PORTAGE COUNTY HEALTH DISTRICT

STORM WATER PROGRAM

2020 ILLICIT DISCHARGE DETECTION AND ELIMINATION ANNUAL REPORT

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Table of Contents Page No.

List of Figures and Tables Page No.

Introduction

The Portage County Board of Commissioners (BOC) contracts with the Portage County Combined General Health District (PCHD) to implement the Portage County Storm Water District's Minimum Control Measure (MCM) #3 - Illicit Discharge Detection and Elimination (IDDE). The MCM #3 is one of the six minimum control measures that regulated communities in Portage County and other counties in Ohio are required by the Ohio Environmental Protection Agency (OEPA) to develop and implement under a Storm Water Management Program (SWMP) using the Best Management Practice (BMP) to reduce the adverse effects of contaminated stormwater discharges. This is pursuant to the Federal Environmental Protection Agency (EPA) Clean Water Act's objective of regulating to achieve and protect sustainable water quality to improve public health.

PCHD is delighted to share the 2020 action plan, implementation activities, achievements of the Storm Water Program in this 2020 Illicit Discharge Detection and Elimination (IDDE) Annual Report based on Portage County's SWMP and the BMP submitted to OEPA. This report is a component of the Portage County Storm Water District's annual report submission to OEPA.

2020 Illicit Discharge Detection & Elimination (IDDE) Action Plan

The Health District's 2020 Storm Water Action Plan is based on, but not limited to the scope of services outlined in the Portage County Storm Water Program contractual agreement between the PCHD and the BOC for storm water services. A summary of the 2020 Action Plan can be found in Appendix A of this report on page 37.

2020 Portage County IDDE Notable Achievements

In pursuance of the Storm Water Program's 2020 action plan for illicit discharge detection and elimination (IDDE) in Portage County's townships and villages, Storm Water Program staff conscientiously built upon the existing storm water management plan towards achieving the long term objective of improvement and sustainable water quality. The PCHD staff continued to enhance the healthy working relationships with BOC, PCEO, SWCD, PCWR, PCPO, Northeast Ohio Four County Regional Planning and Development Organization (NEFCO) townships, villages, and the citizenry to achieve our storm water goals. In particular, the Storm water program:

- Completed PCHD's 2020 outfall verifications and dry-weather screening goal
- Applied for and successfully received $150,000 in financial assistance for low-to-moderate income homeowners from the 2021 Ohio Environmental Agency (EPA) Division of Environmental Financial Assistance (DEFA) Water Pollution Control Loan Fund (WPCLF) for the repair and/or replacement of household sewage treatment systems

- Successfully disbursed $150,000 in financial assistance received for low-to-moderate income homeowners from the 2019 WPCLF grant for repair and/or replacement of HSTSs and sewer connections

- Sent enforcement letters to addresses of houses served by a HSTS within areas of available and accessible public sanitary systems to connect to it

- In the Oakwood Acres, Brimfield Township, 46 of 58 houses have successfully connected to public sanitary system to eliminate illicit discharging STSs in the allotment.

- Eliminated 60 HSTS public health nuisances through repairs, replacements or connections to public sanitary sewer

- Mapped all HSTS replaced in 2020 in the county

- Updated storm water system maps for townships, villages, and Storm Water annual report.

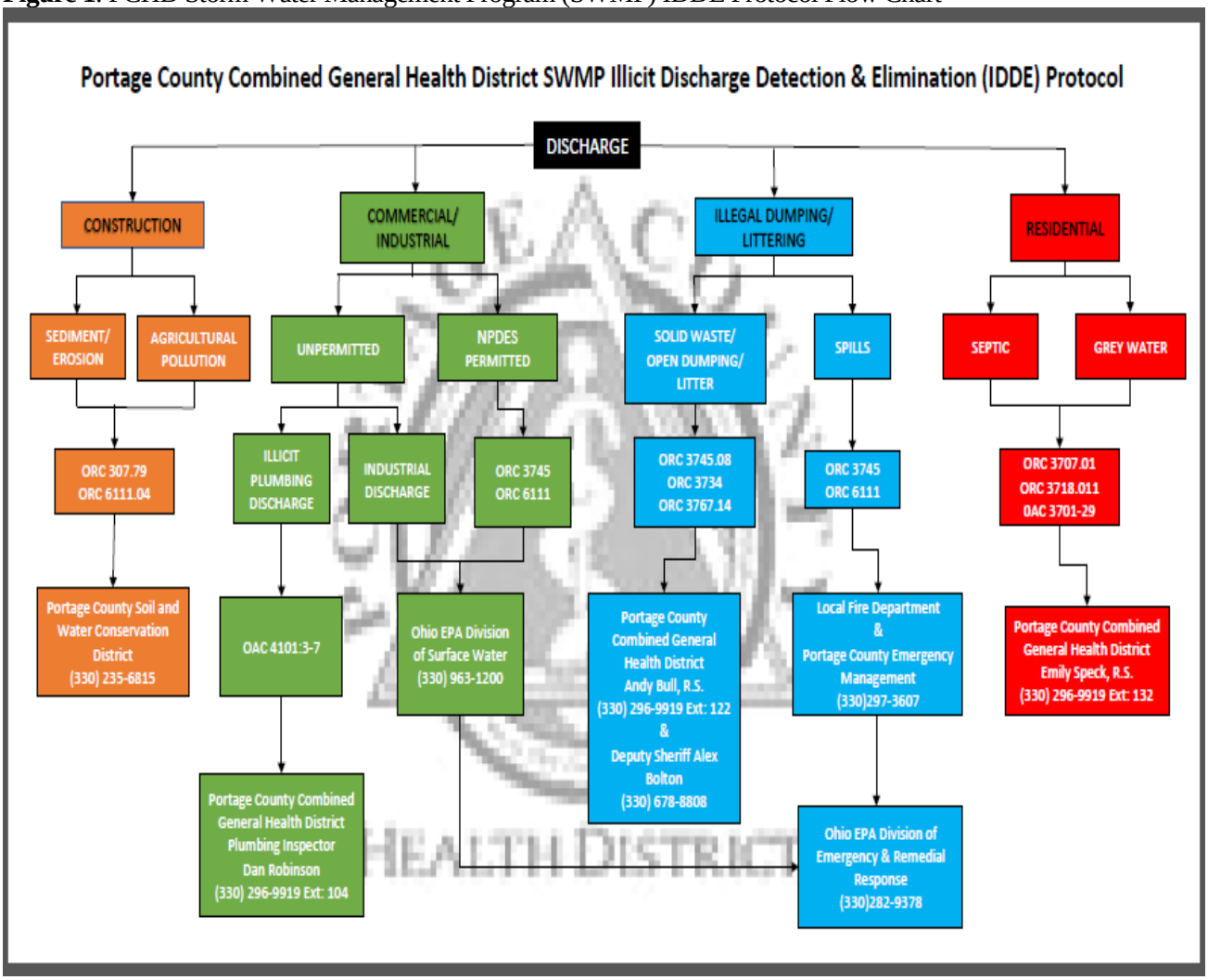
Expanded information elaborating the above listed summary of PCHD's 2020 storm water achievements are offered below in different sections of this annual report.

Portage County IDDE

An Illicit discharge is any direct or indirect discharge to an MS4 storm drain system that is not composed entirely of storm water except as exempted by the National Pollutant Discharging Elimination System (NPDES) permit. Illicit discharges into the storm drain system contribute reasonable amounts of pollutants to surface and groundwater. A variety of transitory, intermittent, and long-lasting illicit discharges are produced by accident or careless practices at the home or workplace. These types of illicit discharge flows from homes, businesses, manufacturing, industry, and commercial establishments include sewage effluent, gray water (laundry), car wash residues, illegal dumping of oil and paint among others. Detection and elimination of illicit discharges from the storm drainage systems is a challenging task.

Portage County Storm Water Management Program (SWMP) provides PCHD with guidance on establishing and implementing an effective IDDE program consistent with OEPA's NPDES permit requirements aimed at preventing illicit discharges from entering the waters of the state. PCHD uses adequately trained staff and storm water management plan including the creation and maintenance of illicit discharge database, HSTS nuisance complaint investigation, voluntary HSTS evaluation for replacement, point of sale HSTS evaluation inspection and dry weather outfall screening to facilitate the achievement of Portage County Stormwater District's IDDE goals. The flow chart in Figure 1 below, created by PCHD is a visual representation of PCHD's SWMP IDDE protocol to deal with illicit discharges in Portage County Storm Water District's jurisdiction.

Figure 1: PCHD Storm Water Management Program (SWMP) IDDE Protocol Flow Chart



Suspected Illicit Discharge Database

In 2010, PCHD evaluated the existing HSTS files, documented and compiled potential illicit discharging and failing HSTSs. Illicit discharge data and information received from villages, townships, county engineer, SWCD, and/or the public were also documented and compiled. PCHD created an Excel database from the collected data and information primarily for the implementation of the Storm Water Program's minimum control measure (MCM) #3 which requires illicit discharging detection and elimination (IDDE) to limit the quantity of pollutants discharging into the waters of the state to protect aquatic environment and public health. This suspected illicit discharge database consists mainly of, but not limited to illicit discharging from failing HSTS only. It contains gray water discharges as well. The database covers the total and cumulative numbers of:

- Suspected illicit discharging HSTSs
- Suspected class I aeration HSTSs without NPDES permit
- Suspected illicit discharging HSTSs that are not class I HSTSs without NPDES permit
- Other suspected illicit discharges such as gray water that were inspected

- Suspected illicit discharging determined to be NOT illicit discharging
- Suspected illicit discharging identified and confirmed to be illicit discharging
- Confirmed illicit discharging eliminated
- Confirmed illicit discharging pending replacement/repair/sewer connection and/or abatement

The total number of suspected illicit discharges in the database fluctuates since its creation in 2010 due to detection of new cases and elimination of existing ones through replacement or repairs or when a suspected case is determined unjustified and closed. The database is updated continuously throughout the year. At the end of every year, the database is reviewed, analyzed, evaluated, and findings are included in the PCHD's Storm Water Program Annual Report. This database remains an important resource for HSTS information search, field inspection, and repository of evidence for storm and wastewater violations enforcement.

The HSTSs data in the suspected illicit discharge and detection elimination database are managed as component of the Health District's operation and maintenance program by one of the four processes:

- Class 1 Aeration Sewage Treatment System Inspections when homeowner fails to provide the required operation and maintenance service agreement
- Investigation upon receipt of a written nuisance compliance in accordance with Ohio Revised Code (ORC) 3718.011 and OAC 3701-29-23
- Identification during a voluntary Point-of-Sale real estate inspection; and
- Storm water outfall dry weather screening inspection.

HSTS identified through any of the processes above that needs further assessment are evaluated to determine whether the system is causing a public health nuisance in accordance with Ohio Revised Code 3718.011. When an HSTS is determined to be causing public health nuisance, PCHD works with homeowners and partner agencies to eliminate the nuisances and prevent pollutants from the HSTS from entering the waters of the states.

2020 MS4 Storm Water Management IDDE Activities

The objective of the IDDE activities is to facilitate prevention of illicit discharges from wastes and wastewaters from non-stormwater sources which cannot legally be discharged down storm drains to Portage County MS4 drainage systems into the waters of the state. Measures implemented to achieve the storm water IDDE required by MCM #3 include training of PCHD storm water staff, participating in Storm Water District Program stakeholders' meeting, and storm water system mapping. Additionally, field activities such as verification of storm water outfalls, dry weather screening, inspections of class I aeration systems rolled into PCHD HSTS operation maintenance (O&M) program, and investigation of suspected HSTS illicit discharging nuisance complaints and voluntary replacement evaluations are employed.

Training

To ensure that PCHD storm water staff are adequately trained for its storm water activities and responsibilities, staff received internal and external training in 2020. However, unlike previous years both internal and external trainings were limited because of Covid-19 pandemic. Internally, staff learned ArcGIS Online mapping and used the skills for outfall dry weather screening field inspection.

Externally, Emily Volz-Speck and Kim Plough, Dan Robinson, and Amos Sarfo attended the 13th Ohio Stormwater Annual Conference from August 26, 2020 – August 28, 2020. This conference was restricted to virtual videoconference due to Covid-19 pandemic. Nonetheless, it offered useful presentations and discussions, which helped to deepen staff understanding of stormwater water management and new developments in the field.

Stakeholders' Meetings

As members of the Portage County Storm Water Task Force and Steering Committee, the PCHD Health Commissioner, Director of Environmental Health, and Storm Water Program Supervisor attend both Storm Water Steering and Task Force Committees' quarterly meetings to discuss all pertinent storm water issues with the Storm Water District's stakeholders. PCHD presents summaries of storm water activities including inspections, dry weather screening, dye testing, office/field consultations, GIS and data search, notices of violation issued for replacement/repairs, court appearances, and field/office research as they occur during the performance of our daily duties. After the first quarter of 2020, in-person meetings became impossible due to Covid-19 restrictions.

Storm Water System Mapping

Using Geographic Information System (GIS) mapping software and hand-held Global Positioning System (GPS) receiver unit, Portage County Storm Water District has created comprehensive storm sewer system maps covering catch basins, drainage system pipes, ditches, and public and private post-construction flood control facilities, such as retention and detention ponds, that have been installed to meet Ohio EPA's NPDES Construction Storm Water general permit and/or local post construction water quality requirements based on water quality best management practice (BMP). These maps are used to support IDDE and other storm water best management practices in the storm water district. The Portage County Storm Water District's GIS maps consist of the following:

1. Storm Water District's Outfall Points map depicting the location of all outfalls and the name and location of all state surface waters, including watersheds that receive discharges from those outfalls
2. Storm Water District's discharging household sewage treatment systems (HSTSs)
3. Storm Water District's municipal small separate sewage system (MS4) outfall points
4. Storm Water District's MS4 catch basins
5. Storm Water District's MS4 water quality BMP facilities
6. Storm Water District's MS4 pipe inlet and outlets

MS4 Storm Water Map Annual Updates

At the end of the year 2020, Portage County Health District Storm Water Program reviewed and updated the MS4 Storm Water System GIS maps listed above in fulfilment of the annual maps update requirement. In October 2020, PCHD sent letters to the townships and villages involved in the storm water program encouraging them to inform PCHD of any stormwater changes that might have occurred in their communities. This helped staff to update the maps to reflect any necessary changes requested by the townships and villages or determined through PCHD staff field inspections. The 2020 updated MS4 area comprehensive storm water maps are shown in Figures 2-6 below.

Figure 2: Portage County Storm Water District MS4 area non-NPDES permitted discharging STSs: This map shows location of all state surface waters including watersheds receiving discharges from storm water drainage system.

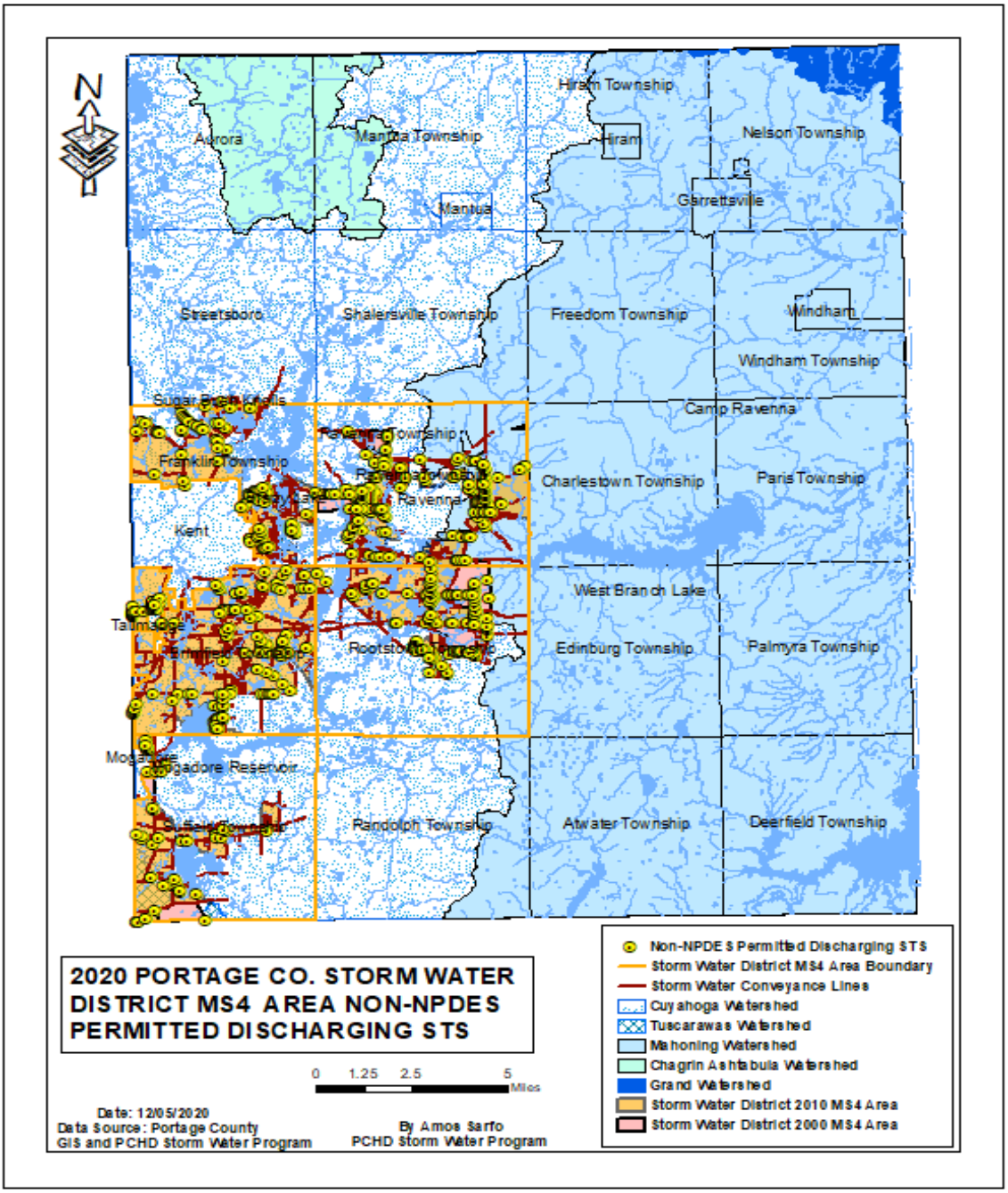


Figure 3: Portage County Storm Water District MS4 Outfalls: This map depicts spatial locations of Portage County Storm Water District's MS4 outfall points and location of state surface waters including watersheds receiving discharges from the storm water system outfalls.

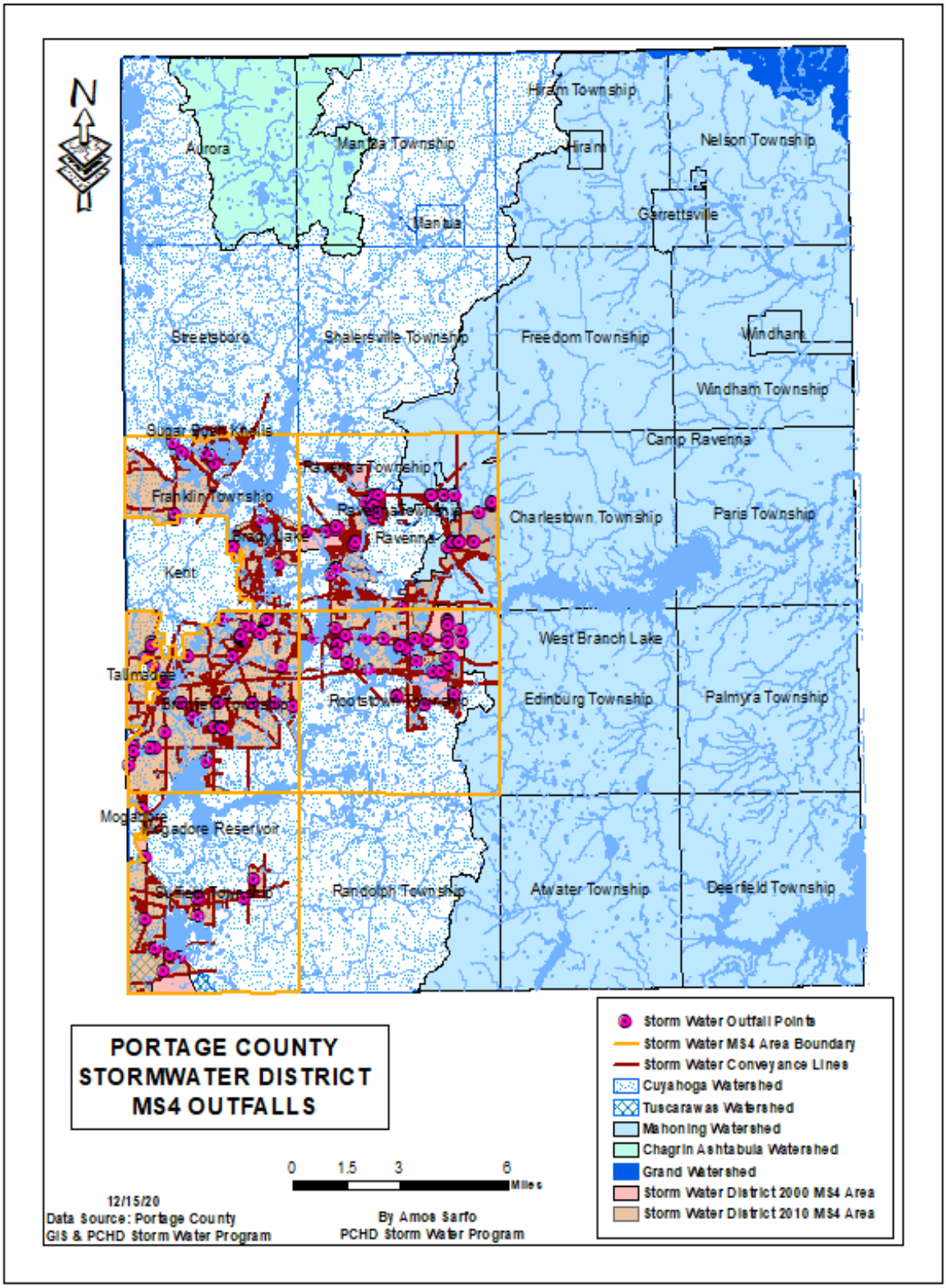


Figure 4: Portage County Storm Water District MS4 Catch Basins: This map depicts Storm Water District's MS4 drainage systems catch basins and location of all state surface waters including watersheds receiving discharges from the storm water drainage system.

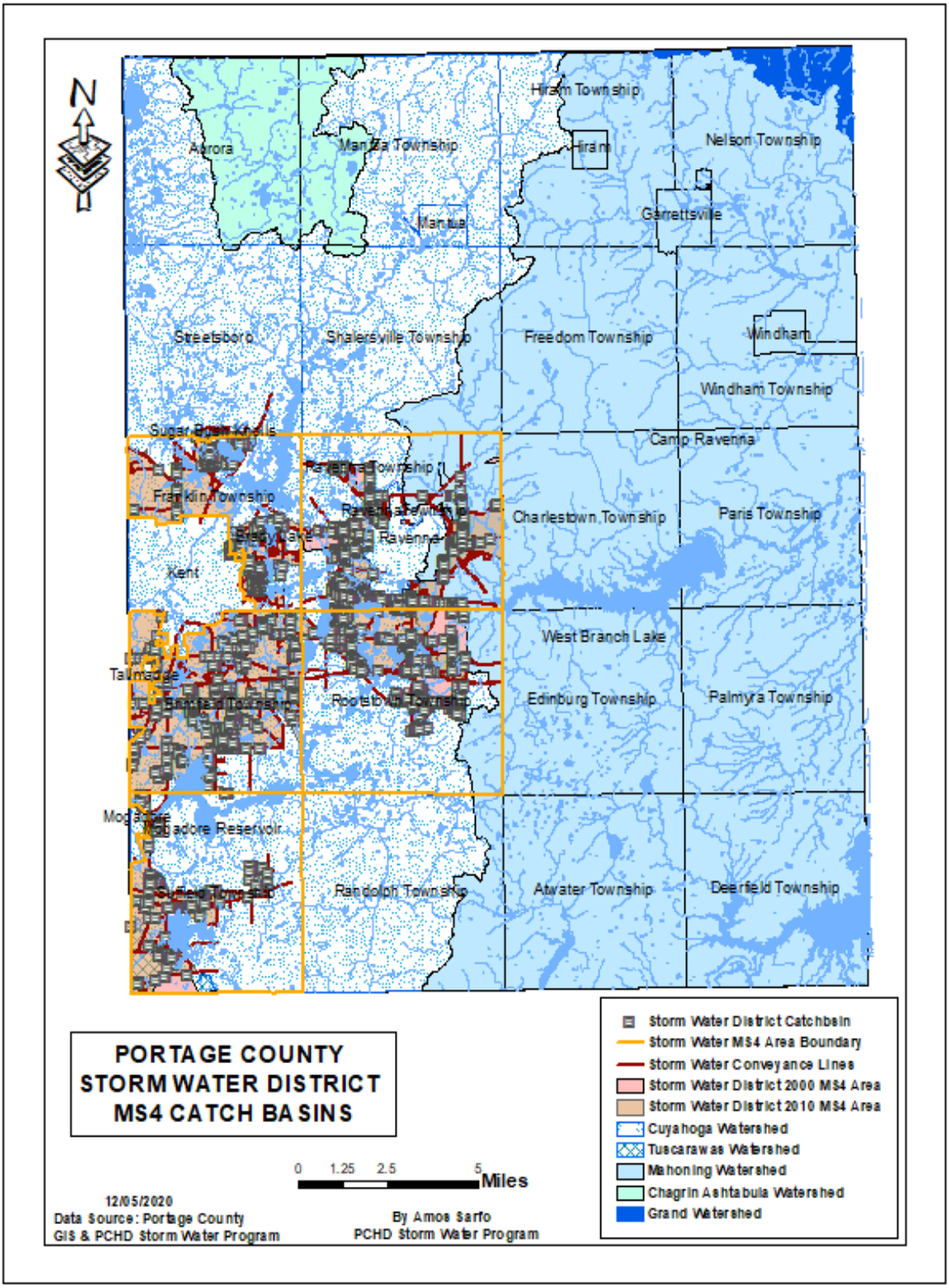


Figure 5: Portage County Storm Water District MS4 Pipe Inlet and Outlet: This map shows Storm Water District's MS4 drainage system pipes (inlet and outlet) and locations of all state surface waters including watersheds receiving discharges from the storm water drainage system.

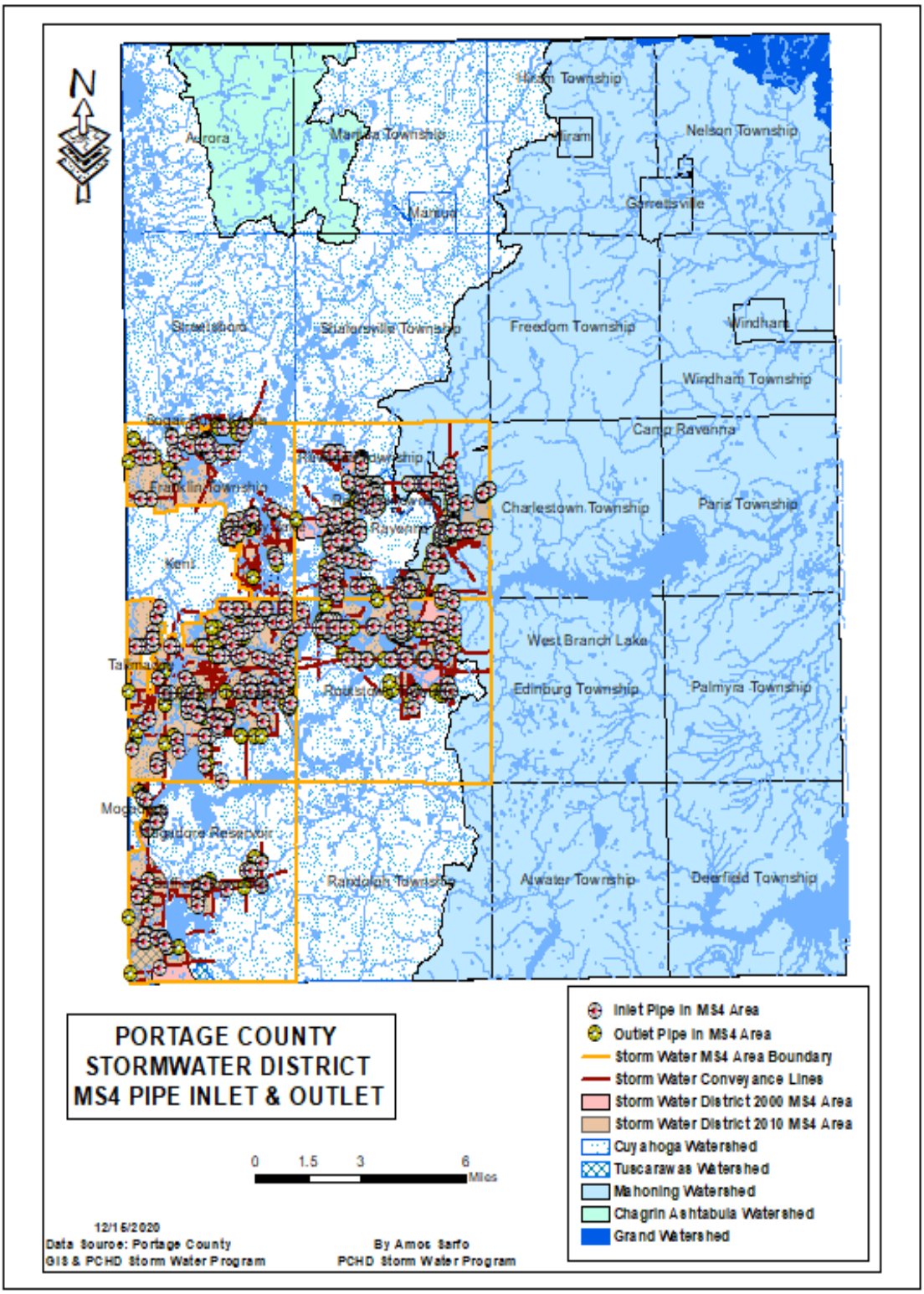
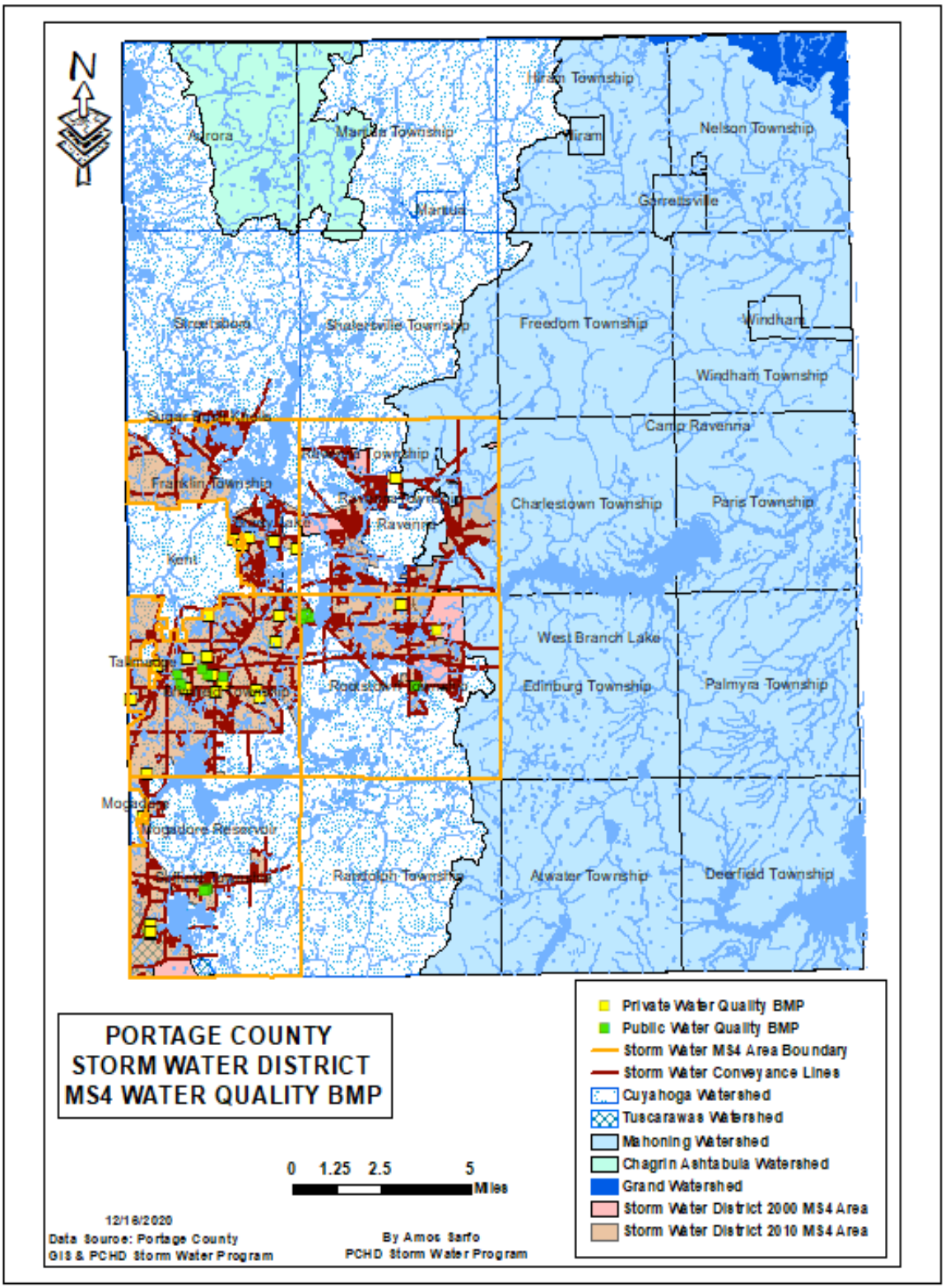


Figure 6: Portage County Storm Water District MS4 Water Quality BMP: This map depicts a visual representation of the spatial locations of Storm Water District's flood control facilities (retention and detention ponds) consisting of public and private post-construction water quality BMPs and locations of all state surface waters including watersheds.



Inspection and Dry Weather Screening of MS4 Outfall Points for IDDE

In 2020, PCHD Storm Water Program staff used the storm water system GIS maps in conjunction with field inspections to verify, and dry weather screen all 214 outfall points in the MS4 communities. During the year, 32 (thirty-two) pre-2020 existing illicit discharges from failing HSTSs identified through file reviews, voluntary replacements, dry weather screening, investigation of suspected illicit discharges form nuisance complaint investigations, operation and maintenance inspections, and real estate property point of sale (POS) HSTS evaluation were replaced, repaired, or connected to public sanitary sewer. The identification and elimination of illicit discharges are linked with the total maximum daily loads in MS4 areas, which is discussed below.

Total Maximum Daily Load (TMDL)

The Total Maximum Daily Load (TMDL) program created under USEPA CWA Section 303(d) of the Clean Water Act focuses on identifying and restoring polluted rivers, streams, lakes and other surface water bodies. A TMDL is a technical calculation of the maximum load of a pollutant a waterbody can receive and still meet water quality standards and an allocation of that amount to the pollutant's sources. It is primarily developed to determine whether surface waterbody connected to the waters of the US is impaired (nonattainment of water quality standards) or unimpaired (attainment of water quality standards in accordance with the CWA). Once impaired waters are identified, the state must act to improve their quality, but if waters reach attainment by other means, a TMDL becomes unnecessary.

The USEPA CWA section 303(d), also states, territories, and authorized tribes are required to develop lists of waterbody segments impaired by a pollutant and needing a TMDL. Since 1995, tens of thousands of TMDLs have been developed nationwide. The Ohio EPA (OEPA) postulates that developing TMDLs on a watershed basis (as opposed to solely focusing on impaired segments within a watershed) is an effective approach towards realization of water pollution prevention goals. Thus, OEPA currently requires holders of MS4 storm water permit to address TMDL as part of the six minimum control measures. The OEPA TMDL seeks to address the sum of all point source loads (“waste load allocation”) and loads associated with nonpoint sources (“load allocation”). A list of watersheds, waterbodies and their status regarding attainment and non-attainment is compiled by OEPA. This list (in accordance with section 303(d) are made available to the public and submitted to the U.S. Environmental Protection Agency (U.S. EPA) in even-numbered years.

The goal of Ohio’s TMDL process is full attainment of biological and chemical Water Quality Standards (WQS) and, subsequently, removal of watersheds and water bodies from the 303(d) list. OEPA’s efforts is boosted by Ohio Governor Mike DeWine’s recent H2O water quality initiative aimed at minimizing the introduction of nutrients and other runoff into Ohio waterways to achieve sustainable water quality. In response to the OEPA TMDL objectives and the governor’s initiative. PCHD uses illicit discharge detection and elimination (IDDE) best management plan (BMP) to address TMDL issues resulting from HSTS illicit discharge of total suspended solids (TSS), biological oxygen demand (BOD5), phosphorus, nitrogen and ammonia.

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Portage county has five watersheds namely, Chagrin Ashtabula, Cuyahoga, Grand, Mahoning, and Tuscarawas. The MS4 areas of the Storm Water District, however, is occupied by the Cuyahoga and

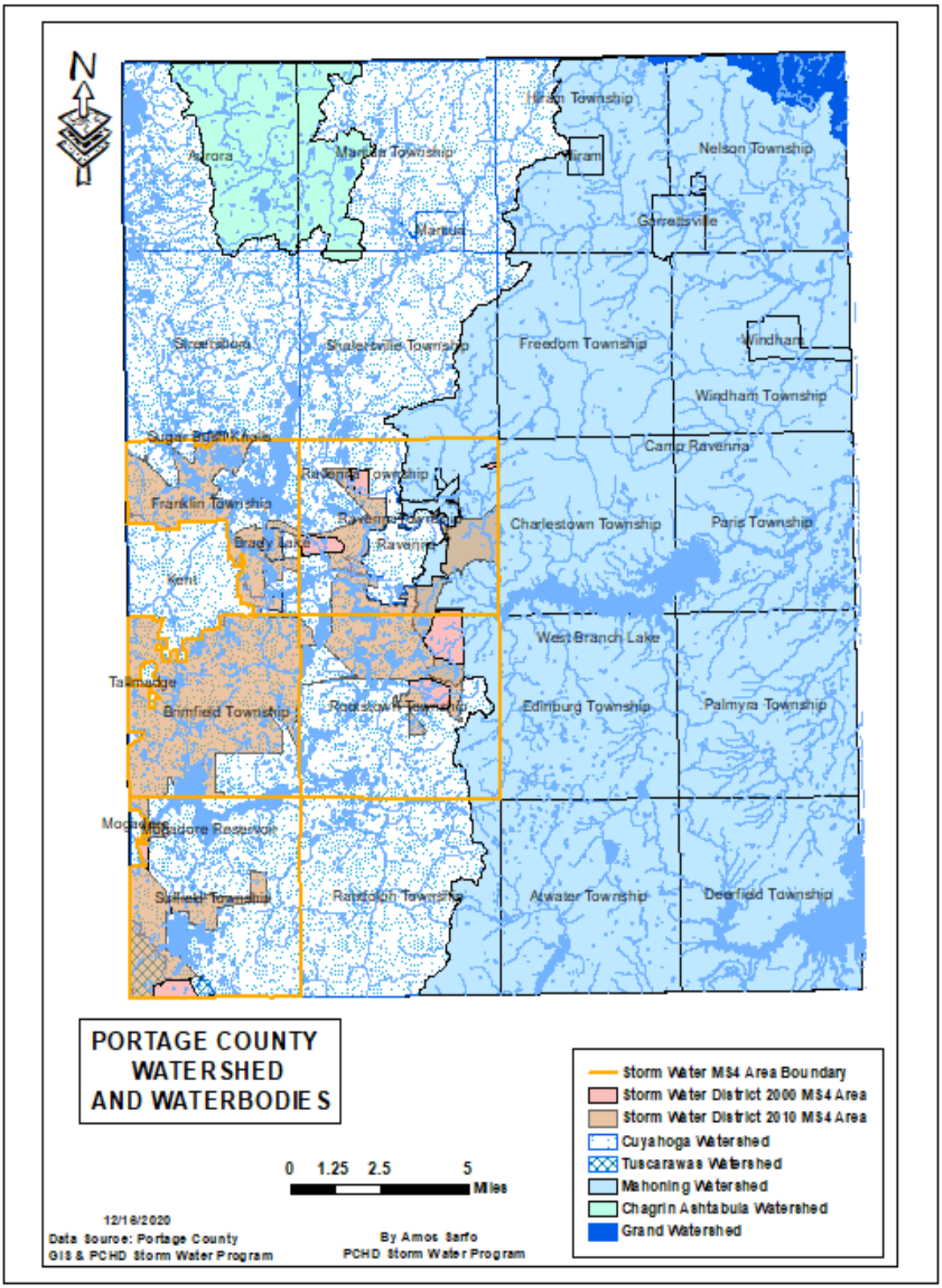
Tuscarawas only. The Chagrin Ashtabula, Grand, and Mahoning watersheds also drain over the rest of the county as shown in Table 1 and Figure 7 below. A brief review of the list of County's main watersheds and sub-watersheds' TMDL attainment status is compiled from Ohio EPA's Watershed Action Plan as reported below. This list characterizes water bodies as achieving attainment, partial attainment, or nonattainment status. Table 1 below summarizes the findings from the review.

This brief review of the MS4 area watersheds indicate that the Breakneck, Potter, Plum, Fish, and Tinkers Creeks, which are tributaries of the Cuyahoga River have achieved partial attainment status. The Wahoo Ditch, a tributary of the Cuyahoga River is classified as nonattainment. The Tuscarawas River headwaters of Muskingum River are also assigned partial attainment. The review also shows that in the non-MS4 countywide Storm Water District of the county occupied by the Chagrin Ashtabula, Grand, and Mahoning watersheds, the West Branch, and the Eagle Creek, which are tributaries of the Mahoning River are assigned partial attainment status. Deer Creek, which is also a tributary of Mahoning was found to be nonattainment. Only 2 out of 10 sites tested on the Deer Creek sites were in full attainment. EPA suspects the nonattainment is primarily due to illicit discharges and failing HSTS. The Upper Aurora Branch of the Chagrin Falls River in the Chagrin Ashtabula watershed was determined to be nonattainment. Notwithstanding the high E. coli from livestock runoff, the Grand River of the Grand watershed is designated as attainment.

Table 1: Portage County Watershed and Waterbodies TMDL Status

Portage County Watershed, Sub-watersheds/Waterbodies			
Main Watershed	**Sub Watershed**	**Attainment Status**	**Reasons/Concerns**
Cuyahoga River	Breakneck	Partial Attainment	Nonattainment from Wahoo Ditch and downstream
	Potter Creek	Partial Attainment	Siltation and channelization. HABs from Congress Lake
	Plum Creek	Attainment	Non-point pollution and fracking
	Fish Creek	Partial Attainment	Partial attainment due to degraded fish population downstream
	Main Stem	Attainment	Kent Dam Removal
	Tinkers Creek-Headwaters	Partial Attainment	Poor aquatic habitat. ST RT 14 Drainage Ditch Restoration, ST RT 303 Culvert Restoration Project
Mahoning River	West Branch	Partial Attainment	Nonattainment downstream due to the influence of the dam and the Mahoning River
	Deer Creek	Nonattainment	Illicit discharges and failing HSTS
	Eagle Creek	Partial Attainment	Nonattainment for aquatic life
Chagrin Falls River	Upper Aurora Branch	Nonattainment	Habitat alterations
Grand River	Grand River	Attainment	Sedimentation problems/erosion. High *E. coli* from livestock runoff
Muskingum River	Tuscarawas River Headwaters	Partial Attainment	Pathogens from sewage illicit discharges. Habitat alterations

Figure 7: Portage County Storm Water District Watershed Map: This map depicts a visual representation of the spatial locations of Portage County County watersheds and surface water



IDDE: Nutrients Elimination to Achieve TMDL in MS4 Communities

This report employed the "Pollutants Controlled Calculation and Documentaion for Section 319 Watersheds Training Manual" (Michigan Department of Environmental Quality, June 1999) to provide gross estimate of sedument and nutrieent load reductions from the implementation of BMPs is based on reduction of efficiencies and calculations developed by Illinois EPA. This Excel spreadsheet module was originally designed by the Indiana Department of Environmental Management and amanded by the Ohio Department of Natural resources. This module uses many simplifying assumptions such as number of bedrooms in a house serve by HSTS and number of gallons of water used per day to provide a general estimate of pollutant load reductions through BMP implementation. More accurate results of pollutant load reductions may be obtained through direct monitoring and/or a more detailed modeling application. Additionally, the the spreadsheet does not estimate pollutant load reductions for dissolved constituents and coliform bacteria.

In 2020, 32 HSTS illicit discharges were replaced, repaird, or connected to public sanitary sewer in the MS4 areas of the Portage County Storm Water District These 35 HSTSs serve homes with combined bedrooms of 86. Based on water usage of 120 gallons a day per bedroom in accordance with the Ohio Aadministrative Code (OAC) Chapter 3701-29 Sewage treatment (STS) Rules, it is estimated that 32 HSTSs will adequately treat 10,320 (86*120) gallons of wastewater per day. Using the Illinois EPA Excel spreadsheeet module, it is estimated that the elimination of 35 illicit discharges will lead to the removal of 2,263.1 lbs of total suspended (TSS) solids, 4,407.2 lbs of biological oxygen demand (BOD), 470.9 lbs of phosphorous, 1,243 lbs of nitrogen, and 941.7 lbs of ammonia from entering the waters of the state per year as shown in Table 2 below:

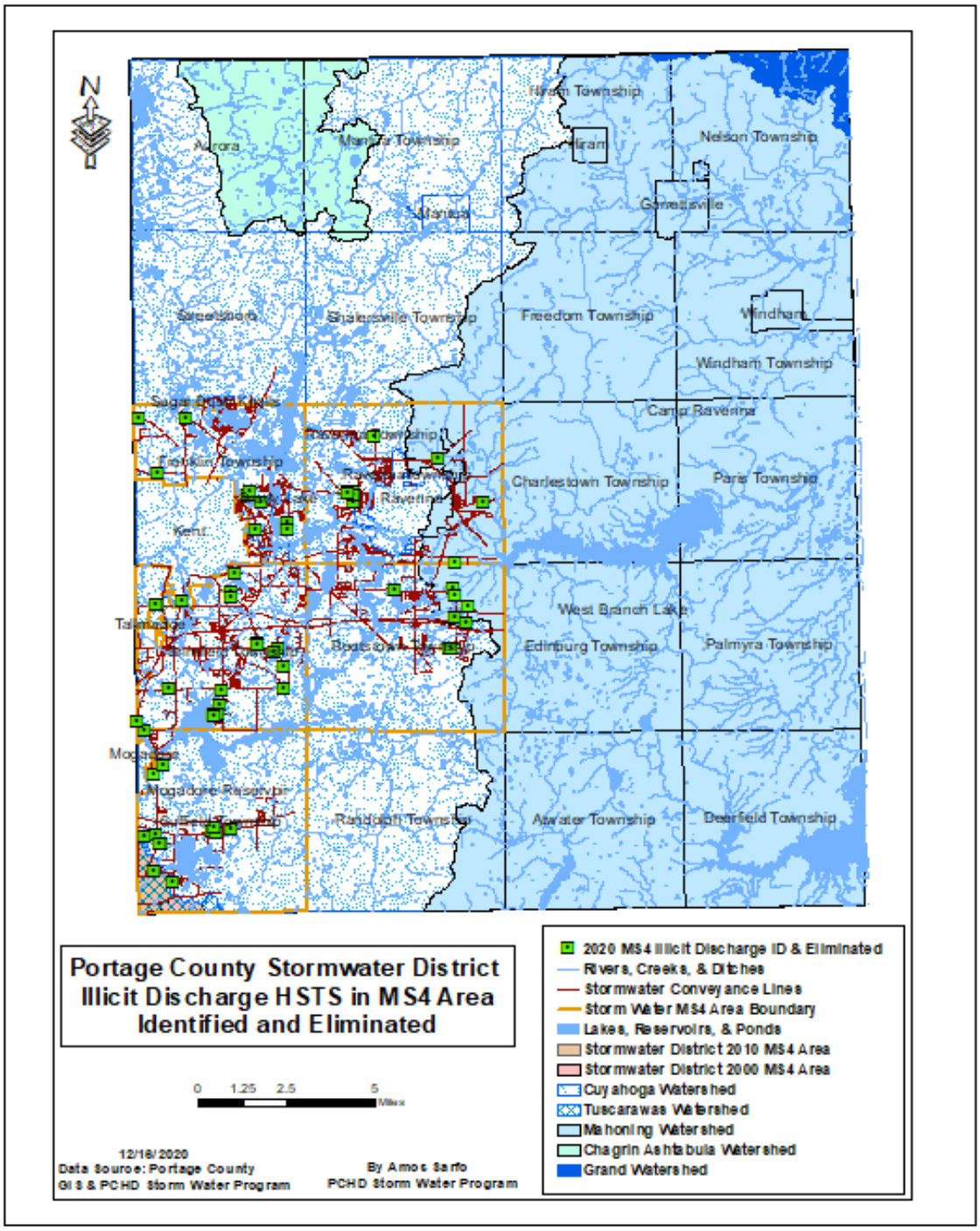
Expanded data of PCHD's historical records from 2010 to 2020 indicate that 186 illcit discharging HSTSs have been eliminated from the MS4 areas since the inception of PCHD's stormwater program in 2010. The affected 160 homes have combined 534 bedrooms, averaging almost 3 bedooms per house. Pursuant to OAC Chapter 3701-29 Sewage treatment (STS) Rules stipulating water usage of 120 gallons a day per bedroom, it is expected that 186 HSTSs will sufficiently treat 64,080 (534*120) gallons of wastewater per day. It is also projected that removal of 186 illicit discharging HSTSs will potentially eradicate 14,033.5 lbs of TSS, 27365.4 lbs of BOD, 2923.7 lbs of phosphorous, 7718.4 lbs of nitrogen, and 5847.3 lbs of ammonia from entering the waters of the state per year as shown in Table 2 below:

Table 2: IDDE and Estimated Nutrients Removed in MS4 Area

Total Estimated Gallons of Wastewater Adequately Treated per Day and Total Pounds of Nutrients Eliminated per Year in MS4 Areas			
Homes and HSTS Data	**2020**	**2010-2020**	
Number of Homes (HSTS)	35	186	
Total Number of Bedrooms	86	534	
Total Wastewater Generated Per Day	10,320	64,080	
Nutrients	**Total Pounds Eliminated per Year**		
TSS	2,260.1	14,033.5	
BOD	4,407.2	27,365.4	
Phosphorous	470.9	2,923.7	
Nitrogen	1,243	7,718.4	
Ammonia	941.7	5847.3	

As Table 2 shows, elimination of HSTS illicit discharges estimate removal of reasonable amount of nutrients from storm water systems every year. Though very small compared to the overall pollutants entering the five watersheds in the county, it is undoubtedly a positive steps in the right direction to help reduce pollution of surface water and waterways to achieve sustainable water quality for human consumption, aquatic life and recreational activities. Figure 8 below shows a map of illicit discharges eliminated from the affected watersheds in the MS4 areas of the Portage County Storm Water District in 2020.

Figure 8: Portage County Stormwater District Illicit Discharge HSTS in MS4 Area: This map is a visual representation of the spatial distribution of illicit discharging HSTS in MS4 areas of Portage County Storm Water District eliminated in 2020.



Facility Planning and Prioritization

Priority Area Facility Planning Activities

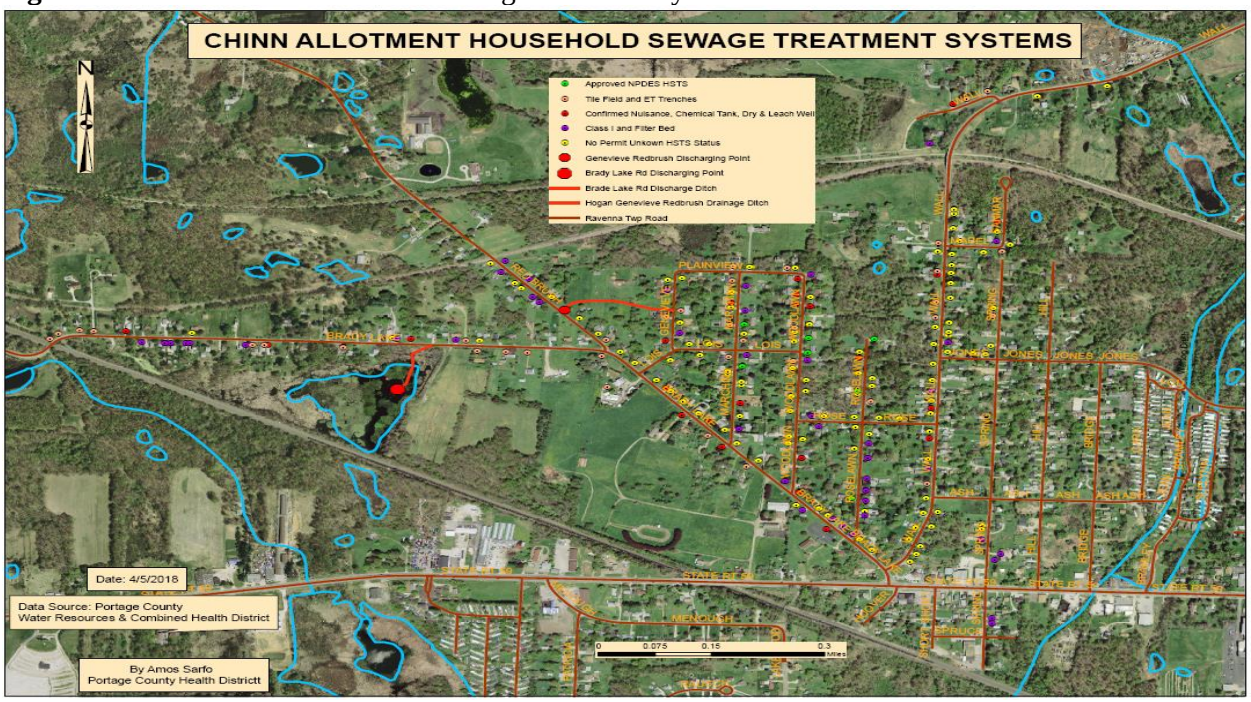
Although Covid-19 restricted some of our activities in 2020, PCHD Storm Water Program continued to collaborate with the Portage County Water Resources to deal with the following issues.

- Identification of potential areas within the Storm Water District that may have high concentrations of failing HSTSs due to age and small lot sizes
- Prioritization of current sanitary sewer projects in the county
- Identification and prioritization of funding and economic impacts for STS repairs and/or replacement or sanitary sewer projects
- Revision, updates, and confirmation of Portage County locations with available and accessible public sanitary sewers.
- These proactive area-wide planning activities focus attention on public investments in wastewater treatment facilities and elimination of point source water pollution aimed at achieving preventable surface water contamination and sustainable water quality..

This collaboration continue to yield positive results and helped focus attention in the following areas that have concentrated numbers of illicit discharging household sewage treatment systems:

- As included in the previous PCHD Storm Water Annual Reports, in Ravenna Township, the process to eliminate the HSTS nuisance condition in the Chinn Allotment by connecting about 250 homes to public sanitary sewer is in good progress. In 2020, the hard work of PCWR was rewarded with $10.6 million award from OEPA 2021 WPCLF grant to assist the funding of the project. Figure 9 below is area map of Chinn Allotment.

Figure 9: Chinn Allotment Household Sewage Treatment Systems



- The only remaining failing HSTS on Lynwood Drive in Brimfield Township was replaced.
- Additionally, under the supervision of PCWR, the project to connect 58 homes in Oakwood Acres neighborhood in Brimfield to public sanitary sewer saw 46 of the homes successfully completed by the end of 2020. The remaining 12 homes are expected to tie into sanitary sewer in 2021.
- In Ravenna Township, we are working on the elimination of a public health nuisance conditions emanating from Bryn Mawr Street and Seabury Drive caused by HSTSs.

2020 Countywide Storm Water IDDE Activities

Portage County Storm Water District Program is intentionally designed to extend beyond MS4 communities of the county. The program unlike other storm water programs in Ohio covers MS4 and non-MS4 unregulated communities across the county. Nonetheless, political jurisdictions including Aurora, Kent, Ravenna, and Streetsboro that have their own storm water programs or some small communities that have applied and received exemption from OEPA are not part of the Portage County Storm Water District program.

Similar to previous years, in 2020, the county's storm water program BMPs were utilized to achieve its' storm water IDDE goals. PCHD conducted countywide IDDE activities similar to those performed in the MS4 communities discussed earlier, which include staff training, outfall verification, dry weather screening, investigations of illicit discharge complaints emanating from HSTSs, class I aeration systems, businesses, manufacturing, and industry wastewater system inspections. Any industrial, manufacturing, or man-made discharges not pertaining to HSTS found were referred to the appropriate agency in charge for investigation and enforcement to eliminate the specific storm water illicit discharge violation.

Countywide Storm Water Outfall and Illicit Discharge Management Maps

In 2020, using *ESRI* GIS software, Storm Water Program staff updated existing maps created in previous years, such as the map of storm water outfall points and the map of suspected illicit discharge management activities in Figure 10 and 11 respectively. These maps that have been updated continuously since 2011 are used as part of storm water management plan to achieve the objectives of the storm water minimum control measure #3, which requires the identification, detection, and elimination of illicit discharges in the county. ArcGIS online mapping was added to PCHD tools for office and field mapping in support of office and field IDDE activities in 2020.

Since the inception of the PCHD Storm Water Program in 2010, over one thousand (1,000) suspected or confirmed illicit discharges have been eliminated through IDDE activities. These suspected or confirmed illicit discharges include failing HSTSs replaced, repaired, or connected to public sanitary sewer in the county between 2010 and 2020. Most of these replacements, repairs, or public sanitary sewer connections occurred largely because of storm water program's IDDE and enforcement activities to improve water quality standards. Figures 12 below shows the visual representation and

distribution of illicit discharges eliminated in the county from 2010 through 2020, which includes HSTS repairs/replacements and public sanitary sewer connections.

In 2020, PCHD also conducted outfall verification inspections, dry weather screening and best management practices mapping to detect and eliminate storm water illicit discharges, from the countywide non-MS4 areas of Portage County Storm Water District. Like the MS4 areas of the storm water district any industrial, manufacturing, or man-made discharges were referred to the appropriate agency for investigation including the OEPA.

Figure 10: Countywide Storm Water District Outfalls

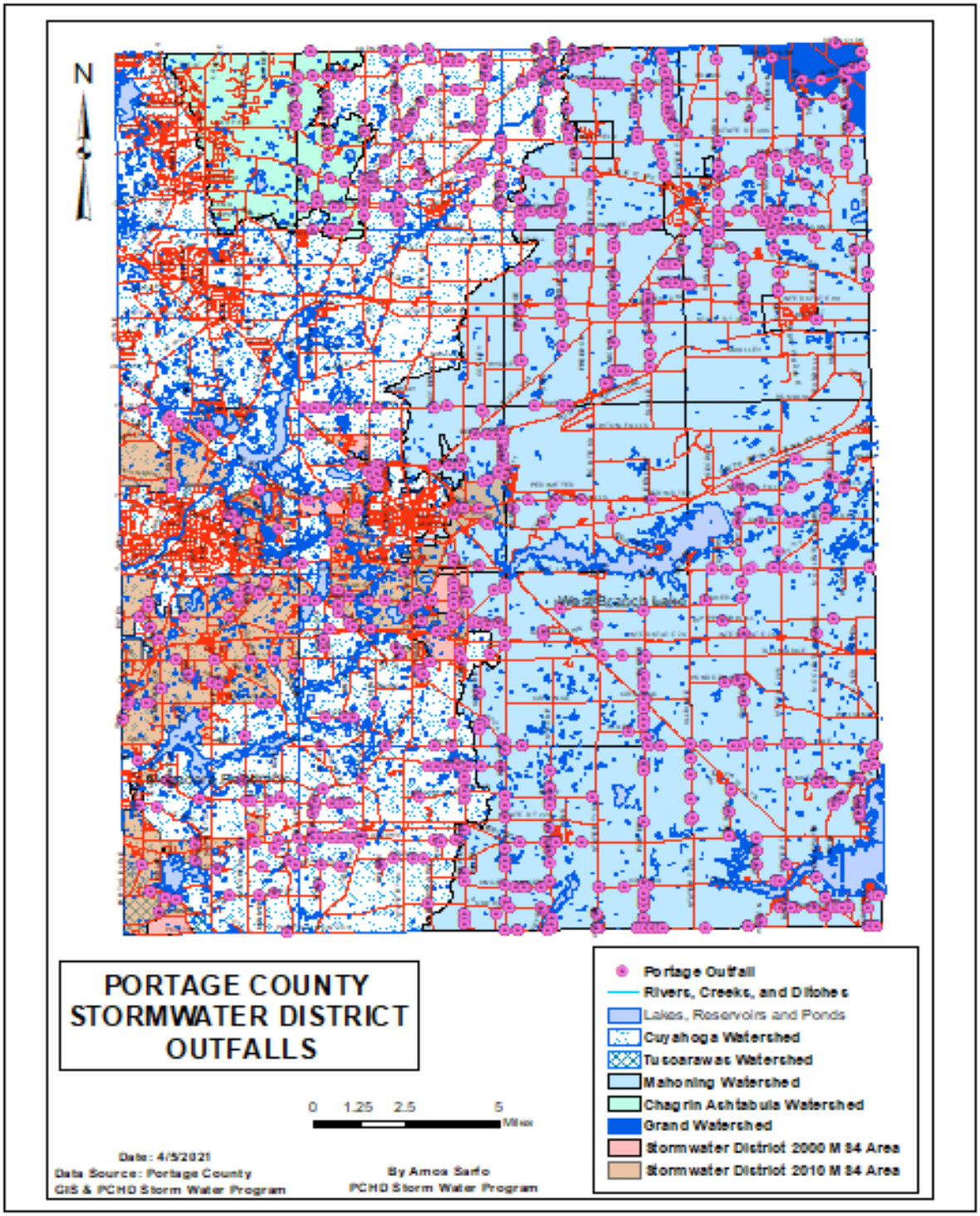


Figure 11: Portage Countywide Illicit Discharge Management Activities

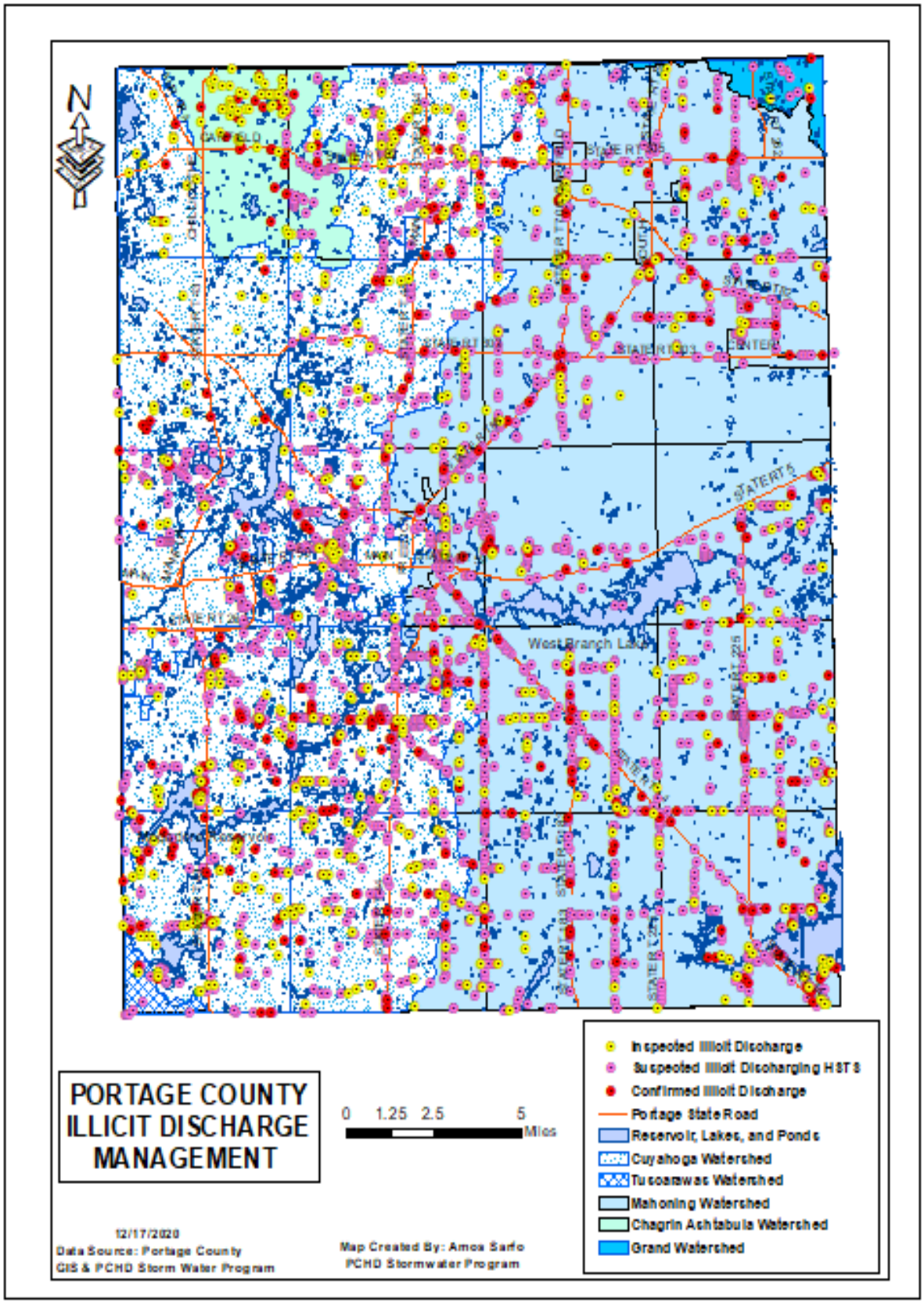
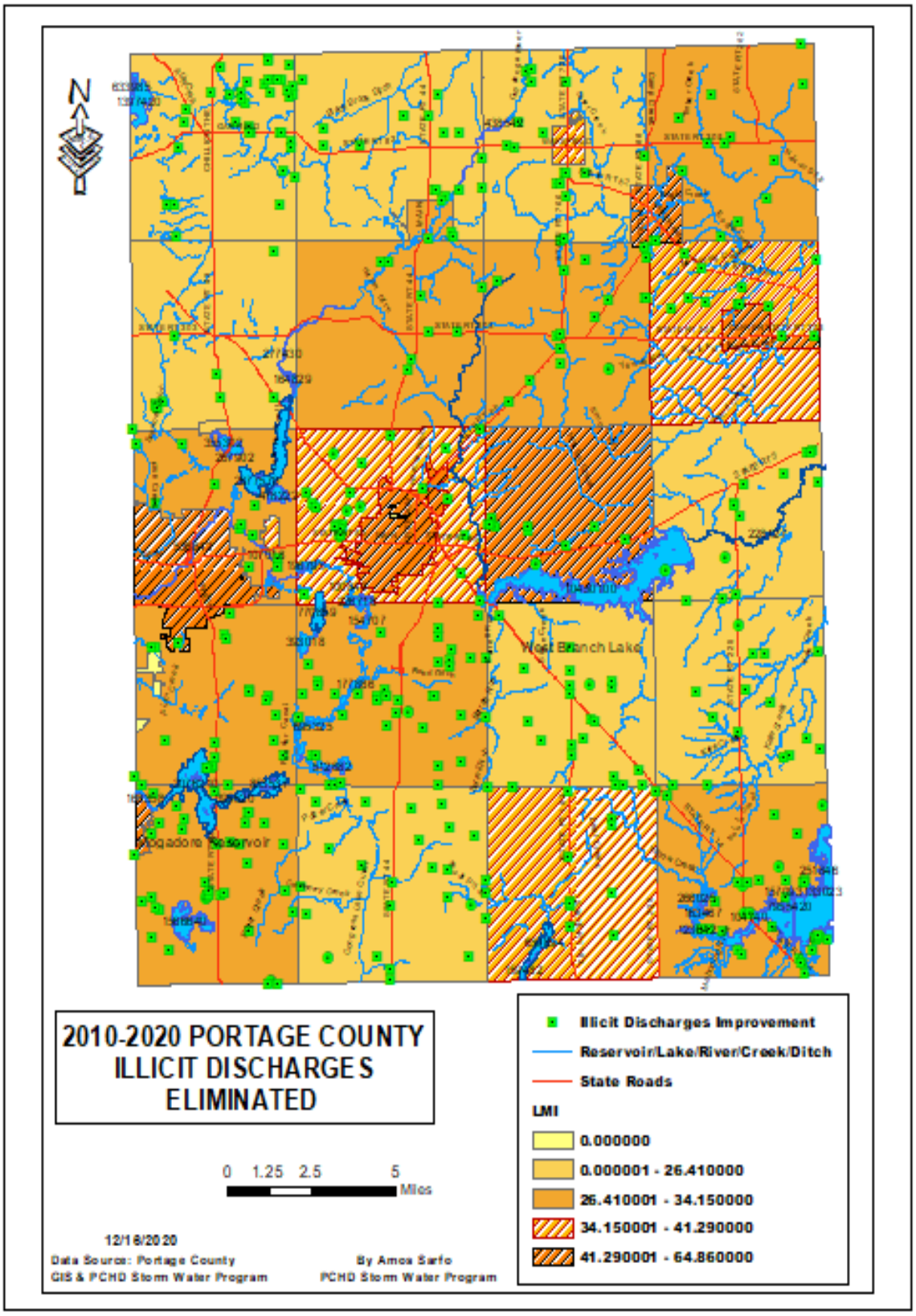


Figure 12: Spatial Distribution of 2010-2020 Countywide Illicit Discharges Eliminated



Suspected HSTS IDDE Inspection Activities

PCHD's countywide HSTS IDDE activities have four main components. These inspection of non-NPDES permitted class I aeration systems rolled into PCHD HSTS operation maintenance (O&M) program for failing to maintain service contract, HSTS nuisance complaint investigations, POS and voluntary HSTS replacement inspections. These four important storm water IDDE BMPs are implemented to prevent contamination of the waters of the state caused by illicit discharges from HSTS.

Non-NPDES Class 1 HSTS Inspection Activities

Effective October 6, 2019, all class I aeration discharging HSTSs installed between 1986 and 2006 without NPDES permit operating as designed are deemed acceptable by Portage County Commissioners' resolution 19-0656 pursuant to Ohio Administrative Code (OAC) 3701-29. The these systems, which did not require NPDES permits at the time of installation. will continue to be part of PCHD's O&M HSTS program that needs service contract, annual inspection, and sampling to prevent illicit discharges from polluting the waters of the state.

In 2020, PCHD inspected 54 Class 1 off-lot discharging aeration HSTSs because the homeowners failed to provide the required operation and maintenance service contract in accordance with the Ohio OAC 3701-29 and the Health District's Supplemental Sewage Treatment System regulations. Among the 54 total inspections, 13, representing 24.07 were found to be non-complaint. Notice of violation and enforcement letters were sent to the owners to repair the systems. Figure 13 below shows HSTS illicit discharge detected during Class I inspection.

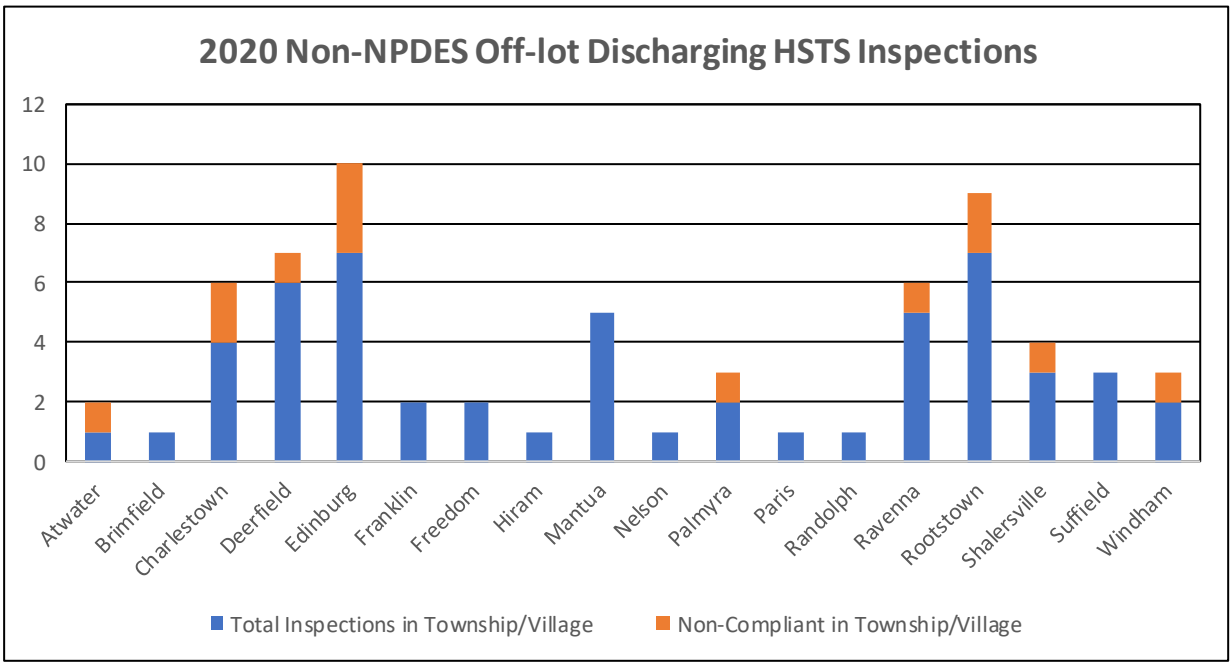
Figure 13: HSTS Illicit Discharge Detected during Class I Aeration System Inspection

Table 3 and Figure 14 below provide a summary and graphical representation of the Class 1 Aeration HSTS inspections by township respectively.

Table 3: 2020 Class 1 Aeration HSTS Inspections and Outcomes

Township	Total Inspections in Township/Village	Non-Compliant in Township/Village
Atwater	1	1
Brimfield	1	0
Charlestown	4	2
Deerfield	6	1
Edinburg	7	3
Franklin	2	0
Freedom	2	0
Hiram	1	0
Mantua	5	0
Nelson	1	0
Palmyra	2	1
Paris	1	0
Randolph	1	0
Ravenna	5	1
Rootstown	7	2
Shalersville	3	1
Suffield	3	0
Windham	2	1
Total	**54**	**13**

Figure 14: 2020 Class I Aeration HSTS Inspections and Outcomes



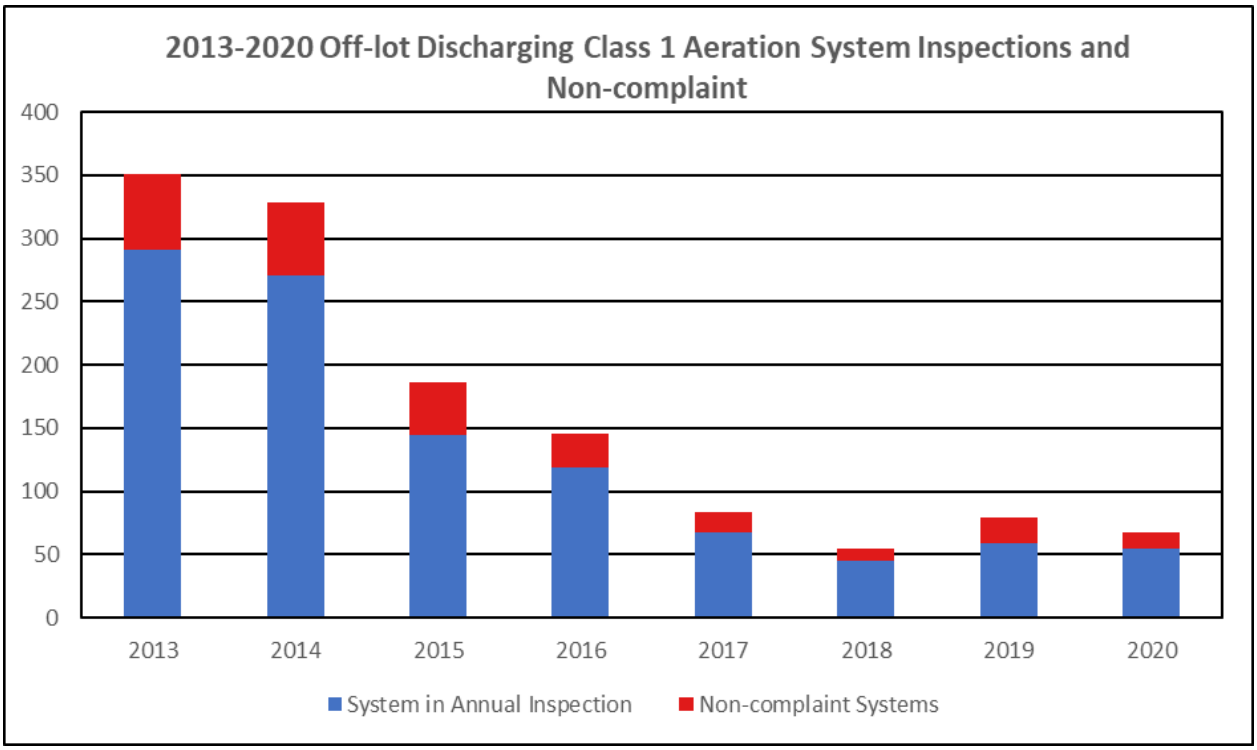
2013-2020 Non-NPDES Class 1 HSTS Inspection Activities Trend

Table 4 and Figure 15 below also offer a summary and graphical representation of the trend of Class I Aeration HSTS inspections and outcomes in the county respectively. The table and the graph show that the number of homeowners that failed to maintain their Class I service contracts warranting PCHD's inspection have generally been declining steadily from 291 in 2013 to 54 in 2020. The number of Class I aeration HSTSs found to be non-compliant during the same period has also declined from 60 in 2013 to 13 in 2020.

Table 4: 2013-2020 Off-lot Class 1 Aeration HSTS Inspections and Outcomes Trend

Year	Total Inspections in Township/Village	Non-Compliant outcome in Township/Village
2013	291	60
2014	271	57
2015	144	42
2016	119	27
2017	67	16
2018	45	10
2019	59	20
2020	54	13
Total	1055	245

Figure 15: 2013-2020 Class 1 Aeration HSTS Inspections and Outcomes Trend



Wastewater Nuisance Complaints

Wastewater nuisance complaints such as failing HSTS and laundry line discharge investigations are some of the most effective tools employed by PCHD for IDDE. Consequently, all nuisance complaints received are investigated promptly. With homeowners and residents permission, HSTSs and laundry drains are dye tested or sampled to determine the validity of the complaint and determination of a public health nuisance. Figure 16 below illustrates a dye test of a malfunctioning sewage treatment system discharging to waters of the state.

Figure 16: Dye Test of Illicit Discharges Observed During HSTS Evaluation

When HSTSs are causing a public health nuisance, the PCHD issues a written notice of violation (NOV). Owners are given 60 days to correct these violations by making repairs and/or replacing the sewage treatment system in accordance with Chapter 3701-29 of the OAC. During the investigation, the type and status of the HSTSs serving the affected houses are documented and the geographical coordinate points of the locations of the public health nuisances captured with GPS units and uploaded into the Storm Water GIS Program database.

When all reasonable attempts to achieve compliance proved futile, enforcement actions were pursued to ensure the elimination of the public health nuisance.

Wastewater Nuisance Complaints Data Analysis

In 2020, PCHD received 27 suspected illicit household wastewater discharging written complaints. These nuisance complaints were fairly distributed across Portage County's townships and villages. Investigation of the 27 suspected nuisance complaints confirmed 18, representing 67%, were in violation, 9, constituting 33%, were determined to be not illicitly discharging, and none of the nuisance complaints is pending for further investigation.

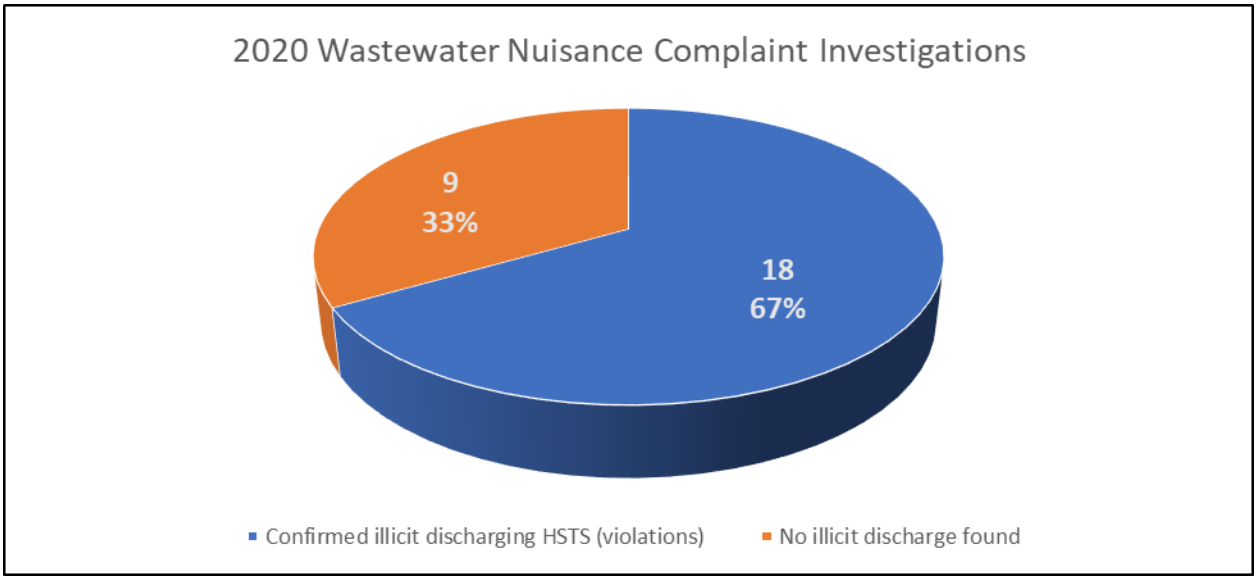
Several nuisance complaints could not be investigated because the complainants wanted to remain anonymous and did not continue with the process for fear of offering information they thought could potentially reveal their identity to the people they were complaining about. In these instances, complainants are provided alternatives such as contacting a public official to submit a complaint on their behalf or to contact the Ohio EPA's northeast district office for assistance.

The public health nuisance complaint data analysis is summarized in Table 5 and Figure 17 below.

Table 5: Suspected Illicit Discharge Nuisance Complaints

Confirmed illicit discharging HSTS (violations)	18	66.67%
No illicit discharge found	9	33.33%
Investigations pending	0	0.00%
Total	**27**	100.00%

Figure 17: Suspected Illicit Discharge Nuisance Complaints



Voluntary Point-of-Sale Real Estate Transfer HSTS Inspection

Storm Water Program Staff also perform real estate transfer inspections of HSTSs upon request. Real estate transfer inspections of HSTSs are effective and efficient methods of IDDE. It offers a significant compliance rate among all the programs offered to eliminate confirmed illicit HSTS discharges because the parties involved in real estate transfer transactions have vested interest to remediate the violation and eliminate the public health nuisance.

The enforcement process of illicit discharging HSTS found during property transfer HSTS inspection is the same as dealing with illicit discharges found during a storm water routine inspection. The homeowners are given 60 days' time limit from the date a notice of violation certified letter is received to correct confirmed violations. The homeowners are required to install an approved HSTS in accordance with the OAC 3701-29 in order to avoid escalated enforcement through court. It must be noted that PCHD does not stop the sale or transfer process when a HSTS is causing a public health nuisance during a real estate transfer inspection despite the issuance of notice of violation for repair/replacement to eliminate the public health nuisance. The elimination of any public health nuisance becomes the responsibility of the new property owner if the property transfers before returning to compliance.

In 2020, 13 HSTS failing or prohibited systems, representing 27.65% were identified among 47 real estate transfer HSTS inspections received by PCHD. These failing or prohibited HSTSs were added to the nuisance complaint database. Similar to the nuisance complaint enforcement process, all failing HSTSs or prohibited systems, such as dry wells, were referred to the Storm Water Program for repair/ replacement enforcement in accordance with ORC 3718 and OAC 3701-29 Sewage Treatment System regulations.

Verified Non-MS4 Area Outfall Points and Assessment

The Storm Water staff inspected and verified 496 non-MS4 outfall points during 2020. Of the 496 (100.00%), only 16 outfalls points representing 3.23% were eliminated. All remaining 480 (96.77%) acceptable outfalls were dry weather screened. This information is summarized in Tables 6 below. This also shows that all the 480 outfall points dry screened represents 100% success rate.

Table 6: Distribution of Verified Non-MS4 Mapped Storm Water Outfall Points

Non-MS4 Mapped Storm Water District Data		
Eliminated Mapped Non-MS4 Outfall Points	16	3.23%
Acceptable Mapped Non-MS4 Outfall Points	480	96.77%
Total Verified Non-MS4 Outfall Points	496	100.00%

New Non-MS4 Outfall Points Identified and Assessed During Inspections

The Storm Water Staff also identified and mapped 112 new outfall points identified during outfall inspections that were not part of the Storm Water District's database. All 112 additional outfall points were dry weather screened during the year.

Illicit Discharge Identified During Dry Weather Screening in Non-MS4 Area

Among all the outfalls dry weather screened in the non-MS4 communities in the countywide storm water district, 5 illicit discharges were found. These consisted of 4 HSTS failing systems identified to be causing public health nuisance. Through PCHD's enforcement, 2 of the 4 failing HSTSs have been replaced or repaired and brought to compliance. The remaining 2 are still pending for replacement and abatement. Also, one grey water illicit discharge violation is still pending for repair and abatement.

Illicit Discharge Elimination Notice of Violations in Non-MS4 Area

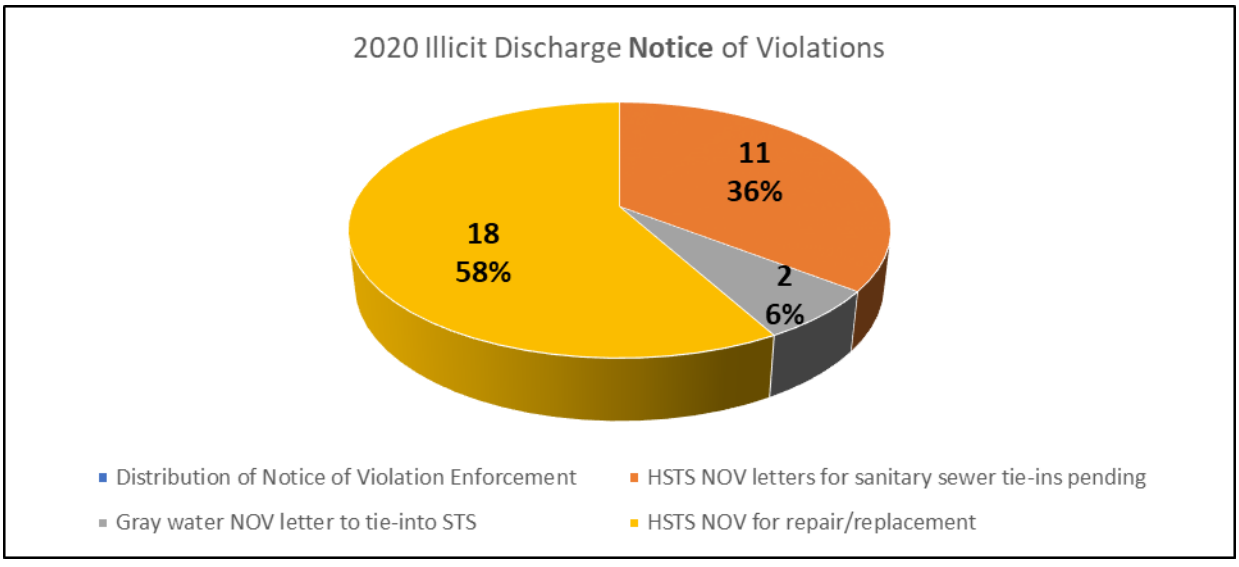
In 2020, staff sent 31 Notices of Violation (NOV) to homeowners to eliminate illicit discharges as summarized in Table 7 and graphically represented in Figure 18 below:

- Among them were 11 HST, representing 35.48%, involving malfunctioning HSTS were ordered to connect to sanitary sewer:
- Additionally, PCHD sent 2 NOVs, representing 6.45% to homeowners with gray water (laundry) illicit discharges to re redirected and connect to their HSTS.
- The remaining 18, representing 58.06% of the notice of violation enforcements are in progress or pending completion of repairs and/or replacement process.

Table 7: Distribution of Non-MS4 Notice of Violation Enforcement

HSTS NOV letters for sanitary sewer tie-ins	11	35.48%
Gray water NOV letter to tie-into STS	2	6.45%
HSTS NOV for repair/replacement	18	58.06%
Total repair/replacement orders	**31**	**100.00%**

Figure 18: Distribution of Non-MS4 Notice of Violation Enforcement



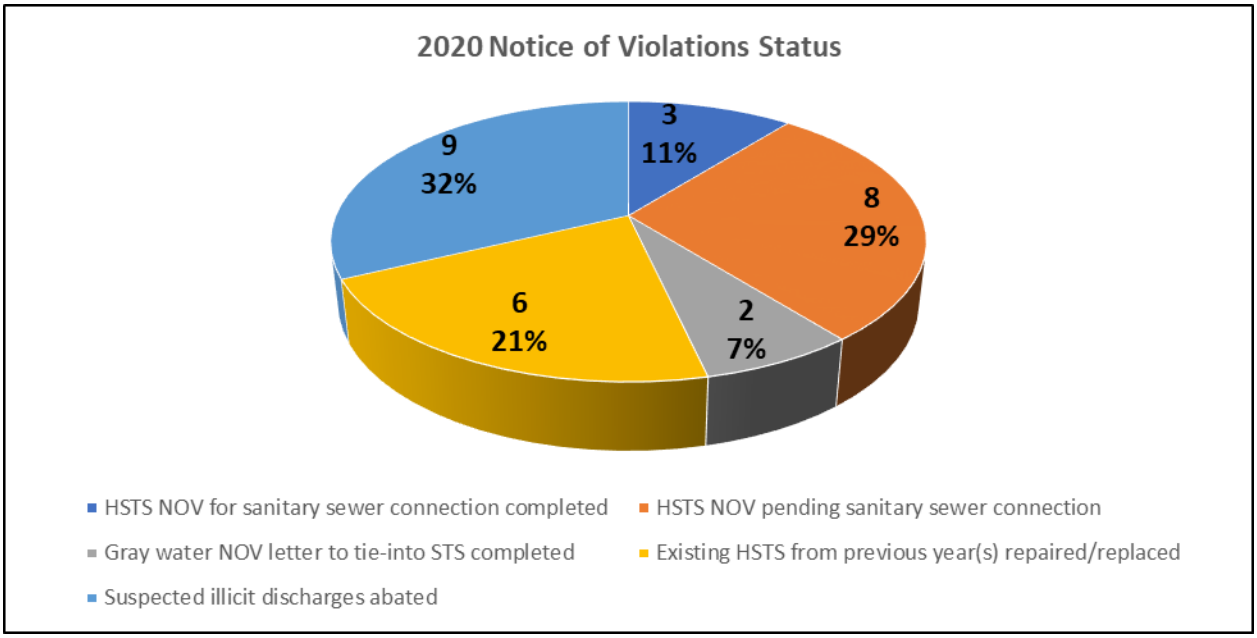
Illicit Discharge Elimination Notice of Violation Enforcement Status

In 2020, 3 of the 11 HSTS illicit discharges ordered to connect to public sanitary sewer were completed. The remaining 8 NOVs are still pending. Additionally, 2 gray water illicit discharges ordered to redirect to HSTS were abated. Furthermore, 6 existing illicit discharge NOVs from previous year(s) were eliminated by repairs or replacement. Also, 9 suspected illicit discharges were abated. The NOV enforcement status is summarized in Table 8 and graphically depicted by Figure 18 below.

Table 8: Distribution of Non-MS4 Notice of Violation Enforcement Status

HSTS NOV for sanitary sewer tie-ins completed	3	10.71%
HSTS NOV for sanitary sewer tie-ins pending	8	28,57%
Gray water NOV letter to tie-into STS completed	2	7.14%
Existing HSTS from previous year(s) repaired/replaced	6	21.43%
Suspected illicit discharges abated	**9**	**32.14%**
Total repair/replacement orders	**28**	**100.00%**

Figure 19: Distribution of Non-MS4 Notice of Violation Enforcement Status



Semi-Public Systems (HB-110) IDDE Activities

In 2020 Portage County Stormwater Program staff inspected all 347 semi- public systems in the county to identify, detect, and eliminate any possible illicit discharges emanating from them. Three of those systems were found causing illicit discharge violations. Notice of violations were issued to the operators to eliminate the violations and achieve compliance.

IDDE: Nutrients Elimination to Achieve TMDL in Non-MS4 Area

In 2020, 28 illicit discharging HSTSs were successfully eliminated from the Non-MS4 communities through replacement and sewer connections. Using OEPA's Ohio Septic Nutrient Conversion Sheet Template, it is estimated that 2365.2 lbs. TSS, 4612.1 lbs. BOD5, 492.8 lbs. phosphorus, 1300.9 lbs. nitrogen, and 985.5 lbs. ammonia that would have entered the waters of the state were likely removed to reduce pollution of waters of the state. PCHD's illicit discharge HSTS data also show that since the inception of PCHD's IDDE program in 2010 through 2020, have effectively eliminated 1059 HSTS illicit discharges from Portage County Stormwater District's non-MS4 areas. The elimination of those illicit discharging HSTSs have potentially facilitated the removal or prevention of estimated 84358.8 lbs. TSS, 164499.7 lbs. BOD5, 492.8 lbs. phosphorus, 1300.9 lbs. nitrogen, and 985.5 lbs. ammonia from entering the waters of the state over the period.

The discussions show that TMDL program is important process or tool that is not only used for identifying but helped enormously in removing critical contamination from the watersheds and drinking water reservoirs in the county. As the data analysis and Table 19 indicate, the elimination of HSTS illicit discharges through outfall verification, dry weather screening, investigations of illicit discharge complaints, POS inspections, -NPDES permitted class I aeration inspections for IDDE remove a reasonable amount of nutrients from storm water systems and prevent them from polluting the waters of the state every year. These preventative measures undobtedly help immensely in reducing pollution of surface water and waterways to achieve sustainable water quality for human consumption, aquatic life and recreational activities in the county.

Table 9: IDDE and Estimated Nutrients Removed from Non-MS4 Area

Total Estimated Gallons of Wastewater Adequately Treated per Day and Total Pounds of Nutrients Eliminated per Year in Non-MS4 Areas		
Homes and HSTS Data	**2020**	**2010-2020**
Number of Homes	28	1059
Total Number of Bedrooms	90	3210
Total Wastewater Generated Per Day	10800	385200
Nutrients	**Total Pounds Eliminated per Year**	
TSS	2365.2	84358.8
BOD	4612.1	164499.7
Phosphorous	492.8	17574.8
Nitrogen	1300.9	46397.3
Ammonia	985.5	35149.5

Financial Assistance for Illicit Discharges Elimination

Financial Assistance for HSTS Improvement

PCHD recognizes the substantial cost involved in HSTS repair, replacement or connection to public sanitary sewer.replace and the financial burden placed on property owners to comply with a notice of violation and eliminate of illicit discharge.

Based on the enormity of the financial needs for illicit discharge elimination in the county, the Storm Water Program is constantly looking for new funding sources to broaden the base of the financial assistance to help homeowners replace, repair, or connect their falling HSTS to sanitary sewer. The PCHD Storm Water Program staff collaborates with the Portage County Board of Commissioners, Portage County Regional Planning Commission (RPC), Engineers Office, Soil and Water Conservation District, Water resources Department, and Neighborhood Development Services (NDS) to assess possible funding sources for: 1) HSTS repair or replacement, 2) connection into an existing sanitary sewer and 3) construction of new sewer projects.

Homeowners who cannot financially afford the repair, replacement, or connection to public sanitary sewer are referred to OEPA managed Water Pollution Control Loan Fund (WPCLF), NDS, , Portage County's Board of Commissioners Home Improvement Programs managed by RPC and Portage County Treasurer, and the United States Development of Agriculture (USDA) Rural Development for possible funding assistance. The financial assistance from these institutions is not guaranteed and only offered when funds are available. Qualification for such financial assistance in the form of soft loans or grants is based on income and federal poverty guidelines. Applicants must meet certain conditions determined by the individual funding organization. Available financial support to qualified applicants is usually disbursed on first-come, first-served basis.

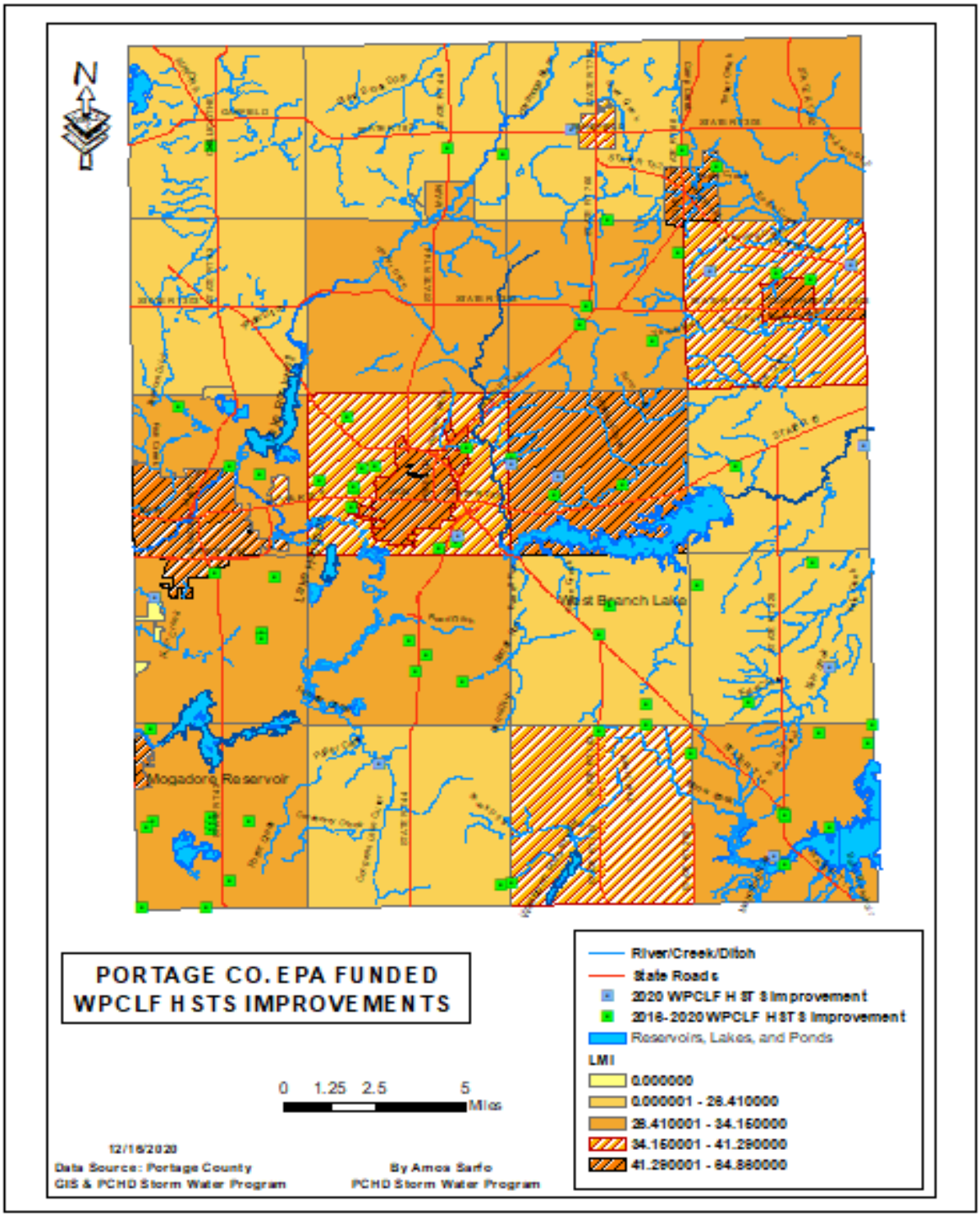
Water Pollution Control Loan Fund (WPCLF) Program

The Ohio Environmental Protection Agency (EPA) Water Pollution Control Loan Fund (WPCLF) program for HSTS improvement managed by PCHD in the county is a principal forgiveness fund to assist low to moderate income qualifying homeowners who meet the guidelines for funding on first come first serve basis. The Storm Water Program, with the support of our stakeholders, have applied for, received and disbursed a total of $1.1 million of the WPCLF grant from 2015 to 2020. OEPA has awarded addition $150,000 to PCHD for the 2021 grant year to be disbursed within 18 months. The distribution of OEPA WPCLF grants awarded to PCHD between 2016 and 2021 are:

- Received $300,000 of 2016 grant
- Received $300,000 of 2017 grant
- Received $200,000 of 2018 grant
- Received $150,000 of 2019 grant
- Received $150,000 of 2020 grant
- Approved $150,000 of 2021 grant

Over the years, WPCLF grants have offered financial assistance to 79 low to moderate income homeowners for 70 HSTS replacements, 5 repairs, and 4 sanitary sewer connections. This has helped to remove or prevent large amounts of pollutants that would have potentially entered the waters of the states as discussed and shown in the TMDL sections of this report. Figure 19 below shows a map of WPCLF funded HSTS improvements in Portage County.

Figure 20: 2016-2020 WPCLF HSTS Funded Replacements



Storm Water Education and Outreach Activities

Community Outreach

Before the Covid-19 pandemic in 2020, PCHD staff used to attend public forums to offer presentations and educational information on HSTS installation, operation and maintenance. The educational and community outreach promotion was aimed at helping Portage County communities to eliminate or prevent point and non-point sources water pollutants from entering the waters of the state through storm water drains. The prevention, detection, and elimination of water pollutants from the storm drain before they enter the waters of the state are aimed at achieving sustainable water quality.

PCHD strives to bring to the attention of public employees, business and the general public the hazards associated with illegal discharges and improper disposal waste that could potentially contaminate surface and groundwater. Normally, Storm Water Program staff extended our education and outreach programs to township trustees and roads department representatives during quarterly Task Force and Township Association Meetings. As mentioned earlier these activities were restricted this year.

Notwithstanding the challenges that Covid-19 presented to all human endeavor including public health education and community outreach in 2020, PCHD was determined to find a unique, yet simple medium that offers more meaningful impact to fulfill its storm water public education and community outreach needs. Upon research and consideration of many factors, PCHD selected electronic billboard advertising, because it offers unique, but simple effective communication tool for broadcasting education campaign that can reach the target population. As a result, PCHD, contracted for 6 billboard campaigns that run from the beginning of October through December 2020. The billboards shown in Figures 20 and 21 below were mounted at the following strategic points in the county to broadcast the stormwater promotion messages:

- Cleveland Rd/Beecher St
- 59 Ravenna Rd/Brady Lake Rd
- S Prospect/Hayes Rd
- SR 59 Ravenna Rd/Menaugh Rd
- SR 88 Freedom St/SR 14
- SR 14/SR 5

Information reaching PCHD indicates that the public education and outreach campaign through the electronic billboard was well received.

Figure 21: 2020 Storm Water IDDE Educational Billboard #1

Figure 22: 2020 Storm WaterIDDE Educational Billboard #2

Conclusion

In 2020, PCHD Storm Water Program was successful in implementing the Municipal Small Storm Sewer System (MS4) program IDDE in the MS4 communities as well as across the countywide storm water district despite the Covid-19 pandemic restrictions, which made life difficult for everyone. PCHD completed all its MS4 outfall verifications and dry-weather screening goals. Through the Storm Water Program specifically, and with EPA WPCLF grant and County Commissioners' financial support, PCHD offered 11 OEPA WPCLF fully or partially funded HSTS improvement contracts to eliminate illicit discharging HSTSs. Among those contracts, 6 were completed at the end of the year and weather permitting, the remaining 5 are slated to be done by the end of June 2021.

Through the Storm Water Program IDDE activities, PCHD eliminated 60 illicit discharges primarily from failing HSTSs or household effluent that were repaired, replaced, or connected to public sanitary sewer that are no longer causing public health nuisance.

In general, the Storm Water Program has proven to be one of the most effective and efficient environmental programs for illicit discharge detection and elimination of wastewater from non-storm water sources such as HSTS, semi-public wastewater systems, and illegal dumping to prevent surface and groundwater pollution pursuant to EPA's Clean Water Act goal of achieving sustainable water quality in the state of Ohio and in the nation.

Appendix A*: *2020 Storm Water Action Plan

1. Ensure compliance with Resolution No. 19-0656 (prohibits the connection to or continued connection of illicit discharges to the Municipal Separate Storm Sewer System (MS4).

2. Ensure PCHD Storm Water Program has adequately trained staff to identify failing household sewage treatment systems (HSTS) and detect illicit discharges. Training may include the use of sampling equipment for water quality testing, Global Positioning System (GPS) units for data collection and Geographical Information System (GIS) mapping software. Staff will be trained about the Ohio Department of Health's design requirements for HSTSs and the Ohio Revised Code (ORC) requirements to determine a public health nuisance

3. Work collaboratively with partners of the Storm Water District's program: Portage County Board of Commissioners (BOC), Engineer's Office (PCEO), Soil and Water Conservation District (SWCD), Prosecutor's office (PCPO), and Regional Planning Commission (RPC). In addition, build on the healthy working relationships with Portage County Water Resources (PCWR) townships, villages, and the citizens to ensure the Storm Water District's success

4. Assess, organize, and investigate potential illicit discharges throughout Portage County Stormwater District and refer to the appropriate agency for enforcement

5. Evaluate PCHD files and documents for potential failing HSTSs in the Stormwater District

6. Accept, record, compile HSTS information and nuisance complaints from villages, townships, government entities, and residents

7. Gather information from SWCD, townships and Ohio EPA on non-HSTS discharges

8. Update the existing databases of suspected and reported illicit discharges to be utilized in the execution of field work, documentation and reporting

9. Investigate nuisance complaints, conduct field inspections, perform dye testing, and surface water sampling to verify illicit discharges and public health nuisances

10. Identify failed and illicit discharging systems through voluntary property transfer inspections

11. Issue notices of violation, as necessary in all confirmed illicit discharging cases to obtain compliance and abatement

12. Update failing and suspected illicit discharging HSTS maps

13. Identify houses served by HSTS within areas of available and accessible public sanitary systems and seek confirmation from agencies in charge of the public sanitary sewers

14. Conduct field inspections to identify, verify, dry weather screen, sample, test, and evaluate outfall points, to detect storm water contamination

15. Update storm water outfall points' database and maps accordingly

16. Map all HSTSs replaced between 2010 and 2020 in the county

17. Use TMDL method to develop a list of water segments impaired by pollutants, needing TMDL

18. Use TMDL to determine estimated pollutants prevented or eliminated from entering waterbodies in the Stormwater District of the county

19. Assist SWCD upon request to train village, township, and municipal employees and develop educational materials, public announcements, and information for homeowners

20. Conduct public educational outreach through distribution of educational materials and perform outreach to inform citizens about the impacts polluted storm runoff can have on water quality

21. Attend quarterly Portage County Storm Water Program Task Force meetings. Provide quarterly statistical report of inspections, consultations and sampling

22. Compile 2020 PCHD Storm Water Program annual report and disseminate report to all stakeholders