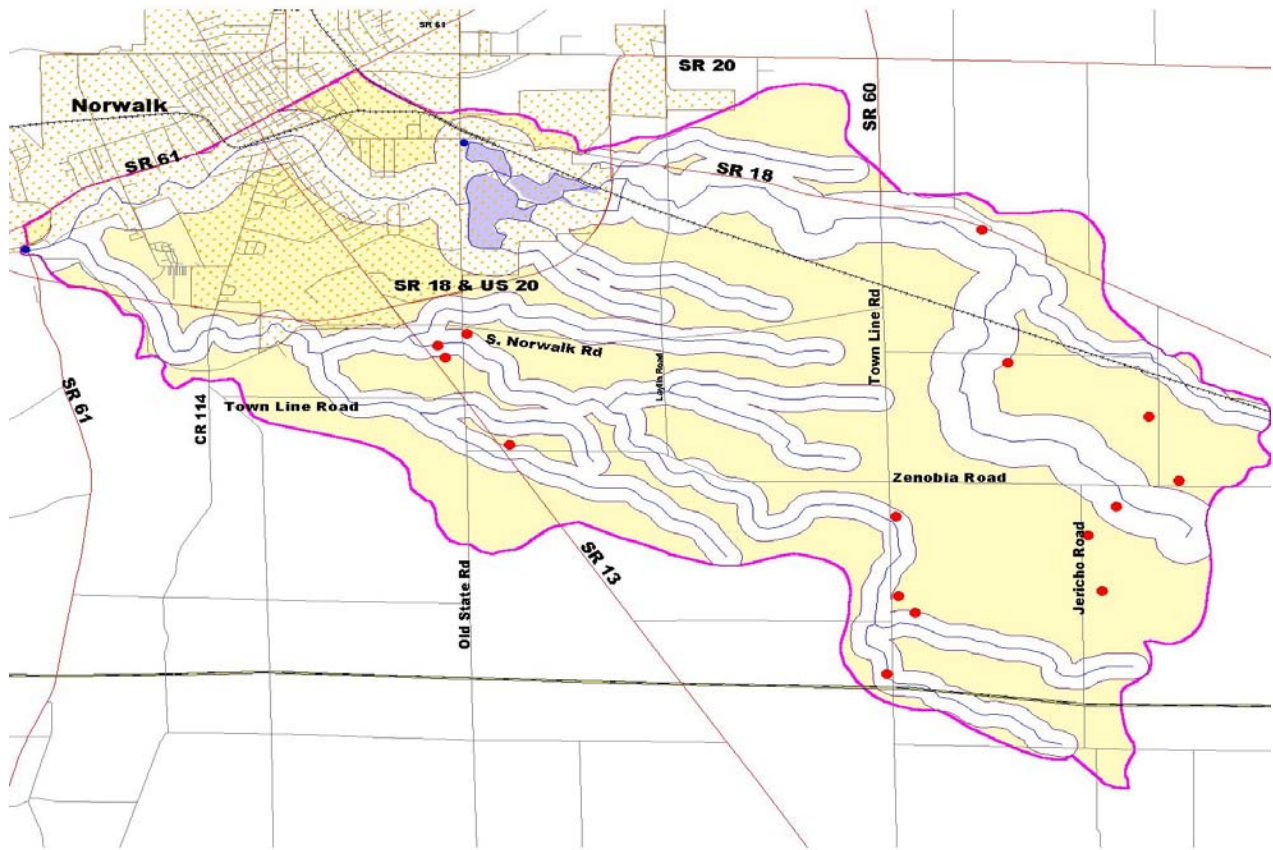


Figure 7 - Gas line, Rail, and Road Stream Crossings within the City of Norwalk's Drinking Water Source Protection Area



- Gas & Oil Wells
- WTP Intake
- Stream
- Municipal Road
- County Road
- State Road
- Gas Pipe Line
- Rail Road
- Counties
- ▨ Cities
- Lake
- Corridor Management Zone
- SWAP Area



OhioEPA

7000 0 7000 Feet

Figure 8 - Gas and Oil Wells located in the City of Norwalk's Drinking Water Source Protection Area

Appendix B

Drinking Source Water Protection Siting Prohibitions and Setbacks in Ohio Rules



Drinking Source Water Protection Siting Prohibitions and Setbacks in Ohio Rules

Please refer to the cited rule for the specifics and exceptions to the restricted activities.

May 2011

FACILITY	REGULATED ACTIVITY	Sanitary Isolation Radius	Inner Management Zone (One-Year Time-of-Travel)	Drinking Water Source Protection Area (Five-Year Time-of-Travel)	
				Low and Moderate Susceptibility	High Susceptibility
Animal Feeding Operation Fact Sheet Regulated by ODA-LEPP OAC § 901:10-2-02	Siting of manure storage or treatment facilities	Not permitted	Not permitted (exemptions if the facility is also a PWS)	Permitted	Not permitted unless engineering and management controls are put in place
Wastewater Treatment Land Application System Fact Sheet Regulated by OEPA-DSW OAC § 3745-42-13	Land application of wastewater	Not permitted	Not permitted	Permitted	Not permitted unless engineering and management controls are put in place
	Siting of wastewater storage facilities.	Not permitted	Not permitted	Not permitted in community and non-transient, non-community protection areas unless engineering and management controls are put in place	
Sewage Sludge (Biosolids) Fact Sheet Regulated by OEPA-DSW OAC § 3745-40-07 thru 40-08	Staging, stockpiling, field storage, and land application of biosolids	Not permitted	Not permitted	Permitted	Not permitted if underlain by karst or fractured bedrock
Landfills Industrial Solid Waste Fact Sheet Regulated by OEPA-DMWM OAC § 3745-29-07 Municipal Solid Waste Fact Sheet Regulated by OEPA-DMWM OAC § 3745-27-07 Residual Waste Fact Sheet Regulated by OEPA-DMWM OAC § 3745-30-06 Scrap Tires Fact Sheet Regulated by OEPA-DMWM OAC § 3745-27-71	Siting of landfills and monofills	Not permitted	Not permitted (exemptions if the facility is also a PWS)	Not permitted (exemptions if the facility is also a PWS)	



Drinking Source Water Protection Cleanup Standards in Ohio Rules

ACTIVITY	Drinking Water Source Protection Area (Five-Year Time-of-Travel)
<p>Leaking Underground Storage Tanks (LUSTs)</p> <p>Fact Sheet Regulated by the Bureau of Underground Storage Tank Regulations (BUSTR)</p>	<p>Cleanup standards are more stringent if the LUST is within 2,000 feet of a drinking water source protection area for a community or non-transient non-community public water system</p>
<p>Site Clean-up through the Voluntary Action Program (VAP)</p> <p>Fact Sheet Regulated by OEPA-VAP</p>	<p>Cleanup standards are more stringent if the VAP site is located within a drinking water source protection area.</p> <p>Urban Setting Designations for ground water are not allowed within a drinking water source protection area. Some exceptions apply to community public water systems.</p>

Drinking Water Source Protection Definitions

Term	Definition	Other terms	Notes
Drinking water source protection area	The surface and subsurface area surrounding a public water supply well which will provide water from an aquifer to the well within five years.	Wellhead protection area; source water protection area; protection area; Drinking water source protection area for a public water system using ground water	The extent of the protection area and inner and outer management zones are determined using a variety of methods, from basic equations that define a circular area to computer models that address complex aquifer systems. The size of the area may range from a few acres to a square mile or more, depending on how much water a system pumps, the aquifer's properties (thickness, porosity, hydraulic conductivity), recharge and other factors.
Inner management zone	The surface and subsurface area within a drinking water source protection area that will provide water to the well within one year.		
Outer management zone	The surface and subsurface area within a drinking water source protection area that will provide water to the well in more than one year and less than five years.		
Sanitary isolation radius	The surface and subsurface area around a public water system that must be maintained in a sanitary condition.		The sanitary isolation radius is determined from the actual or estimated average daily water demand of a public water system well. The minimum radius is 50 feet.
Source water assessment area	the drainage area upstream of the point where a public water system withdraws water from a surface source		
Emergency management zone	the surface and subsurface area in the immediate vicinity of a public water system intake within which the public water supply owner/operator has little or no time to respond to potential contamination from a spill, release, or weather related event		The standard emergency management zone boundary consists of a semi-circle that extends 500 feet upstream of the intake and 100 feet downstream of the intake, except as modified due to local conditions.
Corridor management zone	the surface and subsurface area within a source water assessment area where the potential for drinking water contamination warrants delineation, inventory, and management		The width of the standard CMZ extends 1,000 feet from the top of each bank of the principal stream and extends 500 feet from the top of each bank of tributaries draining into the principal stream, except as modified due to local conditions. The CMZ extends 10 miles upstream of the intake, including the principal stream and all the tributaries that drain to it, except as modified due to local conditions.
Zone of Critical Concern	on the Ohio River and means an area that extends ¼ mile below the intake to 25 miles upstream on the Ohio River and major tributaries. The lateral extent includes ¼ mile on both sides of the Ohio River and major tributaries.		
Critical Area Zone	a calculated area around a Lake Erie public water system intake, based upon its sensitivity determined by the intakes depth and distance from shore		

Appendix C

City Council Source Water Protection Resolution

Work Session: _____	Tabled: _____	Defeated: _____
First Reading: _____	Referred: _____	
Second Reading: _____	Adopted: _____	

**CITY OF NORWALK
RESOLUTION NO. 2014- 055**

**A RESOLUTION SUPPORTING THE DEVELOPMENT AND
IMPLEMENTATION OF A SOURCE WATER PROTECTION
PLAN FOR THE CITY OF NORWALK, OHIO**

Being duly authorized by the Charter of the City of Norwalk, the **Mayor** of the City of Norwalk, on behalf of the **Public Works Director**, does hereby respectfully propose the following legislation:

WHEREAS, the City of Norwalk, Ohio operates a public water supply system in compliance with Ohio Environmental Protection Agency regulations; and,

WHEREAS, the City of Norwalk uses surface water runoff from an eight-square-mile watershed area east of the City as its primary source of drinking water; and,

WHEREAS, the City of Norwalk recognizes the importance of protecting and preserving its source water in promoting the health and welfare of its citizens and other consumers of the Norwalk water system; and,

WHEREAS, a Source Water Protection Plan encourages land owners to voluntarily take measures to improve water runoff quality; and

WHEREAS, the Ohio Environmental Protection Agency encourages the development and implementation of a Source Water Protection Plan, and the State provides some benefits to communities which implement such plans; and

WHEREAS, on September 12, 2014, the Ohio EPA endorsed the Source Water Protection Plan developed by the City of Norwalk:


THEREFORE BE IT RESOLVED, by the Council of the City of Norwalk, Huron County, Ohio, as follows:

Section 1: That the Council of the City of Norwalk, Ohio hereby supports and endorses the City of Norwalk Source Water Protection Plan, a copy of which is on file in the Office of the Clerk of Council.

WHEREFORE, this Resolution will be in full force and effect from and after the earliest period allowed by law.

ATTESTATION:

It is hereby attested and affirmed that the foregoing Resolution received the necessary affirmative roll call votes required for passage on this 21st day of OCTOBER, 2014.




President of Council



Clerk of Council

RESOLUTION APPROVED:



ROBERT L. DUNCAN, Mayor
DAVID LIGHT ACTING MAYOR

10-21-14

Date

Appendix D

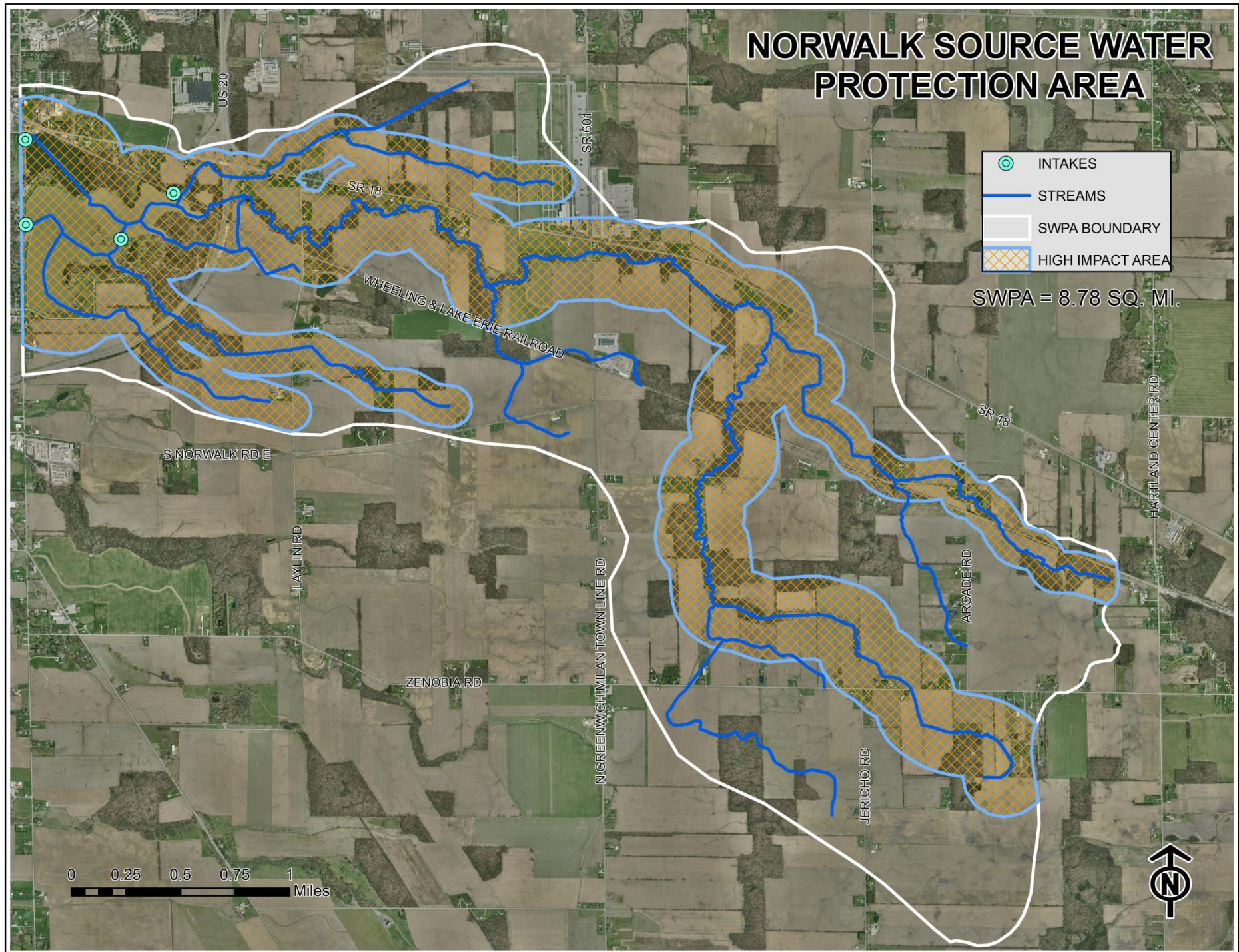
Norwalk Source Water Protection Brochure

NORWALK SOURCE WATER PROTECTION AREA

Legend:

- INTAKES
- STREAMS
- SWPA BOUNDARY
- HIGH IMPACT AREA

SWPA = 8.78 SQ. MI.



0 0.25 0.5 0.75 1 Miles



Where does the City of Norwalk's drinking water come from? More than 90 percent of the city's water supply comes from the Norwalk Creek watershed, which is depicted in the map inside. Rainwater and snowmelt in the watershed forms Norwalk Creek, which flows directly into Upper Reservoir, the first in the three reservoir system.

From Upper Reservoir, water continues into Memorial Reservoir, the largest of the three, and then flows into Lower Reservoir. Water is drawn from Lower Reservoir to be treated in the water plant. The reservoirs have a total capacity of nearly 700 million gallons, more than a year's supply.

During dry years when Norwalk Creek watershed does not provide a sufficient supply, water can be pumped to Memorial Reservoir from the East Branch of the Huron River. On average, this resource is used about once every three years.

The city also buys nearly 55 million gallons a year of treated water from Northern Ohio Rural Water. This connection provides the flexibility to ensure a reliable supply during maintenance and emergencies.

Because nearly all of the water supply comes from the Norwalk Creek watershed, this area is the focus of the city's source water protection efforts. **What are the main threats to source water quality?** The vast majority of the land in the Norwalk Creek watershed is agricultural, but there are also many residences and a few commercial enterprises. In addition, a railroad and major roadways cross the watershed. All of these have the potential to be serious threats to source water. Because the reservoir system directly intercepts the creek, anything that enters the creek will end up in the reservoirs.

A harmful algae bloom occurred in Upper Reservoir in 2014. It had great potential to harm drinking water quality, and illustrates how vulnerable the water supply is to activities in the watershed. The phosphorus required for a harmful algae bloom to occur was a result of activities in the watershed.

Norwalk's source water protection plan was developed in cooperation with many agencies, including Huron/Erie Farm Service Agency, Huron Soil and Water Conservation District, OSU Extension, Huron County Public Health, the Western Reserve Land Conservancy, the Huron County Emergency Management Agency, Ohio Rural Water Association and Ohio EPA. The protection plan lays a framework for determining means to improve water quality. The plan can be found on the city's website at www.norwalkoh.com/dept_services/water_treatment.html.

For more information, contact Superintendent Bill Albrecht at 419/663-6755, or Chief Operator Rick Schaffer at 419/663-6725.

Source water protection information may also be obtained from Ohio EPA at 419/373-4101 or at <http://epa.ohio.gov/ddagw/swap.aspx>.

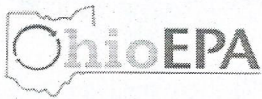
Protecting the City of Norwalk's Source of Drinking Water



Steps our community can take to help ensure a safe and plentiful source of water for the future

Appendix E

Norwalk Additional Testing Requirements



Effective Date: 01/01/2015

2015 ENTRY POINT SCHEDULE

OH3901111 NORWALK CITY

System Type: Community

Operating Period: 1/1 to 12/31

ENTRY POINT MONITORING SCHEDULE

Sampling Location	Facility ID: 3955244	Facility Name: NORWALK CITY	Facility Class: CLASS 3
	SMP ID: EP001	Facility Source: Surface Water	

THIS SCHEDULE MAY NOT INCLUDE ALL MONITORING REQUIREMENTS FOR YOUR SYSTEM.

Contact your district office to review additional monitoring for operating parameters, and/or other monitoring requirements not included on this schedule. For water emergencies that occur after hours, please call 800-282-9378

**** REMINDER: ** Consumer Confidence Report (CCR) is due July 1, 2015**

Chemicals	Monitoring Requirements
INORGANICS	1 Sample(s) Required between 1/1/2015 and 5/31/2015
<i>Sample for all the analytes listed below:</i>	
ANTIMONY, TOTAL - 1074 ARSENIC - 1005 BARIUM - 1010 BERYLLIUM, TOTAL - 1075 CADMIUM - 1015 CHROMIUM - 1020 CYANIDE - 1024 FLUORIDE - 1025 MERCURY - 1035 NICKEL - 1036 SELENIUM - 1045 THALLIUM, TOTAL - 1085	
NITRITE - 1041	Not Required
NITRATE - 1040	1 Sample(s) Required between 1/1/2015 and 1/31/2015 1 Sample(s) Required between 2/1/2015 and 2/28/2015 1 Sample(s) Required between 3/1/2015 and 3/31/2015 1 Sample(s) Required between 4/1/2015 and 4/30/2015 1 Sample(s) Required between 5/1/2015 and 5/31/2015 1 Sample(s) Required between 6/1/2015 and 6/30/2015 1 Sample(s) Required between 7/1/2015 and 7/31/2015 1 Sample(s) Required between 8/1/2015 and 8/31/2015 1 Sample(s) Required between 9/1/2015 and 9/30/2015 1 Sample(s) Required between 10/1/2015 and 10/31/2015 1 Sample(s) Required between 11/1/2015 and 11/30/2015 1 Sample(s) Required between 12/1/2015 and 12/31/2015
RADIOLOGICALS	1 Sample(s) Required between 1/1/2015 and 5/31/2015
<i>Sample for all the analytes listed below:</i>	
GROSS ALPHA - 4002 RADIUM-228 - 4030	
SYNTHETIC ORGANIC CHEMICALS (SOC) GROUP 1	1 Sample(s) Required between 4/1/2015 and 6/30/2015
<i>Sample for all the analytes listed below:</i>	
ALACHLOR (LASSO) - 2051 ATRAZINE - 2050 SIMAZINE - 2037	
VOLATILE ORGANIC CHEMICALS (VOC)	1 Sample(s) Required between 1/1/2015 and 3/31/2015
TOTAL ORGANIC CARBON (TOC)	1 Paired Sample Set Required between 1/1/2015 and 1/31/2015 1 Paired Sample Set Required between 2/1/2015 and 2/28/2015 1 Paired Sample Set Required between 3/1/2015 and 3/31/2015 1 Paired Sample Set Required between 4/1/2015 and 4/30/2015 1 Paired Sample Set Required between 5/1/2015 and 5/31/2015 1 Paired Sample Set Required between 6/1/2015 and 6/30/2015 1 Paired Sample Set Required between 7/1/2015 and 7/31/2015 1 Paired Sample Set Required between 8/1/2015 and 8/31/2015 1 Paired Sample Set Required between 9/1/2015 and 9/30/2015 1 Paired Sample Set Required between 10/1/2015 and 10/31/2015 1 Paired Sample Set Required between 11/1/2015 and 11/30/2015 1 Paired Sample Set Required between 12/1/2015 and 12/31/2015

A paired sample set refers to one source water and one treated water sample. A source water alkalinity is also required at the same time the TOC sample is taken.



Effective Date: 01/01/2015

2015 DISTRIBUTION SCHEDULE

OH3901111 NORWALK CITY

System Type: Community

Operating Period: 1/1 to 12/31

THIS SCHEDULE MAY NOT INCLUDE ALL MONITORING REQUIREMENTS FOR YOUR SYSTEM.

Contact your district office to review additional monitoring for operating parameters, and/or other monitoring requirements not included on this schedule. For water emergencies that occur after hours, please call 800-282-9378

**** REMINDER: ** Consumer Confidence Report (CCR) is due July 1, 2015**

DISTRIBUTION MONITORING SCHEDULE

Sampling Location	Facility ID: DS1 SMP ID: DS000	Facility Name: NORWALK, CITY OF DISTRIBUTION	Facility Class: CLASS 2
--------------------------	---	---	--------------------------------

Chemicals	Monitoring Requirements
LEAD - 1030 AND COPPER - 1022	Not Required
TOTAL COLIFORM (TCR) - 3100	15 Sample(s) Required between 1/1/2015 and 1/31/2015 15 Sample(s) Required between 2/1/2015 and 2/28/2015 15 Sample(s) Required between 3/1/2015 and 3/31/2015 15 Sample(s) Required between 4/1/2015 and 4/30/2015 15 Sample(s) Required between 5/1/2015 and 5/31/2015 15 Sample(s) Required between 6/1/2015 and 6/30/2015 15 Sample(s) Required between 7/1/2015 and 7/31/2015 15 Sample(s) Required between 8/1/2015 and 8/31/2015 15 Sample(s) Required between 9/1/2015 and 9/30/2015 15 Sample(s) Required between 10/1/2015 and 10/31/2015 15 Sample(s) Required between 11/1/2015 and 11/30/2015 15 Sample(s) Required between 12/1/2015 and 12/31/2015
TOTAL CHLORINE - 1000	15 Sample(s) Required between 1/1/2015 and 1/31/2015 15 Sample(s) Required between 2/1/2015 and 2/28/2015 15 Sample(s) Required between 3/1/2015 and 3/31/2015 15 Sample(s) Required between 4/1/2015 and 4/30/2015 15 Sample(s) Required between 5/1/2015 and 5/31/2015 15 Sample(s) Required between 6/1/2015 and 6/30/2015 15 Sample(s) Required between 7/1/2015 and 7/31/2015 15 Sample(s) Required between 8/1/2015 and 8/31/2015 15 Sample(s) Required between 9/1/2015 and 9/30/2015 15 Sample(s) Required between 10/1/2015 and 10/31/2015 15 Sample(s) Required between 11/1/2015 and 11/30/2015 15 Sample(s) Required between 12/1/2015 and 12/31/2015

Samples should be collected at the same time and place as the Total Coliform samples.

Sampling Location	Facility ID: DS1 SMP ID: DS201	Facility Name: NORWALK, CITY OF DISTRIBUTION 394 CLEVELAND RD.	Facility Class: CLASS 2
--------------------------	---	---	--------------------------------

Chemicals	Monitoring Requirements
DISINFECTION BYPRODUCTS	1 Sample(s) Required between 2/1/2015 and 2/7/2015 at SMP: DS201 1 Sample(s) Required between 5/1/2015 and 5/7/2015 at SMP: DS201 1 Sample(s) Required between 8/1/2015 and 8/7/2015 at SMP: DS201 1 Sample(s) Required between 11/1/2015 and 11/7/2015 at SMP: DS201

Sample for all the analytes listed below:

- 1) TOTAL HALOACETIC ACIDS (HAA5) - 2456
- 2) TTHM - 2950



Effective Date: 01/01/2015

2015 DISTRIBUTION SCHEDULE

OH3901111 NORWALK CITY

System Type: Community

Operating Period: 1/1 to 12/31

THIS SCHEDULE MAY NOT INCLUDE ALL MONITORING REQUIREMENTS FOR YOUR SYSTEM.

Contact your district office to review additional monitoring for operating parameters, and/or other monitoring requirements not included on this schedule. For water emergencies that occur after hours, please call 800-282-9378

** REMINDER: ** Consumer Confidence Report (CCR) is due July 1, 2015

DISTRIBUTION MONITORING SCHEDULE

Sampling Location	Facility ID: DS1 SMP ID: DS202	Facility Name: NORWALK, CITY OF DISTRIBUTION 77 CHRISTIE AVE.	Facility Class: CLASS 2
--------------------------	---	--	--------------------------------

Chemicals	Monitoring Requirements		
DISINFECTION BYPRODUCTS	1 Sample(s) Required between	2/1/2015 and	2/7/2015 at SMP: DS202
	1 Sample(s) Required between	5/1/2015 and	5/7/2015 at SMP: DS202
	1 Sample(s) Required between	8/1/2015 and	8/7/2015 at SMP: DS202
	1 Sample(s) Required between	11/1/2015 and	11/7/2015 at SMP: DS202

Sample for all the analytes listed below:

- 1) TOTAL HALOACETIC ACIDS (HAA5) - 2456
- 2) TTHM - 2950

Sampling Location	Facility ID: DS1 SMP ID: DS203	Facility Name: NORWALK, CITY OF DISTRIBUTION 288 W. MAIN ST.	Facility Class: CLASS 2
--------------------------	---	---	--------------------------------

Chemicals	Monitoring Requirements		
DISINFECTION BYPRODUCTS	1 Sample(s) Required between	2/1/2015 and	2/7/2015 at SMP: DS203
	1 Sample(s) Required between	5/1/2015 and	5/7/2015 at SMP: DS203
	1 Sample(s) Required between	8/1/2015 and	8/7/2015 at SMP: DS203
	1 Sample(s) Required between	11/1/2015 and	11/7/2015 at SMP: DS203

Sample for all the analytes listed below:

- 1) TOTAL HALOACETIC ACIDS (HAA5) - 2456
- 2) TTHM - 2950

Sampling Location	Facility ID: DS1 SMP ID: DS204	Facility Name: NORWALK, CITY OF DISTRIBUTION 340 WESTWIND DR.	Facility Class: CLASS 2
--------------------------	---	--	--------------------------------

Chemicals	Monitoring Requirements		
DISINFECTION BYPRODUCTS	1 Sample(s) Required between	2/1/2015 and	2/7/2015 at SMP: DS204
	1 Sample(s) Required between	5/1/2015 and	5/7/2015 at SMP: DS204
	1 Sample(s) Required between	8/1/2015 and	8/7/2015 at SMP: DS204
	1 Sample(s) Required between	11/1/2015 and	11/7/2015 at SMP: DS204

Sample for all the analytes listed below:

- 1) TOTAL HALOACETIC ACIDS (HAA5) - 2456
- 2) TTHM - 2950

Appendix F

Water Treatment Map

From the reaction basins, the water flows into a rapid mixer, which violently agitates the water as ferric chloride and polymer are added. The chemicals make contaminants stick together to form floc particles.

The water then is split to two circular 380,000-gallon treatment basins. At the center of each basin is the flocculation zone where a mixer gently causes the developing floc particles to stick together. The objective is to build a floc particle heavy enough to settle out of the water in the sedimentation zone, located on the perimeter of the treatment basins. Sodium hydroxide is added at the settling basins to increase the water's pH.

As the water travels from the settling basins to a set of filters, a small amount of chlorine is injected to begin disinfection and oxidize some remaining contaminants.

The three filters remove particles not removed in the settling basins. The filter media consists of 15 inches of anthracite coal and 15 inches of sand supported by 12 inches of gravel.

Each filter is periodically cleaned by reversing the flow of water at a high rate through the filter media. Particles and solids retained in the media from normal filter operations are removed.

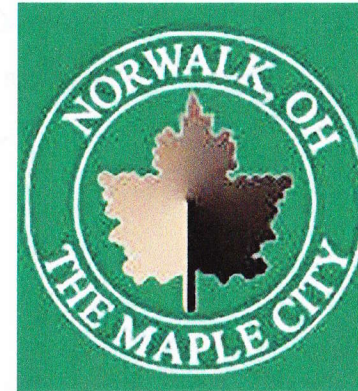
Water from the filters is chemically treated with chlorine for disinfection, fluoride to help prevent tooth decay, and polyphosphates to stabilize the water. Finished water flows to two underground storage clearwells that hold up to a million gallons before being pumped into two water towers and the distribution system on its way to customer taps. If water usage warrants, as much as 3,000 gallons per minute of water can be pumped from the plant, while up to 1.15 million gallons can be stored in the water towers.

A large diesel generator at the plant allows the city to continue treating and pumping water during electrical outages.

Dozens of water tests are done daily in the plant's on-site laboratory to ensure the water safely meets all EPA mandates. Numerous additional water samples are sent to outside labs to confirm water quality.

CITY OF NORWALK, OHIO

WATER TREATMENT PLANT



The City of Norwalk's primary water source is rainwater runoff from about 8 square miles of land east of the city. The rainwater forms Norwalk Creek, which flows into the city's reservoirs on Old State Road. The capacity of the three-reservoir system is nearly 700 million gallons, about a year's supply. To bolster its supply, the city purchases about 53 million gallons of water from Northern Ohio Rural Water. The city also has the ability to pump water from the East Branch of the Huron River into the reservoir system.

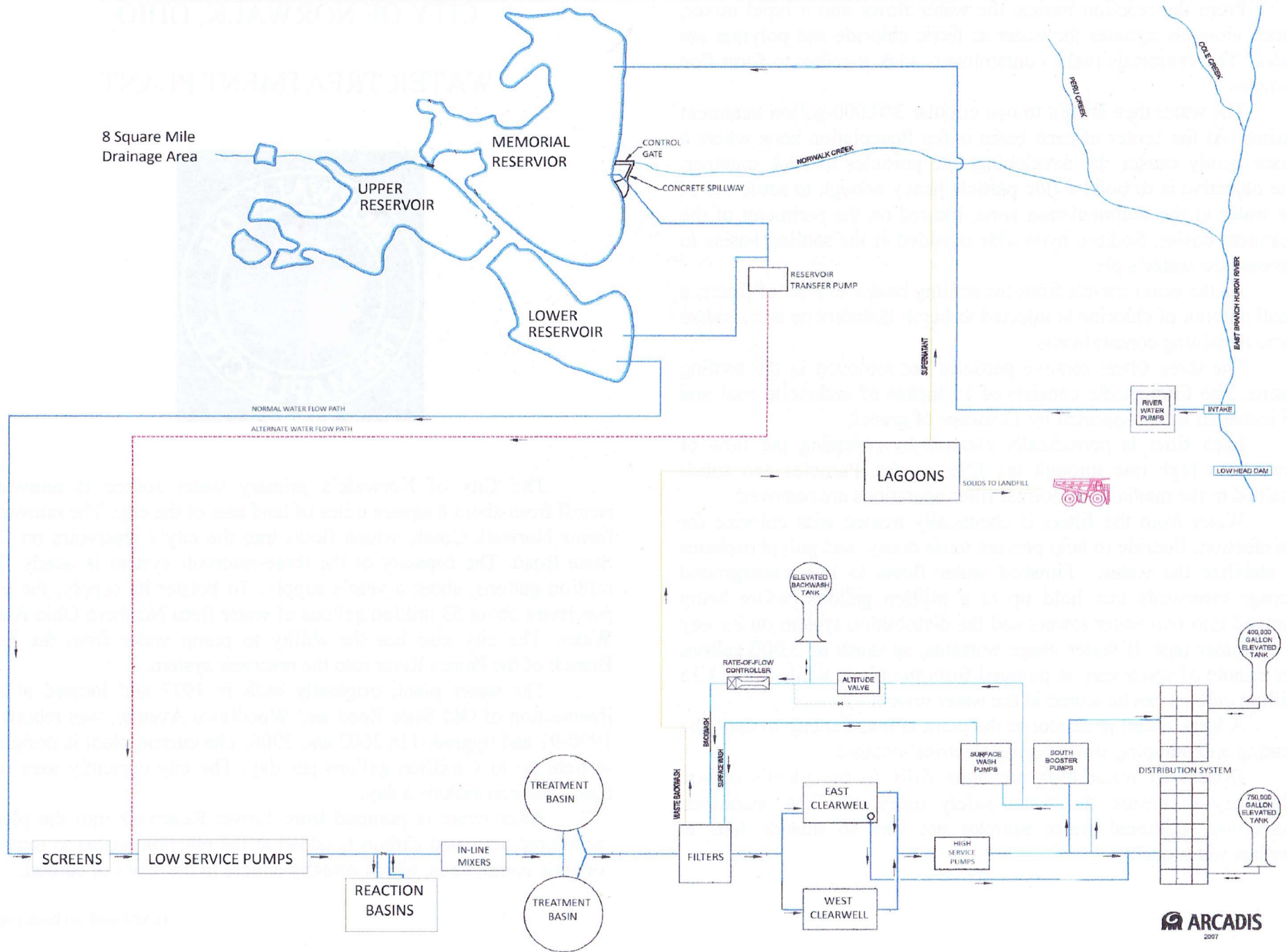
The water plant, originally built in 1927 and located at the intersection of Old State Road and Woodlawn Avenue, was rebuilt in 1990-91 and upgraded in 2002 and 2006. The current plant is designed to treat up to 4 million gallons per day. The city currently uses less than 2 million gallons a day.

After water is pumped from Lower Reservoir into the plant, powdered activated carbon is added at the reaction basins to remove organic compounds, which actually adhere to the specs of carbon.

(continued on back page)



NORWALK CITY WATER SYSTEM



Appendix G

Huron River Watershed TMDL Program Fact Sheet

April 2005

Huron River Watershed TMDL Program

Where is the Huron River watershed?

The Huron River is located in north central Ohio along the Lake Erie shoreline. The mainstem of the river is approximately 60 miles long and drains 403 square miles or 261,000 acres. Land use in the watershed is mostly agriculture, with 74 percent cropland, 15 percent forest and 11 percent urban or other use.

There are three cities, Willard, Norwalk and Huron, and 10 villages in the Huron watershed. The state manages two wildlife areas within the watershed, Willard Marsh Wildlife Area and Milan Wildlife Area. The upstream segments of the river and the Marsh Run subwatershed are characterized by dark, highly erodible "muck" soils and vegetable crop production. The Megginson Creek, Slate Run and Frink Run subwatersheds are dotted with sinkholes, a geological formation that makes ground water highly susceptible to contamination from surface runoff.

How did Ohio EPA collect water quality data?

Comprehensive biological, chemical, and physical data were collected by Ohio EPA scientists in 1998 and 2002 along 220 miles of the Huron River and its tributaries. Samples from 63 sites were evaluated, including monitoring the abundance and diversity of fish and aquatic insect communities, measuring the physical habitat of the stream and adjacent land use, and analysis of water samples to determine the chemical quality of the water and sediments.

The conditions of the watershed were compared with state water quality

goals to determine which stream segments are impaired, and how much needs to be done to restore good stream habitat and water quality. There is an emphasis on protection of public drinking water supplies for several communities in the watershed. This evaluation is done as part of Ohio EPA's Total Maximum Daily Load (TMDL) program.

How does your stream "measure up?"

Citizens in Norwalk and Monroeville get their drinking water from the East Branch Huron River and the West Branch Huron River, respectively.

All streams are designated Warm Water Habitat (the water will support plant and animal species accustomed to warm water), including the lake-affected lower 10 miles of the river. Of the 220 miles evaluated, 140 meet the quality level of their use designation. Eighty-three percent of the impaired streams are in areas that drain less than 20 square miles.

Several streams are being re-evaluated for a possible change to Modified Warm Water Habitat due to persistent habitat or channel modification. They include an upstream

segment of Clayton Ditch, tributary to Frink Run, portions of Marsh Run, tributary to Marsh Run and Shiloh Ditch.

Is the Huron River polluted?

Yes and no. Much of the Huron River and its two major branches have good water quality and populations of fish and other aquatic life.

The Huron River upstream from lake-affected area meets the water quality standards, as do the West Branch Huron River from Monroeville to the mouth and the East Branch Huron River from Bronson Township to the mouth.

Other streams that are meeting water quality standards include Rattlesnake Creek, Village Creek, Walnut Creek, upper Slate Run, Frink Run, Megginson Creek, Seymour Creek, Cole Creek, tributaries to Cole Creek and Norwalk Creek and Clayton Ditch.

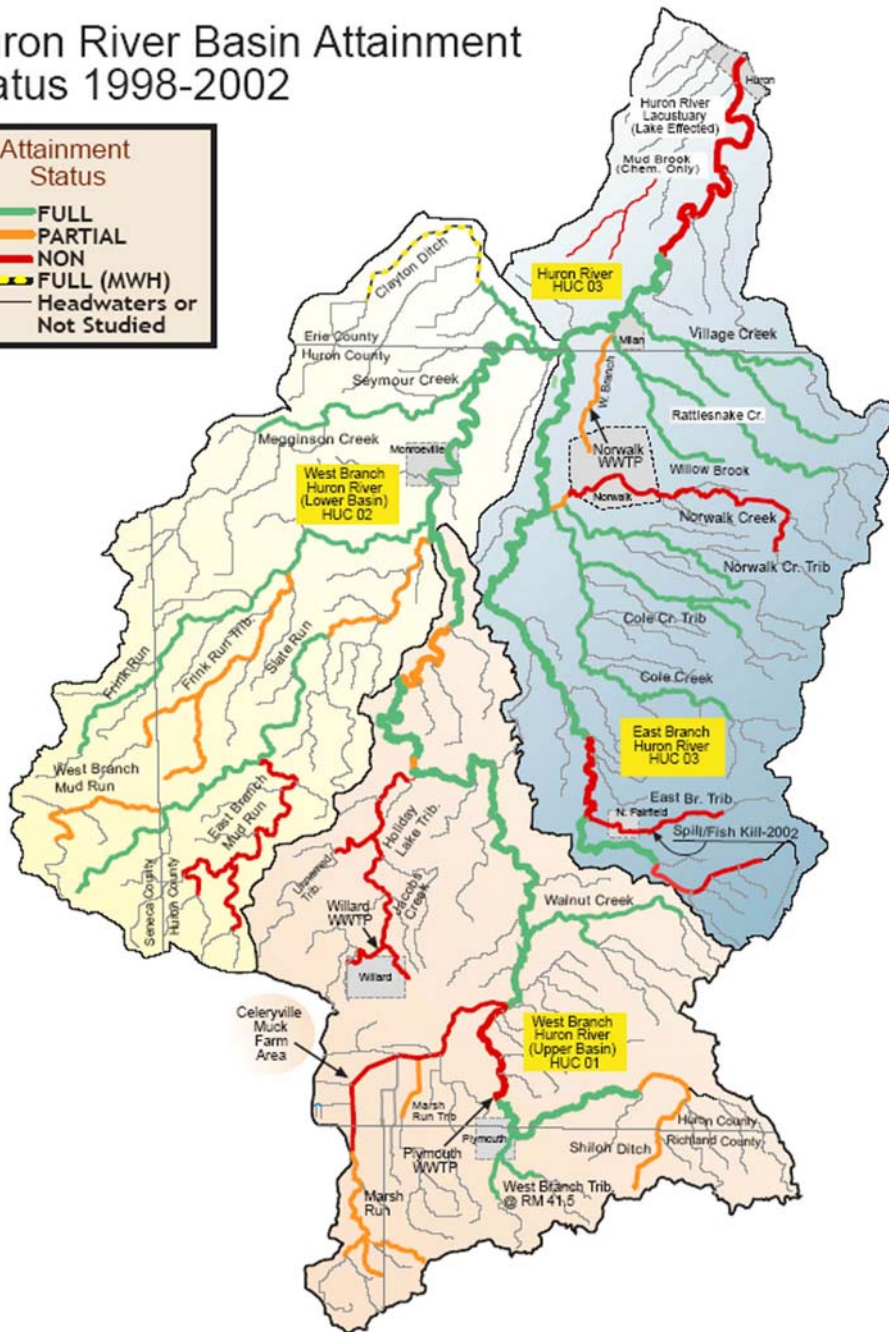
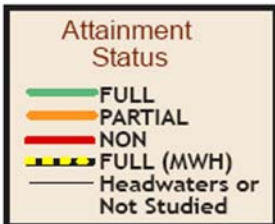
Some areas of the watershed do not currently meet water quality standards. The West Branch Rattlesnake Creek and Norwalk Creek near Norwalk, Jacobs Creek near Willard, West Branch Huron River near Plymouth, the headwaters of Mud Brook and its tributaries south of Huron and the mouth of the Huron River are impaired by municipal sewage.

Communities with combined sanitary and storm sewer systems may have untreated human and industrial waste overflowing to the river during heavy rainstorms. Fuel leaks and pesticide spills have been a problem in Jacobs Creek and the tributary to East Branch Huron River near North Fairfield, respectively. Rapid development along the US 250 corridor north of the Ohio Turnpike resulted in a high number of package plants (pre-manufactured



Huron River Watershed TMDL Program

Huron River Basin Attainment Status 1998-2002



Map of Huron River Watershed

wastewater treatment facilities for small communities or individual property), some seasonal and poorly maintained, discharging to the low flowing headwaters of Mud Brook.

The lower 10 miles of the Huron River are impaired by excessive nutrients and siltation deposits from upstream, and are further degraded by harbor and marina development.

What else degrades the Huron River?

Many small streams and the headwater segments of the three main rivers (East Branch, West Branch and Mainstem of the Huron) are impaired by physical changes to the land. Stream channelization, tiles and loss of floodplains and streamside vegetation have impaired portions of the East Branch Huron River, West Branch Huron River, Mud Run, Shiloh Ditch, Marsh Run and tributaries to Marsh Run and Frink Run.

When streams are widened and deepened for agricultural drainage, they contribute excess soil to the stream which destroys habitat for fish and other aquatic life. Soil carried through ditches degrades the Huron Harbor and Lake Erie.

When trees are removed from along the stream banks, the lack of shade allows the water temperature to increase, decreasing the amount of dissolved oxygen for aquatic organisms. This is made worse by manure runoff and untreated sewage flowing from failing home septic systems.

Huron River Watershed TMDL Program

Excessive nutrients or siltation from agricultural lands also contributed to impairment in many of the same streams, including the headwaters of the two Huron River branches, Mud Run, Shiloh Ditch, Marsh Run, upper Norwalk Creek and tributaries to Marsh and Frink Run.

Lack of water in the small headwater streams, especially in the summer, makes it hard for pollutants to be absorbed and treated by the natural stream biology. Natural drought, along with drainage tiles and crop irrigation withdrawals, contribute to uneven water flow in the streams. While recognizing the value and function of drainage in an agricultural watershed, it should be noted that low water makes it harder for these small streams to support good aquatic communities.

Drought conditions in 2002 contributed to impairment in Slate Run, East Branch Huron River headwaters and segments of West Branch Huron River. The Holiday Lakes Tributary is impaired by a dam, which results in low concentrations of dissolved oxygen and is a barrier to fish movement.

What is being done to improve the water resource?

The community is taking steps toward reducing pollution in the Huron River basin. In the late 1980s, large municipal wastewater treatment plants modernized and water quality improved as a result.

Many conservation measures such as no-till farming, crop residue manage-

ment (leaving soybean stubble and corn husks on the field after harvest), planting winter cover crops, and creating buffer strips (small areas or strips of land in permanent vegetation) have been adopted to reduce soil erosion.

The TMDL program identifies measures to reduce pollution further. Some actions are already occurring. Two previous state/federal grants provided cost share for agricultural conservation practices, home septic system replacements, livestock exclusion fencing and farm chemical containment structures in targeted areas of the watershed. Programs funded through the U.S. Department of Agriculture have helped provide animal waste storage facilities and additional erosion control buffer practices.

The City of Norwalk is required to address combined sewer overflow events by developing a long-term plan to control combined storm water and sewage overflows to the streams during rainfall. The Huron Basin wastewater treatment plant in Erie County is working to eliminate sewage bypasses and reduce discharge of ammonia by July 2006.

How much pollution load must be reduced?

Due to the large percentage of land in crop production in Ohio's agricultural watersheds, including the Huron River, sediment and excessive nutrients are the most pervasive pollutants that need to be controlled. Improvements in stream habitat and reductions in organic

enrichment are also needed in the Huron River watershed. Estimates of the existing pollutant load of sediment and nutrients (nitrate+nitrite and phosphorus) show that reductions are needed throughout the watershed in order to alleviate water quality impairments. (See Table 1) While the results in Table 1 show overall percentage reductions are necessary for these large watershed areas, the need for reductions in some of the small drainage areas severely impacted by agriculture is even greater.

What additional steps must be taken to reduce pollutant loads?

To reduce pollutant loadings and the severity of their impact, Ohio EPA recommends an approach that directs resources to improve the overall habitat and physical stability of streams throughout the watershed. Traditional best management practices and land management measures such as riparian buffer initiatives, agricultural conservation practices, and manure management plans should be targeted at the stream segments most vulnerable to erosion during high-flow storm events. Recommendations also include better management of urban storm water, sanitary waste from unsewered communities, septic systems, and agricultural drainage, and a number of loan and grant opportunities that support conservation and water quality-related improvements.

Table 1: Percentage Reductions Needed to Meet Water Quality Targets

Assessment Unit	Pollutant		
	Sediment	Nitrite+Nitrate	Phosphorus
Upper West Branch Huron River	49%	31%	25%
Lower West Branch Huron River	49%	27%	43%
East Branch Huron River and Huron River Mainstem	65%	32%	5%

Appendix H

Open House Sign-In Sheet and Placemat

City of Norwalk
Water Treatment Plant Surface Water Protection
 Open House

Printed Name	Title	Organization Name	Email address	Phone Number	check if you would like a copy of the sign in sheet emailed to you.
William Albrecht	WEWW TREATMENT SUPERINTENDENT	WEWW PLANTS CITY OF NORWALK	treatmentsuper@norwalkoh.com	419-663-6755	
Rick Schaffer	Chief Operator WTP	City of Norwalk	wtpchief@norwalkoh.com	419-663-6725	
David Ackerman	WEWW TREATMENT ASST SUPERINTENDENT	WEWW PLANTS CITY OF NORWALK	treatmentasstsuper@norwalkoh.com	419-663-6755	
Mike Gastier	Extension Educator	OSU Extension	gastier.3@osu.edu	419-668-8219	
Gary Braden	Water Treatment Operator	City of Norwalk	Garybraden5@aol.com	419 706-4216	
David Wallace	City Council	City of Norwalk		419 706 8656	
Diana Strouse	County Exp. Director	USA	diana.strouse@oh.usda.gov	Ext 105 419-668-4113	
Amanda Eater	Registered Sanitarian	Huron County Public Health	aeater@huroncohealth.com	419 668-1652	

City of Norwalk
Water Treatment Plant Surface Water Protection
 Open House

Printed Name	Title	Organization Name	Email address	Phone Number	check if you would like a copy of the sign in sheet emailed to you
BOB CARLETON	COUNCIL	City of Norwalk	BCARLETON1942@gmail.com	419 706 6853	
Bob Patuskij	Safety Service	City of Norwalk	safety.service@norwalkoh.com	419 681 5816	
John R. Soisson	Fire Chief	City of NORWALK	firechief@norwalkoh.com	419 663-6790	
Robert Duncan	Mayor	City of Norwalk	Mayor@norwalkoh.com	419 663-6700	
Josh Snyder	Public Work Director	City of Norwalk	Engineer@norwalkoh.com	419-663-6735	
CARY BRICKNER	SWCD MANAGER (RETIRED)	SWCD	CARY.BRICKNER@OH.NACDNET.NET	668-4113	
Chad Strong	SWCD DISTRICT Manager	SWCD		668-4113	

What & Where Is Norwalk's Source Water Protection Area?



What conservation practices can improve water quality?

Conservation practices involve planting grass and/or trees for any of the following purposes:

- Buffers for wildlife habitat
- Riparian buffer
- Filter strips
- Wetland restoration
- Grass waterways
- Field tile management

What is a "source water protection area"?

A source water protection area is the watershed that feeds a public drinking water reservoir system that a community tries to protect from contamination.

For more information:

William Albrecht, Superintendent
David Ackerman, Asst. Superintendent
Rick Schaffer, Chief Operator
201 Woodlawn Ave
City of Norwalk
Norwalk, OH
419-663-6725

Appendix I

Algae Treatment Summary

Algae treatment summary

Harmful algae blooms have become a serious concern for many surface water treatment plants. Certain types of algae produce toxins that, in sufficient quantity, can be harmful to people and domestic animals. Many of the nutrients that feed the algae come from runoff from agriculture and from any malfunctioning septic systems

The city has always aggressively treated algae in Lower Reservoir, long before harmful algal blooms became an issue. Even small amounts of algae can be detrimental to the water plant's treatment process.

In order to proactively prevent serious algae infestations, the city uses a copper compound to treat Lower Reservoir an average of 8 to 12 times annually, generally between April 15 and October 1. The timing of the treatment is based on the physical appearance of Lower Reservoir along with the current performance of the treatment plant.

Depending on the algae species present, it can clog the water plant's multimedia filter beds or it may inhibit other processes. To verify that there is not a significant amount of toxin-producing algae present, the species of algae present in the reservoir is identified before the copper is applied.

This aggressive algae treatment practice normally keeps the plant operating satisfactorily and prevents any significant growth of toxin-producing algae, or any other type of algae, to a minimum.

Reducing the nutrients that enter the reservoir would reduce adverse effects the algae have on the water plant's treatment system and possibly reduce the number of times the reservoir needs treated.

January 2015 Update:

As noted earlier in this plan, a harmful algae bloom occurred in Upper Reservoir in August 2014. The bloom was successfully isolated and treated in Upper Reservoir, and posed no threat to the drinking water supply.

It is still believed that the aggressive treatment of Lower Reservoir should keep the harmful algae from proliferating in Lower Reservoir. In response to the harmful algae bloom, all reservoirs will be regularly monitored for the presence of harmful algae, and all reservoirs will be treated as necessary. Sampling will also be done in the reservoirs and the watershed to track nutrient levels.

Appendix J

Intake Locations



catch basin to lower reservoir

catch basin inlet to lower reservoir 24"

approximate location of 4" pipe from pond to upper

Upper Res inlet from Railroad Bridge

connector between upper and memorial

upper reservoir east- foot bridge

Memorial - twin 36" pipes under road

Memorial SE - 24" pipe under road