



CLEAN WATER ACT INTEGRATED PLANNING PHASE 1 REPORT

MAY 2018



West Creek Watershed Stewardship Center



West Creek Reservation



West Creek Reservation Overlook Bridge

This report is a production of the City of Parma, with assistance from the City's partner agencies.



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The City of Parma's efforts in compiling this report have benefited from close coordination with the City's excellent partners in environmental and public health matters. The City of Parma thanks these active partners for their contributions:

Northeast Ohio Regional Sewer District

Cuyahoga County Public Works Department

Cuyahoga County Board of Health

Cleveland Metroparks

Cuyahoga County Soil and Water Conservation District

West Creek Conservancy

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Attachments

- A. Integrated Planning Framework, EPA Memorandum, June 2012
- B. Cuyahoga County 2017 Annual Report
- C. Parma Maintenance Photographs
- D. "Paving the Way For Improving Parma's Street," (February 2018)
- E. City of Parma, MS4 SWMP Update
- F. NEORSD Watershed Advisory Presentations, March 2018

Section 1: Overview

The City of Parma is developing its Integrated Plan (IP) in keeping with the City of Parma's community vision to enhance wet weather resiliency. In recent decades, an increase in the occurrence of very large wet weather events, many exceeding a 10-year recurrence interval, have occurred in Parma and surrounding communities. These storm events vastly exceeded the design capacity of all existing storm sewers and resulted in localized flooding. In order to prepare for a vibrant 21st Century, the City of Parma intends this Integrated Plan to guide cost effective improvements to the City sewer system's capacity to handle wet weather events.

This Integrated Planning effort follows EPA's June 2012 Integrated Municipal Stormwater and Wastewater Planning Approach Framework, a copy of which is attached as **Attachment A**. This Phase 1 Report furthers the City's ongoing efforts to use all planning tools available to integrate stormwater management with wastewater collection management and all City infrastructure and community initiatives in order to realize community goals in redevelopment and improvement in public health and the environment. This report builds upon the information presented during the first annual Water Summit held on March 22, 2018, in the City of Parma.

This Phase 1 Report is a preliminary phase focusing on Elements 1 and 2 of the Integrated Planning Framework. Element 1 involves describing the water quality, human health and regulatory issues to be addressed by the Integrated Plan. Element 2 outlines a description of existing wastewater and stormwater systems under consideration. As demonstrated below, this report is preliminary because detailed sewer system assessments are currently underway in Parma, and those assessments will provide further information that can be the foundation of completing a robust Integrated Plan consistent with the remaining IP Framework Elements 3-6. The sewer system and watershed analyses, particularly by the NEORSD, are unprecedented in Parma's history and represent a significant effort in time and expense to obtain the best characterization of the City's systems that is possible.

Section 2: City of Parma and its Sewer Systems

The City of Parma is a diverse community of approximately 80,000 people in Cuyahoga County, Ohio. Parma is proud of its heritage as a community where people have lived the American Dream, including enjoying affordable home ownership. Largely developed after World War II, Parma boasts significant housing developments that have fostered closed-knit families and communities for generations.



Welcome to Parma

City of Parma – Overview

Population:	<u>2000 Census</u>	<u>2016 Estimate</u>
	81,601	79,425
Median Household Income:	<u>2000 Census</u>	<u>2016 Estimate</u>
	\$43,920	\$50,440
Poverty:	<u>2000 Census</u>	<u>2016 Estimate</u>
	4.9% (4,126 people)	11.2% (8,895 people)

In terms of evaluating sewer investment, home value is an important metric. Like most of Cuyahoga County, Parma median housing values took a heavy hit during the Great Recession and the nationwide collapse of the housing market. Hitting a high in 2007 at \$119,000, median home prices plummeted to a low of \$85,000 in 2014. Since then, the Parma market has been rebounding to a median price of \$100,000 in 2016 and a price of \$120,000 midway through 2017. Parma's housing market prices are expected to continue a modest rise and settle in the mid \$120,000 to low \$130,000's - keeping it in the middle of the housing market in Cuyahoga County.

Since 2009, the City of Parma has enhanced efforts to address the challenges of upgrading, operating and maintaining its nearly century-old, complex sewer system. Parma's sanitary sewer system is a mixture of sanitary and storm pipes, frequently designed to be and constructed in the same trench,

as well as areas served by septic systems. The watersheds are densely-populated, largely built-out community, where some drainage pathways have been subsumed by development.

City of Parma public infrastructure includes:

- 253 center line miles of roads;
- 11 bridges;
- 1,335,000 linear feet of water distribution mains;
- 1,224,000 linear feet of wastewater collection sewers;
- 1,400,000 linear feet of storm sewers;
- 14 retention/detention basins; and
- 1,299 septic systems (HSTS) (as of the year 2000).

The public systems are fed by the privately-owned and maintained infrastructure on private property. In the typical residential lot without a septic system (HSTS), this usually includes two separate lateral pipes connecting household plumbing, both storm and sanitary, to the respective systems in the street.

Examples:

- Inflow- downspout directly to sanitary line instead of storm line
- Infiltration- cracked sanitary lateral line where stormwater can enter

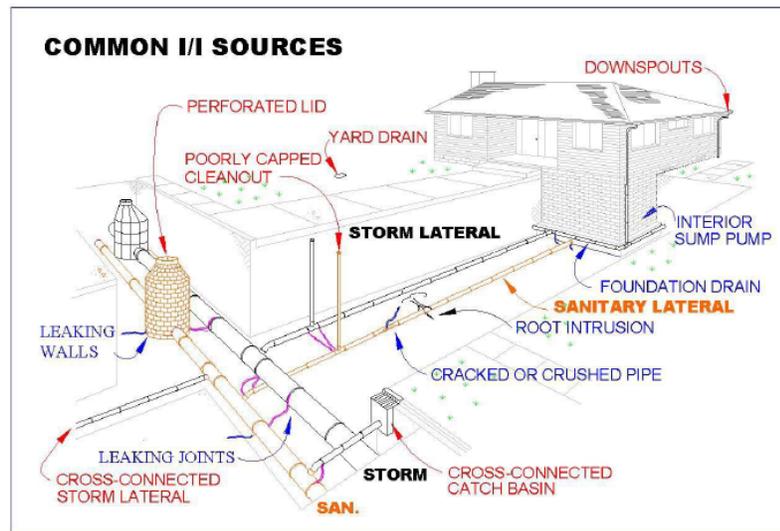


Figure 1: Public and Private Plumbing Diagram Showing I/I Sources

The City of Parma collection system is tributary to the NEORSRD regional interceptors and treatment plant. Parma residents are rate payers to NEORSRD, and fund the District's \$3 billion CSO Consent Decree and its regional operations. NEORSRD manages the Regional Stormwater system and Parma residents pay a stormwater fee to fund that program.

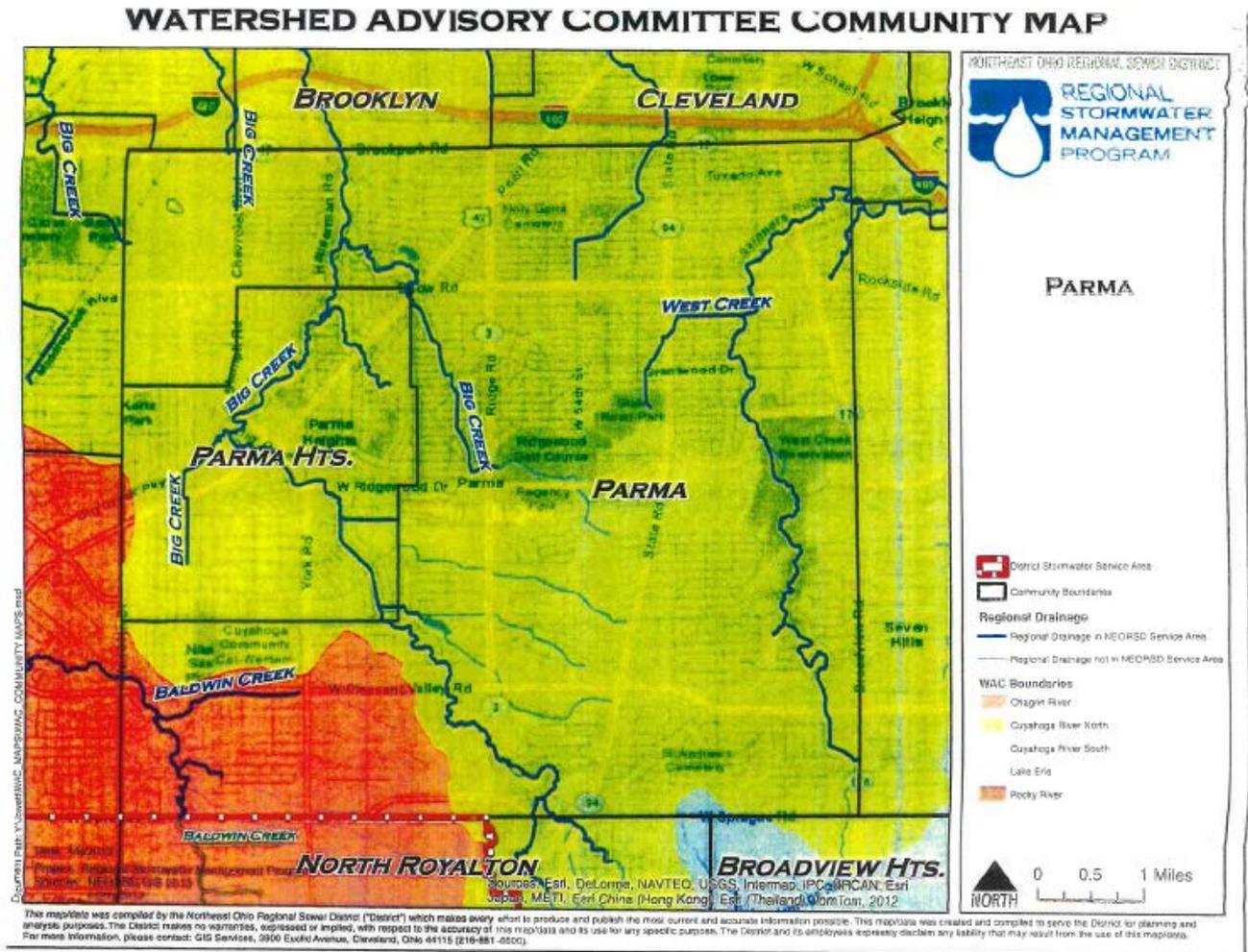


Figure 2: Parma Watersheds, Source NEORS

Section 3: Sewer System Maintenance in Parma

Section 3.1: Cuyahoga County Maintenance

Since 2008, Cuyahoga County Department of Public Works has provided comprehensive maintenance of Parma’s sanitary and storm sewers. Service includes: mainline sanitary sewer cleaning and televising, maintenance of sanitary main lines in the public right-of-way and public easements,

engineering services with respect to plan review and approval only, pump station maintenance, issuance of permits, inflow and infiltration inspection, and sanitary sewer lateral cleaning in the public right-of-way. County is not generally responsible for sanitary sewer lateral cleaning on private property, but may do so at the County's discretion or at the request of the City.

Cuyahoga County in 2017 provided the services depicted below.

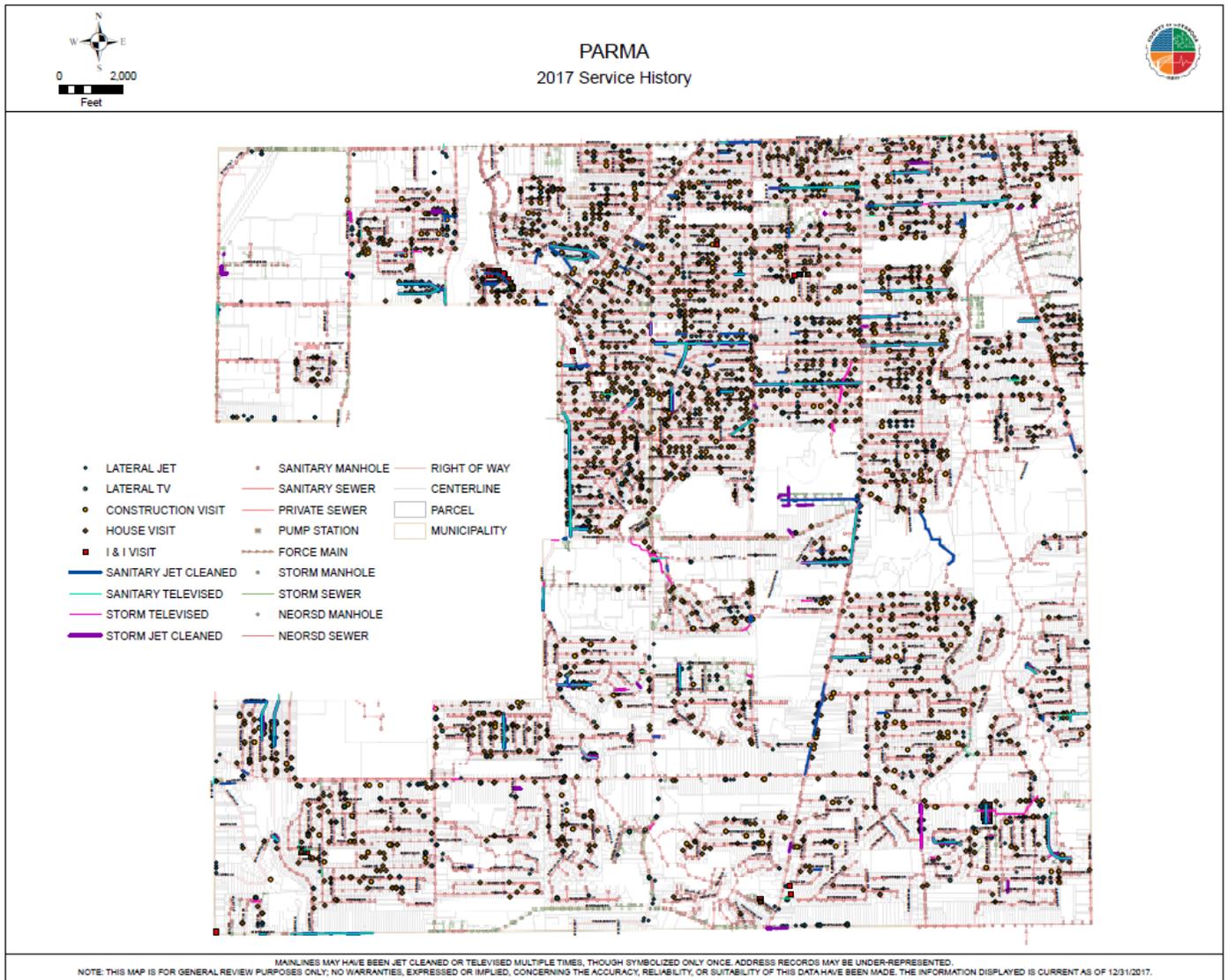
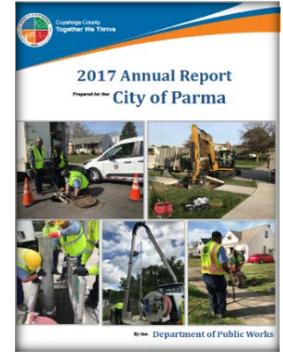


Figure 3: Parma 2017 Service History Map, Source Cuyahoga County, http://publicworks.cuyahogacounty.us/pdf_publicworks/en-US/Cities%20-%20Maps/2017/Parma.pdf

All of Cuyahoga County's services are reported in an annual report, and include maps like the one above. A copy of the 2017 Annual Report is attached as **Attachment B**. All are available at <http://publicworks.cuyahogacounty.us/en-US/parma.aspx>. The several years of comprehensive maintenance resulted in all of Parma's sanitary sewers being cleaned and inspected multiple times. When a section of the City is completed, the maintenance cycle is repeated.



2017 Annual Report

Section 3.2: City Maintenance Activities

In addition to the complete routine maintenance of sewers performed by Cuyahoga County for nearly a decade, the City of Parma provides sewer and stormwater maintenance and improvement. For example, the City maintains several retention and detention basins across the City before and after significant wet weather events. The City recently acquired both a broom sweeper (\$281,517) and a jet vacuum (\$475,460), two costly pieces of equipment that will enhance the City's ability to maintain sewer infrastructure.

The City's extensive maintenance of key stormwater facilities is reflected in **Attachment C**.

Section 3.3: Extreme wet weather events cause flooding even with enhanced maintenance

In both 2011 and 2017, Parma and surrounding communities suffered multiple extreme wet weather events. These events were greater than a "25 year storm," meaning statistically the storms were so large that they would not be expected to occur more frequently than every 25 years, based on records. The February 2011 event, with 3 inches of rain falling on ground covered with 8 inches of snow, was greater than a 100 year event.

The magnitude of these events is beyond the sewer capacity of any local storm system in Ohio. As a comparison, Cuyahoga County adopted a 5 year storm as the design storm for storm sewers in the 1970s, which was after most of

the sewers in Parma were built. When a wet weather event exceeds the designed capacity of the storm system, flood waters under pressure will find their way to the lowest spot. This occurs on private property as well as public, where water pushes its way into the sanitary sewers, typically resting lower than the storm sewers. Sanitary sewers that operate properly before and after the extreme event become surcharged with flood waters, leading to temporary backups or overflows, sometimes including basement flooding. In the extreme events noted above, City sewers performed as designed before and after the extreme storm events.

With Cuyahoga County, the City of Parma routine and enhanced maintenance minimize the risk of flooding during large rain events. But no sewer system can prevent flooding during all extreme rain events.

The purpose of this Integrated Planning effort is to identify and prioritize potential improvements that can increase the resiliency of Parma to handle the largest wet weather events, and to achieve that improvement cost-effectively for the protection of human health, the environment and property values.

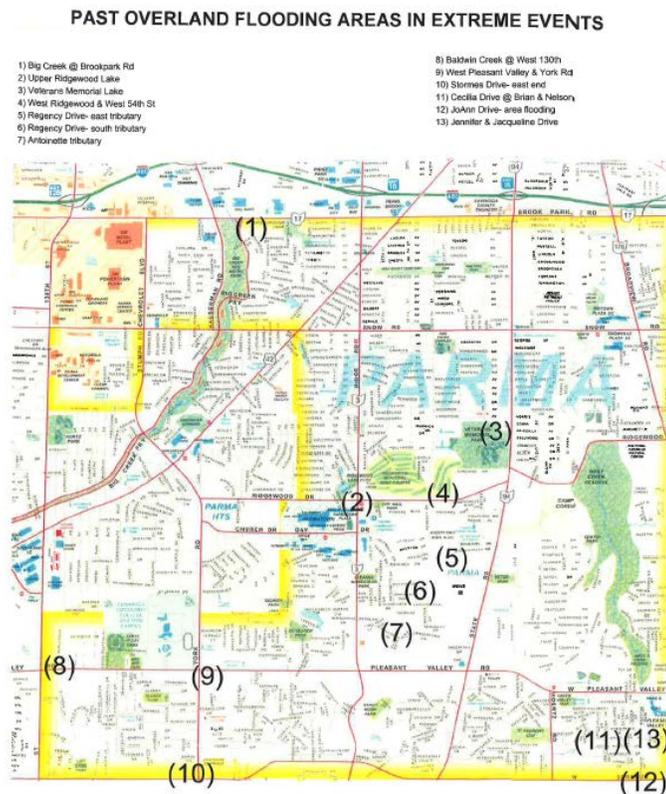


Figure 4: Past Overland Flooding Areas in Extreme Events, Source City of Parma

Section 4: Infrastructure Planning and Improvement

Section 4.1: Septic System Elimination

Aging septic systems become a significant source of bacteria and nutrients that affect public health and reduce the water quality of receiving streams and, ultimately, Lake Erie. In 2000, approximately 1299 home sewage treatment systems were operating in the City of Parma. The City and its partners have sustained a focused program to provide sewers to those properties. As of 2017, new sanitary sewer has been constructed and is available for 785 homes. Future sanitary sewer for the balance of homes with septic system is expected to be constructed by 2022.

Household Sewage Disposal Systems by Street and Watershed — Total of 1,299 Systems

Street	Watershed	Number of Septic Systems	Year Tied into Sanitary Sewer	Year Planned to Tie-in
Bonny	West Creek	19	2011-12	
Bradenton	West Creek	23	2011-12	
Broadrock	West Creek	30		2019-20
Broadview	West Creek	52	47 — various 2008-2014)	5 in 2018-19
Brookdale	West Creek	11		2019-20
Burden	West Creek	14	1998	
David	West Creek	20	2008	
Dentzler	West Creek	7	2013-14	
Glencairn	West Creek	13	2013-14	
Grantwood	West Creek	11	2011	
Green Acres	West Creek	2	2008-09	
Green Valley	West Creek	36	2008-09	
Hillcrest	West Creek	2	2008-09	
Hoertz	West Creek	29	2011	
Howard	West Creek	6	2008-09	
Knowles	West Creek	15	2011	
Maple	West Creek	23	2007	
Melody	West Creek	11	2011	

Street	Watershed	Number of Septic Systems	Year Tied into Sanitary Sewer	Year Planned to Tie-in
Orchardview	West Creek	13	2008-09	
Parkhaven	West Creek	29	2013-14	
Pleasantview	West Creek	21	2011	
Robert	West Creek	8	2008-09	
Old Rockside	West Creek	17		2019-20
Sagamore	West Creek	21	2007-08	
Sunhaven	West Creek	30	2011	
Sunrise	West Creek	15	2011	
Thornclyffe	West Creek	16	2007-08	
South Park	West Creek	1	2012	
Bruening	Big Creek	16	2001-02	
Craigleigh	Big Creek	25		2021-22
Forest Hills	Big Creek	4		2021-22
Kenilworth	Big Creek	5		2020-21
Manhattan	Big Creek	2	2011	
Marlborough	Big Creek	5		2020-21
Orchard Park	Big Creek	17		2021-22
Ridge	Big Creek	56		2018-19
State	Big Creek	7		2019-20
Theota	Big Creek	5		2020-21
West 84th	Big Creek	7		2020-21
W. Ridgewood	Big Creek	134	123 homes in 2016-17	
Walter	Big Creek	3		2021-22
Craigleigh	Rocky River	26		2021-22
East Bagley	Rocky River	3		2018-19
Joyce	Rocky River	7		2021-22
List	Rocky River	1		2021-22
Martin	Rocky River	7		2021-22
Millerwood	Rocky River	12		2021-22
North Linden	Rocky River	54		2021-22
South Linden	Rocky River	5		2021-22
Valley Villas	Rocky River	20		2019-20
West 130 th	Rocky River	50		10 in 2018-19, 40 in 2021-22
West Linden	Rocky River	28		2021-2022
West Pleasant	Rocky River	130	107 (2008-14)	23 in 2018-19
West Sprague	Rocky River	115	72 (2014-15)	43 in 2020-21
York	Rocky River	10		2019-20
Hoertz	Chippewa Creek	22	2016	
Parmaview	Chippewa Creek	28		2021-22

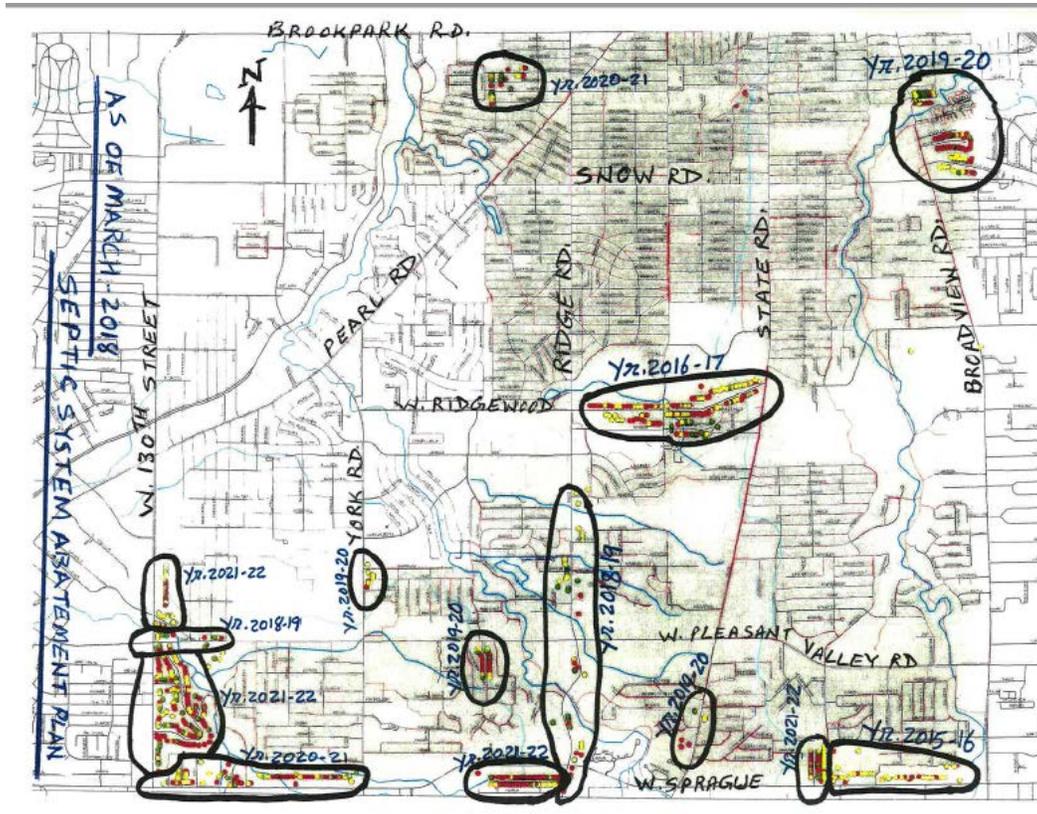


Figure 5: Map of Septic System Abatement Plan, Source City of Parma

Section 4.2: Wet Weather and Municipal Activities

Section 4.2.1: Integrating Wet Weather Improvement with Street and Infrastructure Renewal

The goal of Integrated Planning is to prioritize public health and environmental needs and then, through capital infrastructure and redevelopment planning, cost-effectively coordinate those measures with other activities. With an Integrated Plan, the City of Parma will remain well-positioned to leverage non-local funding to achieve the environmental and public health goals.

The City of Parma prudently has been integrating its infrastructure spending out of necessity for several years. This is best exemplified in the analysis

supporting the city streets program. In addition to the condition of street pavement, the city reviews related water, wastewater and stormwater infrastructure in the corridor. The development of this Integrated Plan will make that analysis even more robust, as well as identifying community priorities to communicate to Parma's several partner agencies.

For a full discussion of the City of Parma's infrastructure integration involving streets, see "**Paving the Way for Improving Parma's Streets**" (February 2018), attached as **Attachment D** and also available at http://www.cityofparma-oh.gov/pdf_Parma/en-US/STREETS_2018.pdf.

Section 4.2.2: MS4 Permitting and Stormwater Code Enforcement

The City of Parma is responsible for overall management and implementation of a stormwater permit issued by Ohio EPA for operation of its municipal separate storm sewer system (MS4). That permit requires the City to meet Six Minimum Controls, which are:

1. Public Education and Outreach
2. Public Involvement and Participation
3. Illicit Discharge Detection and Elimination
4. Construction Site Runoff Control
5. Post-Construction Runoff Control
6. Pollution Prevention and Good Housekeeping for Municipal Operation

As specified in the Stormwater Permit Update document attached as **Attachment E**, several of these minimum controls are implemented with the assistance of the Cuyahoga Soil and Water Conservation District and NEORSD.

The City of Parma municipal code reflects the requirements and goals of this stormwater management regime. All site plan reviews for development or redevelopment include wet weather analysis. The City plan review stage reviews projects for compliance with City ordinances relating to: wetland setback (Chapter 1109), riparian setbacks (Chapter 1111), comprehensive storm water management (Chapter 2301), erosion and sediment control (Chapter 2303) and storm water storage containers (Chapter 2309).

These ordinances, similar to those in neighboring cities, have resulted in significant stormwater management features being installed in Parma. For example,

Shoppes of Parma-Greenspace





Section 4.3: Infrastructure Construction Since 2009

The City of Parma has continued a sustained initiative to repair and improve infrastructure to meet a vibrant 21st century. Below is a list of significant infrastructure projects in the City of Parma that include sanitary, stormwater or drinking water components undertaken since 2009:

1. *Chevrolet Blvd. Area Storm/Sanitary Sewer Improvement*
2. *Day Drive Repair/Resurfacing Project*
3. *Ridge Road Sanitary and Water Main Improvement*
4. *Various Headwall Repair/Replacement Project*
5. *Ridge Road Sanitary Sewer Improvement, Phase 1*
6. *Sprague Road Culvert Repair*
7. *State Road Hills Repair*
8. *Pleasant Valley/Bagley Sanitary Sewer Project*
9. *Chevrolet Blvd. Detention Basin Project*
10. *Sprague Road Reconstruction Project*
11. *Royalview Bridge Replacement Project*
12. *W.Ridgewood Sanitary Sewer Project*
13. *Broadview Road Drill Drop and Sanitary Sewer*
14. *Sprague/Hoertz Sanitary Sewer Project*
15. *Parkhaven/Broadview Sanitary Sewer Project*
16. *Dentzler/Glencairn Sanitary Sewer Project*
17. *Green Valley Area Sanitary Sewer Project*
18. *Bradenton Area Sanitary Sewer Project*
19. *Manhattan Area Sanitary and Water Main Project*
20. *Maple/Sagamore Sanitary Project*
21. *Day Drive Water Main Project*

Section 5: NEORSD Local Sewer System Evaluation Studies

The Northeast Ohio Regional Sewer District (Sewer District) has undertaken Local Sewer System Evaluation Studies (LSSES) across its service area. These studies will provide local communities the technical support to better understand their local collection systems and the associated water quality and human health issues such as basement flooding and/or sanitary sewer overflows. This will be accomplished through field data collection and sewer model expansion into the local community sewers. The information from this study will be provided to the communities to help them understand problem areas, prioritize future projects and to apply for grant funding through the District's Member Community Infrastructure Program (MCIP). The MCIP is a grants program established specifically for local communities to fund projects that address local water quality and human health issues.

TASK 1: Local System Assessment Strategy

Review existing information, develop approach, and prioritize areas for system inspection, testing and monitoring.

TASK 2: Local Inspection and Condition Assessment

Perform field work in the local system to support the evaluation and recommendations.

TASK 3: Local System Evaluation

Collection system modeling and hydraulic capacity evaluation.

TASK 4: Capital Solution and Policy Recommendation

Development of community reports which include local system condition information and prioritized project descriptions for potential submission into the MCIP grants program.

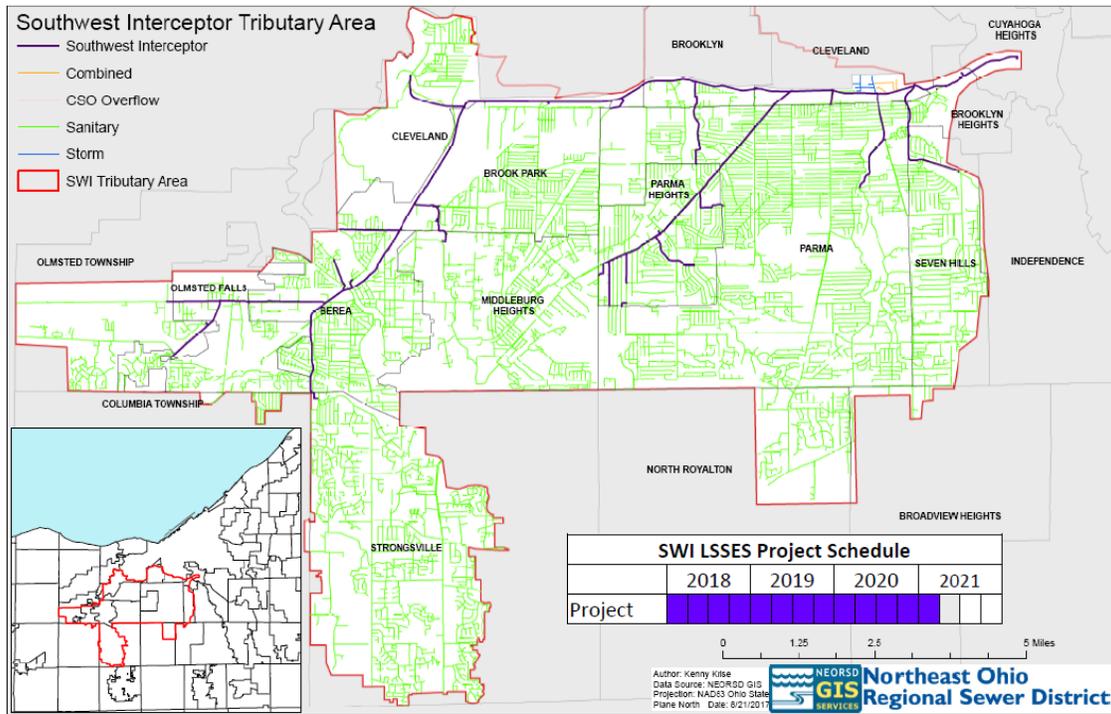


Figure 6: Map of Southwest Interceptor Tributary Area, Source NEORSD

Section 6: Partner Agencies in the Watersheds

This section outlines the critical work of partner agencies in the watersheds that cross Parma. These activities represent significant investments of time and expertise that were not readily available in past decades, but which hold great promise for the future development and implementation of Parma’s Integrated Planning goals.

Section 6.1: NEORSD Stormwater Program

NEORSD performs significant functions with respect to the stormwater flows and natural streams in the City of Parma. NEORSD’s Watershed programs:

- Include essential investigation and enforcement for the City of Parma’s Illicit Discharge Detection and Elimination program required under Parma’s MS4 NPDES permit.

- Provide strategic implementation of the Regional Stormwater Management Program. This includes
 - Developing the stormwater fee credit manual;
 - Assisting Member communities, such as Parma, with parking lot and downspout disconnection codes
 - Offering additional site plan reviews
- Developing Watershed Master Plans to develop a prioritized list of construction and maintenance activities
 - Including development of modeling and GIS resources for ongoing tracking of changes and improvement
- Undertaking maintenance and construction projects in the watersheds, including
 - Stormwater inspections
 - Routine maintenance projects
 - Non-routine maintenance projects
 - Urgent storm response
 - Capital improvement projects
 - Conservation opportunities

The activities above have opened new possibilities for stormwater management in Parma. First, the Stormwater Master Plans will be an essential component of future advancements of the City of Parma's Integrated Plan, as it will offer tools for Parma to prioritize work based on detailed investigation and modeling.

Second, NEORSD's program has undertaken maintenance and construction of significant stormwater assets in Parma, including the Chevy Boulevard Detention Basin and a significant overhaul of the Bonnie Banks basin and related stream segments.

Third, the local funds available under the stormwater fee have enabled the City of Parma to add expensive street sweeping and sewer-jetting equipment to enhance the maintenance of storm water assets.

The NEORSD website supplies a wealth of information. Attached as **Attachment F**, for example, are two recent presentations regarding the status of stormwater management activities in two separate watersheds that include parts of the City of Parma.

Section 6.2: West Creek Conservancy

The West Creek Conservancy has been a dynamic force in the City of Parma and the West Creek watershed. West Creek Conservancy (formerly West Creek Preservation Committee) protects local natural areas, open spaces, streams and waterways right here in our community. This private non-profit entity reclaims vacant urban lands and restores streams, wetlands, woods and natural habitats. They work to establish trails and greenways to link people and neighborhoods not only to these special places, but to each other as well.

For more information on the dynamic work of West Creek Conservancy, including how you may volunteer and donate, please visit their website at <http://westcreek.org/>.



Section 6.3: Cleveland Metroparks

The Cleveland Metroparks is actively changing the landscape in the City of Parma to create natural and recreational opportunities. The Cleveland Metroparks opened the West Creek Reservation on the site of the former municipal landfill. This asset includes the Watershed Stewardship Center, where dozens of stormwater best management practices are on display.



West Creek Watershed Stewardship Center

Recently, the Cleveland Metroparks extended its mission by agreeing to acquire 80 acres of the closed Parmadale facility, and adding those to the West Creek Reservation. Preservation of green space in the watersheds in Parma is essential to maintaining flood control, reducing erosion, and maintaining water quality, in addition to creating recreation opportunities.

Section 7: Next Steps for Integrated Planning

Parma aims to integrate the goals of wet weather control, environmental improvement and sustainability into many facets of community life, including enshrining them in building and parking codes and informing multiple aspects of its capital improvement plans.

Integrated Planning over the next few years will evaluate the following issues:

- Leveraging private development to increase stormwater management features;
- Eliminating septic systems;
- Enabling homeowners to improve private plumbing, such as eliminating cross connections, in order to improve resilience for extreme wet weather events and improve property values; and
- Strategic property acquisition to support stormwater and civic goals.

Increasing resiliency, including protecting public health, will take sustained effort to plan work and cost-effectively integrate capital spending. The tools and analysis in development will enable the City of Parma to complete a full Integrated Plan and chart its route to reaching its 21st Century goals.