

Centralized Green Stormwater Infrastructure (GSI) in City Parks

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What I will be presenting:

Dense urban environments often constrain implementation of Green Stormwater Infrastructure (GSI) within the public right of way due to limited space, complex utilities, and constructability challenges. Parks and public open spaces present an opportunity to overcome these limitations by serving as centralized locations for managing runoff from surrounding streets and neighborhoods. This presentation will highlight JMT's experience delivering park-based GSI projects that intentionally consolidate City drainage into single, controlled stormwater management practices (SMP) located within public open spaces. Case studies will include Wissinoming Park, Olney Recreation Center, Holmesburg Recreation Center, Awbury Park, and Finnegan Playground - all public spaces within Philadelphia, PA. The session will describe the process used to evaluate feasibility, capture and conveyance of runoff to park sites through green storm sewer systems, and siting and sizing centralized SMP. Design coordination with parks, utility agencies, and municipal stakeholders will be discussed, along with how construction-phase observations prompted targeted retrofits to address identified system limitations. Overall, the presentation will demonstrate how centralized drainage approaches can improve constructability, enhance drainage area capture and support long-term maintenance and performance.

What the audience will learn:

Attendees will gain practical insight into using parks as effective stormwater management hubs in dense urban environments, particularly where maximizing drainage area capture is critical to meet regulatory goals. The session will provide lessons learned on evaluating feasibility for routing roadway runoff into park-based systems while balancing drainage capture objectives with site constraints, utilities, maintenance and park operations. Participants will learn how centralized GSI approaches can simplify system performance and meet City of Philadelphia regulatory goals at a larger scale when compared to distributed right-of-way systems. The presentation will emphasize the value of monitoring GSI systems during construction and early post-construction phases to confirm design assumptions, observe system behavior, and identify issues related to soils, groundwater and construction techniques. The presentation will also address maintenance considerations and how access is coordinated with the owner while aligning with park operations. Attendees will leave with transferable strategies for multi-agency coordination, applying a feedback-driven design approach, and delivering maintainable GSI solutions that align with municipal priorities, operational needs, and regulatory goals.



Master Planning for Stormwater Flooding in Rockville, MD

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What I will be presenting:

Hazen and Sawyer is assisting the City of Rockville, MD with the development of a Flooding Resiliency Master Plan. The City of Rockville is creating a flooding resiliency master plan in response to increases pluvial flooding throughout the city. The development of the Flooding Resiliency Master Plan included desktop data collection, public engagement, and the development of a 1D-2D stormwater model. The increase in pluvial flooding in Rockville is attributed to increase in high intensity, short duration rainfall patterns as well as increase in occurrence of larger storms and hurricanes. The 1D-2D stormwater model was built in PCSWMM and various rainfall scenarios were run including historical storms, Atlas 14 design storms, and climate change projection scenarios based on NOAA MARISA and time period of 2020-2070. Model results were compared with flooding reports obtained from 311 and 911 calls, public surveys, and social media. The master plan aims to leverage model results and public feedback to identify flood risk areas.

What the audience will learn:

This presentation on the City of Rockville's Flooding Resiliency Master Plan will include discussion on increases in pluvial flooding due changes in weather patterns in the region. The presentation will also cover desktop data collection and analysis of public information and client provided data. We will talk about identifying data gaps and using engineering judgement to make assumptions where data gaps cannot be resolved. There will be extensive discussion on the development of the 1D-2D stormwater model in PCSWMM and the use of Atlas 14 and NOAA MARISA for creating design storms and climate change scenarios. Audience members will learn how we verified model results using observational data such as flooding reports obtained through public engagement events and/or social media. We will talk about how we held public engagement events that provided education and feedback opportunities for the effected community. Finally, we will discuss how we identified flood risk areas using stormwater modeling tools.

Title: Right-of-Way Stormwater Projects in Tredyffrin Township

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What I will be presenting:

Tredyffrin Township is one of Chester County's oldest municipalities, with much of the historical development occurring prior to existing regulations for site-level stormwater management. The recent increase in high intensity rainfall events has greatly impacted the Township, resulting in damaged infrastructure and flooding impacts to residents, business owners, and streams. In addition, water quality is an issue across the state, with the majority of the Township's streams classified as impaired. In response to these issues, the Township has been diligently seeking grants to leverage Township funding to design and implement a variety of stormwater improvement projects that address these increased impacts and provide multiple benefits.

Driven by the Township's comprehensive four-fold strategy to improve water quality, reduce flooding, protect / restore its infrastructure, and achieve regulatory compliance, the Township has been designing and installing green stormwater infrastructure (GSI) within the public right-of-way for over two decades. Projects are undertaken for a variety of reasons, though are typically focused on known areas of flooding or erosion problems due to insufficient drainage or stormwater management, or based on the recommendations of the Tredyffrin Stormwater Citizens Advisory Task Force. This presentation will cover the lifecycle of three recent GSI projects implemented within residential streets: from identifying areas of need and funding opportunities to concept development, detailed design, construction, and monitoring. These projects collectively reduce erosion from uncontrolled stormwater runoff, improve water quality, and decrease flooding.

What the audience will learn:

The audience for this presentation will hear about Tredyffrin's recent stormwater management efforts (watershed planning, PRP/MS4 compliance, funding, etc.) and valuable lessons learned regarding GSI implementation for three successful projects in the public right-of-way, including design considerations, construction challenges, and implementing / evaluating performance monitoring. The first project consists of several underground stormwater infiltration systems in the Crabby Creek watershed, which drains to Little Valley Creek, an Exceptional Value stream impaired from urban runoff / storm sewers. Constructed in 2024 with funding from multiple grant sources, these systems were set up with wireless ultrasonic water level sensors so that their performance during storm events could be evaluated, and future designs appropriately modified. Data collected from the sensors has confirmed that water levels rise in the systems during storms as anticipated, and further analysis has determined that the systems generally overperform in comparison to the design assumptions and calculations.

The second and third projects, both completed in 2025, consist of multiple underground stormwater systems with high-capacity storage media constructed in the Trout Creek watershed, a Warm Water Fishery impaired from urban runoff / storm sewers. Design challenges for these projects included road slope and curvature, uncertainties / coordination related to existing utilities, and connections to the existing drainage network. Both designs were adjusted based on community engagement, utility compliance, and cost.