

CONTROLLING *the* SOURCE



EXECUTIVE SUMMARY



A Roadmap For
Working Together
on Impactful
Source Control

July 2020

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Hillcrest Green Stormwater Infrastructure Project

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Source control projects can help reduce wet weather sewer overflows.

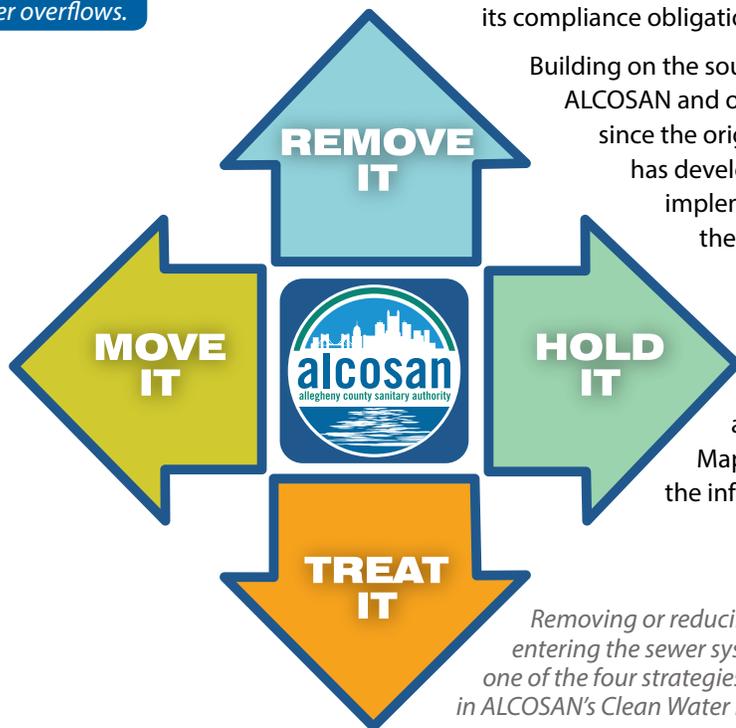
Introduction

The Allegheny County Sanitary Authority (ALCOSAN) serves an area that spans approximately 310 square miles across 83 municipalities, including the City of Pittsburgh. Located along the Ohio River on Pittsburgh's Northside, ALCOSAN's wastewater treatment plant (WWTP) is one of the largest of its type in the Ohio River Valley, currently processing up to 250 million gallons of wastewater daily.

In May 2020, ALCOSAN's Modified Consent Decree (Modified CD) with the United States Environmental Protection Agency (U.S. EPA), the Pennsylvania Department of Environmental Protection (PADEP), and the Allegheny County Health Department (ACHD) was entered by the U.S. District Court of the Western District of Pennsylvania. ALCOSAN has adopted its updated Clean Water Plan (CWP) to meet the requirements of the Modified CD.

The ultimate objective of the Modified CD and CWP is to improve and protect the water quality of the region's streams and rivers by reducing the volume of wet weather sewer overflows by approximately seven (7) billion gallons per year by 2036.

Source control is one of the methods selected by ALCOSAN in the CWP to eliminate sanitary sewer overflows, control combined sewer overflows, and meet its compliance obligations.



Building on the source control-related efforts undertaken by ALCOSAN and our customer municipalities and authorities since the original CD was signed in 2008, ALCOSAN has developed a framework to help identify and implement impactful source control projects in the Authority's service area.

Controlling the Source (CtS) documents that framework, including the processes that were developed and utilized; the opportunities that were identified and associated concept plans; and the Web Map that was created to facilitate access to the information.

Removing or reducing flow entering the sewer system is one of the four strategies included in ALCOSAN's Clean Water Plan



Key Terms

Modified Consent Decree (Modified CD): Agreement between ALCOSAN and the regulatory agencies for ALCOSAN to achieve compliance with the Federal Clean Water Act during periods of wet weather.

Clean Water Plan (CWP): ALCOSAN's long-term plan to reduce the overflows of diluted, untreated wastewater into the region's streams and rivers, and meet its compliance obligations.

Source Control: Practice of reducing the amount of stormwater and groundwater flow (inflow) entering the sewer system.

Impactful Source Control Projects: For the purpose of this report, projects anticipated to significantly and cost-effectively reduce inflow and overflow.

Controlling the Source is intended as a resource for ALCOSAN, our customer municipalities and other regional partners to aid in:

- Identifying and implementing impactful source control projects, i.e., increasing the common understanding of where municipalities can be most effective in reducing inflow and overflow per dollar spent on source control.
- Maintaining open communication and fostering collaboration with local customer municipalities and stakeholders on source control projects.
- Leveraging planned work and local investments to extend the reach of ALCOSAN's Green Revitalization of our Waterways (GROW) Program.
- Outlining strategies for implementing regional source control programs.
- Describing and quantifying the impact source control can have on inflows and overflows under different regional conveyance and treatment system conditions.

Source Control's Role in the Sewer System

Reducing the amount of stormwater and groundwater entering the sewer system can:

- Reduce volume and frequency of overflows and improve water quality.
- Maintain or restore the available conveyance and treatment capacity in the system, and therefore asset performance and resilience.
- Eliminate or reduce the need for other types of new sewer infrastructure.
- Reduce the operations and maintenance, energy and chemical demands for conveying and treating wastewater.

Source control methods considered in CtS are green stormwater infrastructure (GSI), direct stream inflow removal (DSIR), sewer separation (SS), and infiltration and inflow (I/I) reduction – including rainfall-derived infiltration and inflow. In terms of reducing inflows and overflows, DSIR, SS and GSI would typically be used in the combined sewer system (CSS) area while I/I reduction could apply to the entire service area.

One of the intended uses of CtS is to leverage planned work and local investments to extend the reach of ALCOSAN's GROW Program.



Key Terms

Green Revitalization of Our Waterways (GROW) Program: Grant program created by ALCOSAN Board of Directors in 2016 as part of a system-wide effort to reduce the amount of stormwater and groundwater entering the collection system.

Green Stormwater Infrastructure (GSI): Stormwater control measures that use plant systems, soil systems, permeable pavement, stormwater management, harvest and reuse, or piping to store, infiltrate, evapotranspire, or reuse stormwater and reduce flows to the combined sewer system.

Direct Stream Inflow Removal (DSIR): Practice of removing direct stream inflow (DSI) from the combined sewer system.

Sewer Separation (SS): Practice of separating the combined sewer system into separate systems for sanitary and stormwater flows.

Infiltration and Inflow (I/I) Reduction: Practice of reducing groundwater infiltration into sewers and inflow such as from sources improperly connected to the sanitary sewer system.

Combined Sewer System (CSS): System that collects stormwater, domestic wastewater and industrial wastewater in the same pipe system.

Sanitary Sewer System: System designed to collect wastewater only.



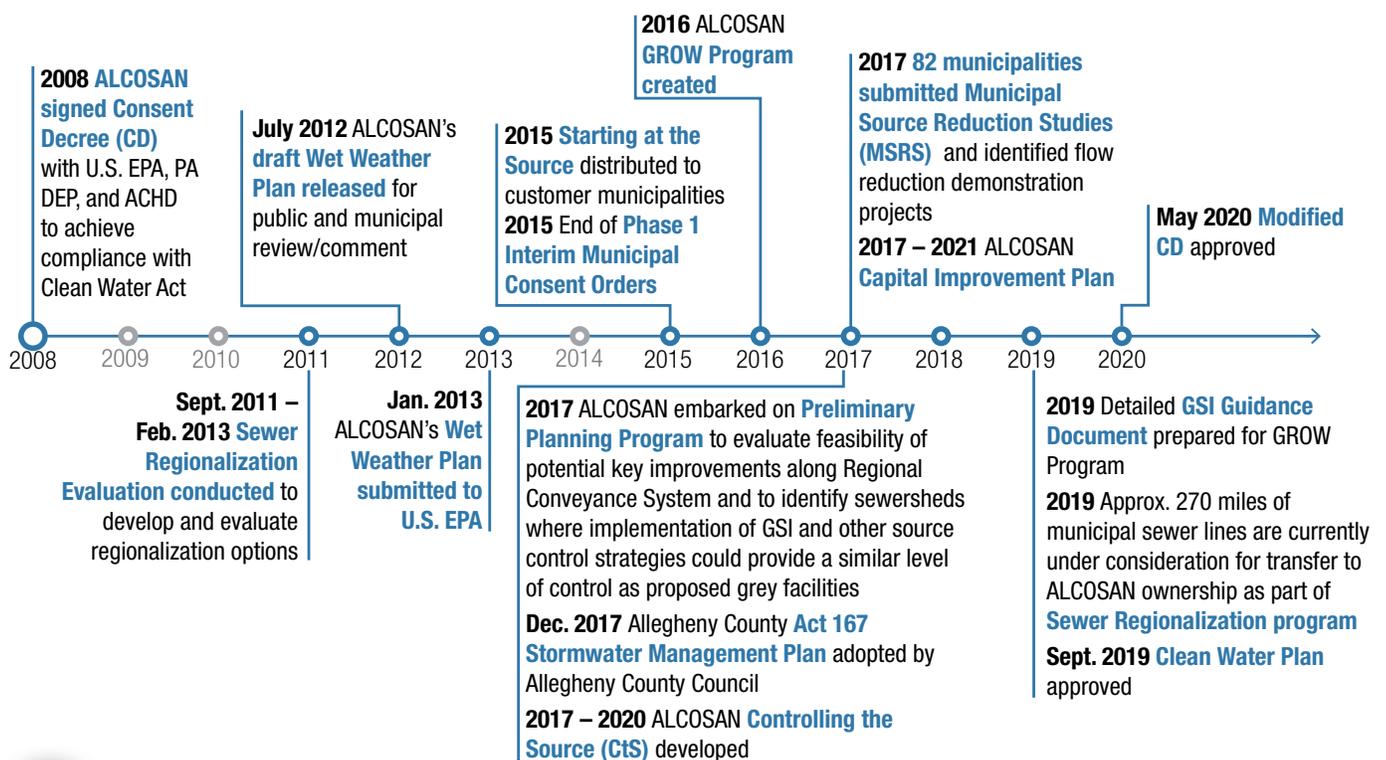
The content of CtS has been adapted to reflect this major milestone; further refinements and new work will be necessary. It is ALCOSAN's intent to update CtS as new information becomes available, as part of the CWP implementation and as other conditions change.

Background

Additional information on ALCOSAN's initiatives with links to source control, including the CWP, the GROW Program and Regionalization; and on municipal initiatives and initiatives by others, can be found in Section 2 and Appendix A of the report.

Since the first CD in 2008, ALCOSAN has undertaken several programs to move the region forward in meeting water quality standards and promoting source control. In addition to ALCOSAN's efforts, many customer municipalities, non-profit organizations and third-party stakeholders have undertaken their own source control initiatives in recent years – some of which are represented in the timeline below.

With the approval of the Modified CD and CWP, ALCOSAN and the region are moving forward with Regionalization of multi-municipal trunk sewers, expansion of ALCOSAN's WWTP and construction of conveyance and storage tunnels along the rivers to improve and protect the water quality of the region's streams and rivers. In parallel, ALCOSAN and the region will continue to look for opportunities to reduce flow entering the system in the first place, and add environmentally friendly GSI components, consistent with the Adaptive Management Framework set forth in those documents.



Key Terms

Regionalization: Process of transferring ownership of multi-municipal trunk sewers and other structures to ALCOSAN.

Adaptive Management Framework: A framework included in the Modified CD and CWP that supports early implementation of GSI and other source control projects, demonstration of effectiveness, and the substitution or reduction of grey infrastructure where GSI and other source control strategies can be shown to cost effectively provide equivalent system-wide performance.

Processes to Identify and Prioritize Opportunities

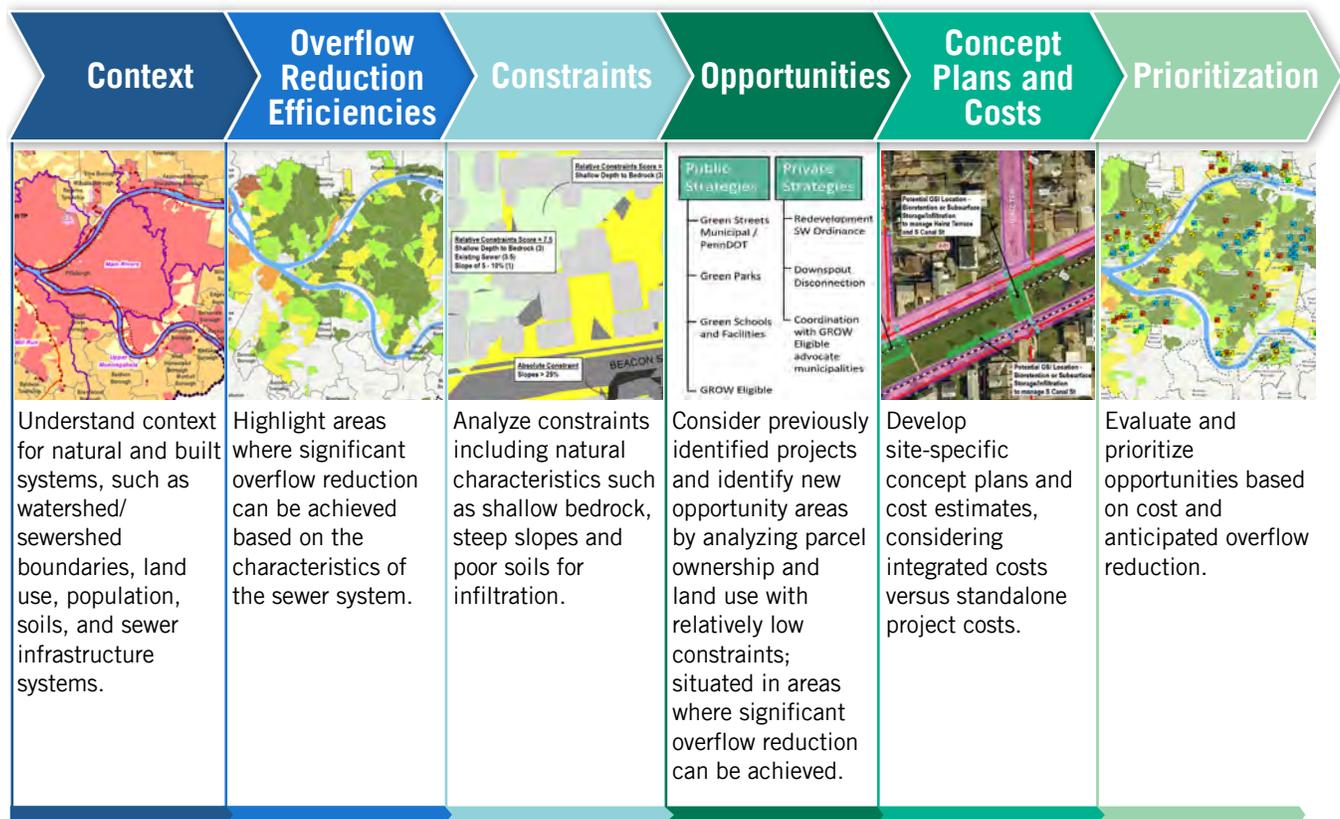
Additional information on the generic process and the four processes specific to GSI, DSIR, I/I reduction, and SS can be found in Sections 3 through 7 of the report, respectively, as well as Appendix C.

The primary objective of this CtS is to identify impactful opportunities by applying a consistent and science-based planning-level process. The process considers factors such as physical constraints; projects previously identified by ALCOSAN and others; inflow and overflow reduction; overflow reduction efficiencies; and costs through the six steps represented in the illustration below. See page 6 for a full explanation of overflow reduction efficiencies, a critical factor in this process.

Some features of the process and work to date vary by source control method. As such, a generic process and four source-control specific processes were developed and are being utilized by ALCOSAN to identify and prioritize cost-effective and impactful source control opportunities for GSI, DSIR, I/I reduction, and SS.

The prioritized opportunities are intended to be further evaluated in coordination with municipalities, and would typically be implemented by the municipalities with potential funding and technical support from ALCOSAN. In addition, feedback and updates via lessons learned, input from stakeholders and other sources, etc. can be considered. Through this process and cooperation, the opportunities identified in this document can be refined and adapted and additional opportunities can be identified.

A generic process to identify and prioritize opportunities was developed, which was then adapted to the four source control methods. The process specific to GSI is illustrated below as an example.



WHAT ARE OVERFLOW REDUCTION EFFICIENCIES (OREs)?

The ability for source control projects to reduce sewer overflows varies significantly across the ALCOSAN service area.

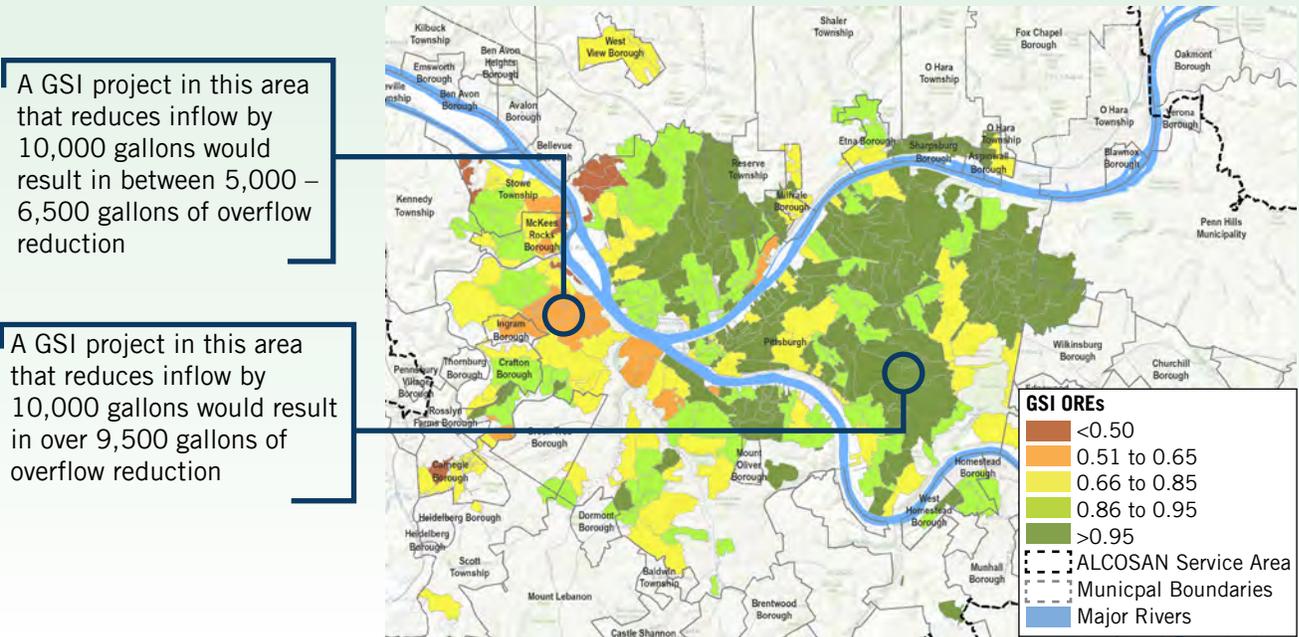
Overflow reduction efficiency is defined as the ratio between the overflow reduced and inflow reduced. If a source control project in a certain location controls 10,000 gallons of inflow, how much overflow reduction results? As shown on the map below, the results for GSI vary widely, from less than 5,000 gallons to more than 9,500 gallons (OREs of less than 0.5 and greater than 0.95, respectively). OREs can therefore be used to estimate the overflow reduction for a project by multiplying the inflow reduction by the applicable ORE.

OREs provide a guide for ALCOSAN, municipalities and other stakeholders on overflow reduction potential across the service area. This enables planning efforts to consider the areas with the greatest potential overflow reduction benefits.

An ORE is one key piece of information that can be considered, along with other important factors such as:

- The scale of source control projects. For example, a targeted project with a large inflow reduction can still achieve significant overflow reduction even in lower ORE areas. Conversely, a project with little inflow reduction will not result in much overflow reduction even in a high ORE area.
- The characteristics of the specific sewershed, including land use, soils, impervious area, the frequency and volume of overflows, and any proposed improvements to control those overflows.
- The feasibility and cost of source control in that location.

HOW DO YOU READ AN ORE MAP?



GSI OREs within the Combined Sewer System under Existing Conditions

The ORE maps included in this edition of CtS and currently available through the Web Map are based on existing system conditions. ALCOSAN is currently evaluating OREs under future CWP conditions. The results associated with these evaluations will be presented in subsequent updates to CtS.



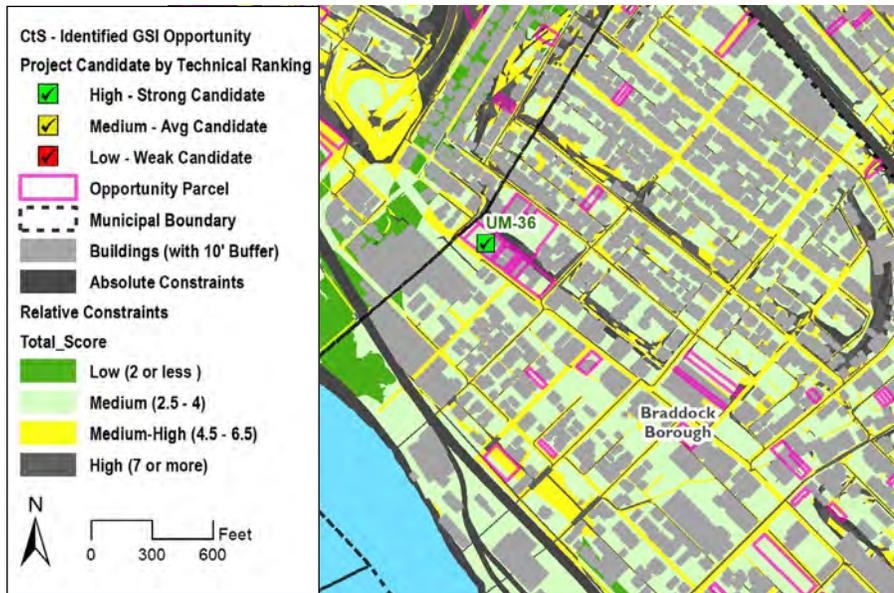
Key Terms

Existing Conditions: ALCOSAN's hydrology and hydraulic model considers existing flows and infrastructure and treatment plant conditions as of approximately 2009. The model also assumes a typical year rainfall over a 12-month period as defined in the CWP.

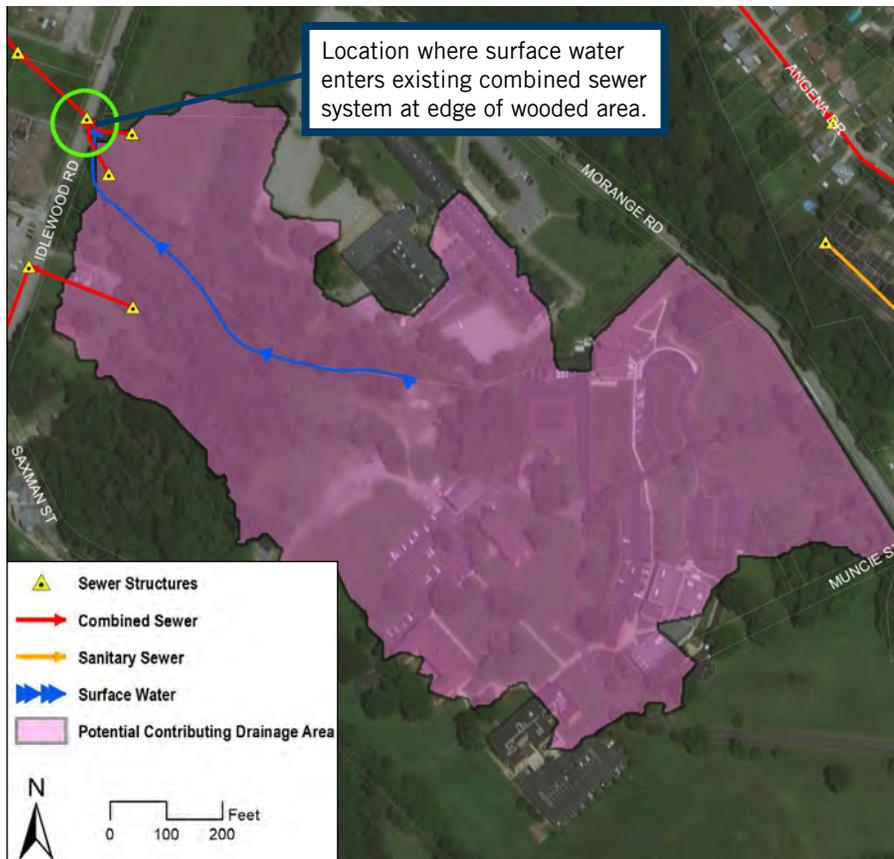
Future CWP Conditions: Refers to different phases of the CWP as significant improvements are scheduled to be implemented (e.g., plant expansion, construction of conveyance and storage tunnels).

Some of the specifics associated with the process for each source control method include:

- For GSI**, the process consisted of an analysis of mapping data to identify public properties in the CSS area with relatively low constraints (e.g., low to moderate slopes and reasonable soil infiltration capacity) situated in higher ORE areas where GSI could be implemented to manage impervious area (e.g., roads, sidewalks, buildings, and parking lots). Identified opportunity areas were then analyzed further in terms of site feasibility and to delineate drainage areas; visits were conducted to further evaluate site conditions; and concept plans and costs were developed for the highest ranked opportunities.
- For DSIR**, the process completed to date consists of an analysis of mapping data to identify potential DSI locations based on specific information, such as lost (historic) streams, site visits to confirm findings, and a preliminary prioritization resulting in the selection of 15 DSI locations considered most viable. A DSIR feasibility study was then completed for those 15 locations.
- For I/I reduction**, the process consists of an analysis using data collected by ALCOSAN as part of the Regionalization process (including condition assessment data on multi-municipal sewers) and targeted field work (flow isolation studies which started in 2016, etc.). The data is analyzed through a prioritization matrix to identify locations where sewer defect repairs can be developed into impactful, cost-efficient I/I reduction projects. As of May 2020, the process has been applied to specific sewersheds associated with three points of connection (POCs) with two additional sewersheds currently under evaluation. As relevant data is collected by ALCOSAN and its customer municipalities (with a focus on sewersheds shown or suspected to have areas of higher amounts of I/I), additional sewersheds will be analyzed. In the future, the process developed for the areas specified above could be adapted and applied to broader areas within ALCOSAN sanitary sewer service area.



Sample constraint analysis results for GSI in Rankin and Braddock Boroughs: yellow and grey areas present higher constraints, green areas present better potential for GSI.



Sample DSI location: an existing combined sewer structure is receiving flow from a natural drainage path in the Chartiers Creek Basin.



Key Terms

Point of Connection (POC): A physical point where municipal system(s) connect to ALCOSAN's interceptor sewers.



GSI in East Liberty



I/I reduction via sewer rehabilitation

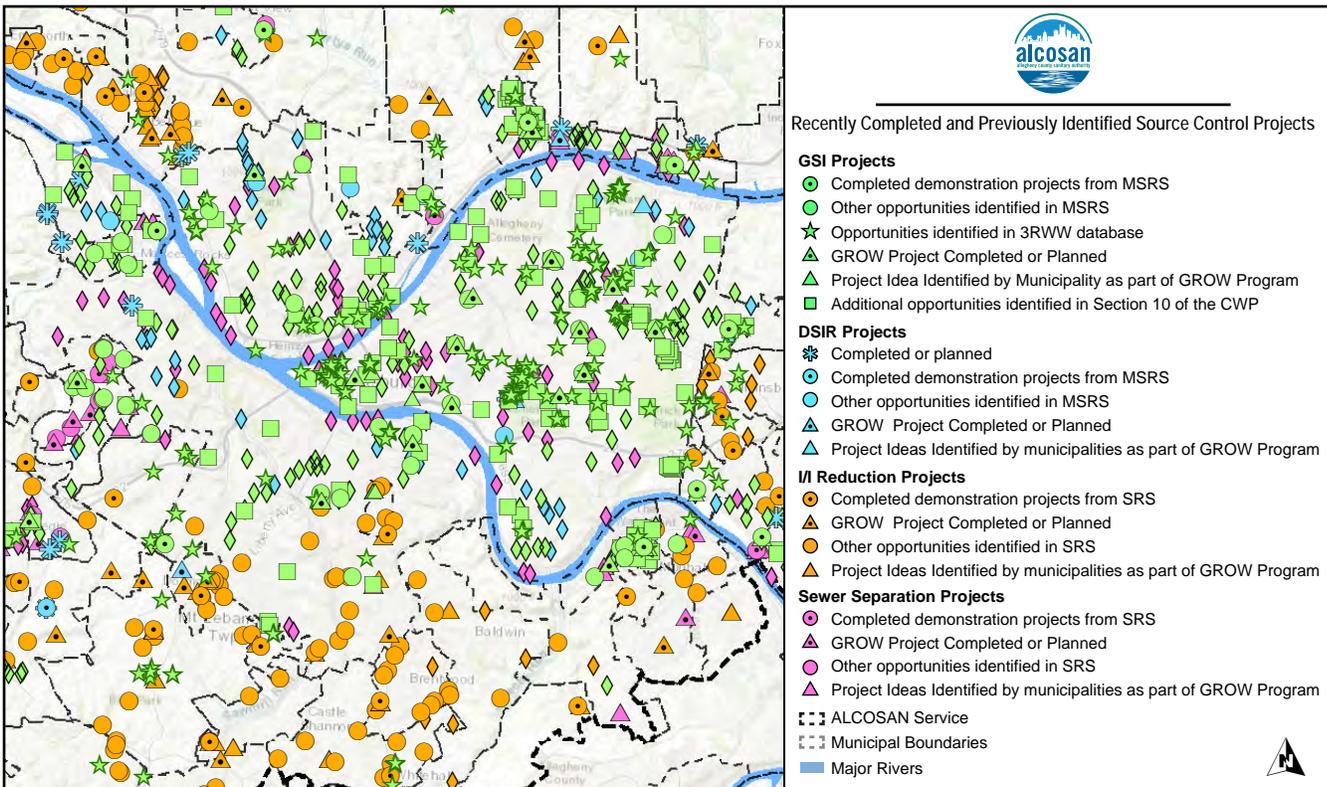
Other Source Control Benefits

After construction is complete, GSI and some DSIR projects are typically more visible than other types of source control and can provide added benefits such as local water quality improvements and community benefits. However, I/I reduction and SS are also important methods as part of sound asset management and can provide added benefits such as basement flooding reduction. All methods are considered in CtS.

For SS, the process focuses on specific POCs identified by ALCOSAN within the CSS area as far as traditional storm sewer and sanitary sewer conversion is concerned. The process also considers the following two categories of SS opportunities throughout the CSS area: storm sewers within the existing combined sewer system that have the potential to be managed locally with GSI; and storm sewers currently connected to the CSS within riverfront communities, or near streams that have the potential to be disconnected from the CSS and rerouted to the adjacent receiving water or an existing separate storm sewer. As of May 2020, specific opportunity areas have been identified and work was initiated to finalize the process and select and develop viable concepts.

Previously identified projects were considered so that the process can be used to reinforce these project ideas and preliminarily evaluate their viability. Various databases of previously identified projects were used as the basis for CtS. Additional opportunities are identified in the Saw Mill Run Integrated Watershed Management Plan (currently being developed) and other documents. However, these additional opportunities are not currently tracked in the databases available for CtS. They would need to be considered in future updates of CtS for the opportunity database to be more comprehensive (see Next Steps).

Previously identified projects were considered in the process to the extent practical until the various existing databases of projects are better validated and integrated.



Opportunities and Concept Plans

Additional information on the opportunities that were identified by utilizing the established processes and on the concept plans and planning-level cost estimates for the prioritized opportunities can be found in Section 8 and Appendix D of the report.

The following opportunities were identified as of May 2020 following the established processes:

- A total of 195 potential GSI opportunities were identified and 59 were prioritized for concept development – representing a potential runoff capture for the typical year of 163 MG/yr and overflow reduction of 146 million gallons per year (MG/yr) under Existing Conditions. The planning-level estimated cost of construction associated with the 59 concepts is approximately \$47 million (2017 dollars) or \$0.32 per gallon of overflow removed.

The figure on page 10 illustrates the location of the GSI opportunities within ALCOSAN CSS service area and the technical ranking associated with each of these opportunities. The table on pages 13 and 14 lists the available concept plans for the 59 prioritized GSI opportunities by municipality.

- A total of 86 new potential DSI locations were identified during the desktop analysis phase; 44 were confirmed in the field as DSIs. Four were noted as needing additional field work for confirmation (due to site obstructions, access issues, or a need for more detailed information). During field investigations, 18 of the 86 new potential DSI locations were discovered (via dye testing and/or visual observation) to either connect directly to adjacent receiving waters or to flow into existing storm sewers rather than the combined system. Therefore, these sites are not DSIs but may have revealed areas previously mapped as part of the combined sewer system that are in fact separate. This information will be considered in the model and GIS updates that are underway under a separate effort. High-ranking new DSI locations were selected to be included in a DSIR feasibility study, completed by SKELLY and LOY, Inc. in May 2020. There are 11 sites recommended for further evaluation; 10 of which may be suitable for removal through new conveyance and one of which may be suitable for management using GSI. If the viability is confirmed and the DSIRs are implemented, the study estimates that these projects would manage approximately 39 MG/year of inflow volume.

The figure on page 11 illustrates the location of the potential DSI locations by confirmation status. The table on pages 13 and 14 lists the concept plans that were developed for the 11 sites recommended for further evaluation.

- A total of 100 SS opportunity areas were identified as illustrated in the figure on page 12 and are now being further evaluated. The total potential contributing drainage area is estimated to be approximately 1,300 acres (380 impervious acres). Results will be reported in future updates to the CtS.
- The I/I reduction opportunities process has been applied to specific sewersheds associated with three POCs within the study area with two additional currently under evaluation. Additional POCs are being investigated as relevant data is collected by ALCOSAN. Initial results are reported in Section 8 of the main report and full results will be reported in future updates to the CtS.

The various opportunities outlined above would generally not be implemented or funded solely by ALCOSAN. The opportunities would need to be further evaluated in coordination with municipalities and other stakeholders as applicable. Opportunities would typically be implemented by the municipalities, with potential funding and technical support from ALCOSAN.

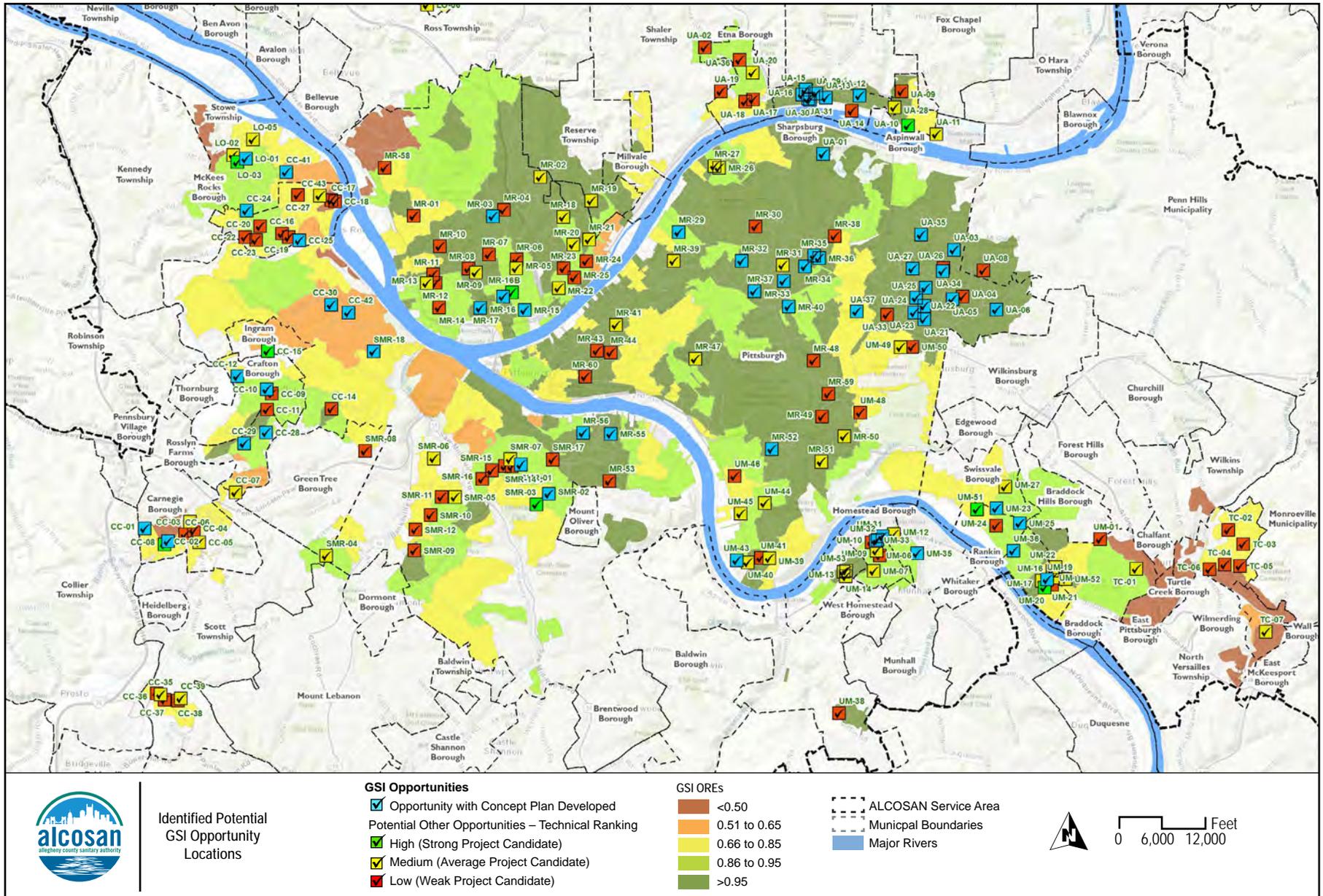


Key Terms

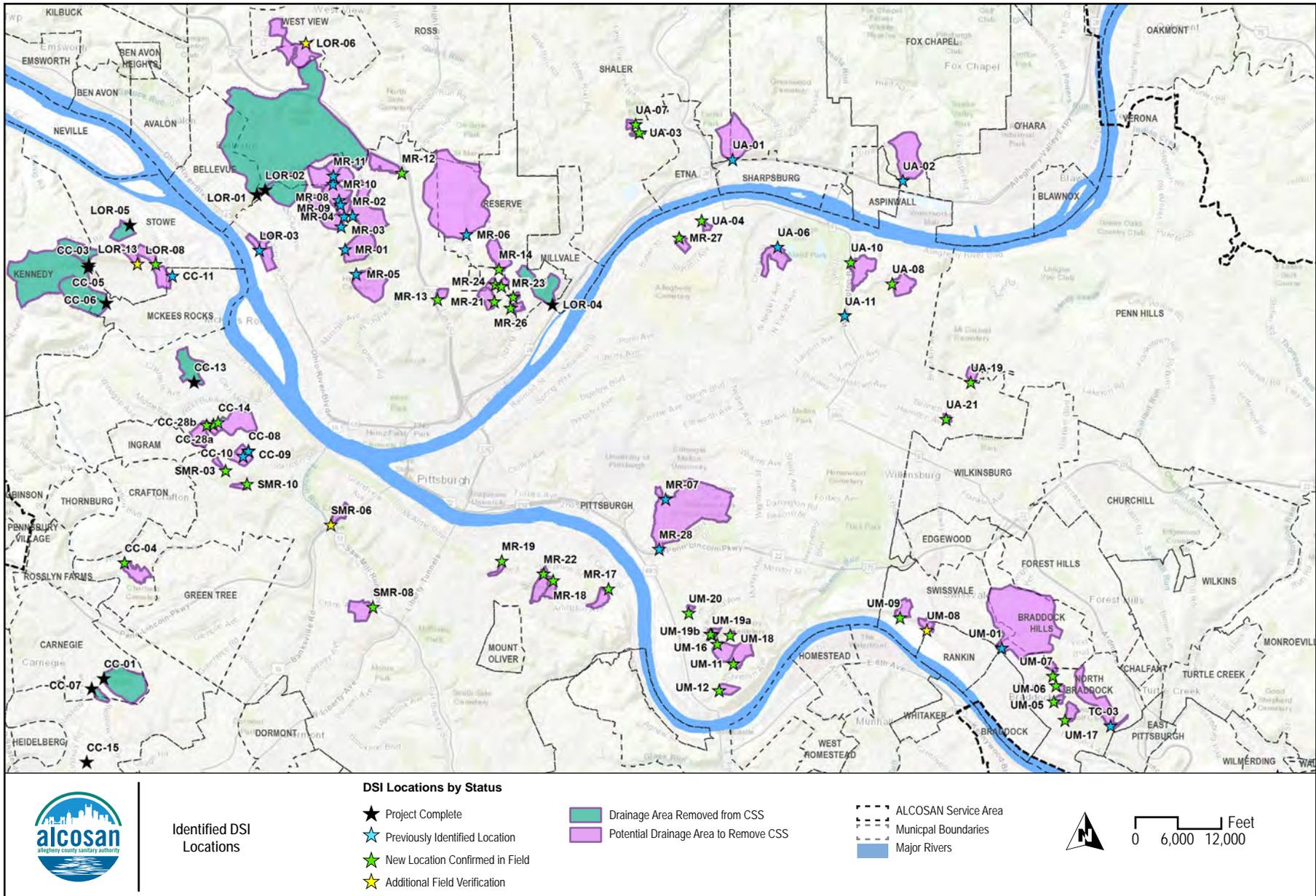
Typical Year: Refers to typical rainfall over a 12-month period as defined in the CWP.

Planning-Level Estimated Cost: A cost estimate that carries uncertainties. Actual cost would be expected to be up to 50% higher or up to 30% lower than this estimate.

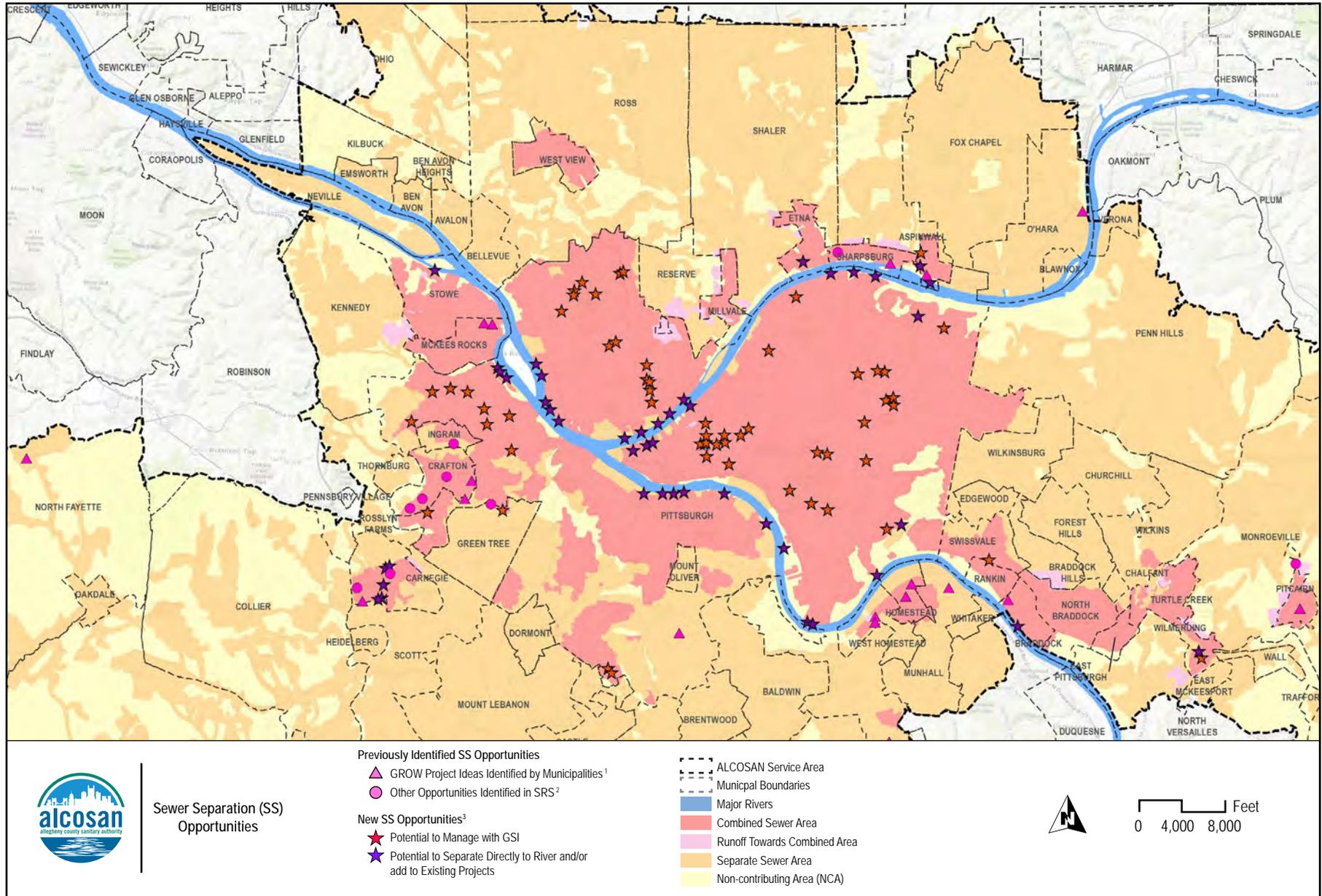
Identified GSI Opportunity Locations. Projects with higher OREs will generally provide more overflow reduction than similar projects with lower OREs.



Identified DSI Locations by Confirmation Status.

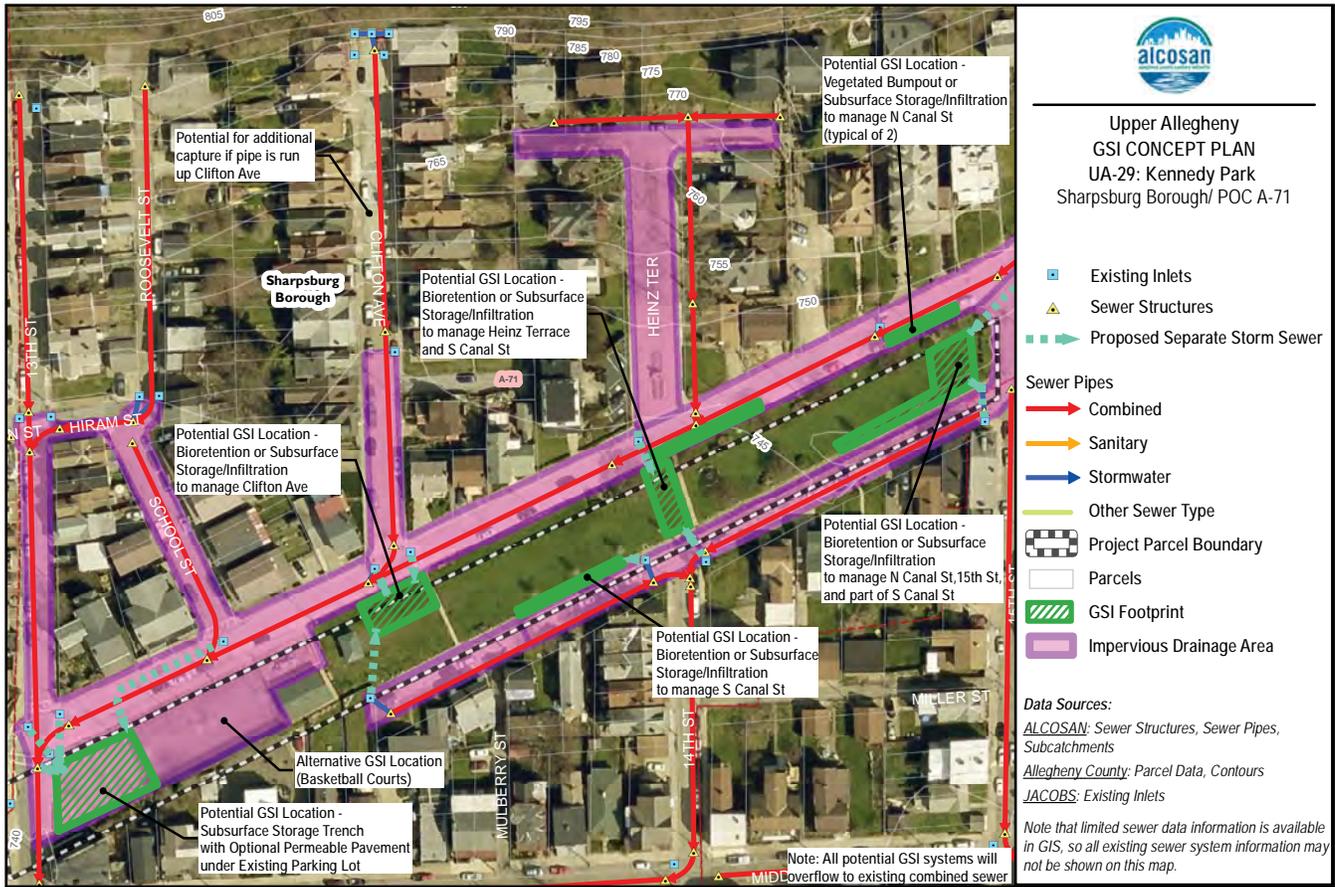


Identified Sewer Separation Opportunities Areas by Status.



Data Sources: ¹ ALCOSAN GROW project database; ² MSRS database; ³ ALCOSAN SS opportunity database

Concept plans similar to the one shown below for 70 GSI and DSIR locations were developed - representing a potential runoff capture of over 200 million gallons per year.



Concept plans associated with each of the GSI and DSIR projects listed below are available in CtS.

Basin	Municipality	Project Type	Project ID	Site Name
UM	Braddock	GSI	UM-19	Library and Braddock parking lot
UM	Braddock	GSI	UM-36	Vacant lot at Kenmawr Ave and Hamilton St
CC	Carnegie	GSI	CC-01	Seventh Avenue Park
CC	Carnegie	GSI	CC-02	Carnegie Station Park and Ride
CC	Crafton	GSI	CC-10	Port Authority Park and Ride Crafton
CC	Crafton	GSI	CC-12	Crafton Park
UM	Homestead	GSI	UM-31	Parking Lot at McClure and 7th Ave
UM	Homestead	GSI	UM-32	Parking Lot at NW corner of Ann and 7th
UM	Homestead	GSI	UM-33	Parking Lot at NE corner of Ann and 7th
CC	McKees Rocks	GSI	CC-25	Furnace St Extension Lot
UM	Munhall	GSI	UM-35	Munhall Fire Playground
CC	Pittsburgh	DSIR	CC-04	Idlewood Road
CC	Pittsburgh	DSIR	CC-14	Greenway Drive 1
CC	Pittsburgh	GSI	CC-28	Oakwood Park
CC	Pittsburgh	DSIR	CC-28a	Greenway Drive 2
CC	Pittsburgh	DSIR	CC-28b	Greenway Drive 3
CC	Pittsburgh	GSI	CC-29	Bishop Canevin School
CC	Pittsburgh	GSI	CC-30	Port Authority Parking Lot
CC	Pittsburgh	GSI	CC-42	Pittsburgh Classical Academy
MR	Pittsburgh	GSI	MR-03	Fowler Playground
MR	Pittsburgh	GSI	MR-15	East Park

Basin	Municipality	Project Type	Project ID	Site Name
MR	Pittsburgh	GSI	MR-16	West Park Ballfield
MR	Pittsburgh	GSI	MR-17	West Park near Brighton Rd
MR	Pittsburgh	DSIR	MR-27	Shop 'n Save
MR	Pittsburgh	GSI	MR-29	Arsenal School
MR	Pittsburgh	GSI	MR-32	Friendship Park
MR	Pittsburgh	GSI	MR-33	Friendship Community Group Park
MR	Pittsburgh	GSI	MR-34	Enright Parklet
MR	Pittsburgh	GSI	MR-35	Garland Parklet
MR	Pittsburgh	GSI	MR-36	Urban Redevelopment Authority Lots
MR	Pittsburgh	GSI	MR-37	Osceola Parklet
MR	Pittsburgh	GSI	MR-40	Liberty School
MR	Pittsburgh	GSI	MR-52	Magee Playground
MR	Pittsburgh	GSI	MR-55	Phillips K-5 School
MR	Pittsburgh	GSI	MR-56	Armstrong Playground
SMR	Pittsburgh	GSI	SMR-01	Warrington Field & Rec Center
SMR	Pittsburgh	GSI	SMR-02	Knoxville Elementary School
SMR	Pittsburgh	DSIR	SMR-08	Crane Avenue
SMR	Pittsburgh	GSI	SMR-18	Townsend Parklet
UA	Pittsburgh	GSI	UA-01	Natoli Field
UA	Pittsburgh	GSI	UA-03	Chadwick Playground
UA	Pittsburgh	DSIR	UA-04	Sawyer Street
UA	Pittsburgh	GSI	UA-05	G-Tech Strategies Sunflower Garden
UA	Pittsburgh	GSI	UA-06	Crescent Early Childhood Center Parking
UA	Pittsburgh	GSI	UA-21	Urban Redev Auth of Pittsburgh
UA	Pittsburgh	GSI	UA-22	Homewood Montessori School
UA	Pittsburgh	GSI	UA-23	Westinghouse Park
UA	Pittsburgh	GSI	UA-24	Urban Redev Auth of Pittsburgh
UA	Pittsburgh	GSI	UA-25	City Vacant Lot
UA	Pittsburgh	GSI	UA-27	Westinghouse Academy Track & Football Field
UA	Pittsburgh	GSI	UA-34	Urban Redevelopment Authority Vacant Lot
UA	Pittsburgh	GSI	UA-35	Paulson Playground
UA	Pittsburgh	GSI	UA-37	Mellon Park
UM	Pittsburgh	DSIR	UM-16	Kilbourne Street
UM	Pittsburgh	DSIR	UM-18	Flowers Avenue
UM	Pittsburgh	DSIR	UM-19a	Giddings Street 1
UM	Pittsburgh	DSIR	UM-19b	Giddings Street 2
UM	Pittsburgh	DSIR	UM-20	Gladstone Street
UM	Pittsburgh	GSI	UM-43	Blair Street Park
UM	Rankin Borough	GSI	UM-25	Hawkins Village
UA	Sharpsburg	GSI	UA-12	Heinz Memorial Field
UA	Sharpsburg	GSI	UA-13	Marion Gerardi Memorial Park
UA	Sharpsburg	GSI	UA-15	Sharps Terrace
UA	Sharpsburg	GSI	UA-16	The Watson Institute
UA	Sharpsburg	GSI	UA-29	Kennedy Park
UA	Sharpsburg	GSI	UA-30	Municipal Parking Lot
UA	Sharpsburg	GSI	UA-31	Sharpsburg Library & Community Garden
CC	Stowe Township	GSI	CC-24	Sto-Rox HS Community Field
CC	Stowe Township	GSI	CC-41	School Bus Lot
LO	Stowe Township	GSI	LO-01	Pleasant Ridge Public Housing
UM	Swissvale	GSI	UM-23	Swissvale Park and Ride

Web Map

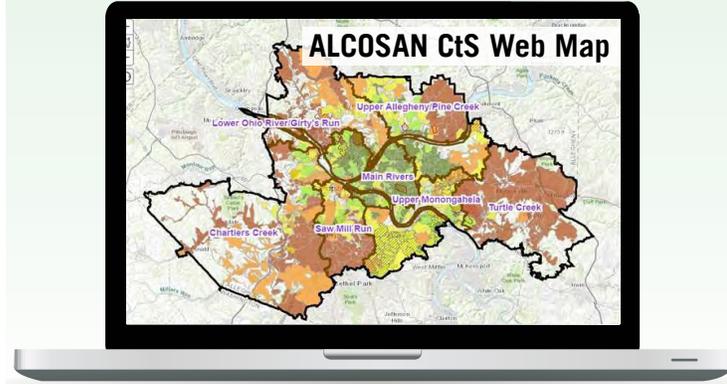
Additional information can be found in Section 9 and Appendix B of the report.

An interactive Web Map was created to facilitate access to the information presented in CtS, including existing conditions, previously identified project locations, overflow reduction efficiencies, and identified opportunities.

The Web Map is hosted on ALCOSAN's website.

A complete instruction guide is available in Appendix B of the report.

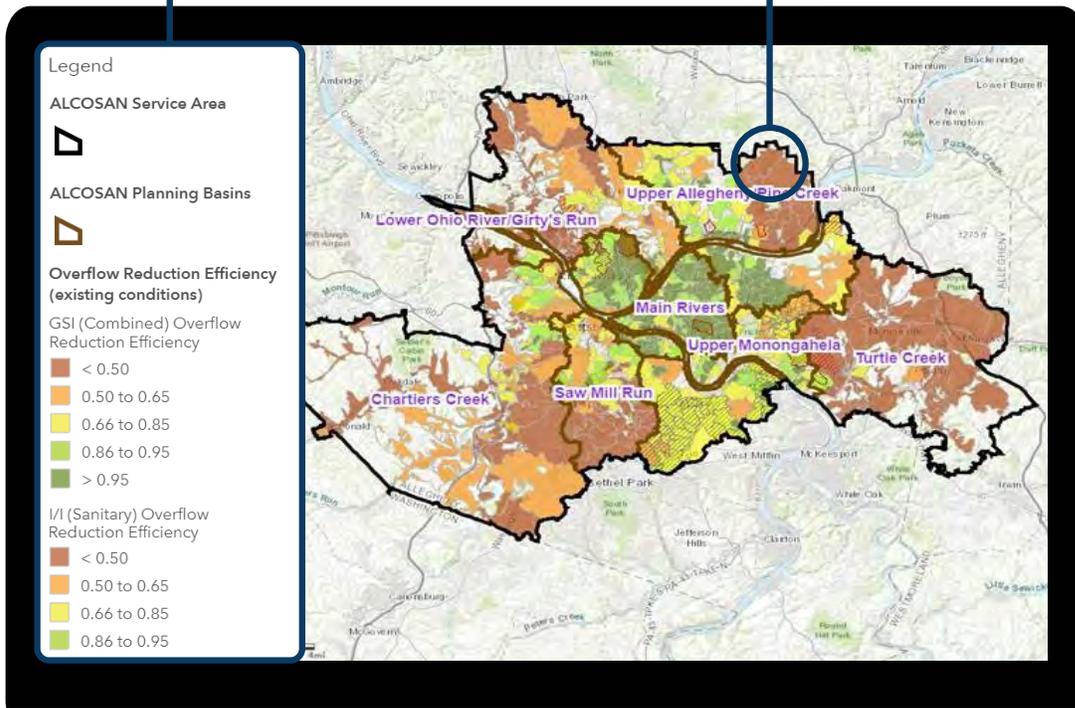
To access the Web Map, visit **ALCOSAN's website** and click on the **CtS Web Map** image to open the map.



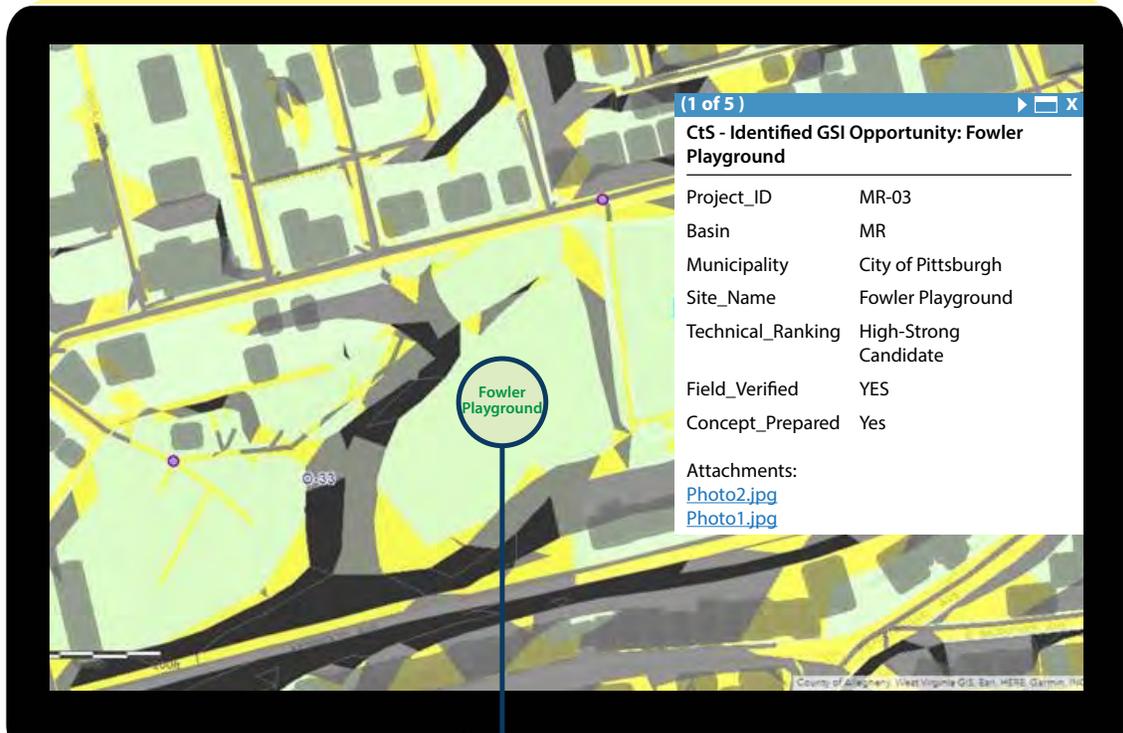
You can easily consult the Web Map to see whether any opportunities were identified to date in a community and to look at other information such as OREs and constraints.

The ALCOSAN Service Area, Planning Basin, and ORE layers are shown by default.

Upon opening, the map will automatically zoom to the full ALCOSAN service area.



Zoom into an area of focus and click on the map to view the pop-up legend with different layers of information.



Zooming further into the map will display icons indicating potential project opportunities. Click on the point to reveal a pop-up legend containing opportunity details and concept plans.

Conclusions/Next Steps

Complete conclusions and recommendations can be found in Section 10 of the report.

As of May 2020, the development and application of the framework has led to:



- The identification of 195 GSI opportunities and the development of 59 GSI concept plans – representing a potential runoff capture for the typical year of 163 million gallons per year (MG/yr) and potential overflow reduction of 146 MG/yr under Existing Conditions. The planning-level estimated cost of construction associated with the 59 concepts is approximately \$47 million (2017 dollars) or \$0.32 per gallon of overflow removed.
- The identification of 44 new DSI locations and the selection of 15 DSI locations that were investigated to identify specific DSIR opportunities.
- The definition of a process to leverage the extensive data collection and analysis work performed by ALCOSAN under the Regionalization Program and the results of field investigations in sewersheds near multi-municipal trunk sewers to identify impactful I/I reduction opportunities.
- The identification of 100 new sewer separation opportunity areas in the CSS service area.
- The engagement of ALCOSAN, municipalities and other stakeholders on specific opportunities identified through the framework and potential next steps.
- The creation of a Web Map to facilitate information sharing and collaboration between parties.
- A better understanding of opportunities throughout the service area and engagement with municipalities and stakeholders on upcoming GROW funding cycles and associated funding opportunities.
- The improved understanding of the potential impact of the identified source control opportunities on ALCOSAN’s regional collection system and wet weather sewer overflow reduction.

ALCOSAN will work with municipalities to use the framework to identify, evaluate and implement source control projects and leverage GROW and other funding sources. ALCOSAN will also complete the work in progress described previously, continue to develop and refine CtS and publish updates as appropriate. ALCOSAN calls on municipalities and other partners to work with us, and work together to:

- Further evaluate and implement prioritized opportunities from CtS based on municipal priorities and funding availability.
- Adapt and apply the framework to their own communities.
- Pursue or secure funding for implementing source controls (GROW and other grants, loans, stormwater fees).
- Provide feedback to ALCOSAN for consideration in future updates.

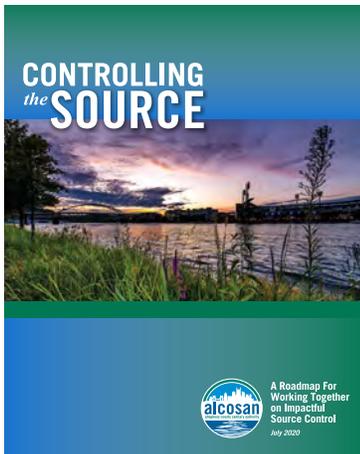
We also call on all stakeholders to continue improving ordinances, codes, and programs to facilitate, incentivize or require GSI and other source controls, and to take other actions aligned with our common goal to improve and protect the water quality of the region’s streams and rivers by **Controlling the Source**.

CtS Updates

CtS is intended as a living document. Specific updates envisioned at this time include the incorporation of the results associated with work in progress, including the development and application of OREs under different CWP conditions, and the application of the I/I reduction-specific process to all the sewersheds currently being evaluated by ALCOSAN.

In addition, it is anticipated that CtS will be updated to account for new data/information (e.g., new stormwater system mapping; new opportunities identified by ALCOSAN and others; hydrology and hydraulic model updates; new cost information; additional flow monitoring and flow isolation study data; and relevant data collected as part of the Modified CD requirements from 2020 to 2025). Also there may be updates around potential improvements identified through implementation of the framework, such as improved source control opportunity and projects database integration and questions and feedback from stakeholders; or other sources.

Updates will be posted on ALCOSAN’s website.

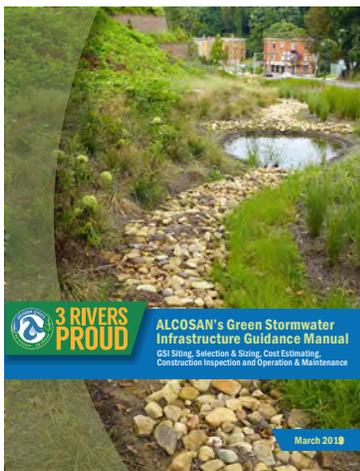


Funding Resources Beyond the GROW Program

Appendix E of CtS identifies potential funding sources including grant programs available from public entities, ranging from the Commonwealth Financing Authority, the U.S. Department of Agriculture, the Pennsylvania Department of Community and Economic Development to the Pennsylvania PA Department of Conservation and Natural Resources or Pennsylvania Infrastructure Investment Authority. The Appendix also includes a summary of potential philanthropic funding sources.

Full Report Organization and Useful Links

The development of CtS generated a large amount of information, including overflow reduction efficiencies; GSI constraints and opportunities; GSI planning-level cost estimates; opportunity identification methodologies for DSI, I/I and SS; and funding resources. The information in the full CtS report is organized into 10 sections and various appendices as shown below.



Section 1 – Introduction

Section 2 – Background on Source Control-Related Efforts

Section 3 – Generic Opportunity Identification and Evaluation Process

Section 4 – GSI-Specific Process

Section 5 – DSIR-Specific Process

Section 6 – I/I Reduction-Specific Process

Section 7 – SS-Specific Process

Section 8 – Identified Opportunities

Section 9 – Web Map

Section 10 – Conclusions

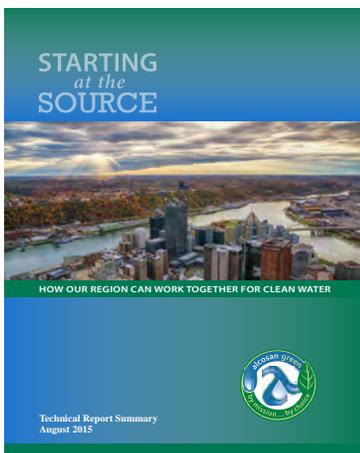
Appendix A – Additional Background on Source Control-Related Efforts

Appendix B – ArcGIS Online Web Map Resources

Appendix C – Opportunities Identification and Evaluation Process Support

Appendix D – Identified Opportunities – List and Concept Plans

Appendix E – Funding Resources



The full CtS report and the Web Map are available to the public on our website (www.alcosan.org/) under “Our Plan.” Additional resources associated with the 2019 Clean Water Plan and related programs are available under the same link. Additional resources associated with the 2019 Clean Water Plan and related programs are available under the same link. Additional information about the GROW Program is also available under the dedicated Municipal Log-In website.

CtS builds upon ALCOSAN's commitment to collaborate with regional stakeholders to advance investments in impactful GSI and other source control projects. CtS is the latest of three major publications on the subject, following Starting at the Source published in 2015, a guidance manual to support GSI implementation and an accompanying manual on monitoring source control projects published in 2019.

Acknowledgments

We would like to thank the following people and organizations for their contributions to CtS as peer reviewers:

- Allegheny County, Office of the County Executive: Darla Cravotta
- HDR: Chad Davis (Allegheny County Act 167 Stormwater Management Plan representative)
- KC Water (Kansas City, Missouri): Lisa Treese, Priya Iyengar, Andy Sauer, Brenda Macke
- Northeast Ohio Regional Sewer District (Cleveland, Ohio): Kimberly Colich.
- Pittsburgh Water and Sewer Authority: Beth Dutton, Ben Grunauer, Ana Flores, Jim Turner, Ryan Quinn, Maria Natoli, James Stitt
- RAND Corporation: Jordan Fischbach
- University of Pittsburgh | Pittsburgh Collaboratory for Water Research, Education, and Outreach: Eitan Shelef, Dan Bain, Eric Perry
- 3 Rivers Wet Weather: Annie Quinn

We have made every effort to address their comments in this edition of CtS and we are committed to making further improvements in future editions.

We would like to acknowledge the Board of Directors of the Allegheny County Sanitary Authority and the leadership team for their continued support on source control efforts.

We would also like to thank our consultant, Jacobs, and their subconsultants, Collective Efforts, Cosmos Technologies, David Caliguiri, DLZ, Moore Design Associates, Mulberry Public Affairs, Sigma Associates, and Sci Tek Consultants.

Finally, and most importantly, we would like to acknowledge all of our customer municipalities and other local stakeholders that have directly or indirectly contributed to Controlling the Source, whether through meeting/workshop attendance, source control project implementation, general interest in source control, or through other channels.

Source control is happening throughout the region thanks to our customer municipalities and other stakeholders.





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