

# Lick Run Watershed Master Plan

METROPOLITAN  
SEWER DISTRICT  
of greater  
CINCINNATI



May 2012





# Executive Summary

“Through the Project Groundwork initiative, Cincinnati is demonstrating that there are sustainable solutions to challenges that traditionally would have been managed only through ‘grey’ infrastructure. The initiative has resulted in rich engagement and participation from public and private agencies all across the spectrum to ensure these projects leave a successful legacy of sustainability and partnerships for communities of the future. Together, we’re not only addressing combined sewer overflow issues but also helping to revitalize our communities”.

*- Vice Mayor Roxanne Qualls  
City of Cincinnati, Ohio*

## Clean water is essential to life and health.

The growth and success of our communities and our nation over the last 100 years has happened due to the vision and foresight of our county's leaders to create a vast and effective infrastructure for conveying and cleansing water. Without it, unnecessary sickness and disease would still be an unwelcome part of our lives. But that infrastructure is now aging and in desperate need of repair, and some of the strategies for conveying stormwater have not been as effective or as safe as they could have been. For example, combined sewers still discharge raw sewage into our streams and rivers during large rain storms, creating pollution and severely impacting the quality of life for our citizens, recreational opportunities, aquatic life, and for the wildlife that relies on clean water for food and habitat. Can we afford to wait any longer to solve the infrastructure problems that affect our community?

## Cincinnati's Challenges

As one of the top five combined sewer overflow (CSO) dischargers in the country, the Metropolitan Sewer District of Greater Cincinnati (MSD) is under a federal Consent Order to resolve this problem. The solution is Project Groundwork, one of the largest public works projects in the history of our community. This two-phased, multi-year and multi-billion dollar program is comprised of hundreds of sewer improvements and stormwater control projects across our area, with the local community investing over a billion dollars over the next 10 years.

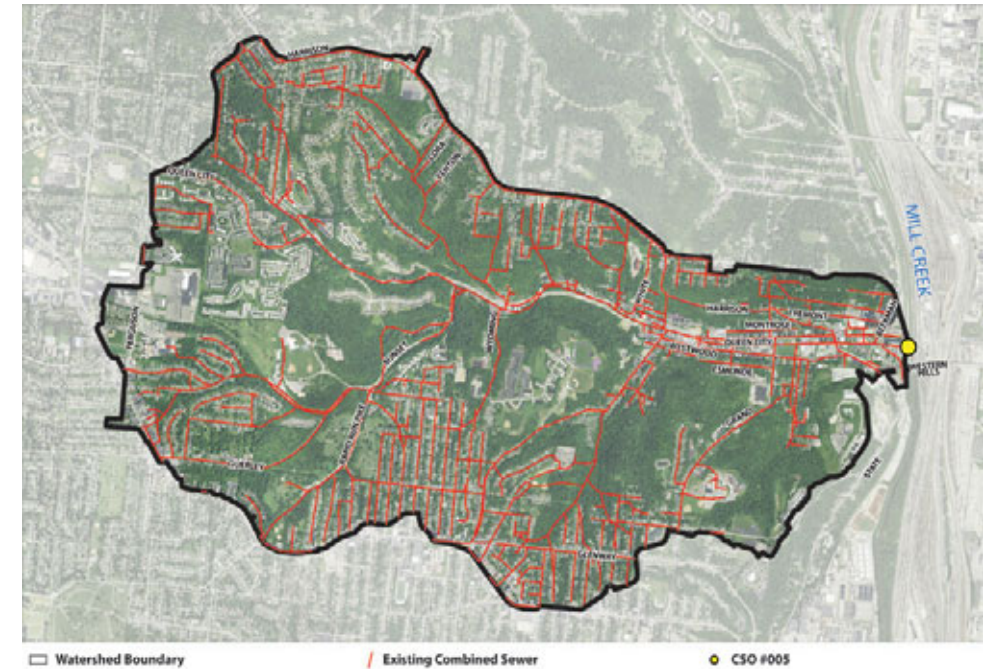
Under Project Groundwork, MSD must eliminate two billion gallons of combined sewer overflows from the Lower Mill Creek watershed by 2018. MSD's vision for Project Groundwork is to:

- use innovative technologies
- revitalize communities through creation of jobs and growth opportunities for local businesses
- create solutions that benefit communities on an environmental, social and economic level.

To achieve this goal, MSD has developed a watershed-based approach to evaluate and develop solutions to high volumes of CSOs.

## Why Focus on the Lick Run Watershed?

The Lick Run Watershed, located in the Lower Mill Creek, is home to CSO #005, the largest CSO (by volume) in Hamilton County. Every year, about 1.5 billion gallons of raw sewage - mixed with stormwater - overflow from CSO #005 into the Mill Creek. Of that total, less than 25% is sewage - the rest comes from stormwater and what used to be natural stream flow.



The watershed was named after a stream that once ran between Queen City and Westwood avenues and discharged into Mill Creek. In 1907, the stream was enclosed within the 19.5-foot-diameter Lick Run combined sewer, which runs under 3,700 feet of streets and buildings in South Fairmount. Today, a combination of wastewater, natural drainage and stormwater enters the Lick Run combined sewer, located between Queen City and Westwood avenues.

During dry weather, the flow is conveyed to the Mill Creek treatment plant in Lower Price Hill where it is treated. When it rains, the Lick Run combined sewer can become filled beyond its capacity. Excess flow is diverted - untreated - through the CSO outfall to the Mill Creek.

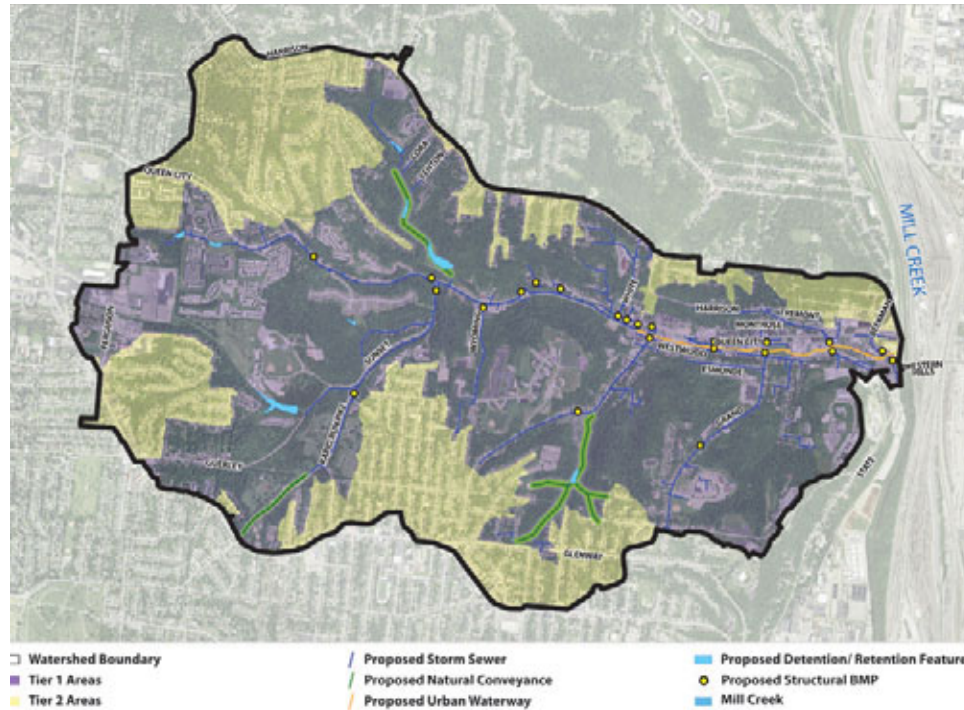
The "default" solution (i.e., the project identified in MSD's Consent Decree) to meeting CSO reduction mandates in the Lower Mill Creek is a deep, underground storage tunnel and enhanced high-rate treatment facility.

*"We can't solve problems by using the same kind of thinking we used when we created them."*

**Albert Einstein**

## What's the Alternative Solution?

With the long-term sustainability of infrastructure projects in mind, and consistent with US EPA's Integrated Planning Approach Framework, MSD and its partners identified an alternative approach to CSO control in the Lick Run Watershed.



Referred to as the Lick Run Alternative Project, the solution includes:

- Removing stormwater and natural drainage from the combined sewer system via strategic storm sewer separation and natural conveyance
- Optimizing infrastructure with detention/retention features
- Demonstrating green infrastructure practices through Enabled Impact Projects
- Conveying separated stormwater runoff through a series of water quality improvement features and a newly created an urban waterway in South Fairmount that connects to Mill Creek.

The proposed urban waterway represents the keystone of the Lick Run Alternative Project. It aims to “reconnect” the watershed landscape with the Mill Creek and has the potential to create a strong community amenity as a leave-behind.

## What If...?

MSD recognized that CSO reduction solutions constructed as part of Project Groundwork will set the stage for the next 50 to 100 years. The development of the Lick Run Alternative Project, based on extensive technical evaluation and feasibility analysis, generated a series of thought-provoking questions:

### What if a sewer project...

... could be more than a sewer project?

... could be a **strategic investment**?

### What if...

... it could be a **catalyst** for community transformation?

... it could be a **regional model** for a new watershed-based approach to community planning?

... if it could be a **national model** for green infrastructure planning/design?

... it could involve the **community** and many public and private partners?

... it **did more** than improve stormwater management and reduce combined sewer overflows?

... it created a **network of community assets** that attracted new interest and investment?

... if it left behind open spaces, enhanced streetscapes and **opportunities** for green buildings?

... if it served as a model for a **sustainable 21st century community**?

In an attempt to effectively and wholistically answer these questions, MSD developed the Communities of the Future initiative.



This initiative includes a comprehensive community engagement process that has helped to help gather public feedback on the Lick Run Alternative Project and more specifically, the proposed urban waterway in South Fairmount. In addition to encouraging public involvement, the initiative's goals include addressing triple bottom line, sustainability, and forming strategic partnerships to help implement projects and community development, while creating public amenities beyond simply meeting mandates outlined in the Consent Decree.

To understand the community's needs/desires/opportunities, MSD and its partners used a variety of input and feedback mechanisms, including:

- A Community Open House (January 2011)
- Three Community Design Workshops (August 2011, October 2011, and February 2012)
- Numerous Lick Run Watershed Tours
- Meetings with the South Fairmount Community Council
- Meetings with the South Fairmount Business Association
- Meetings with Key Stakeholder Groups
- Meetings with Individual Business & Property Owners
- Meetings with the Communities of the Future Advisory Committee (CFAC)
- Meetings with Key Public Agency Partners
- Meetings with Key Regulators



Throughout the master planning process, input from this broad cross-section of the community (within the watershed, as well as the greater regional community) was vital to understanding existing conditions and challenges, as well as specific goals and priorities. At each of the Community Design Workshops, attendees provided verbal feedback and worked to complete feedback forms so that every voice could be recorded.

## Each voice was important, and made the plan stronger.

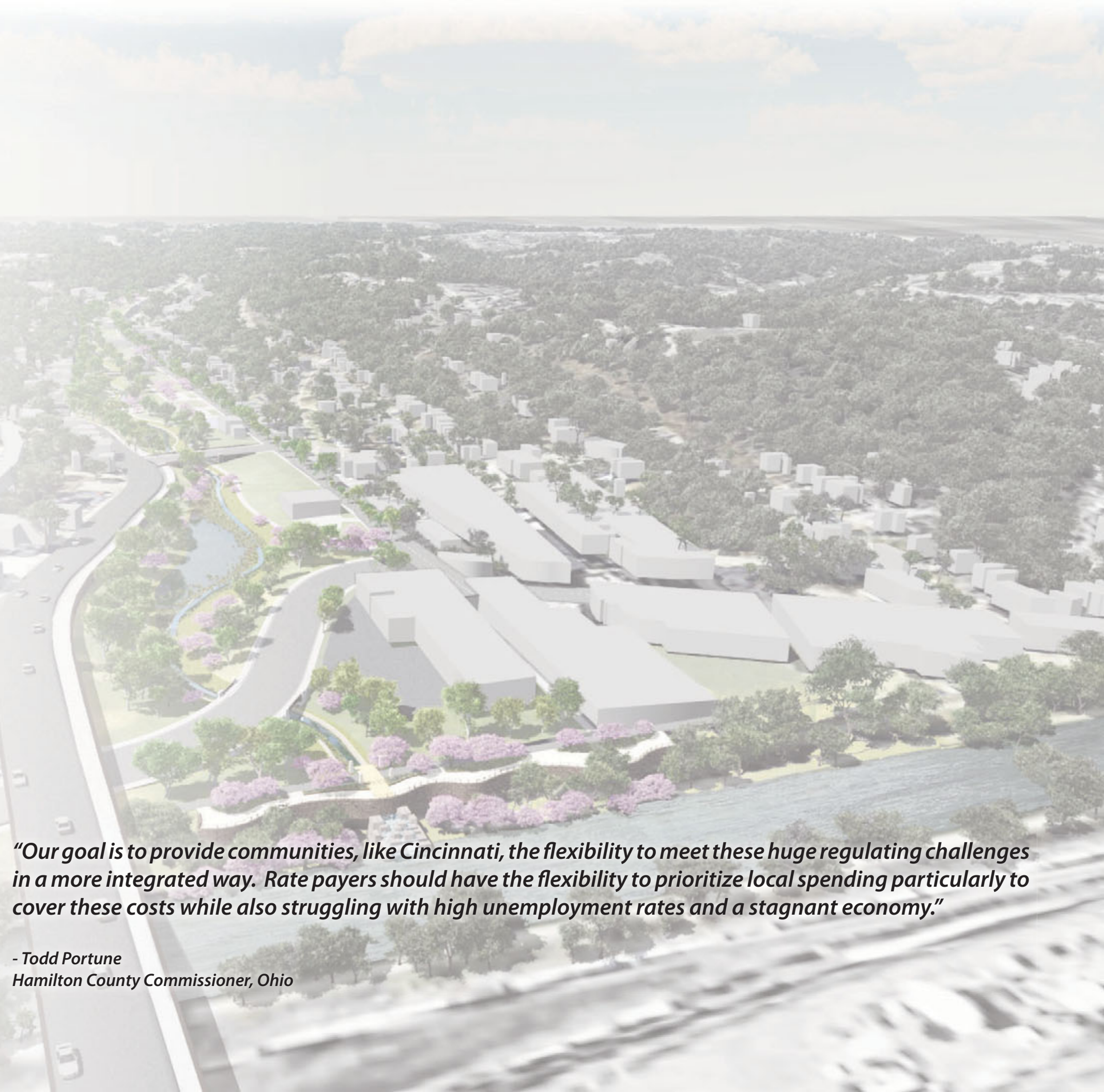
Within the City of Cincinnati, we have the rare opportunity, at this point in our region's history, to coordinate a Comprehensive Plan Update, the development of a Land Development Code and Form-Based Codes along with other initiatives like the Lick Run Alternative Project. It is an unprecedented opportunity and the success of all of these projects relies on partnerships and continued coordination among local agencies, organizations, residents, businesses, and stakeholders.

Are we ready to look at CSOs, mandates, and stormwater in a new way—not as a problem but as an asset to our community? Can we implement a new watershed-based CSO reduction project with stormwater infrastructure that preserves and enhances our communities, creates green space and habitats, and addresses the health, safety and welfare of our citizens?



***“Our goal is to provide communities, like Cincinnati, the flexibility to meet these huge regulating challenges in a more integrated way. Rate payers should have the flexibility to prioritize local spending particularly to cover these costs while also struggling with high unemployment rates and a stagnant economy.”***

**- Todd Portune  
Hamilton County Commissioner, Ohio**







# Acknowledgements

The Lick Run Watershed Master Plan is the work of many individuals and organizations who contributed their collaborative spirit, time, content, comments, and ideas throughout the public engagement process.

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San Antonio Church  
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Sierra Club  
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South Fairmount Community Council  
Southwest Ohio Regional Transit Authority (SORTA)

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United States Green Building Council (Cincinnati Chapter)  
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# Project Background & Technical Foundations

Commencing an in-depth feasibility phase of the Lick Run project, which included technical alternatives and analysis, triple-bottom line and business case evaluations, peer reviews and preliminary cost estimating, MSD and the design team evaluated if the alternative, sustainable approach proved to be viable enough to advance to the next stage – a Master Plan.

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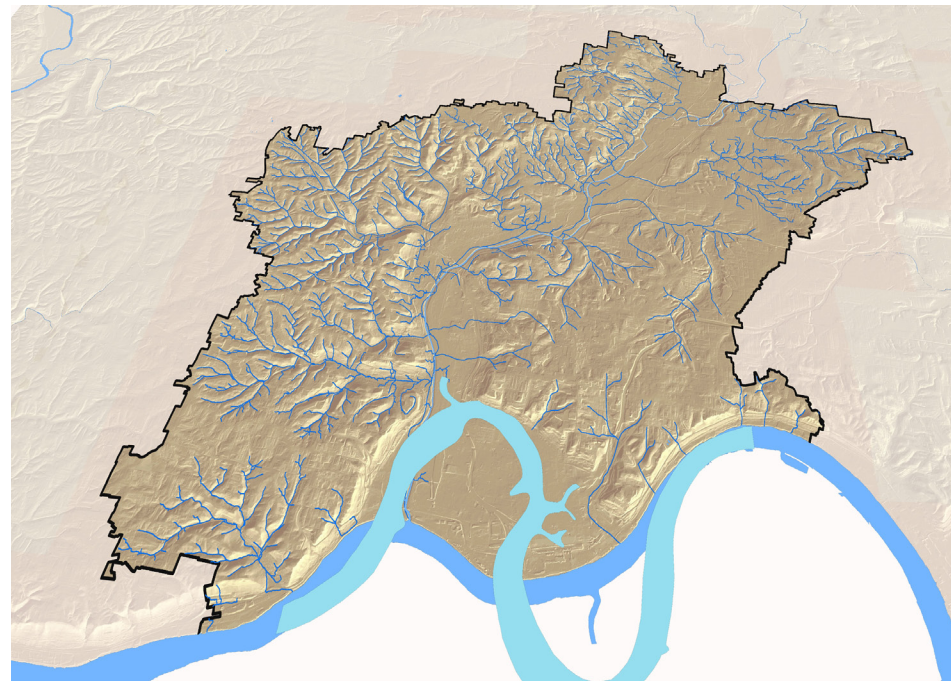
## REGIONAL CHALLENGES: AGING INFRASTRUCTURE AND CSOs

Cincinnati's first stormwater sewers were built in the 1800s to carry surface runoff away from buildings and streets. As indoor toilets and plumbing evolved, sanitary sewer lines were connected to the stormwater sewers. Sewage and stormwater mixed in the same pipe is called a combined sewer. Cincinnati is one of about 772 cities in the U.S. with a combined sewer system.

Combined sewers can become overloaded with sewage and stormwater during heavy rains, causing sewage backups in buildings and unsanitary conditions. Overflow outlets on the sewers allow excess stormwater and sewage to discharge directly into waterways. For years until the 1950s, combined sewer overflows (CSOs) were an acceptable engineering practice for handling excess flows.

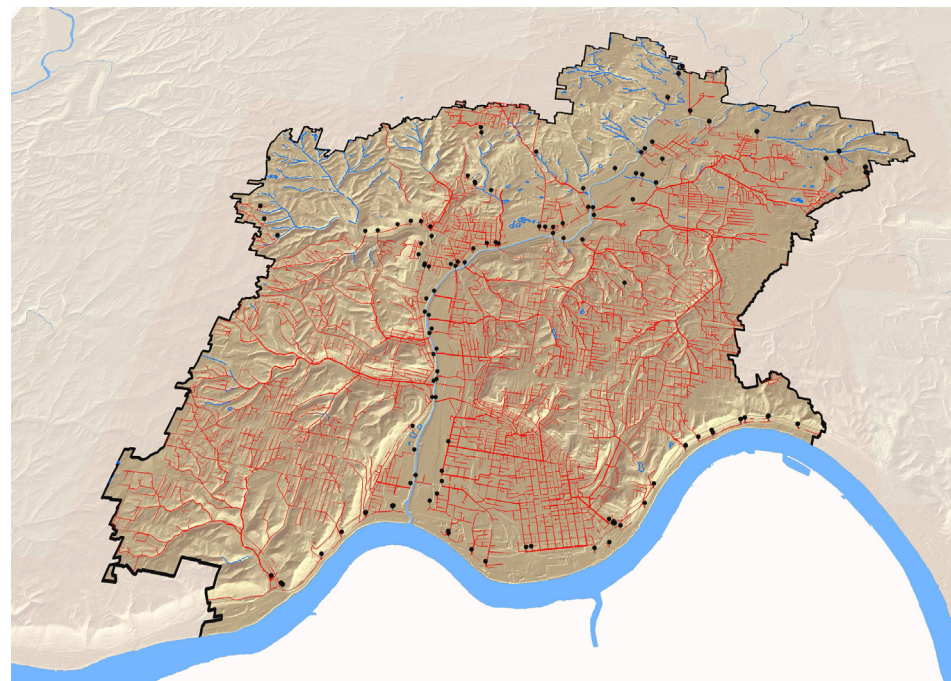
As part of the Clean Water Act, the USEPA has placed greater emphasis on CSO communities to reduce CSOs. Given numerous additional CWA obligations, USEPA recognizes the need for a more integrated approach to solve water quality problems and now provides each community with the latitude to develop their own approaches, using a combination of traditional gray (pipes, tunnels, etc.) and green (natural systems, stormwater BMPs, etc.) to address these challenges.

**Today, the United States Environmental Protection Agency (U.S. EPA) is focused on controlling CSOs through enforcement of the Clean Water Act.**



**Pre-development Water Flow Patterns in Lower Mill Creek**  
More than 300 miles of streams once flowed freely through the Lower Mill Creek area.

- Lower Mill Creek Watershed
- Ancient Ohio River



**Today's Water Flow Patterns** Many of the streams became combined sewers. Today, only 75 miles of natural streams remain, with more than 600 miles of combined sewers.



Brick sewer from the 1800s



CSO #005 in South Fairmount under dry and wet weather conditions.

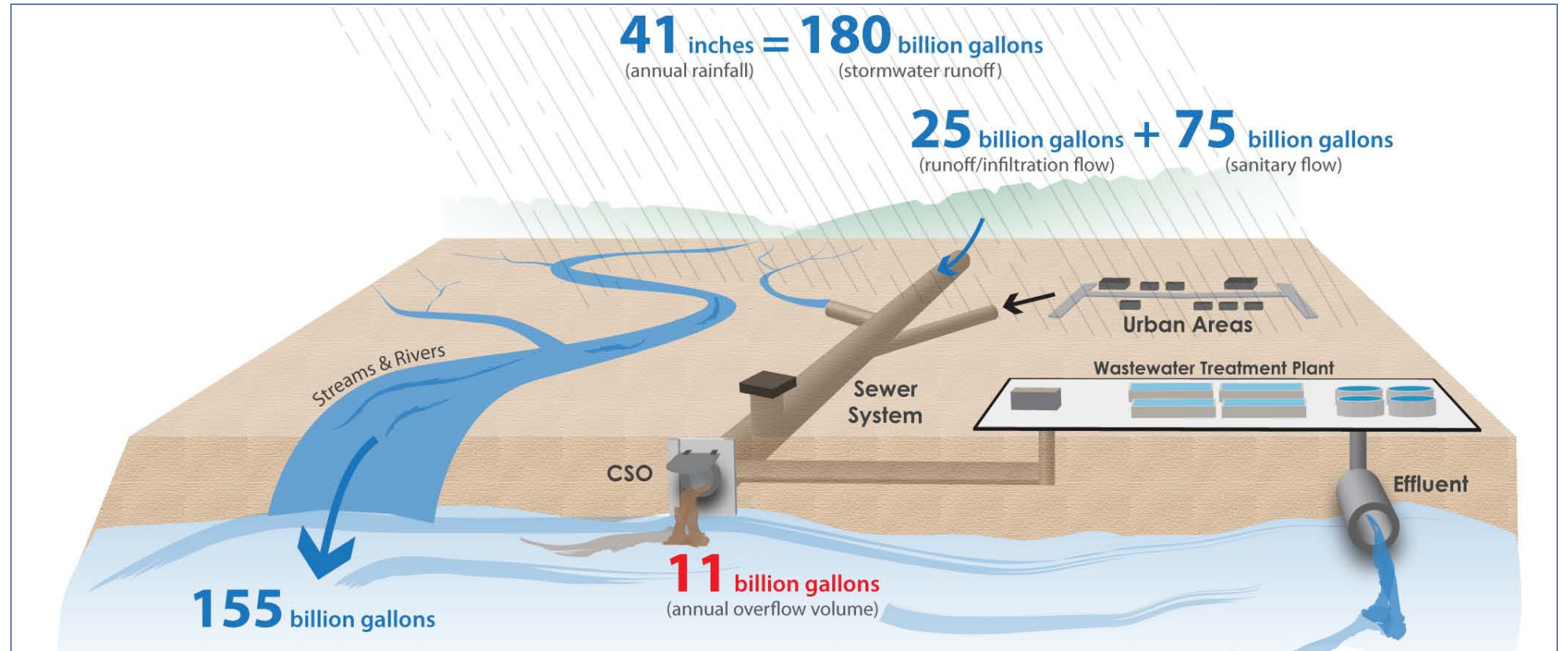


## Impacts on our Communities

Overflows from combined sewers threaten public health, negatively impact the environment and degrade quality of life across the entire Cincinnati community. After heavy rains, many area waterways are unsafe for swimming or wading due to high levels of *E. coli* bacteria that are discharged during CSO events. Fish and other aquatic life are also impacted by water pollution.

Hamilton County is one of the top 5 locations in the nation for urban CSOs. Overflows occur as many as 105 times a year at some locations.

**Every year, about 11 billion gallons of raw sewage - mixed with stormwater - overflows from our sewers into local waterways and backs up into basements.**



MSD's sewer system during wet weather based on the typical year rainfall.



CSOs cause offensive odors and leave toilet paper and other unsightly debris behind.



Excess flow in combined sewers can cause sewer backups in homes and businesses.



CSOs impact recreational uses and human contact with our waterways, because of public health risks.

## REGIONAL SOLUTIONS: PROJECT GROUNDWORK

As one of the top five CSO dischargers in the country, MSD is under a federal Consent Order to resolve this problem.

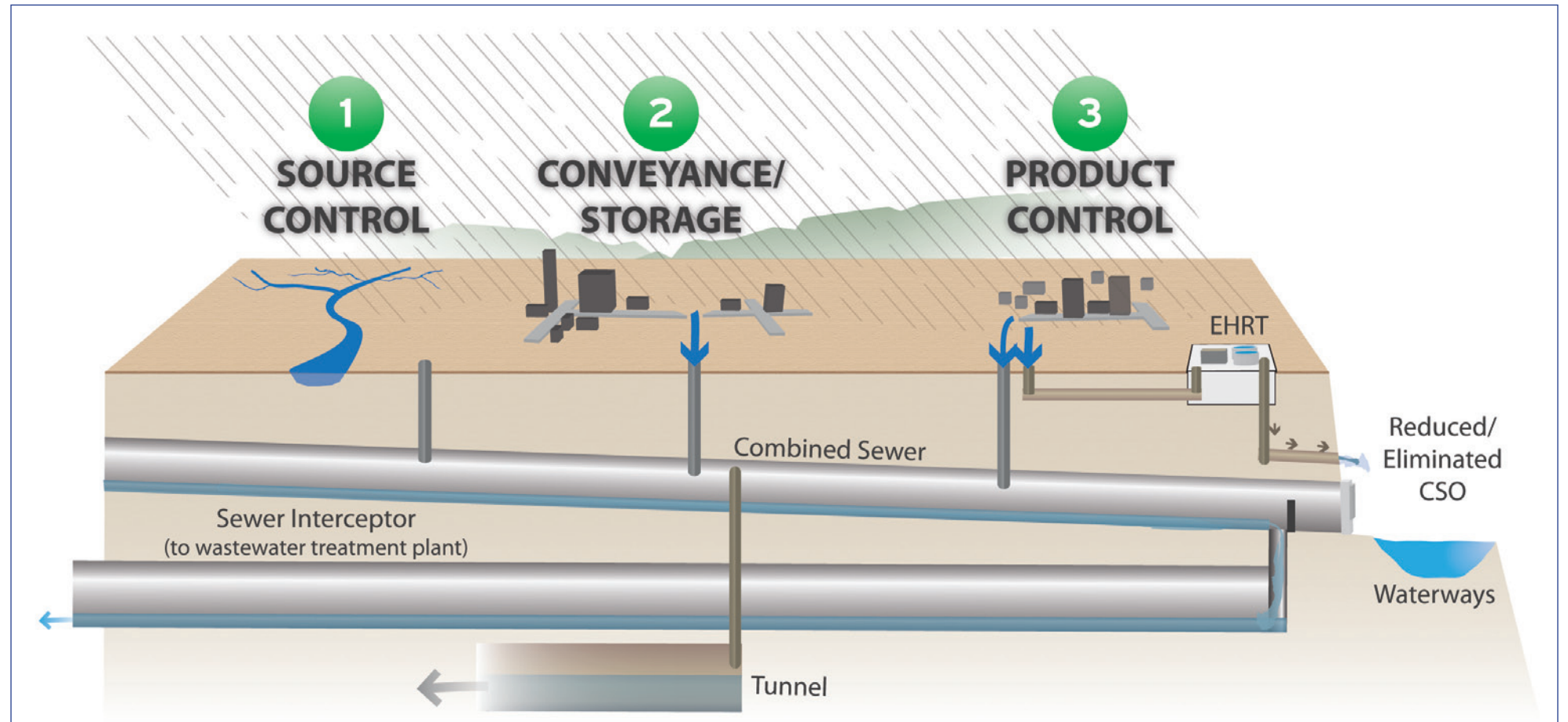
The Consent Decree with the U.S. EPA, the Ohio EPA, and ORSANCO (the Regulators) mandates that MSD:

- Capture, treat, or remove at least 85% of the 11 billion gallons of annual overflows from combined sewers,
- Eliminate all overflows from sanitary only sewers (about 100 million gallons annually)

MSD's solution to this problem is *Project Groundwork*, one of the largest public works projects in the history of our community. This two-phased, multi-year and multi-billion dollar program is comprised of hundreds of sewer improvements and stormwater control projects across our area, with the local community investing over a billion dollars over the next 10 years.

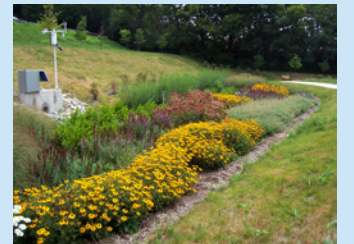


**PROJECT GROUNDWORK**  
*your pipeline to clean water*



*MSD's three-pronged approach to wet weather solutions*

- 1 Source Control (removing stormwater)**  
 Prevent or delay stormwater from reaching combined sewers, such as separating the sewers, installing stormwater retention ponds and controlling stormwater that flows down hillsides.
- 2 Conveyance and Storage**  
 Build larger sewers to "convey" or transport wastewater to treatment plants and/or construct underground storage tunnels to "store" excess stormwater and sewage during heavy rains.
- 3 Product Control (treatment of flows)**  
 Upgrade existing wastewater treatment plants to handle more wastewater and construct special treatment facilities to treat flows at the CSO outfall prior to being discharged into a waterway.



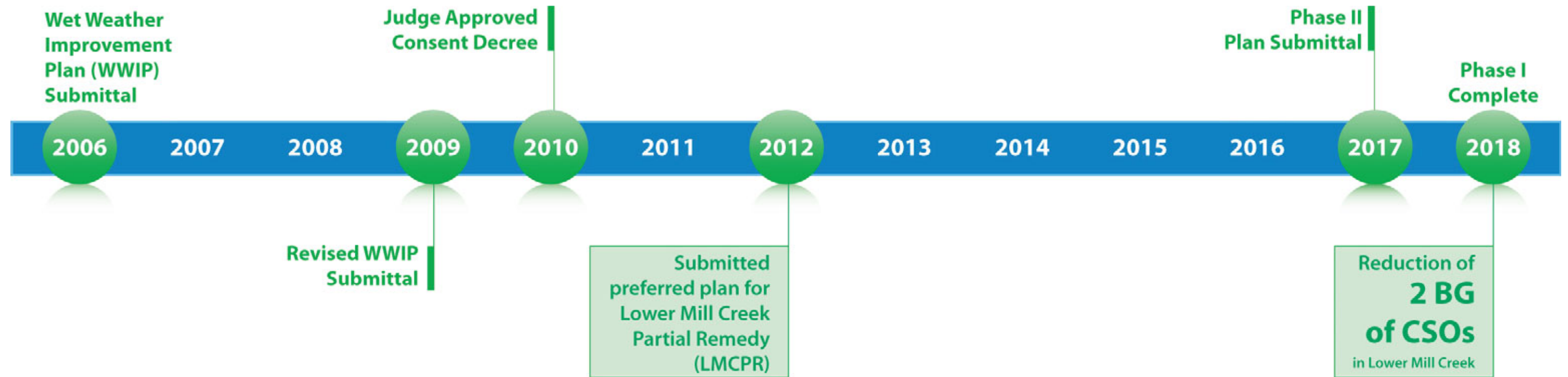
## Project Groundwork: Timeline

Project Groundwork will be conducted in two phases: Phase 1 (2009-2018) and Phase 2 (after 2018). Phase 1 requires sewer improvement projects that must be completed by or before 2018.

This phase also mandates the elimination of 2 billion gallons of CSOs in the Lower Mill Creek area, called the Lower Mill Creek Partial Remedy (LMCPR).

The Lower Mill Creek watershed, which drains into the Mill Creek, contributes more than seven billion gallons or more than 50 percent of the total overflows that occur annually from combined sewers in Hamilton County.

**Phase I of Project Groundwork** is estimated to cost about \$1.145 billion (in 2006 dollars). This program is funded mainly by MSD customers, through monthly or quarterly sewer bills, but MSD is seeking additional funding sources. MSD is committed to finding sustainable solutions that are cost-effective.



Project Groundwork Timeline

## TRIPLE BOTTOM LINE EVALUATION

A Triple Bottom Line (TBL) evaluation weighs the cost-benefits of economic, social and environmental parameters of a project. The following summarizes the findings of a TBL evaluation of the Lick Run Alternative Project:

### Economic Benefits:

- Creates jobs and business revenues for local contractors and tradesmen working on sewer improvement projects
- Promotes the use of small, woman-owned, and minority businesses on sewer improvement projects
- Eliminates chronic sewage backups in homes and businesses, which can lead to an increase in property values
- Creates additional sewer capacity that can attract new homes and businesses

### Social Benefits:

- Encourages more recreational use of waterways and improves aesthetic appeal of creeks and streams
- Enhances natural habitats for people, plants, and wildlife
- Creates more green space or effective use of green space through development of green infrastructure
- Helps facilitate urban renewal and community revitalization through the integration of sewer improvement projects with creek restorations, creation of urban waterways, parks or gardens, and the renovation or reuse of urban lands.

### Environmental and Public Health Benefits:

- Reduces CSOs into local rivers and streams
- Eliminates sanitary sewer overflows in a typical year
- Eliminates sewage backups into basements caused by MSD's public sewer system
- Reduces sewage debris and sewage odors in local waterways
- Decreases human exposure to pathogens and pollutants, such as *E. coli* bacteria



## CSOs and Investment in our Communities: Communities of the Future

Beginning in 2009, MSD developed a watershed-based planning approach that considers CSO reduction strategies in the context of natural and built systems, and community needs and conditions. MSD's Sustainable Watershed Evaluation Planning effort, or SWEPE, may help achieve broad-scale community goals in ways that are more cost effective than traditional approaches.

MSD recognized that CSO solutions constructed as part of Project Groundwork will set the stage for the next 50-100 years. MSD created a unique concept called "Communities of the Future," which integrates sustainable sewer infrastructure improvements with urban revitalization opportunities in areas that experience high volume or frequent combined sewer overflows CSOs.

**By using this approach, MSD can do more than just "fix a sewer;" it can help the community identify solutions for sewer overflows that can simultaneously address community issues such as brownfields, urban blight, vacancy and property abandonment.**

To assist and guide MSD with the *Community of the Future* vision, a Community of the Future Advisory Committee (CFAC) was created in February 2010 as a forum for dialogue, discourse and counsel.

The CFAC is comprised of representatives from a variety of public and private organizations, as well as private citizens, each providing their own unique perspectives and sharing ideas to help MSD engage with citizens and stakeholders within the watersheds in MSD's service area.

First convened in March 2010, the committee is also directed to help MSD align with initiatives such as Hamilton County's Community Compass, Agenda 360: A Regional Action Plan and the City of Cincinnati's Comprehensive Plan Update.



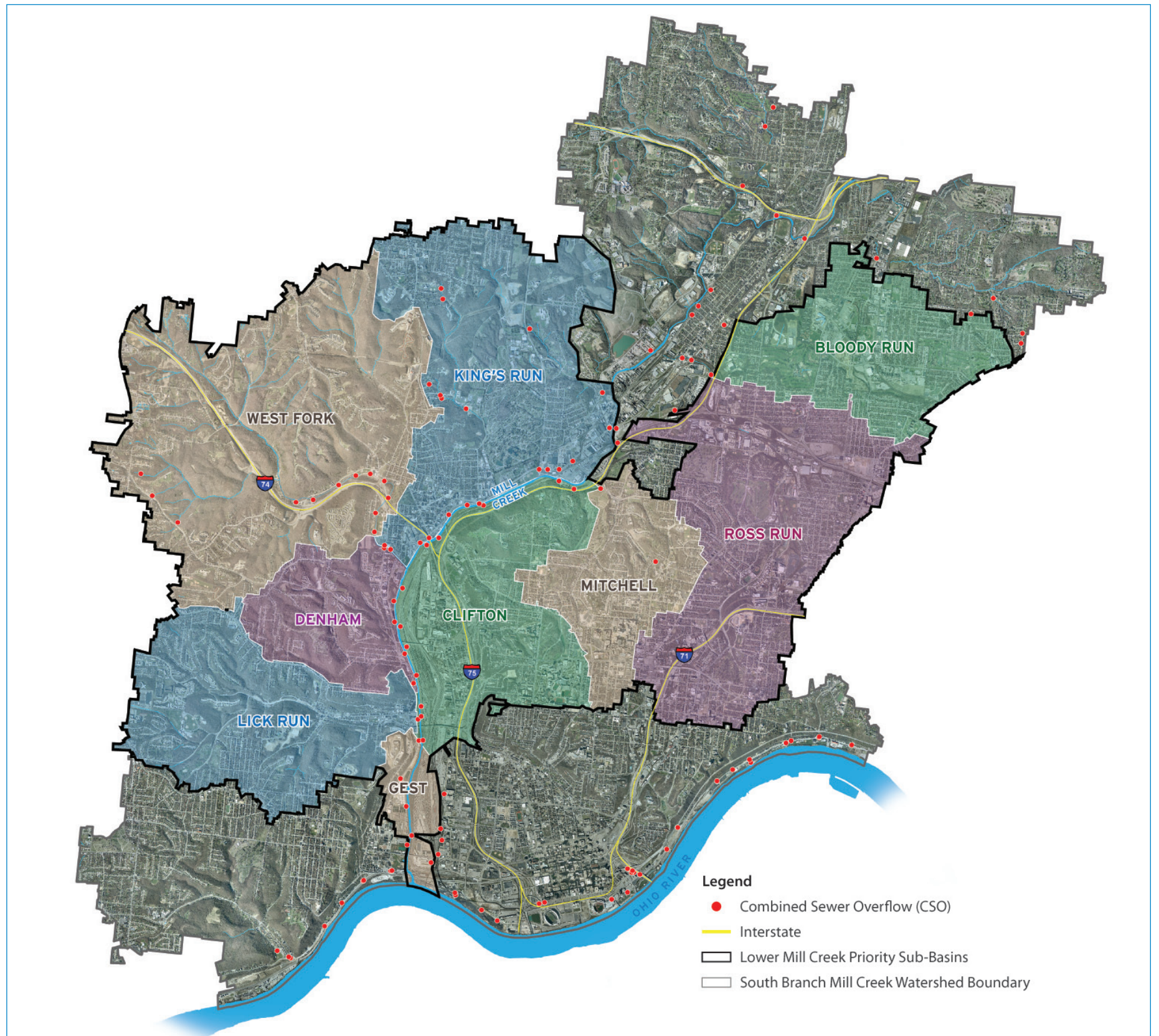
## PRIORITY WATERSHEDS OF THE LOWER MILL CREEK

Source control solutions can be just as effective as traditional CSO reduction technologies, achieve better water quality and provide potential community benefits. They also help free up capacity for wastewater flows that cannot be separated and allow MSD to size pipes and treatment facilities for the remaining reduced flow volume.

Under Project Groundwork, MSD must eliminate two billion gallons of combined sewer overflows from the Lower Mill Creek watershed by 2018. To achieve this goal, MSD is focusing on watersheds within the Lower Mill Creek that experience high volumes of combined sewer overflows (CSOs). The Lower Mill Creek watershed contributes more than 7.6 billion gallons of the total 11 billion gallons that overflow annually from combined sewers in Hamilton County and offers many opportunities for source control.

**MSD is currently evaluating alternative “source control” solutions through 2012 that could replace or supplement the tunnel, and:**

- Achieve Wet Weather Improvement Plan (WWIP) goals
- Be less expensive
- Decrease treatment and operational costs at Mill Creek Wastewater Treatment Plant (WWTP)
- Be consistent with Communities of the Future goals
- Provide adaptability for addressing long-term water quality needs



### Lower Mill Creek Watershed

The Lower Mill Creek Watershed covers approximately 40,000 acres (62.5 square miles) in the heart of Hamilton County. It includes nine smaller watersheds, including Lick Run, that drain to the Mill Creek. The watershed includes almost 50 Cincinnati neighborhoods, as well as Elmwood Place, Norwood, St. Bernard and portions of Green Township and Springfield Township.

## TWO DIFFERENT SOLUTIONS

MSD has evaluated two different solutions to determine the best, most locally preferred solution to eliminate 1.6 billion gallons of CSOs. Note: A reduction of at least 400 million gallons has already been achieved through realtime control projects. RTC uses existing capacity for storage during wet weather.

### Default Solution: Deep Tunnel

The Regulator's default solution is a deep storage tunnel (about 30 feet in diameter and 1.2 miles long) beneath the Mill Creek. Excess flows would be captured and stored during rain events and then pumped up into an enhanced high-rate treatment facility (EHRT).

**The storage tunnel will meet federal and state mandates for CSO compliance; however, this solution is less adaptable, provides few opportunities for community engagement, and it does not allow us to make a strategic investment in areas that need it most.**

**After \$244 million, communities along Mill Creek, including South Fairmount and the Lick Run Watershed will remain unchanged without any new MSD-enabled community amenities and reinvestment.**

### Alternative Solutions

As part of the Regulators' mandate, MSD has the opportunity to explore alternatives to the tunnel. One alternative is the use of sustainable infrastructure to control stormwater at the "source." These source control projects, such as separating combined sewers and installing stormwater retention basins, delay or prevent stormwater and natural drainage from reaching combined sewers, thus reducing overflows. Most of this work would be done in watersheds and would bring investments into local communities.



Location of default "deep tunnel" solution in the Lower Mill Creek watershed



A look inside a tunnel.

## Focus on the Lick Run Watershed

The Lick Run watershed is home to CSO #005, the largest CSO (by volume) in Hamilton County. The watershed was named after a stream - called Lick Run - that once ran between Queen City and Westwood avenues and discharged into Mill Creek. In 1907, the stream was enclosed within a 19.5-foot diameter combined sewer called the Lick Run interceptor, which runs under 3,700 feet of streets and buildings in South Fairmount.

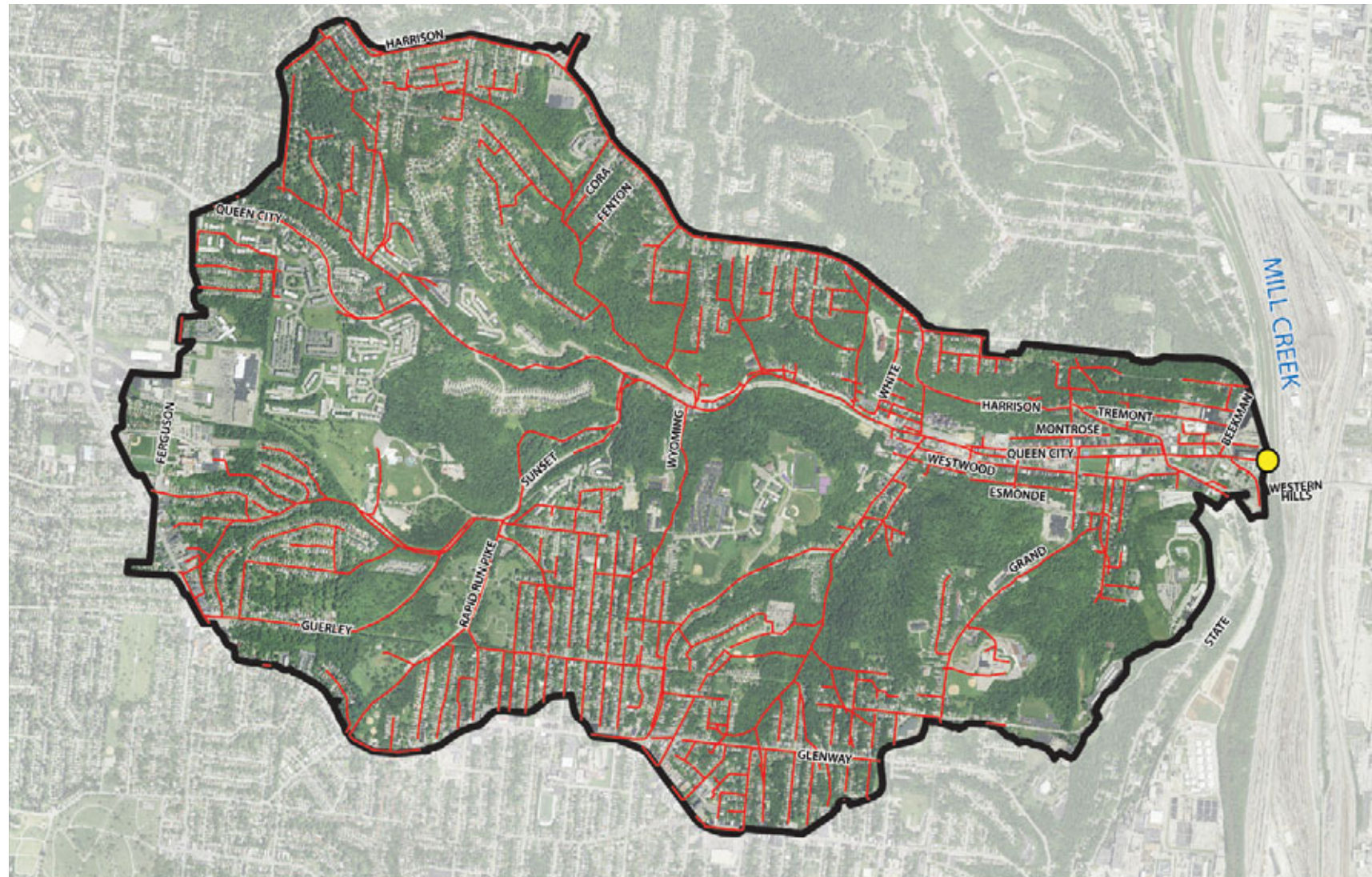
When it rains, the Lick Run interceptor sewer can become filled beyond its capacity. Excess flow is diverted - untreated - through the CSO #005 outfall to the Mill Creek.

### Overflow History

In a typical year, 1.5 billion gallons of combined sewage and stormwater overflow from CSO #005 into the Mill Creek. Of that total, less than 25% is sewage - the rest comes from stormwater and what used to be natural stream flow.

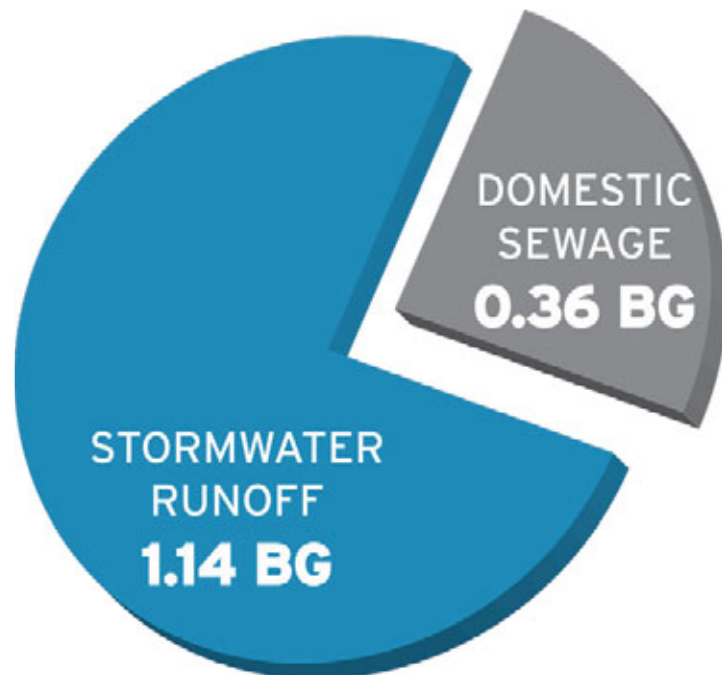
### Watershed Characteristics

The Lick Run watershed covers about 2,700 acres on Cincinnati's west side. It includes Cincinnati's South Fairmount neighborhood and portions of East and West Price Hill and Westwood. It is roughly bounded by Harrison Avenue to the north, Ferguson Avenue to the west, Glenway Avenue to the south and the Mill Creek to the east.



Watershed Boundary     
 / Existing Combined Sewer     
 ● CSO #005

### Existing combined sewer system in the Lick Run Watershed



### Undeveloped, forested hillsides in the Lick Run Watershed

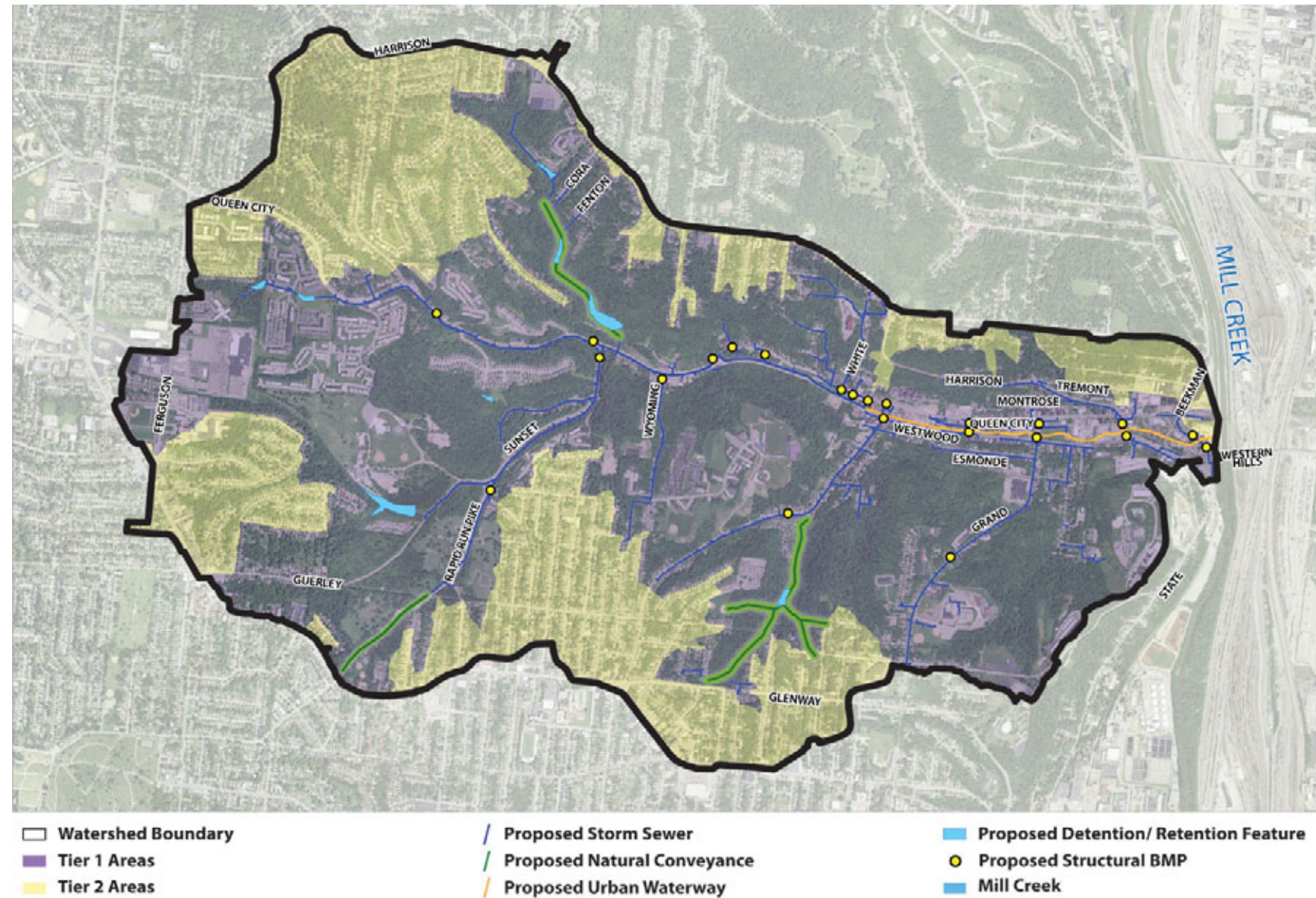


## ALTERNATIVE APPROACHES IN THE LICK RUN WATERSHED

To reduce overflows through CSO #005, MSD evaluated a series of stormwater sewer separation projects throughout the watershed. Natural drainage and stormwater flows would be directed to the Mill Creek via a series of underground storm sewers and natural, above ground waterways, while sewage and a much smaller volume of stormwater would continue to be transported by the Lick Run interceptor to the Mill Creek treatment plant. This solution, known as the Lick Run Alternative, would eliminate about 800 million gallons of CSO volume a year from CSO #005.

The limits of the strategic separation areas within the 2,700-acre Lick Run Watershed were determined with the goal of capturing as much stormwater as possible with strategic investments in new infrastructure. The separation approach targeted stream entry points, large undeveloped hillsides, and areas already served by separate storm and sanitary systems that discharge into the combined sewer system. These targeted areas of the watershed were identified as "Tier 1 areas" for strategic separation and represent approximately 1,800 acres.

Highly developed areas on the upper reaches were excluded from the Tier 1 areas unless it was reasonably efficient to extend new separated storm sewers to connect with existing drainage systems. These upland areas were termed "Tier 2 areas" and represent the remaining 900 acres.



### Overview of the Lick Run Alternative Project - Two Tier Approach

**A comprehensive technical evaluation and feasibility study showed that through partial/strategic separation, stormwater runoff can be captured and conveyed from strategic portions (Tier 1 areas) of the Lick Run watershed directly to Mill Creek in a manner comparable to or exceeding the capacity of the default solution. The reports summarizing technical evaluations and feasibility studies are described as follows:**

1. The June 2009 Lick Run Wet Weather Strategy report (Appendix A) identified source control opportunities as effective watershed strategies to reduce CSO volume by approximately 800 MG:
2. Preliminary Engineering Analysis Report (November 2009) refined strategic sewer separation areas
3. Community Opportunities Plan (Appendix B) defined a synthesis plan based on refined technical evaluations.
4. Basis of Design Report (April 2010) evaluated the technical feasibility of a valley conveyance system between Queen City Avenue and Westwood Avenue
5. Value Engineering Study (January 2011) validated the technical feasibility and probability of meeting the requirements of the Consent Decree.
6. Conceptual Design Report (March 2012) summarized the evaluations, analyses, results, and status of the proposed Lick Run Alternative.
7. Capital cost of \$122 M and life cycle cost of \$140 M (reviewed by MSD Estimating Group, August 2010)
8. Sewer separation projects advancing through turnover process and will be constructed in 2012 - 2015
9. Preliminary findings of the Lick Run Watershed Master Plan submitted for review (March 2012)

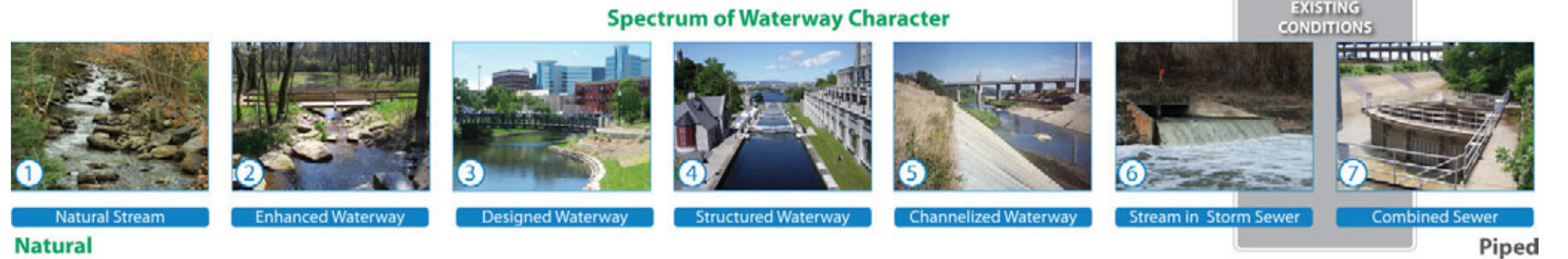
## What are Potential Approaches for Stormwater Conveyance in South Fairmount?

Strategic separation of the Tier 1 areas captures stormwater runoff and natural drainage from the watershed. These captured flows must be conveyed directly to Mill Creek (rather than to the combined sewer system) in order to achieve modeled CSO reduction benefits.

South Fairmount, the Cincinnati neighborhood that lies within the valley of the Lick Run Watershed, represents the natural stormwater conveyance corridor. A review of historical records indicates this corridor is the approximate location of the original Lick Run channel.

As part of the initial feasibility analysis for a source control solution in Lick Run, MSD evaluated several different approaches for stormwater conveyance through South Fairmount, including more traditional gray approaches and more sustainable approaches.

Each was studied for CSO reduction, water quality benefits, potential community revitalization opportunities, and costs. The leveraged sustainable approaches consistently ranked higher in these categories.



### TRADITIONAL GRAY APPROACHES

#### 1. Underground Storm Sewers with Open Space

- Traditional Approach: Limited Water Quality Benefits
- Series of large separate storm sewers underground
- Restricted use of open space because of underground sewer infrastructure

#### 2. Uniform Surface Channel

- Traditional Approach: Limited Water Quality Benefits
- Above ground channel
- Uniform shape and made of concrete
- Retaining walls and fencing for public safety



## LEVERAGED SUSTAINABLE APPROACHES

### 3. Natural Stream with Underground Storm Sewers

- Leveraged Approach: CSO Solution as Community Amenity
- Surface natural stream channel and separate storm sewers
- Flows into separate underground storm conveyance to Mill Creek

### 4. Natural Stream with Water Quality Feature

- Leveraged Approach: CSO Solution as Community Amenity
- Above-ground natural stream channel and separate storm sewers
- Water quality feature linked to natural stream channel and Mill Creek
- Leveraged community investments from other sources

### 5. Natural Stream with Water Quality Feature & Roadway Improvements

- Leveraged Approach: CSO Solution as Community Amenity
- Above-ground natural stream channel and separate storm sewers
- Water quality feature linked to natural stream channel and Mill Creek
- Roadway improvements on Westwood and Queen City



## Why Daylight Lick Run?

One of the cornerstones of *Communities of the Future* is using natural water features, such as daylighted streams, to encourage revitalization and partnerships that could lead to parks and greenspace, improved housing and opportunities for business growth or development, among others. Daylighting is turning a stream that has been diverted into a sewer - either a combined sewer or a culvert - back to a naturally flowing aboveground waterway.

Daylighting Lick Run will remove stormwater runoff from the combined sewer system and reduce overflows from CSO #005. It will also improve water quality in Mill Creek, convey stormwater flow from the hillsides to Mill Creek, provide a natural amenity for the community and a gateway to the western side of Hamilton County, and provide a potential catalyst for community revitalization as part of MSD's *Communities of the Future* approach.

The proposed Lick Run Alternative project could, potentially, become a national model for a more sustainable approach to infrastructure investments required for CSO reduction.

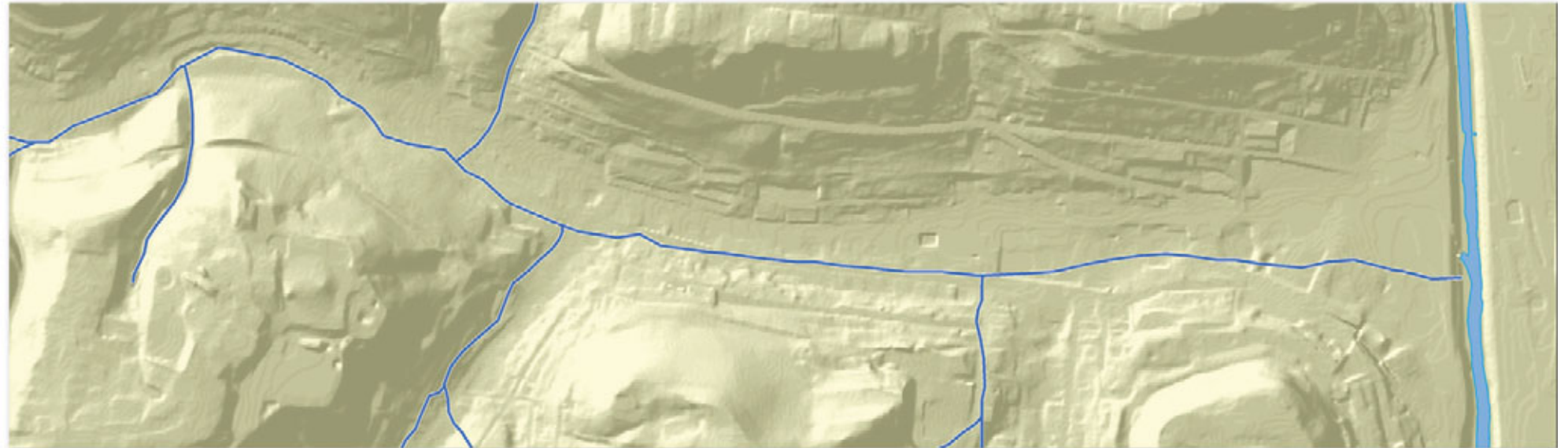
## Has Daylighting Been Done Before?

Many communities across the North America have addressed stormwater management and flooding problems with solutions that are aimed at leveraging investments and maximizing community benefits. These communities include:

Kalamazoo, Michigan  
 Hutchinson, Kansas  
 St. Paul, Minnesota  
 Oklahoma City, Oklahoma  
 Lowell, Massachusetts  
 Providence, Rhode Island

Seattle, Washington  
 Vancouver, British Columbia  
 Kansas City, Missouri  
 Lenexa, Kansas  
 Charlottesville, Virginia

The projects described on the next page represent examples of daylighting projects that are similar in scale to daylighting Lick Run. These examples help to show how other communities have leveraged stormwater management projects to provide social, economic and/or environmental benefits.



**Lick Run Corridor: Historical Conditions** Historically, the Lick Run stream conveyed water from tributaries throughout the watershed to the Mill Creek. — Historical Lick Run Stream — Mill Creek



**Lick Run Corridor: Existing Conditions** Currently, the Lick Run stream runs through an underground 19.5-foot diameter combined sewer. ● Combined Sewer Overflow (CSO) — Existing Combined Sewer — Mill Creek

## Examples of Daylighting Projects

### Arcadia Creek, Kalamazoo, Michigan

#### Economic Development / Flood Reduction

This \$18 million stream daylighting project was part of a major flood prevention and downtown redevelopment campaign along Arcadia Creek. Construction of the project took place between 1989 and 1992, and finished in 1995. Because of this project, Kalamazoo is now protected from anything up to a 500-year flood.

The new "Festival Site" now hosts five major summer festivals that generate \$12 million in annual revenues. Annual property tax revenues near the creek have risen from \$60,000 to \$400,000.



Before



After

### Cow Creek, Hutchinson, Kansas

#### Creation of a Park Amenity

Rather than replacing the aging bridge atop Cow Creek, which would have rerouted traffic and disrupted local businesses during the three years of construction, the city decided to daylight the 800-foot long stream and make the section a civic amenity. The daylighted stream, completed in 1997, is now the centerpiece of a new park that includes walking paths, open space, an amphitheater and large water play area.



Before



After

### Thornton Creek, Seattle, Washington

#### Economic Development / Ecological Restoration

The asphalt parking lot covered a 60-inch storm pipe that channeled untreated runoff from 680 highly urbanized acres into Thornton Creek, a critical salmon-bearing stream that has been in decline due to urbanization.

Working with community stakeholders, private developers, and the City, the design team developed a solution that created an open, planted channel to treat the pipe's flows while allowing development to occur on the site. Completed in June 2009, the project's channel serves as the focal point for adjacent commercial and residential development and also contributes much-needed public open space to this urban neighborhood.



Before



After

## COMMUNITY ENGAGEMENT IN THE MASTER PLANNING PROCESS

Following an in-depth feasibility phase of the Lick Run project, which included technical alternatives and analysis, triple-bottom line and business case evaluations, basis of design, peer reviews and preliminary cost estimating, the Alternative Sustainable Approach proved to be viable enough to advance to the next stage – a Master Plan. This would provide the opportunity to gain valuable input from the community and to merge their needs/desires/opportunities with the CSO Reduction objectives that MSD was required to meet. This synthesis, then, would be a first important step toward realizing the Communities of the Future objective to leverage MSD's investment in ways that help strengthen and revitalize our neighborhoods, watersheds and the region as a whole.

Invitations to each of the Community Design Workshops were mailed to every address in the watershed, and attendance to each averaged almost 100 people. Throughout the master planning process, input from this broad cross-section of the community (within the watershed, as well as the greater regional community) was vital to understanding existing conditions and challenges, as well as specific goals and priorities. At each of the Community Design Workshops, attendees provided verbal feedback and worked to complete feedback forms so that every voice could be recorded. Each voice was important, and made the plan stronger.

Following each Workshop, a summary of the input/feedback was posted on MSD's website and mailed to attendees. A series of update meetings with CFAC and Key Public Agency Partners was held prior to and following each Community Design Workshop.

All of this detailed input has helped shape the Master Plan. If the Alternative Sustainable Project is approved and moves forward, interaction with the community will continue. Judging by the master planning process, the community's interest and willingness to participate will remain high, and their input will continue to strengthen the plan as it is realized.

**To understand the community's needs/desires/opportunities, a variety of input and feedback mechanisms were established:**

- A Community Open House
- Three Community Design Workshops
- Meetings with the South Fairmount Community Council & South Fairmount Business Association
- Meetings with Several Key Stakeholder Groups
- Meetings with Individual Business & Property Owners
- Meetings with the Communities of the Future Advisory Committee (CFAC)
- Meetings with Key Public Agency Partners
- Meetings with Key Regulators



## MASTER PLANNING PROCESS

The Lick Run master planning process was divided into three distinct phases of community engagement – Awareness, Exploration and Vision, which culminated over a 6-month timeframe.

### Awareness

In the first phase, **Awareness**, emphasis was placed upon getting to know the people and the place, while also sharing information. At Community Design Workshop #1 (CDW1) in August 2011, MSD provided an overview of the CSO Reduction challenges that they faced and the feasibility work that had led to the need for creating a Master Plan. In turn, MSD asked attendees for input regarding the needs/challenges/aspirations of the community. To facilitate this input, the meeting was divided into four smaller breakout sessions: The Open Space Corridor, The Community Core, The Historic Fabric, the Hillside & Ridgetop Neighborhoods. These topic-based breakout sessions provided opportunities for smaller group discussions and one-on-one interaction. Also Visual Preference Survey materials were used to provide an initial foundation of aesthetic preferences from which to begin. All of this input was summarized and used to develop a series of alternatives to inform and be presented at the next workshop.

### Exploration

In the second phase, **Exploration**, a wide variety of concept alternatives and draft planning principles were developed, based upon input from CDW1. At Community Design Workshop #2 (CDW2) in October 2011, MSD again provided important background information, and then a thorough presentation of the concept alternatives. Following the presentation, attendees were divided into small groups by table and joined by a facilitator. This intimate structure allowed participants to ask questions and have discussions about different topics with the other participants at their table. All participants were again given input and feedback forms to fill out, and they were asked to describe the strengths and weaknesses of each conceptual alternative. This feedback approach was used, instead of asking participants to pick their preferred alternatives, because it allowed the strengths of each concept to be carried forward, while the weaknesses were eliminated or reduced. All of this input was summarized and used to develop a series of Preliminary Master Plan illustrations and content to be presented at the next workshop.

### Vision

In the third phase, **Vision**, the best ideas from the previous phases are synthesized together into one cohesive, preliminary plan, for feedback from the community. At Community Design Workshop #3 (CDW3) in February 2012, MSD again provided important background information, and then a thorough presentation of the Preliminary Master Plan materials. The presentation first covered “The Base Plan”, which was watershed-wide integrated stormwater and CSO-reduction network, the urban waterway and associated open space that MSD would need to build to accomplish their objectives, even if other partners did not come on board and invest. Following this portion of the workshop, an open Q&A session was held to make sure that attendees had the opportunity to ask questions or make comments regarding “The Base Plan”. Following the Q&A, MSD presented the longer-term “Vision Plan” that was possible, if MSD’s initial investments were leveraged, other public and private participants came on board, and the potential of community revitalization was realized. Then, participants were divided into four smaller groups and asked to fill out surveys, ask questions and have more one-on-one discussion.

All of this input was summarized and used to finalize the Master Plan recommendations included in this report.



## COMMUNITY DESIGN WORKSHOP #1

On Thursday, August 11, 2011, MSD hosted its first of three Community Design Workshops at Roberts Paideia Academy to gather public input on the proposed Lick Run Alternative project. (Appendix C)

The workshop featured an overview presentation and four breakout sessions designed to gather community input on the proposed urban waterway in South Fairmount and other topics that relate to the entire watershed. Community input was collected through written surveys and visual preference surveys, which used photographs to solicit participant preferences on topics ranging from waterway characteristics to recreational opportunities.

What was learned from the public during this community design workshop helped MSD advance the Master Plan and refine watershed-based CSO reduction solutions that maximized the potential for other community benefits and amenities.

### Overview Presentation

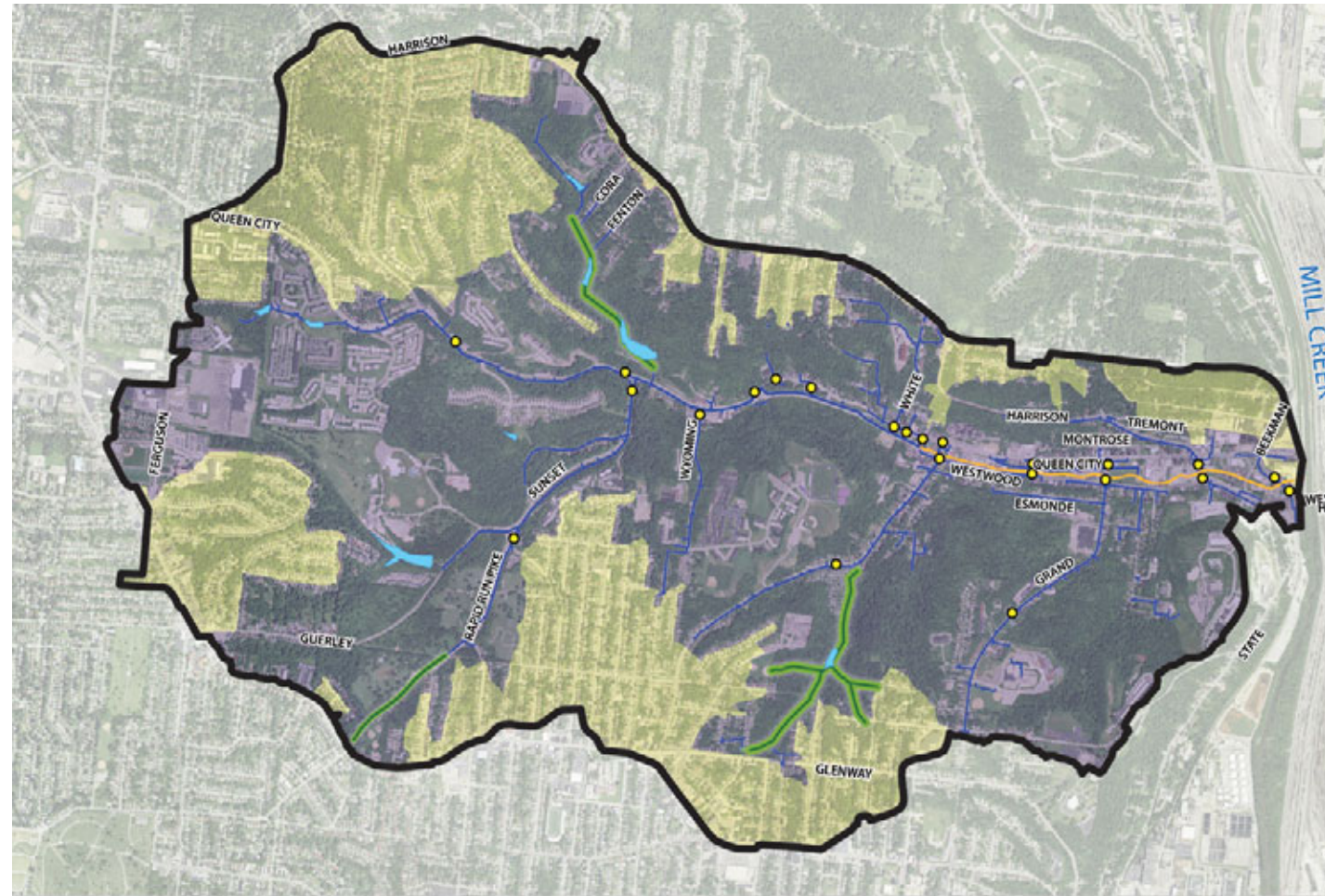
- Summarized Consent Decree mandates and timelines for a CSO reduction solution in the Lick Run Watershed
- Provided project status updates for the two alternatives that will be part of the Lower Mill Creek Partial Remedy (LMCPR) submittal in late 2012
- Explained the timeline for the development of a comprehensive, integrated Master Plan
- Explained the objective of Community Design Workshop #1
- Identified opportunities for continued community involvement
- Engaged public in visual preference survey for each breakout session



Postcard Invitation



Breakout Sessions



Proposed Solutions in the Lick Run Watershed



## SUMMARY OF COMMUNITY FEEDBACK

Input from the community was critical in shaping solutions that will be presented to the Hamilton County Board of County Commissioners and state and federal regulators at the end of 2012. The input gained from Workshop #1 helped MSD and its partner agencies refine watershed-based CSO reduction solutions and maximize the potential for other community benefits and amenities.

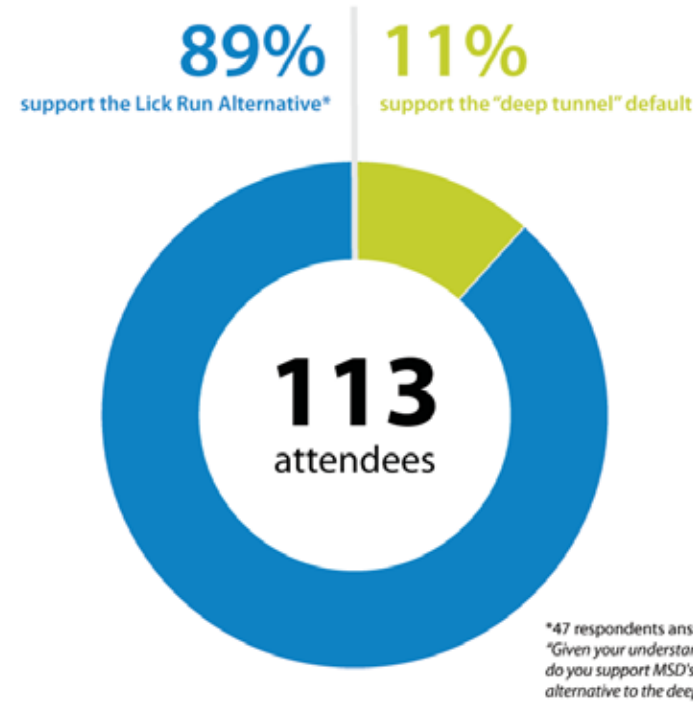
### Exit Survey Results:

- **113** people attended Community Design Workshop #1.
- **60%** of participants live in the Lick Run Watershed.
- **89%** of respondents support MSD's investment in the Lick Run Alternative, compared to 11% who support the "deep tunnel" default solution.
- **90%** of exit survey respondents felt better informed after attending the workshop.

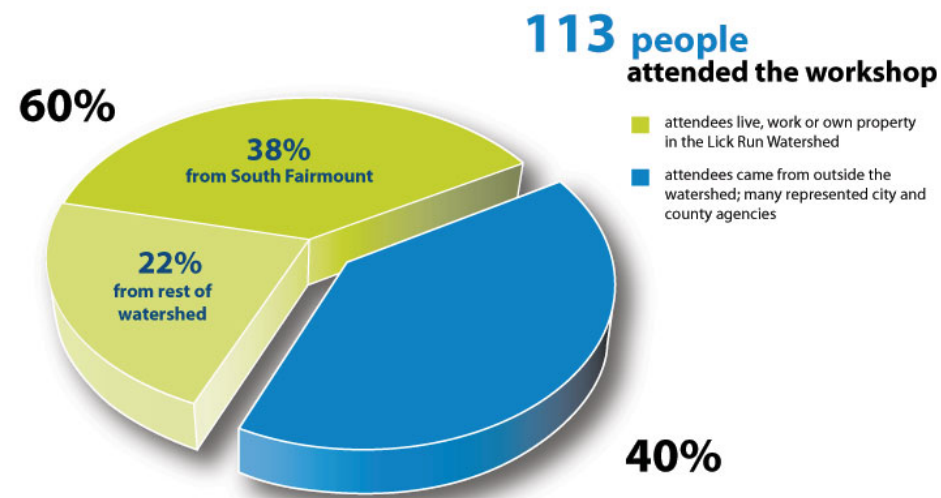
### Major findings from the workshop:

- 84% of break-out sessions participants believe the proposed urban waterway as a central feature in South Fairmount could benefit the community.
- Nearly all respondents said that a strong neighborhood core is important to the future of South Fairmount.
- A majority identified existing traffic patterns as a major obstacle for the neighborhood.

Following the workshop, the results of the visual preference survey were tallied, thus revealing the preferred images for each category. The community's preferences were used to inform design decisions in the conceptual development phase of the master planning process. Furthermore, the community's written feedback was compiled in a spreadsheet {see Appendix D}. The words were filtered through a word cloud generator, which assigned greater prominence to words found more frequently in the comments. This mode of evaluation helped first to reveal common themes and key issues, and then to visually represent them to the public in an accessible and objective way.



Attendee Support of the Lick Run Alternative



Attendee Demographics



**Presentation:** Representatives from MSD and the design team present the challenges and proposed solutions for the Lick Run Alternative project. Attendees then separated into smaller groups to discuss different topics relative to the project in greater depth.



**Breakout Sessions:** In addition to a brief introduction and Q&A, participants were asked to fill out a visual preference survey during the breakout session for each topic. Participants were also given the opportunity to provide written feedback about additional concerns.



## COMMUNITY DESIGN WORKSHOP #2

On Wednesday, October 26, 2011, MSD hosted its second of three “Community Design Workshops” at Gilbert A. Dater Montessori to gather public input on the proposed Lick Run Alternative project.

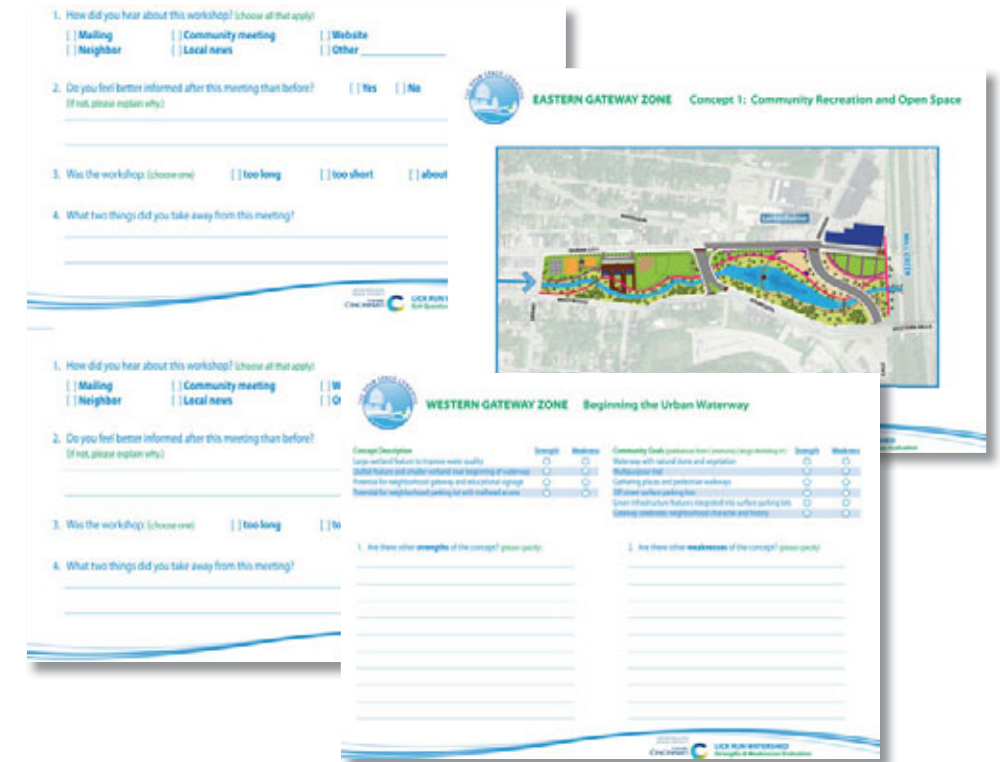
The meeting was advertised by sending postcard invitations to more than 7,000 Lick Run residents, property owners, businesses and local stakeholders. In addition, workshop information was published in the South Fairmount community newsletter and other community newsletters, as well as on the Lick Run website and in the local news media.

### Focus of Community Design Workshop #2

The workshop featured an overview presentation and small group work sessions to review and discuss revised design concepts for the proposed urban waterway in South Fairmount. The workshop also covered transportation network opportunities, green planning principles and trail network opportunities. All were developed with input from Community Design Workshop #1. **(Appendix E)**



Postcard Invitation



Handout & Survey Materials Examples

### Overview Presentation

- Summarized Consent Decree mandates and timelines for a CSO reduction solution in the Lick Run Watershed
- Provided project status updates for the two alternatives that will be presented to federal and state regulators as part of the Lower Mill Creek Partial Remedy (LMCPR) submittal in late 2012
- Explained the timeline for the development of a comprehensive, integrated Master Plan
- Explained the objective of Community Design Workshop #2
- Identified opportunities for continued community involvement
- Reviewed design concepts and watershed opportunities

### Small Group Work Sessions

- The objective of the small group work sessions was to have participants identify the strengths and weaknesses of each concept through written surveys.



Overview Presentation



Small Group Work Sessions

## SUMMARY OF COMMUNITY FEEDBACK

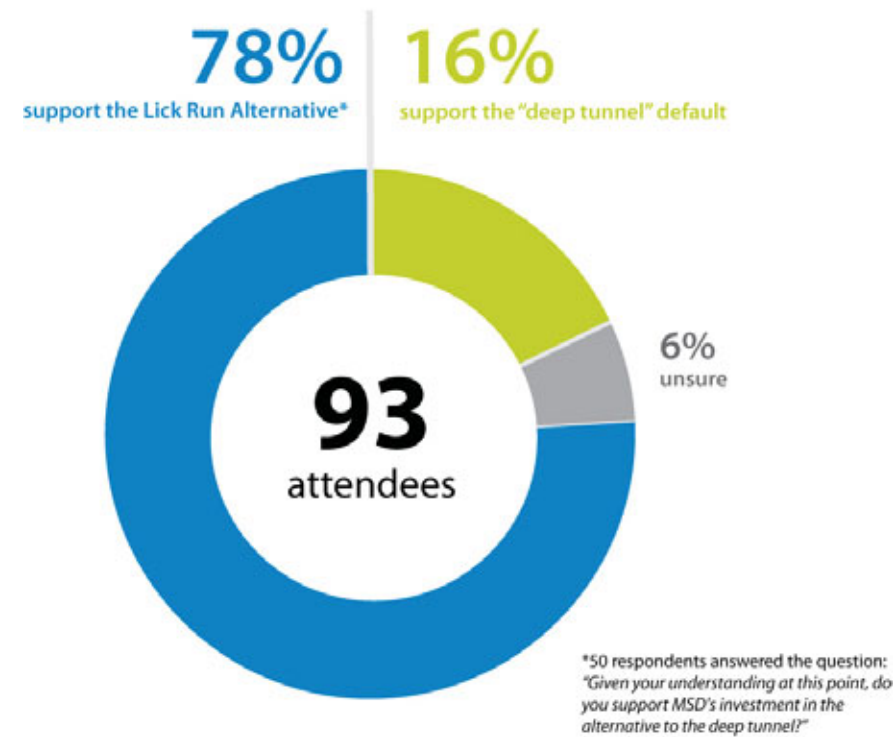
### Exit Survey Results

- **93** people attended the workshop.
- **78%** of respondents support the proposed Lick Run Alternative, compared to 16% who support the deep tunnel and 6% who are unsure. (54% of attendees responded to this question.)
- **54%** of respondents attended the first workshop (58% of attendees responded to this question.)
- **89%** of respondents felt better informed after attending the second workshop. (60% of attendees responded to this question.)
- **98%** of respondents said they will attend the third workshop. (54% of attendees responded to this question.)

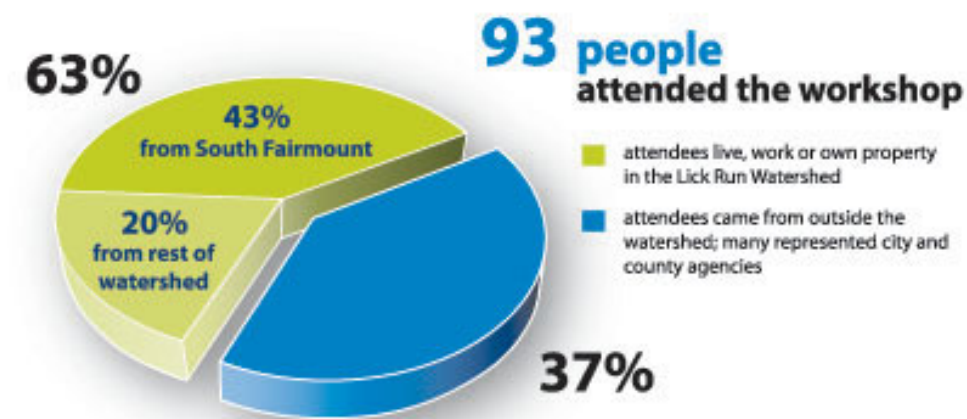
### Major Findings from the Workshop

- The urban waterway should provide ecological benefits, wild-life habitat, and opportunities for environmental education.
- The Neighborhood/Business Zone should promote a walkable, mixed-use business district by improving pedestrian safety and addressing concerns about high-speed traffic through the corridor.
- Future plans for civic spaces and the urban waterway should place public safety and long-term maintenance as high priorities.
- Near and long-term transportation improvements should focus on improving pedestrian safety and addressing traffic and parking issues.

A full summary of feedback from CDW#2 is contained in Appendix F.



Attendee Support of the Lick Run Alternative



Attendee Demographics

### Common Concerns

#### How will MSD address the short-and long-term maintenance needs of proposed urban waterway and civic spaces?

Through Project Groundwork, MSD has begun planning and designing sustainable solutions to CSO reduction. Some of these projects use innovative techniques to remove stormwater and natural drainage from the combined system by creating conveyance systems that could also serve as community amenities. MSD understands the community's concern for maintenance of the conveyance systems and public spaces that may result from the Lick Run alternative. MSD is working closely with Cincinnati Parks and the Cincinnati Recreation Commission to plan for and provide maintenance needs through these public agencies.

#### How are the needs of local businesses being addressed in the planning process?

Local businesses have been an active part of the dialogue in the South Fairmount community for more than a year. MSD regularly meets with the South Fairmount Business Association, and has facilitated bringing representatives from the Small Business Administration and SCORE (a non-profit that offers small businesses confidential business counseling services at no charge) to the SFBA meetings as well. In addition, the City of Cincinnati Community Development Department has committed two development officers to assist businesses in South Fairmount with their needs.

#### What does the Lick Run Alternative have to do with transportation? How will transportation improvements be decided?

The concepts presented at Community Design Workshop #2 highlighted the central importance of transportation planning to the long-term outcomes of the Lick Run Alternative project. The transportation network opportunities presented at Community Design Workshop #2 were concepts only, and were developed to help the community more clearly understand the potential short-and long-term opportunities in the Lick Run Watershed that may be achieved through public partnerships and private investments. The concepts will continue to go through additional analysis, review, and refinement by MSD and partner agencies.

## COMMUNITY DESIGN WORKSHOP 3

On Thursday, February 23, 2012, MSD hosted its third of three “Community Design Workshops” at Orion Academy (charter school) in South Fairmount to gather public input on the proposed Lick Run Alternative Project.

The meeting was advertised by sending postcard invitations to more than 7,000 Lick Run residents, property owners, businesses and local stakeholders. In addition, workshop information was published in the South Fairmount community newsletter and other community newsletters, as well as, on the Lick Run website and in the local media. (*Appendix G*)

### Focus of Community Design Workshop #3

The workshop featured an overview presentation, Q&A, and small group breakout sessions to evaluate the strengths, weaknesses, and potential refinements for both the preliminary Lick Run Master Plan and the Long-term Watershed Vision Plan. The preliminary design concepts were developed with input from Community Design Workshops #1 and #2.

#### Overview Presentation

- Summarized Consent Decree mandates for a CSO reduction solution in the Lick Run watershed
- Explained a timeline for the selection, design, and implementation of a CSO solution in the Lick Run watershed
- Explained the objective of Community Design Workshop #3
- Described the MSD-funded Urban Waterway Plan for Lick Run (also known as the Base Plan)
- Compared order-of-magnitude costs for the Default solution versus the Urban Waterway Plan solution
- Described the Long-Term Watershed Vision Plan for Lick Run



Postcard Invitation

Community Feedback Form



Feedback Discussions



Small Group Q&A

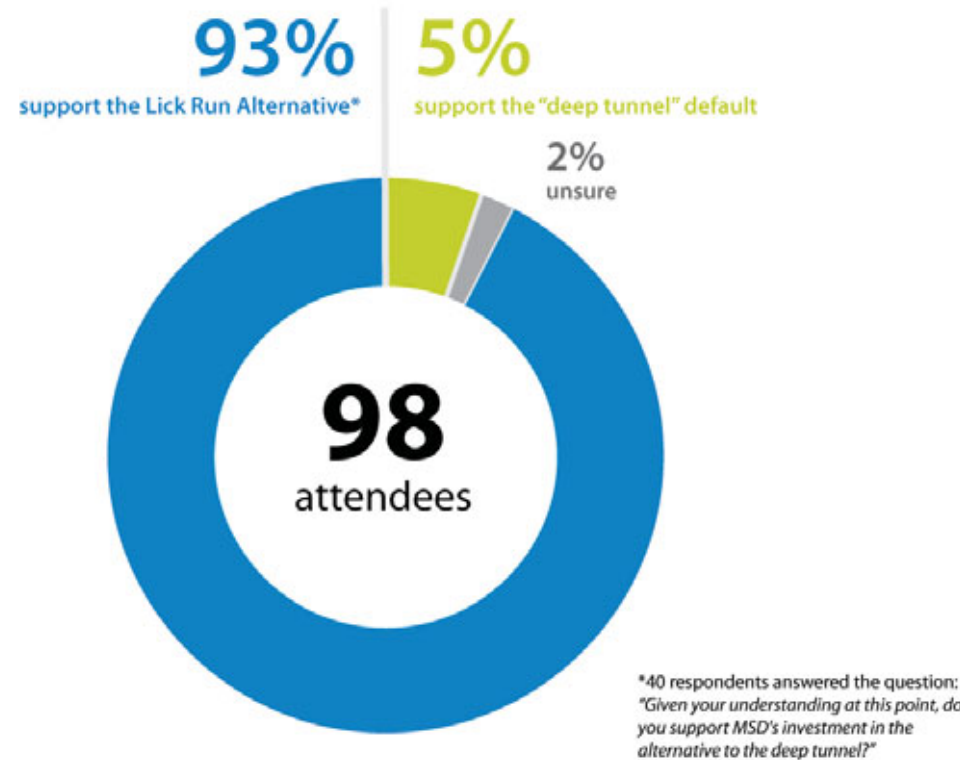
## SUMMARY OF COMMUNITY FEEDBACK

### Exit Survey Results

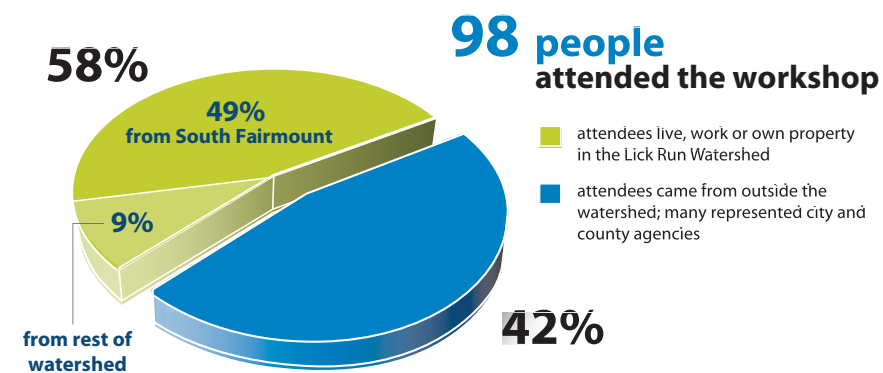
- 98 people attended the workshop.
- 93% of respondents support the proposed Lick Run Alternative, compared to 5% who support the deep tunnel and 2% who are unsure. (80% of attendees responded to this question).
- 93% of respondents said that after seeing the presentation, they have a better understanding of what MSD is proposing to implement as part of the alternative solution for CSO reduction. (93% of attendees responded to this question).
- 71% of respondents attended a prior Community Design Workshop.

### Major Findings from the Workshop

- Participants perceived strengths of the proposed Lick Run Alternative to be: lower up-front & lifetime costs, potential for urban revitalization, neighborhood beautification, ecological benefits, and attention paid to the historic fabric.
- Participants perceived weaknesses of the proposed Lick Run Alternative to be: impact to existing businesses, traffic and parking issues, lack of identified funding, and lack of clear economic benefit provided by green space.
- Participants reinforced the importance to preserve as many existing and historic buildings as possible, address public transportation opportunities, encourage urban infill for future development, and coordinate with future Harrison Avenue and Western Hills Viaduct projects. (*Appendix H*)



### Attendee Support of the Lick Run Alternative



### Attendee Demographics

Some specific feedback received during the workshop includes the following:

#### Perceived Strengths:

- Potential for urban revitalization, including the promotion of urban infill and a more livable, walkable community
- Enhanced beauty and aesthetics of neighborhood
- Ecological and environmental benefits
- Lower up-front & lifetime costs
- Attention given to neighborhood's history
- Improved neighborhood identity & quality of life

#### Perceived Weaknesses:

- Impact on local jobs and businesses
- Parking accommodations fall short of demand
- Lack of identified funding
- Economic benefits of green space not clear
- Traffic noise could detract from ambiance of the waterway
- Waterway could split the neighborhood north and south

#### Suggested Refinements:

- Preserve existing and historic buildings where possible
- Address public transportation
- Create incentives for homeowner implemented sustainable strategies (i.e., rain barrels, rain gardens)
- Include farmers markets & dog parks from CDW#2
- Coordinate with future Harrison Avenue & Western Hills Viaduct
- Promote urban infill development



# Community Needs & Awareness

In the first phase of the master planning process, Awareness, emphasis was placed on getting to know the people and the place, while also sharing information. The main goal of this phase was to introduce to the community the challenges, potential solutions, and road map for the master planning process. Furthermore, MSD solicited feedback from the community regarding their preferences for how the concept of the proposed urban waterway could evolve and maximize benefits to the community.

**Understanding Natural Systems**

**Understanding Community History & Decisions that Impact Conditions in the Community**

**Understanding the Community Profile**

**The Open Space Corridor**

**The Community Core**

**The Historic Fabric**

**Hillsides & Ridgetop Neighborhoods**





# UNDERSTANDING NATURAL SYSTEMS

## Historical vs. Existing Landscape

Once a farming community, South Fairmount became urbanized as the population of Cincinnati (and its neighborhoods) grew. As the city grew, the landscape of the neighborhood changed. Streams and trees were replaced with roadways, buildings and sewer pipes. Increased runoff from hard surfaces like rooftops, roads and sidewalks mixed with additional domestic flows led to increased frequency and intensity of flooding events and sewer overflows. Over time, the Mill Creek and its tributaries became the dumping ground for human and industrial waste.

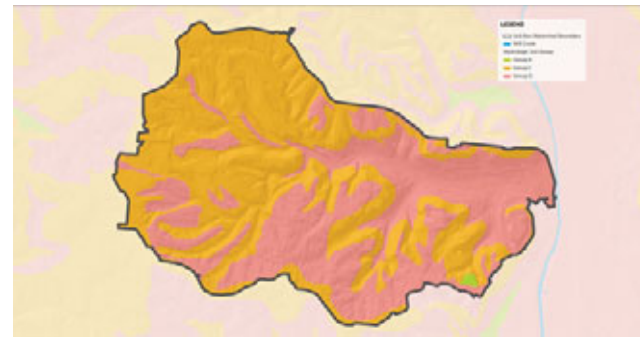
To resolve this public health threat, several more tributaries of the Lick Run were enclosed within a large sewer pipe to move the waste away from the South Fairmount neighborhood. That 19.5-foot diameter pipe still remains today, running under 3,700 feet of buildings and streets. It is connected to CSO 005, a relief outfall at the east end of Queen City Avenue that overflows into Mill Creek during heavy rains.

## Physical Characteristics

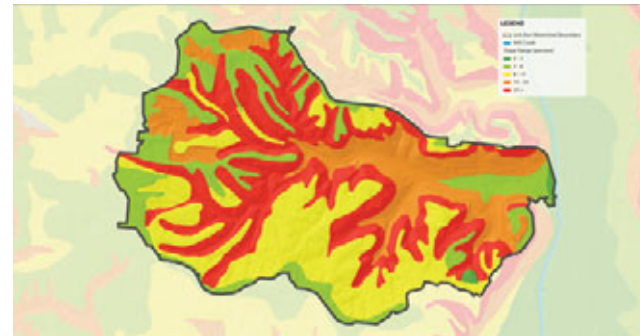
Prior to development, an extensive system of creeks and streams existed within the watershed. This system flowed east as part of the historical Lick Run stream through South Fairmount. This network naturally conveyed stormwater runoff from the ridgetops and forested hillsides into natural ravines and through the valley corridor to the Mill Creek.

Today, even though the ridgetops and the valley core have been heavily developed, the steeper hillsides enjoy a strong canopy cover of trees. Despite this, much of the natural runoff from these hillsides flow into the combined sewer system.

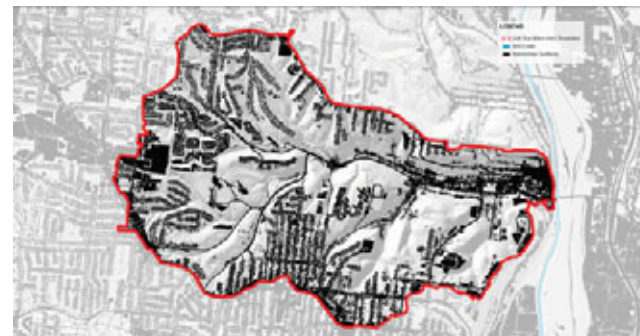
### Inventory



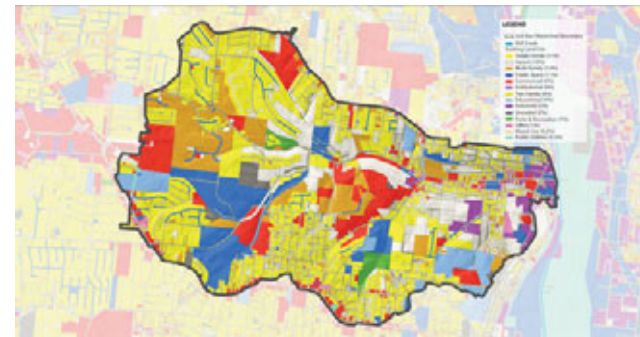
**Existing Soils:** Soils classified as “Group C” or “Group D,” which cover most of the Lick Run Watershed, contain fine particles like clay and silt. These materials have slow rates of water infiltration, which increase the volume of stormwater runoff generated during rain events. MSD is incorporating specialized soils within green infrastructure projects, in order to increase rates of water infiltration.



**Topography:** The watershed is characterized by flat upland ridges (colored green) and steep, forested hillsides (colored orange and red) that form natural valleys. These valleys convey stormwater runoff through South Fairmount towards Mill Creek.



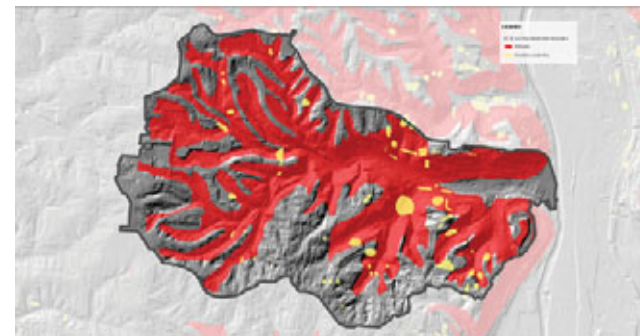
**Impervious Surfaces:** Impervious surfaces like pavement, parking lots, roadways, and rooftops limit or prevent the natural infiltration of stormwater into local soils; therefore increasing the volume of stormwater runoff that enters the combined sewer system within Lick Run. Approximately 31 percent of the watershed is covered by impervious surfaces.



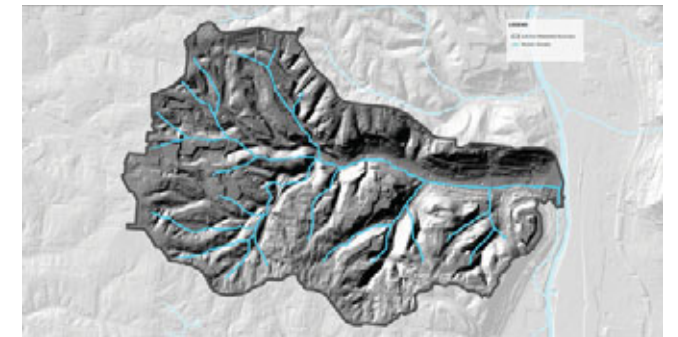
**Existing Land Use:** Land use classifies existing development types. Residential, commercial, and industrial land uses generate different volumes of stormwater runoff. MSD is working with local agencies to create land development codes that better address stormwater management needs.



**Tree Canopy Cover:** Trees can intercept, absorb, and filter stormwater runoff. Approximately 47 percent of the watershed is covered by trees, mostly on the hillsides and in parks.



**Hillsides:** Steep hillsides can be prone to landslides, thereby posing a threat to development in these areas. Proper preservation and management of hillsides can preserve interconnected woodlands, reduce erosion and runoff, and promote public safety.



**Historic stream network.** Historically, the Lick Run stream conveyed water from tributaries throughout the watershed to the Mill Creek.



**Existing stream network.** Currently, the Lick Run stream runs through an underground 19.5-foot diameter combined sewer.



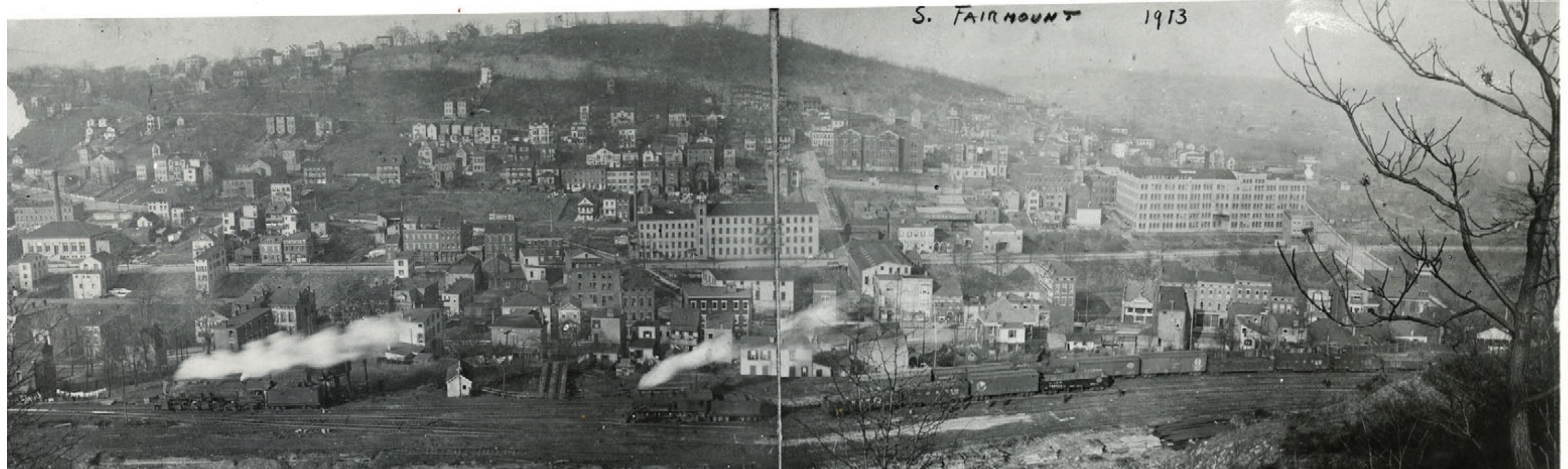
**Neighborhoods:** The Lick Run watershed boundary overlaps four neighborhoods, including Westwood, South Fairmount, West Price Hill and East Price Hill.

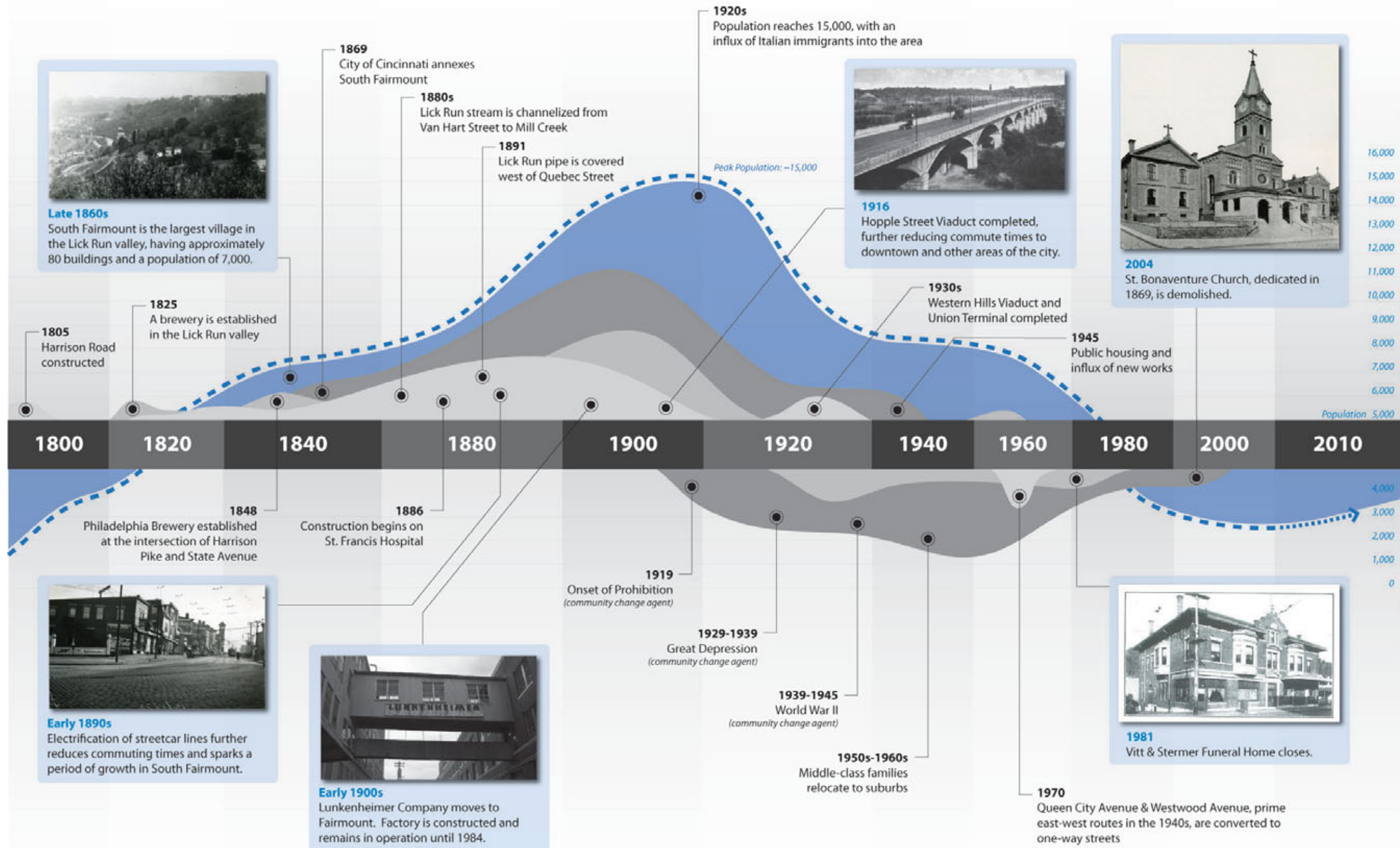
## UNDERSTANDING COMMUNITY HISTORY & DECISIONS THAT IMPACT CONDITIONS IN THE COMMUNITY

Historically, South Fairmount benefited from a strategic location in the region, adjacent to the primary traffic corridor into downtown Cincinnati, and serving as a gateway into western suburban areas. South Fairmount was first settled in the early 1800s. Although it was initially settled for farming, its proximity to downtown drove demand for back office, service, and industrial activities; key employers included the Fairmount Woolen Mills (Adler & Co.), the Clark and Thompson lumber yard, the Fairmount Flour Mill, and the Herancourt Brewery. South Fairmount originally developed as a self-sustaining community, with homes, vibrant industry and businesses, health care, and educational institutions. It was an early “bedroom community” of the City, hugging the Mill Creek Valley.

Peaking in population and prominence in the 1920s, a series of events such as the Great Depression, Prohibition, the World Wars, and an overall flight to the suburbs started a population decline that continues today. The conversion of the main transportation routes (i.e., Queen City and Westwood avenues) from two-way to one-way traffic in the 1970s accelerated decline, since the neighborhood became a passing point rather than a destination.

*Historic South Fairmount*





The data show that, historically, investments in infrastructure led to positive impacts on the community and increases in population. The infographic shows that the neighborhood's population is bottoming out.

## UNDERSTANDING THE COMMUNITY PROFILE

In July 2009, the Lick Run Daylighting and Urban Revitalization Plan–Demographic and Policy Framework was completed. Efforts included a current demographic perspective for the South Fairmount neighborhood covering population, income, household structure, housing vacancy, educational attainment, and employment concentrations. Core findings from the report are as follows:

**Population decline:** The population of South Fairmount is declining, and the median household income is below the City of Cincinnati average while the household size is larger than the City of Cincinnati average.

**Need for revitalization:** Evidence shows a trend of long-term disinvestment in the community, including significant housing stock vacancy.

*Property values decreased by 55% between 2000 and 2010.*



### Property values plummet

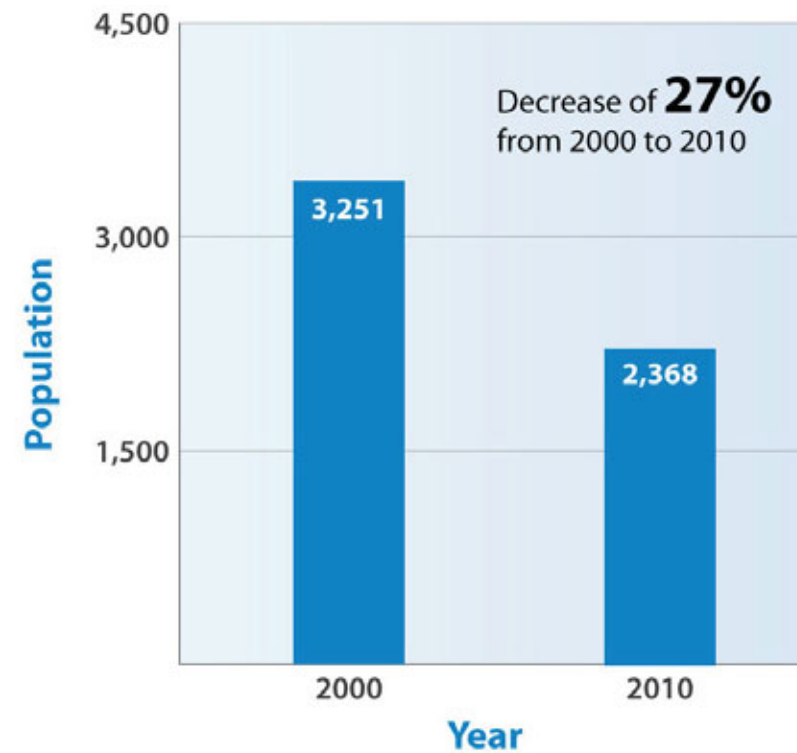
North and South Fairmount each saw bigger drops in property values than any other neighborhoods in Cincinnati.

PROPERTY VALUES % CHANGE, 2000-2010

- 50.0% and less
- 49.9% to -20.0%
- 19.99% to 0
- 0 to 50.0%
- 50.0% and greater



*Between 2000 and 2010, South Fairmount had the fifth-biggest drop in population in the city.*



*South Fairmount has the second highest percentage of vacant properties in the city. Over 30% of all housing units in the neighborhood are unoccupied.*

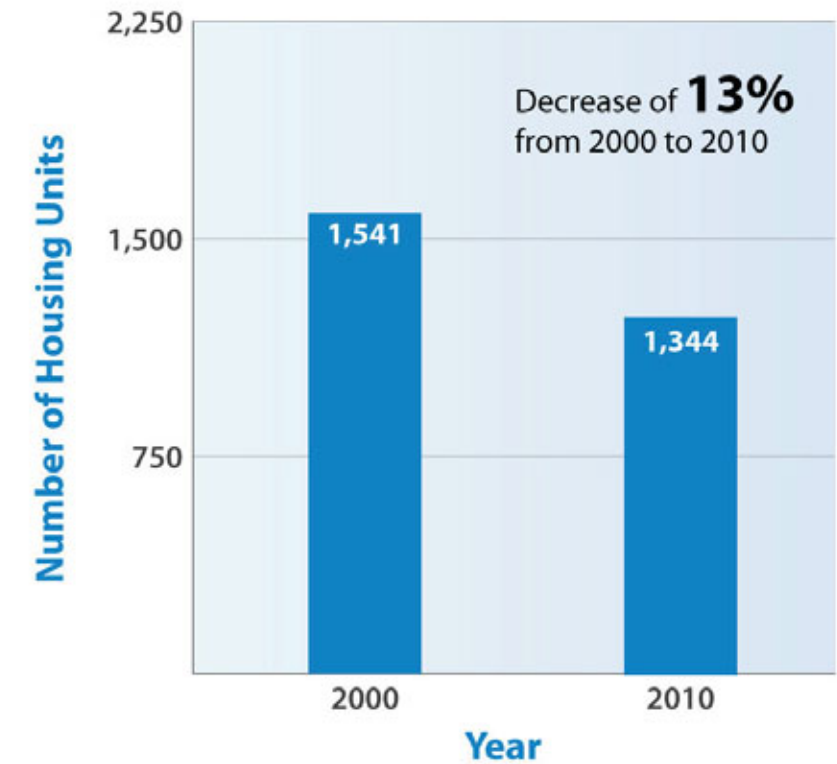
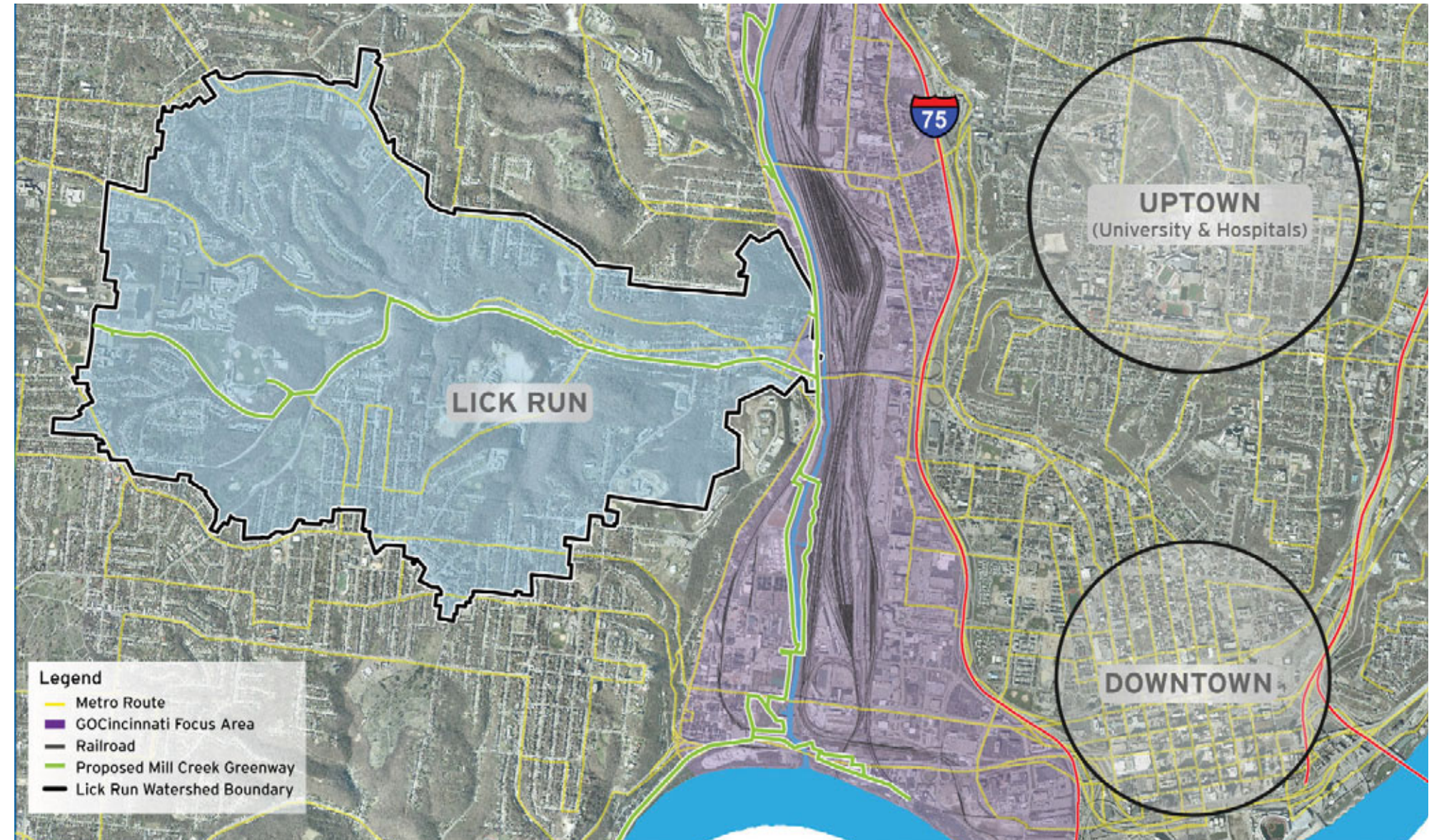


Image Source: Cincinnati Enquirer. March 31, 2012.

Data Sources: US Census Bureau, Hamilton County Auditor, Cincinnati Police Department, Cincinnati Metropolitan Housing Authority and Cincinnati Enquirer.



**Strategic location:** South Fairmount’s service as a gateway and proximity to downtown Cincinnati has proven historically to drive demand for economic activities. Regional and national trends point to an increase demand for urban infill sites. That, in addition to the real estate benefits generated by proximity to parks, greenways, and a trail system suggests South Fairmount warrants consideration as the location for the proposed revitalization strategy.

**Precedent:** There are regional and national examples that have combined stormwater improvements with open space, trail and greenway improvements with the intent of encouraging revitalization. Examples include San Antonio, Kansas City, Dallas, and Kalamazoo. In many of these examples, cities have also partnered with community development and planning agencies, stormwater and sanitary districts as well as the Army Corps of Engineers to achieve broader revitalization goals.

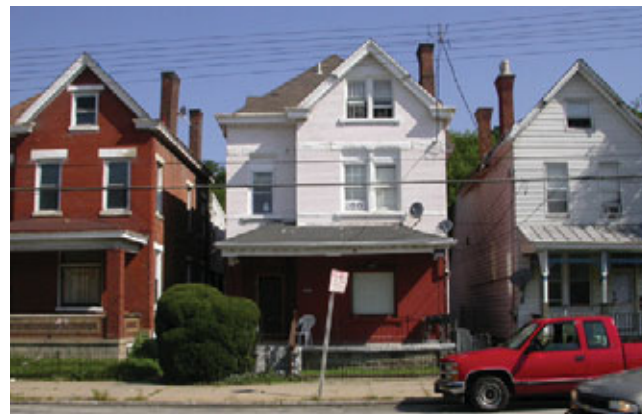
## Urban Audit

The November 2009 *South Fairmount–CSO#5 Urban Audit*, conducted by the Hamilton County Regional Planning Commission (HCRPC) (see *Appendix I*), presented an evaluation of the buildings located within proposed conveyance corridor. This included identification of historically significant properties as well as an analysis of existing structure uses and conditions.

The report identified 24 buildings of historical or architectural significance and found that most buildings appeared to be in good condition or require only minor repairs, though nearly 20 percent of the buildings require major repairs or appeared to be in critical condition.



The Urban Audit assessed and documented the conditions of the existing structures in the South Fairmount corridor. Each building (represented in yellow, above) links to an image database, exemplified by the images below. This tool provided an interface for Community Design Workshop participants to learn more about the condition of key buildings within the corridor.





The Urban Audit assessed the exterior physical conditions of 244 buildings in the South Fairmount project area. The rating system included the following four categories: "Sound Condition," "Requires Minor Repair," "Requires Major Repair," and "In Critical Condition." The Survey form also required building information on frontage orientation to the street, height, and construction material.



CSO #5 Urban Audit Auditor's Name \_\_\_\_\_  
 Building/Housing Survey Form Date \_\_\_\_\_

Street Address \_\_\_\_\_

Photo# \_\_\_\_\_

Frontage Orientation to street: South North East West

Height: (see below-circle only one) 1, 1.5, 2, 2.5, 3, 4, 5, 6,

Construction (see below-circle only one) (if combinations note in comments) 1, 2, 3, 4, 5, 6

Foundation (see Structural Conditions-circle only one) 1, 2, 3, 4

Walls (see Structural Conditions-circle only one) 1, 2, 3, 4

Roof (see Structural Conditions-circle only one) 1, 2, 3, 4, 5

Building Rating (Structural Conditions--circle only one) 1, 2, 3, 4

Blighting Influences (see below) \_\_\_\_\_  
 (up to three allowed, otherwise use Special Comments)

Land Use: (see below-circle only one) SF, TF, MF, C, O, IN, ED, I

Special Comments (e.g. for sale, business, accessory structures, junk vehicles, parking for etc)


Construction		Height		Land Use	
1-masonry (brick)	4-metal	1- one story	3- three stories	SF-Single Family	O-Office
2-masonry (block)	5-shingle covered	1.5-one & 1/2	4- four stories	TF-Two Family	IN-Institutional
		2- two stories	5- five stories	MF-Multi-Family	ED-Educational
3-wood	6-stucco	2.5- two & 1/2	6- six stories	C-Commercial	I-Industrial

Structural Conditions:  
 1) Sound, 2) Require Minor Repair, 3) Requires Major Repair, 4) In Critical Condition, 5) Unable to View

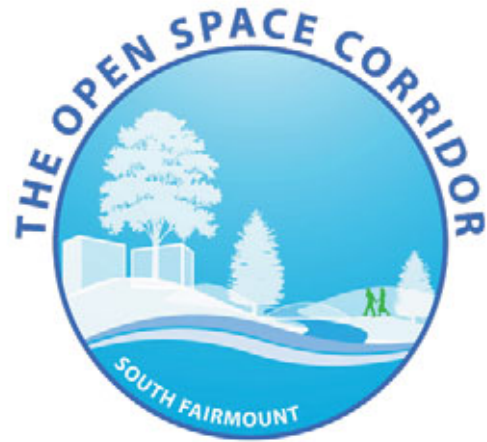
Blighting Influences:  
 1)Age, 2)Obsolescence, 3)Deterioration, 4) Dilapidation, 5)Abandonment/Excessive Vacancies, 6)Periodic Flooding, 7)Faulty Lot Layout/Overcrowding/Inadequate Loading/Parking, 8)Deleterious/Incompatible Land Use/Site Conditions, 9)Inadequate Facilities/ROW, 10)Diversity of Ownership, 11)Illegal Use/Code Violation, 12)Unsuitable Soils Conditions, 13)Unused Railyards or Service Stations-Landfill/Junkyard, 14)Other Factors Inhibiting Sound Private Investment

Deterioration – is evidenced by broken windows, peeling and faded paint, cracked pavement, missing shingles, etc.

Dilapidation – is basically beyond deterioration when a property is in critical condition. If you list "deterioration" under "Blighting Influences" you **should not** also list "dilapidation".

A Building/Housing Survey Form was developed for auditors performing the assessment in South Fairmount. A form was completed for every building in the project area and at least one digital photo was taken of all buildings.

# THE OPEN SPACE CORRIDOR



Visual Preference Boards and participant survey for the Open Space Corridor breakout session at Community Design Workshop #1.

Studies show that open spaces and natural systems (e.g., parks, greenways, streams, and trees) benefit communities by improving public health and safety, and by providing a central amenity around which revitalization can focus. There are excellent local examples like Piatt Park, International Friendship Park, The Banks, Fountain Square, and Washington Park.

The area south of Queen City Avenue and north of Westwood Avenue is the location of the proposed urban waterway. This area, referred to as the Open Space Corridor, presented many questions related to aesthetics, components, and features. For example, what should the urban waterway should look like? What types of features should be located in the waterway to improve water quality? Should the urban waterway be part of a community park? If so, what should the park could look like and how should it be used?

At Community Design Workshop #1, attendees viewed images to help answer some of these questions. The images were part of visual preference survey displays, which focused on the following topics:

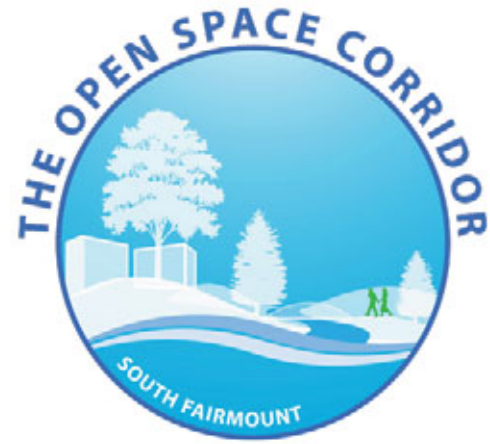
- A. Waterway character (natural/urban)
- B. Water quality features
- C. Special water features
- D. Gathering spaces (personal/group),  
Gathering spaces (open landscape/urban)



South Fairmount - Open Space Corridor



## Community Preferences



“Make Lick Run beautiful and exciting and bring it into a very urban setting, where many people can enjoy it.”  
*Citizen employed in South Fairmount.*



### Waterway Character

Respondents preferred a natural-looking waterway that is compatible with an urban setting and that encourages interaction.



### Water quality features

Well-planted, green features should be integrated throughout the proposed conveyance corridor to improve water quality.



### Special water features

The waterway character should include in-stream water features like mini waterfalls, pools and riffles. Interactive elements should also be incorporated, where possible.



### Gathering spaces

The general preference was for open gathering spaces that allow for passive recreation (e.g., picnics, sitting) and for community events. The potential open space network should include an assortment of active recreational uses, with an emphasis on bike and pedestrian trails.

gathering spaces  
 urban  
 water  
 natural  
 community  
 functional

# THE COMMUNITY CORE



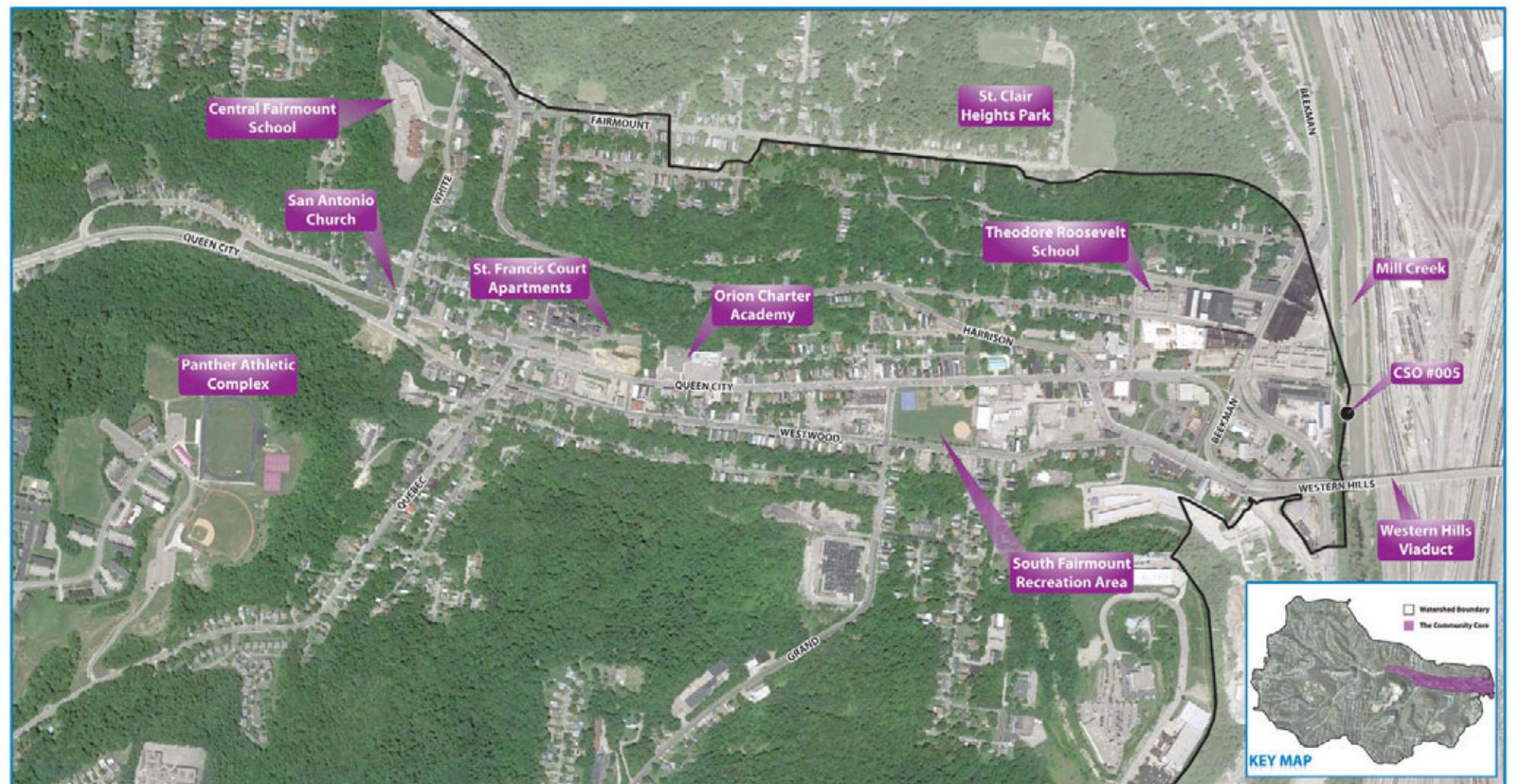
Visual Preference Boards and participant survey for the Community Core breakout session.

The Community Core relates to physical and social systems within South Fairmount. Physical systems (e.g., streets, buildings, sidewalks, and the characteristic forested hillsides) define the neighborhood’s spatial realm, while social systems (e.g., neighborhood destinations, economy, businesses) define the neighborhood’s land uses and character.

Understanding how the urban waterway and open space network integrate with the Community Core presented many site-specific questions. For example, what exists now that’s important to the residents? What, in terms of services, is missing from the neighborhood? What could the heart of the community look like in the future? What could streets and sidewalks look like? How should parking be integrated into the neighborhood?

At Community Design Workshop #1, attendees viewed images to help answer some of these questions. The images were part of visual preference survey displays, which focused on the following topics:

- A. Architectural types and styles
- B. Mixing uses
- C. Adaptive reuse
- D. Civic spaces (personal/group)
- E. Parking
- F. Scale of street corridors
- G. Street character
- H. Street amenities



South Fairmount - Community Core

## Community Preferences



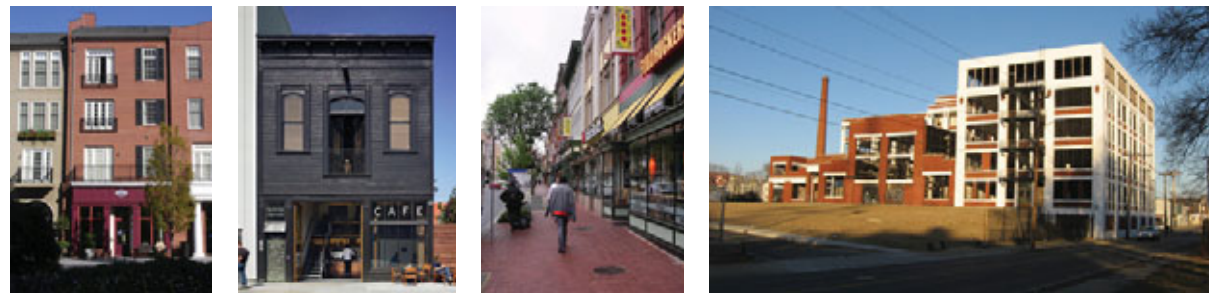
“Focus on destinations, safety, walkability, local foods, and community amenities.”  
 – South Fairmount Resident

pedestrian  
 character  
**street**  
 neighborhood  
 business  
 trees  
 historic  
 green



### Architectural Types & Styles

Architectural types and styles should primarily be historic and traditional with the potential for well-integrated modern architecture.



### Building Uses

Respondents preferred mixing uses as part of a vibrant live/work zone, reusing existing buildings where possible, and including basic services (e.g., grocery store, pharmacy) in the business district.



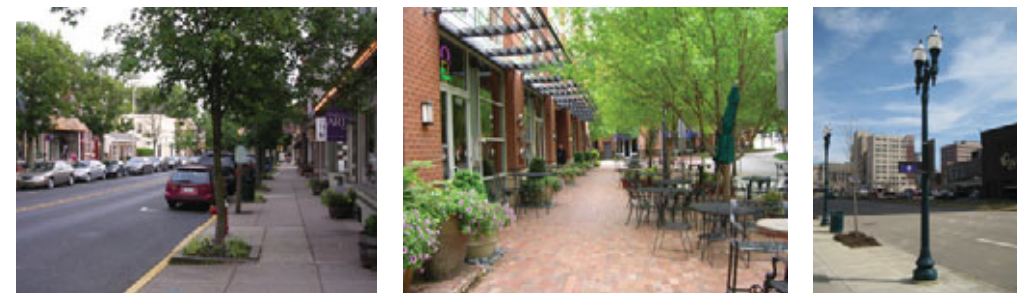
### Civic Spaces

Civic spaces should focus on small, green areas for personal interaction, but also include common areas for community events.



### Parking

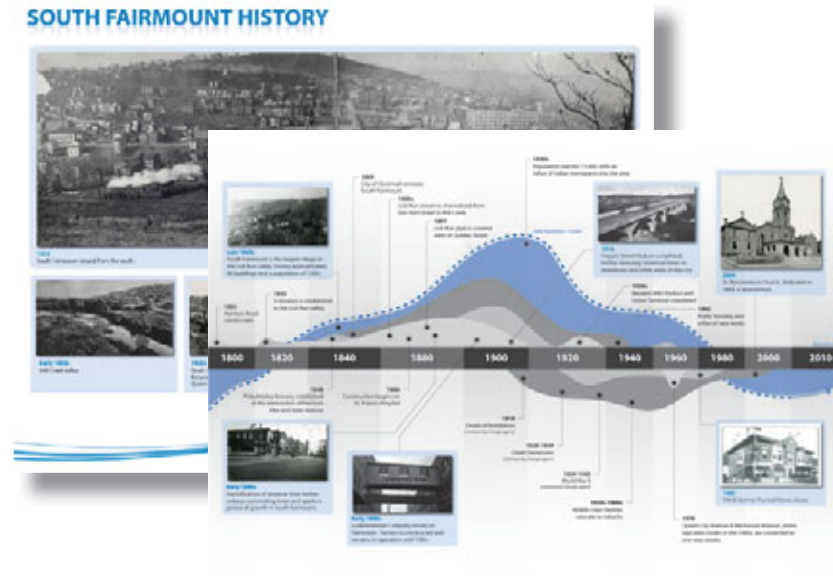
Parking needs in the business district would be best served by a mixture of on-street and surface lots integrated between buildings.



### Streets (scale, character, and amenities)

Respondents preferred neighborhood-scale street corridors with spaces for gathering, improved lighting, and plenty of amenities. Nearly all respondents said existing traffic patterns need to change for the business district to be successful.

## THE HISTORIC FABRIC



Like other Cincinnati neighborhoods, South Fairmount has been influenced over time by important people, places, and events. Investments in transportation infrastructure (e.g., roadways, viaducts, and streetcars) helped attract population and centralize development within the Lick Run valley. By the 1920s, the population in South Fairmount reached 15,000.

Historical photos, community timeline, and participant survey for the Historic Fabric breakout session.

Starting in the 1920s, economic and social changes (e.g., the Great Depression, World War II, suburban flight) led to a decades-long trend of population decline and disinvestment in the neighborhood. The conversion of Queen City and Westwood avenues to one-way traffic in 1970 isolated the neighborhood, since South Fairmount's neighborhood-scale streets became major arterial routes between downtown and Cincinnati's western neighborhoods.

Because of the scale of proposed infrastructure investments and physical impacts associated with an urban waterway, understanding the "Historic Fabric" was an essential component of the Awareness phase. For example, how do residents, neighbors, or visitors to South Fairmount define the core of the community? What buildings are important and why? What stories should be told about the neighborhood? At Community Design Workshop #1, attendees learned about previous infrastructure investments (e.g., roadways, street car, Lick Run sewer, and railways); provided written feedback on important people, places, and events; and completed a mapping exercise to define a perceived community boundary.



South Fairmount - Historic Fabric

## Community Preferences

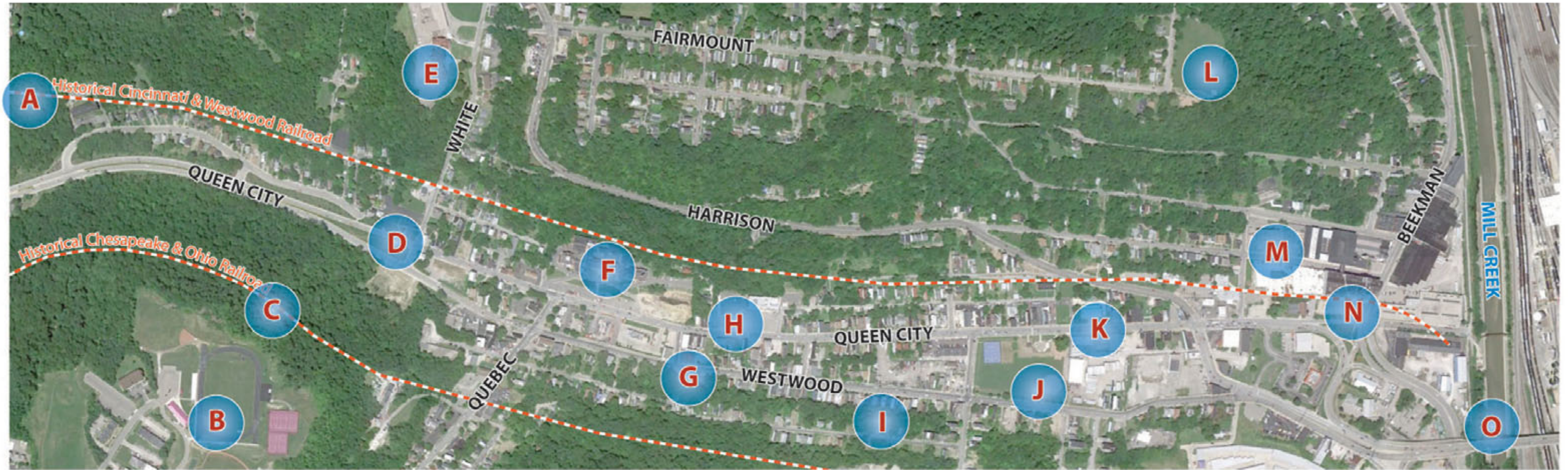


*"Historic buildings are important, but it is also about the people, the culture."*  
 - Citizen's comment during break-out session discussions



Historic/cultural landmarks in the corridor. Specific buildings were identified as important, the most notable in terms of participant response are:

- A Cincinnati & Westwood Railroad
- B Panther Athletic Complex
- C C&O Railroad
- D San Antonio Church
- E Central Fairmount School
- F St. Francis Court Apartments
- G Vitt & Stermer Funeral Home
- H Orion Academy
- I Row Houses on Westwood
- J South Fairmount Recreation Area
- K Water Works Pumping Station
- L St. Clair Park
- M Theodore Roosevelt School
- N Lunkenheimer Factory
- O Western Hills Viaduct



South Fairmount Corridor

# HILLSIDES & RIDGETOP NEIGHBORHOODS



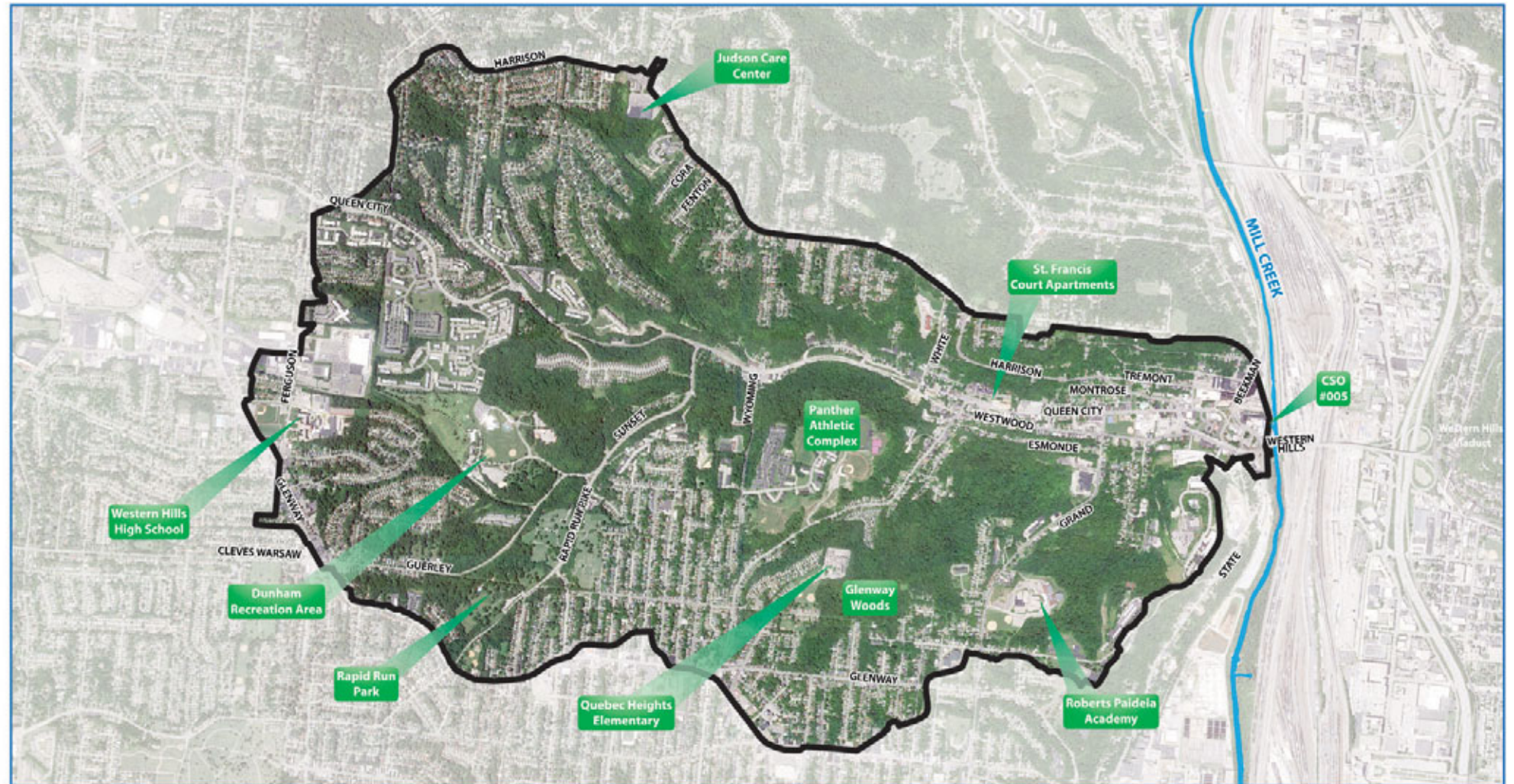
Visual Preference Boards and participant survey for the HillSides & Ridgetop Neighborhoods breakout session.

In a traditional planning process, each component (e.g., streets, hillsides, sewers, parks, business district, etc.) is studied separately. In a watershed-based planning process, multiple agencies, organizations, and residents work together to study how these components relate to one another.

At Community Design Workshop #1, attendees provided input on a framework for the Lick Run Watershed. For example, what guidelines should be created to help plan better for the future? How can transportation choices be improved and better connect people to the watershed assets? How should green infrastructure be incorporated in parks and parkways? How can accessibility and safety be improved? Images were shown to help answer some of these questions. The images were part of visual preference survey displays, which focused on the following topics:

- A. HillSides (personal/group)
- B. Complete Streets
- C. Green Planning Principles
- D. Parks & Open Space Structures
- E. Bridges
- F. Pedestrian Trails
- G. Accessible Design

This feedback helped create a foundation for watershed-specific planning tools that could integrate with other local and regional planning efforts (e.g., the Land Development Code and the city's Comprehensive Plan).



South Fairmount - HillSides & Ridgetop Neighborhoods

## Community Preferences



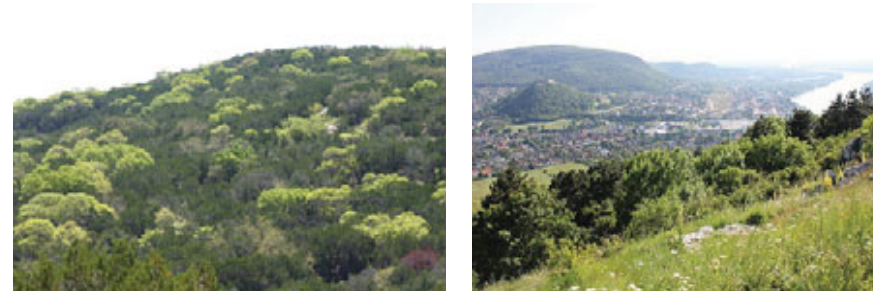
“Green planning should be the overall vision for the community.”  
 – South Fairmount Resident

natural  
 Keep development green  
 hillsides  
 trees  
 bike lanes



### Green Planning Principles

Respondents supported integrating green planning principles, like green infrastructure, for responsible and sustainable stormwater management.



### Natural Resources

The watershed’s physical assets (e.g., forested hillsides, parks, and open spaces) should be preserved and responsibly managed for environmental benefits.



### Connectivity

Respondents overwhelmingly supported complete streets concepts (e.g., dedicated bike lanes, street trees, multi-modal facilities), improving pedestrian safety, and enhancing watershed connectivity with accessible trail networks that complement the immediate surroundings.



### Aesthetics

Aesthetic preferences focused on natural materials like wood and stone. Structures and bridges should be well integrated with the watershed’s unique physical characteristics.





# Alternatives Exploration

After gathering visual preference data from the community and receiving feedback from local leaders and public partners, the design team explored a spectrum of options for the Lick Run Alternative Project. The main goal of this exploration was to integrate community input with design objectives for the proposed urban waterway and planning objectives for other local projects.

**Design Challenges**

**Framework for Exploration**

**Urban Waterway Concepts**

**Transportation Network**

**Market Analysis**

**Urban Design Analysis**

**Trail Network Opportunities**

**Watershed Planning Framework**

## DESIGN CHALLENGES

The steep forested hillsides, narrow valley, roadways, and utilities in South Fairmount present many challenges regarding the placement and design of the proposed urban waterway system. Understanding these design challenges and integrating community feedback required a high level of coordination among MSD, the design team, public agencies, and property owners. This continuous collaboration was essential for refining CSO reduction solutions and maximizing opportunities to integrate broader community needs.

During the Exploration phase, some of the design challenges and key coordination needs included:

### Existing Combined Sewer

The existing 19.5-foot diameter combined sewer between Queen City and Westwood Avenues to CSO #005. This pipe must stay in place in order to accommodate sewer flows and requires an easement of 10' to either side that limits what can be built on the surface.

### Existing Underground Utilities

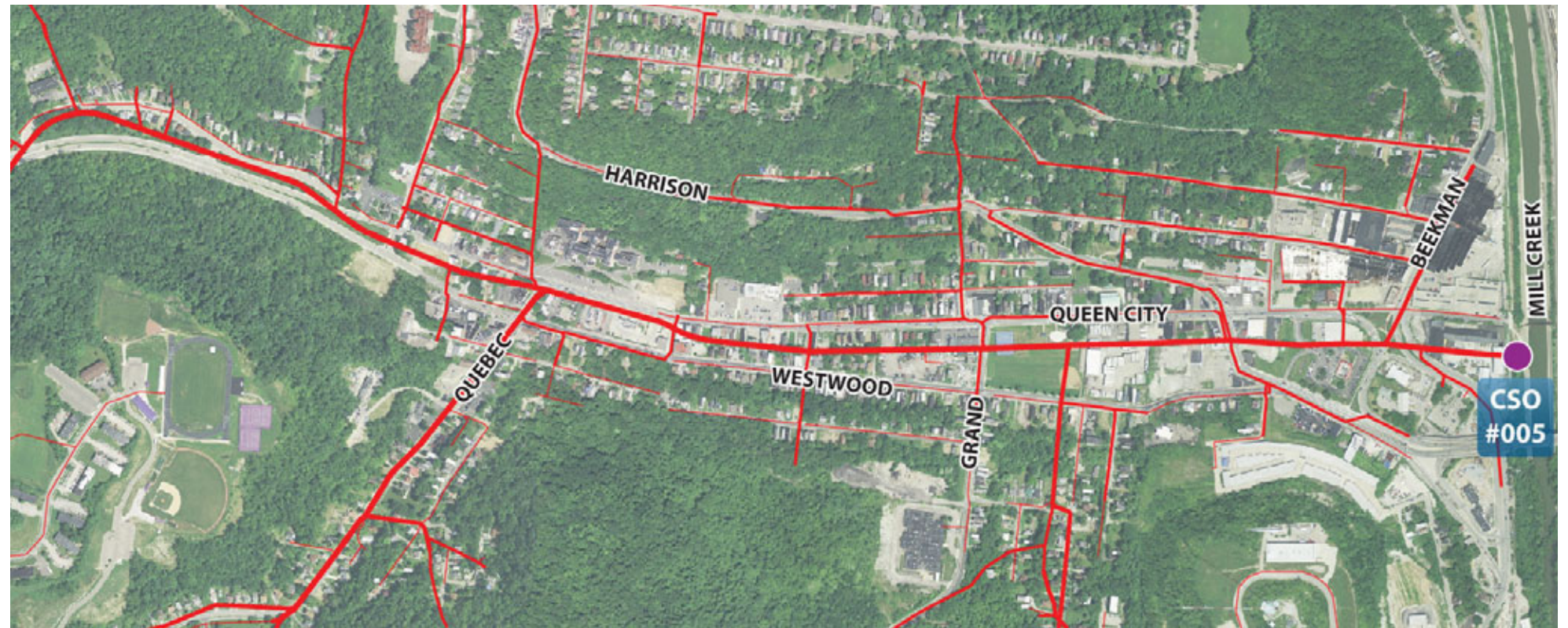
Underground utilities including gas mains, sanitary lines, water mains, and telecommunications lines that impact the placement of future underground utilities. MSD has worked with local public agencies and utility companies to plan for potential impacts on underground utilities.

### Existing Roadways/Traffic

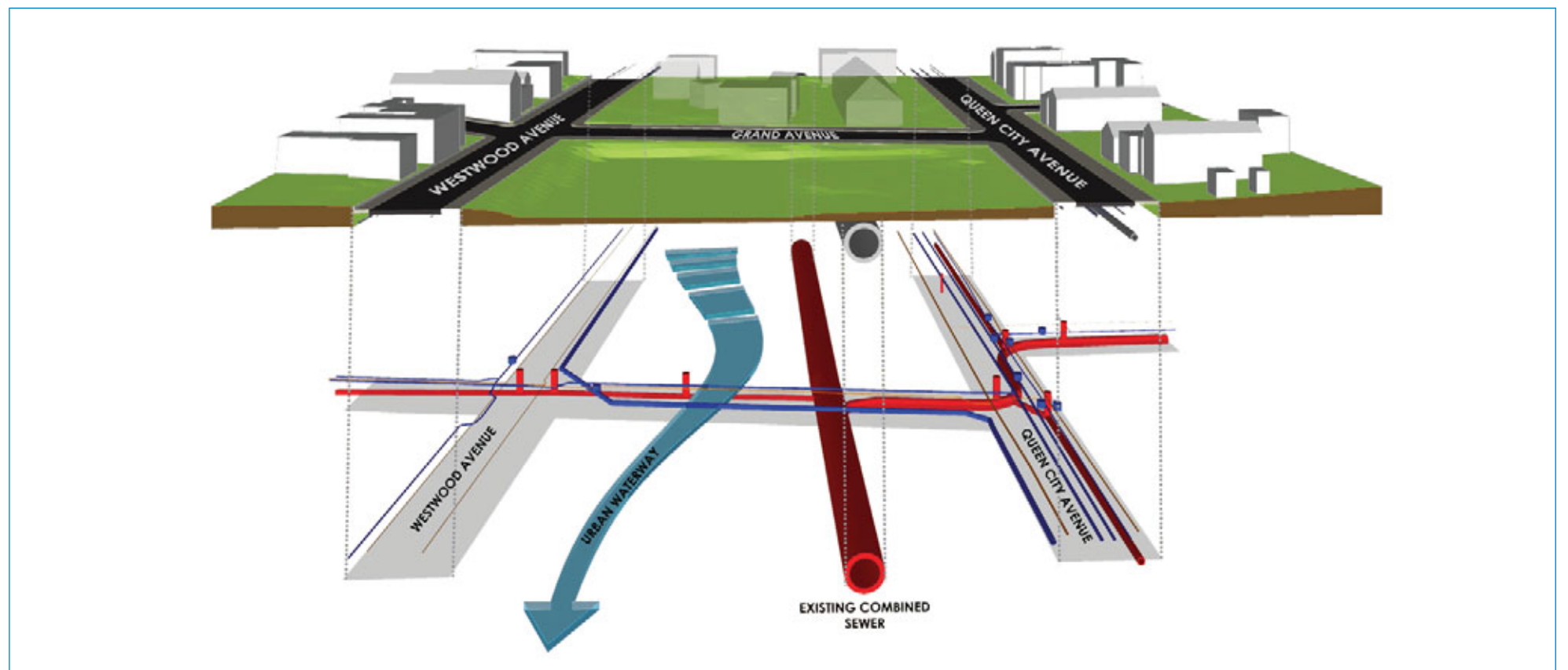
Queen City and Westwood Avenues are extremely high-volume roadways with narrow lanes and fast traffic. This one-way pair serves as a primary arterial roadway from Downtown and Uptown to the West Side. MSD continues to coordinate with CDOTE to assess impacts on roadways.

### Existing Businesses & Buildings

Projected grading and flood limits indicate that some existing buildings in the corridor will be impacted by the proposed urban waterway. MSD is working with local property owners, business owners, and public agencies to plan for potential impacts on buildings.



Existing Conditions in South Fairmount: Combined Sewer Conditions



Existing Conditions in South Fairmount: Underground Utilities

## FRAMEWORK FOR EXPLORATION

The Exploration phase was based on feedback from the public and outcomes from coordination with public agencies and property owners. It focused on the following components, which are described in more detail throughout this chapter:

- Urban Waterway
- Transportation
- Market Analysis
- Urban Design
- Trail Networks
- Watershed Planning Framework

The Exploration phase was also heavily influenced by project assumptions for conveyance of stormwater runoff through South Fairmount. Specifically, MSD and the design team developed an approach that:

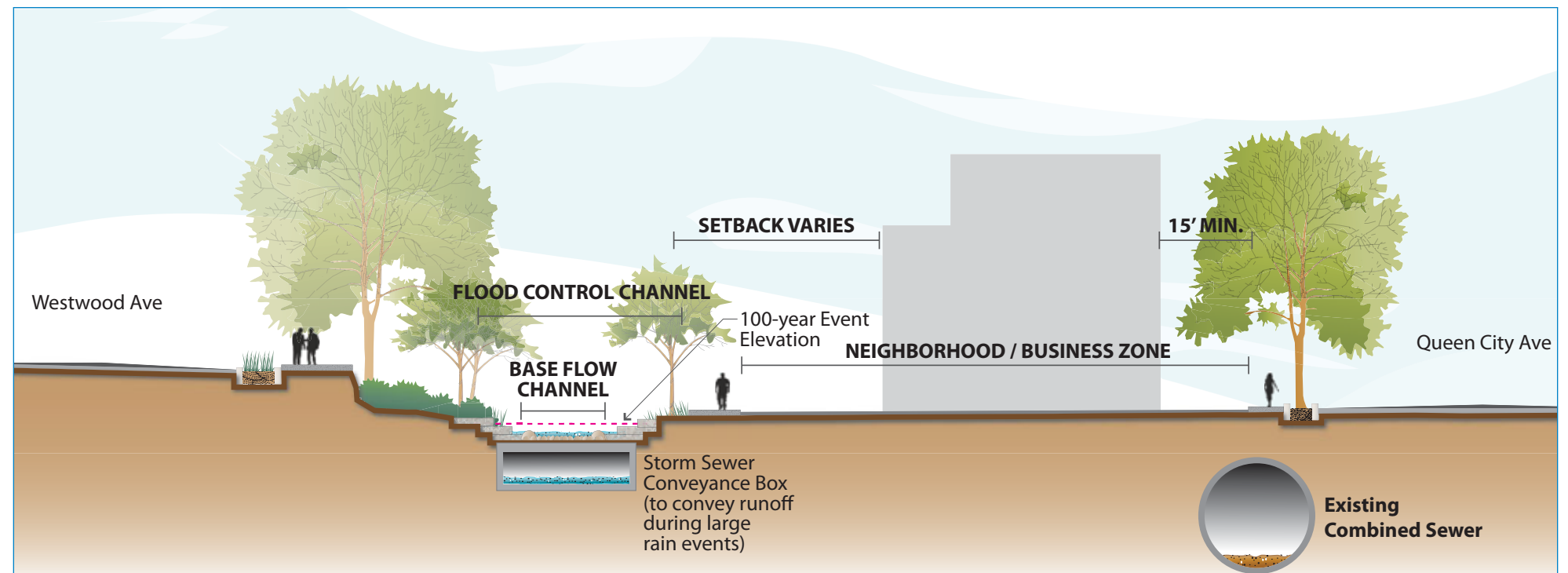
- Safely conveys stormwater runoff and natural drainage to Mill Creek
- Maximizes water quality improvement
- Maximizes the potential for more green space, recreational uses, and community amenities
- Provides a potential catalyst for community reinvestment as part of MSD's Communities of the Future approach

Previous technical evaluations and feasibility studies, as well as the Value Engineering Study, verified that a hybrid conveyance system was the most suitable to meet the conveyance goals outlined above. The hybrid conveyance system includes the urban waterway on the surface and an underground storm sewer conveyance box. This approach:

- Minimizes risks to public safety (fast water goes in the conveyance box)
- Incorporates features for quality benefits
- Provides opportunities for community amenities
- Accommodates the rigid parameters defined by the location of the existing Combined Sewer and required setbacks.

MSD	Local, Public Partner Agencies				
	Department of Transportation & Engineering	Economic & Community Development	Planning & Buildings	Parks	CRC
Planning and design of Lick Run Alternative Project	Design and construction of Harrison Avenue improvements	Business & job retention	Comprehensive Plan Update	Planning coordination for sustainable infrastructure	Planning coordination for South Fairmount Recreation Area
Gathering public feedback for the Lick Run Watershed Master Plan	Conceptual alignment for Western Hills Viaduct	HUD NSP planning & implementation	Form-Based Codes	Installation and maintenance of sustainable infrastructure	
Coordination with public partner agencies	Analysis of traffic patterns for Western Hills Viaduct and Lick Run Watershed Master Plan	Code enforcement	Watershed-based zoning tools		
Coordination on Harrison Avenue improvements	Elimination of Beekman Street connector	Marketing development opportunities of additional sewer capacity	Land Development Code		
Enabled Impact Projects	Identification of opportunities for multi-modal transportation choices				

**Public Partners Coordination Matrix** This table defines roles and responsibilities of MSD and local, public partner agencies throughout the Lick Run Watershed planning process. MSD maintained an extensive level of coordination in order to fully integrate the goals and objectives of the Lick Run Watershed Master Plan with other, complementary efforts in the watershed and greater Cincinnati.



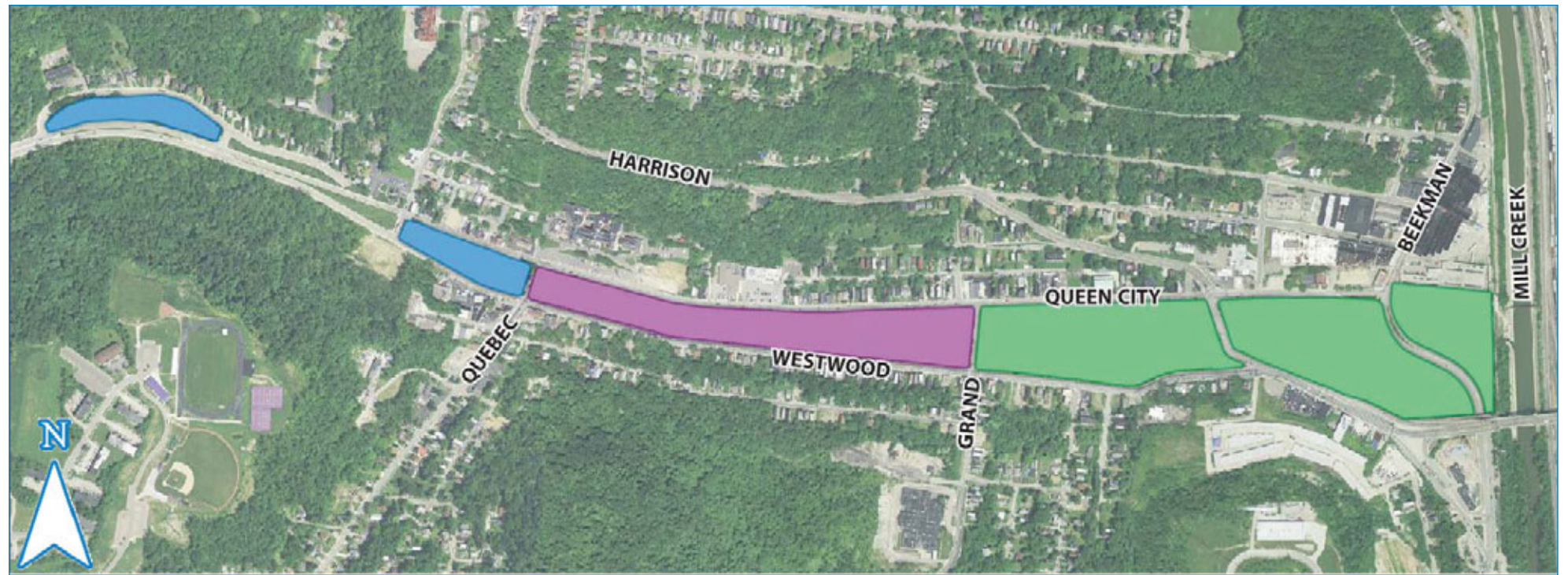
**Proposed Hybrid Conveyance System**

## URBAN WATERWAY CONCEPTS

Dividing the conveyance corridor into three distinct zones helped MSD, the design team, and public partners agencies develop a spectrum of design concepts for the urban waterway. Each concept integrated physical and design constraints specific to each zone with preferences and goals from Community Design Workshop #1.

The urban waterway zones and the associated design components and considerations include:

- **Western Gateway Zone**
  - Forebay & rain gardens
  - Daylighting of Lick Run
  - Neighborhood gateway
  - Residential land uses
- **Narrow Channel Zone**
  - Narrow conveyance channel
  - Mixed land uses (residential, office, commercial)
- **Eastern Gateway/Civic Recreation Zone**
  - Large water quality feature
  - Outfall of Lick Run to Mill Creek
  - Mixed land uses (recreation, office, light manufacturing)
  - Gateway to the West Side at Western Hills Viaduct



● Western Gateway Zone

● Narrow Channel Zone

● Eastern Gateway Zone

### Urban Waterway Zones



### Existing Combined Sewer System

## Western Gateway Zone

### 1 Beginning the Urban Waterway

Large wetland feature to improve water quality; Outfall feature and smaller wetland near beginning of stream; Potential for neighborhood gateway and educational signage; Potential for neighborhood parking lot with trailhead access

## Narrow Channel Zone

### 2 Waterside Pedestrian Walkway

Narrow waterway with retaining walls on both sides; Pedestrian walkway, with overlooks and seating on north side; Multipurpose trail on south side; Green infrastructure features integrated into surface parking lots; In-stream features (e.g., pools, riffles) to improve water quality; Opportunities for future residential/business development north of waterway

### 3 Waterside Overlooks

Narrow waterway with retaining walls; Overlooks to waterway located near surface parking lots/civic spaces; No walkway behind buildings; allows buildings to maintain privacy at rear of property; Multipurpose trail on south side; In-stream features (e.g., pools, riffles) to improve water quality; Opportunities for future residential/business development north of waterway

### 4 Community Park

Narrow waterway with retaining walls, terraces, and water access points; Emphasis on public amenities (e.g., farmers market, community gardens, educational gardens, dog park, civic lawn, shelters, etc.); Multipurpose trail on south side of channel; In-stream features (e.g., pools, riffles) to improve water quality

## Eastern Gateway Zone

### 5 Community Recreation & Open Space

Lake with shallow pool and a deeper second pool (for water quality); Mix of recreation facilities: active, passive, and civic open space (existing sprayground and basketball courts remain); Multipurpose trail on north side of channel; In-stream water quality features (e.g., pools, riffles); Gathering places and pedestrian walkways; Large community open space for large events; requires relocating a portion of the existing 19.5-foot diameter combined sewer (to provide space for the lake feature); Limited opportunities

### 6 Community Hub & Wetland

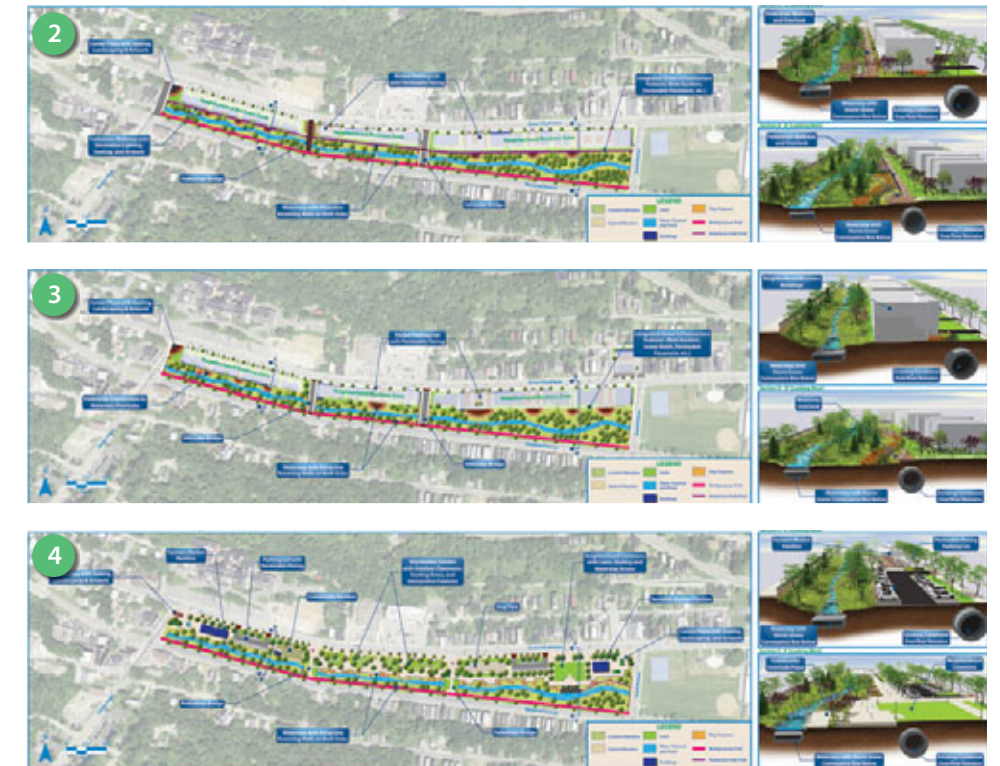
Variable waterway width with large wetland (for water quality); Enhanced recreation hub with pavilion, amphitheater, and amenities (existing sprayground and basketball courts remain); Multipurpose trail creates hard edge for north side of waterway; Opportunities for future business development north of waterway; In-stream water quality features (e.g., pools, riffles); Potential for other neighborhood businesses/services

### 7 Small Lake & Braided Wetlands

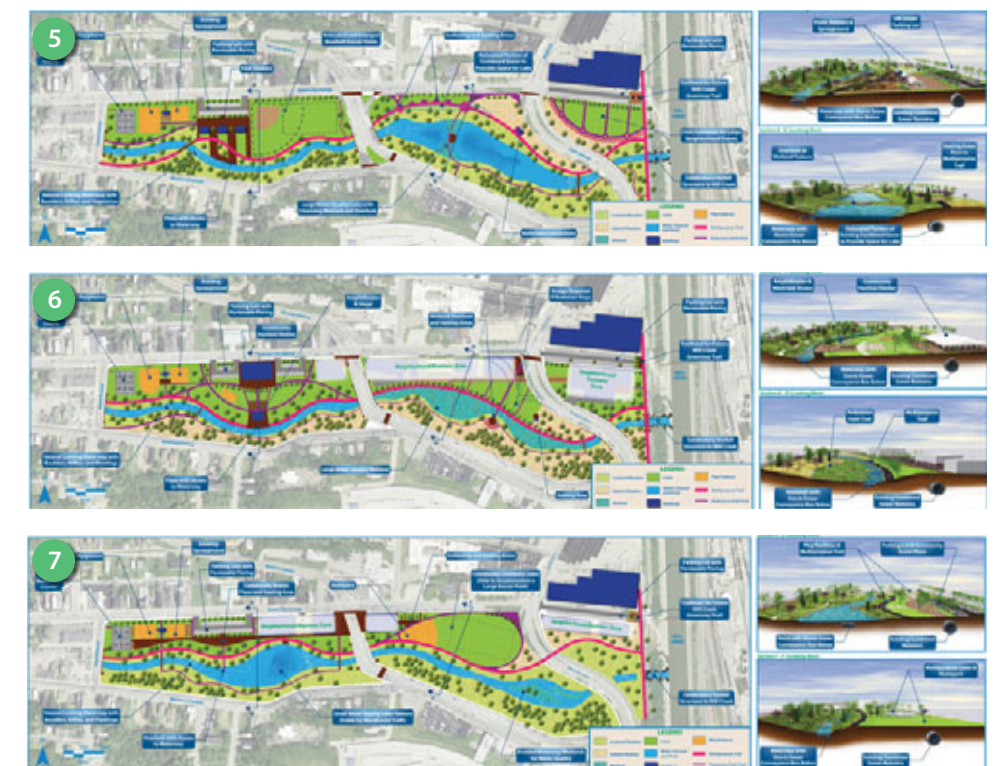
Variable waterway width with large wetland (for water quality); Enhanced recreation hub with pavilion, amphitheater, and amenities (existing sprayground and basketball courts remain); Multipurpose trail creates hard edge for north side of waterway; Meadows surrounding natural-looking waterway; Large multipurpose lawn for civic events and recreation; In-stream water quality features (e.g., pools, riffles); Opportunities for future business development



Western Gateway Zone: 1 Concept



Narrow Channel Zone: 3 Concepts



Eastern Gateway Zone: 3 Concepts

## TRANSPORTATION NETWORK

Feedback from CDW#1 indicated concerns about the volume of traffic, high speeds, undersized travel lanes, on-street parking conflicts, lack of pedestrian safety measures, and confusing connections to the Western Hills Viaduct. MSD and the design team worked closely with CDOTE to assess existing conditions along the two arterial roadways (i.e., Queen City and Westwood avenues) through South Fairmount; to understand key project assumptions with complementary planning efforts; and to explore potential concepts for transportation improvements that could be integrated as part of MSD’s investment or as part of separately-funded transportation projects.

### Assessment of Existing Conditions

#### Queen City Avenue

- Average right-of-way: 60 feet
- Number of lanes: 3 one-way travel, 1 dedicated parking
- Traffic Volume: 16,000 vehicles per day
- Level of Service: A/B

#### Westwood Avenue

- Average right-of-way: 58 feet
- Number of lanes: 3 one-way travel, 1 dedicated parking
- Traffic Volume: 23,000 vehicles per day
- Level of Service: A/B

Note: The Level of Service for existing conditions was based on planning-level evaluations and may be refined with more detailed modeling and analysis.

### Key Project Assumptions

- Beekman Street, between Queen City and Westwood, will be eliminated to accommodate the proposed urban waterway.
- New stormwater infrastructure will be integrated as part of Harrison Avenue roadway improvements (construction is anticipated to start in Spring 2012).
- CDOTE will lead the Western Hills Viaduct study, a planning effort that will develop options to reconstruct or replace the 1932 bridge that is used by 55,000 vehicles per day. The new plan will address structural integrity, traffic flow, pedestrian and bicycle safety, and clarity of access, and must be closely integrated with the proposed urban waterway.



Queen City Avenue: Existing Westbound Traffic Flow



Queen City Avenue



Queen City Avenue



Westwood Avenue



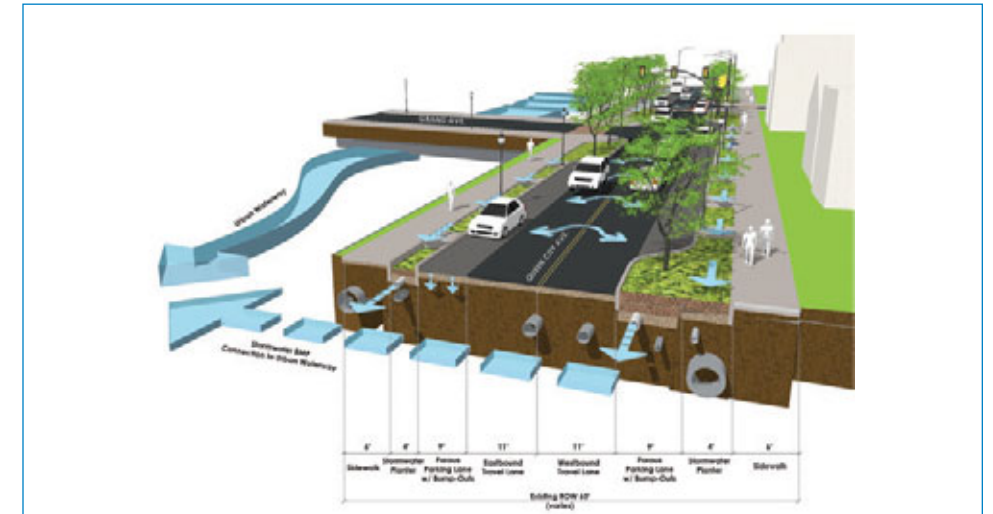
Westwood Avenue



Westwood Avenue: Existing Eastbound Traffic Flow

Through a series of coordination meetings, MSD, City and County Planning, the design team, and CDOTE developed a spectrum of transportation enhancement concepts. These concepts varied from minor change (i.e., working within the existing curb lines) to significant transformation (i.e., changing traffic patterns and modifying curb lines). Full-size versions of these transportation concepts are included in *Appendix E*.

### Queen City Avenue Concepts



#### Minor Change: Curb-to-Curb Concept

- One-way traffic remains
- 4 total lanes (3 travel, 1 dedicated parking)
- Pedestrian safety improvements (e.g., sidewalks, improved visibility of crosswalks, lighting)

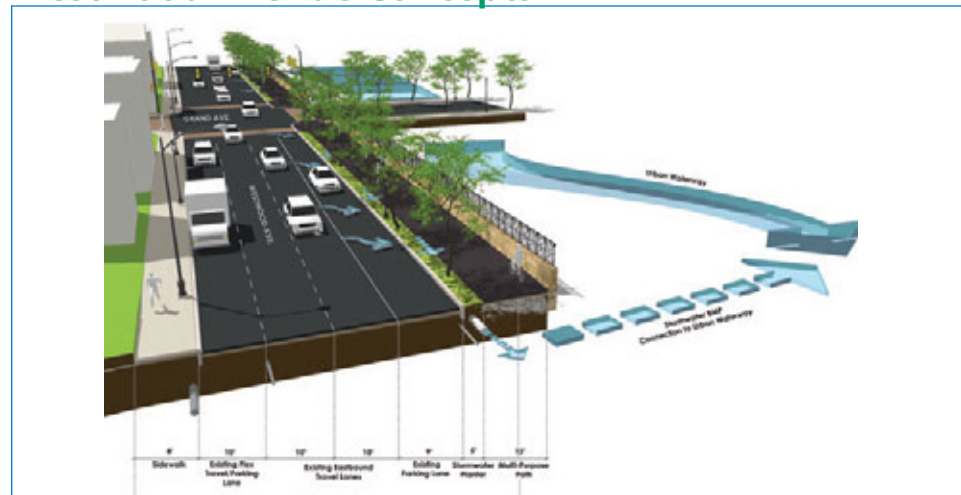
#### Intermediate Change: Reduced Roadway Width Concept

- One-way traffic remains
- 3 total lanes (3 wider travel lanes, 1 flexible parking lane)
- Stormwater planters integrated within right-of-way
- Pedestrian safety improvements (e.g., sidewalks, improved visibility of crosswalks, lighting)

#### Significant Transformation: Local Two-Way Street Concept

- Two travel lanes and two permanent parking lanes
- Stormwater planters and bump-outs with street trees
- Requires improvements on Westwood Avenue
- Pedestrian safety improvements (e.g., sidewalks, improved visibility of crosswalks, lighting)

### Westwood Avenue Concepts



#### Minor Change: Curb-to-Curb Concept

- One-way traffic remains
- 4 total lanes (3 travel, 1 dedicated parking)
- Pedestrian safety improvements (e.g., sidewalks, improved visibility of crosswalks, lighting)

#### Intermediate Change: Reduced Roadway Width Concept

- One-way traffic remains
- 3 total lanes (3 wider travel lanes, 1 flexible parking lane)
- Stormwater planters integrated within right-of-way
- Pedestrian safety improvements (e.g., sidewalks, improved visibility of crosswalks, lighting)

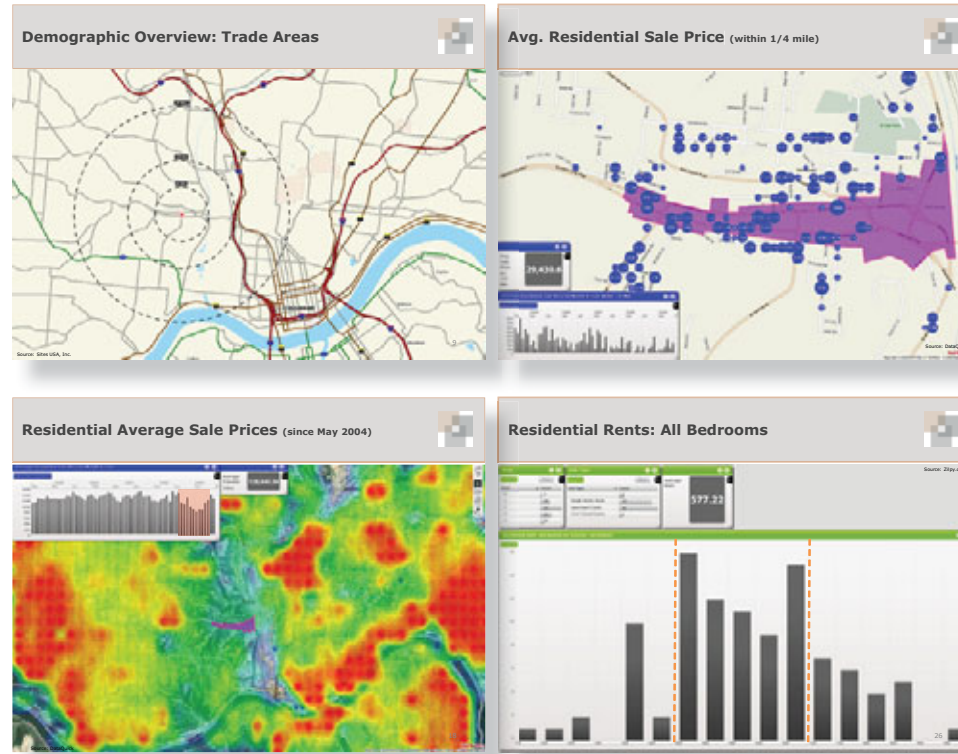
#### Significant Transformation: Ecological Parkway/Complete Street

- Expands existing right-of-way (requires removal of buildings on south side of Westwood)
- 3 one-way lanes in each direction
- Stormwater planters and street trees
- Pedestrian safety improvements (e.g., sidewalks, improved visibility of crosswalks, lighting)

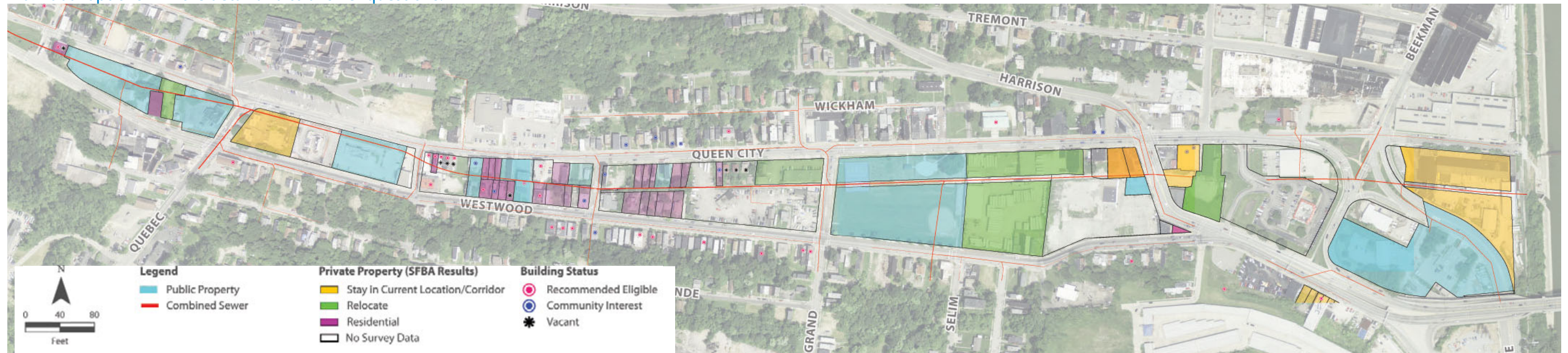
## MARKET ANALYSIS

In developing concepts that showed an urban waterway well integrated with the Community Core, MSD and the design team explored economic development opportunities and assessed existing business uses. As part of a Stage I Market Analysis, MSD completed a Marketplace Housing Assessment (focusing on demographics, residential sale trends, and residential rental comparables) and a Commercial Market Assessment (focusing on economic sectors, commercial real estate, and services). This information is contained in **Appendix J**.

At the request of the South Fairmount Business Association (SFBA), and to ensure business voices across the project area were considered, MSD and the CFAC Economic Development subcommittee conducted a survey of existing businesses. The survey was distributed at an SFBA meeting, and individual businesses were also contacted. The survey asked for information about the interest in remaining within Lick Run, what assistance a business would like to see with regard to relocation, and other informative data. This input was helpful in understanding which businesses wanted to stay and be part of a new revitalized core and which ones saw it as an opportunity to relocate. It also provided greater clarity about facilities and needs. Beyond the survey, MSD held one-on-one meetings with many business and property owners to discuss individual options in more detail and to answer questions.



Sample pages from the Stage 1 Market Analysis Report, Fall Analysis in **Appendix J**.



**Property Summary:** The map reflects the results of the SFBA survey.



## URBAN DESIGN ANALYSIS

In developing urban design concepts that built upon the basic anatomy of the valley corridor and complemented the adjacent conveyance channel and associated open space, two very important characteristics quickly became apparent – the length/walkability of the corridor, as well as building uses and buildable areas.

### Walkability

A 1,300-foot (approximately 1/4 mile) pedestrian shed centered on a common destination is easily traversed in about 5 minutes of leisurely walking. The Queen City corridor is too long to support one continuous neighborhood business district, when compared to other successful districts around the region. Local examples of neighborhood business districts of a 1,300-foot scale include Ludlow Avenue in Clifton and Hamilton Avenue in Northside.

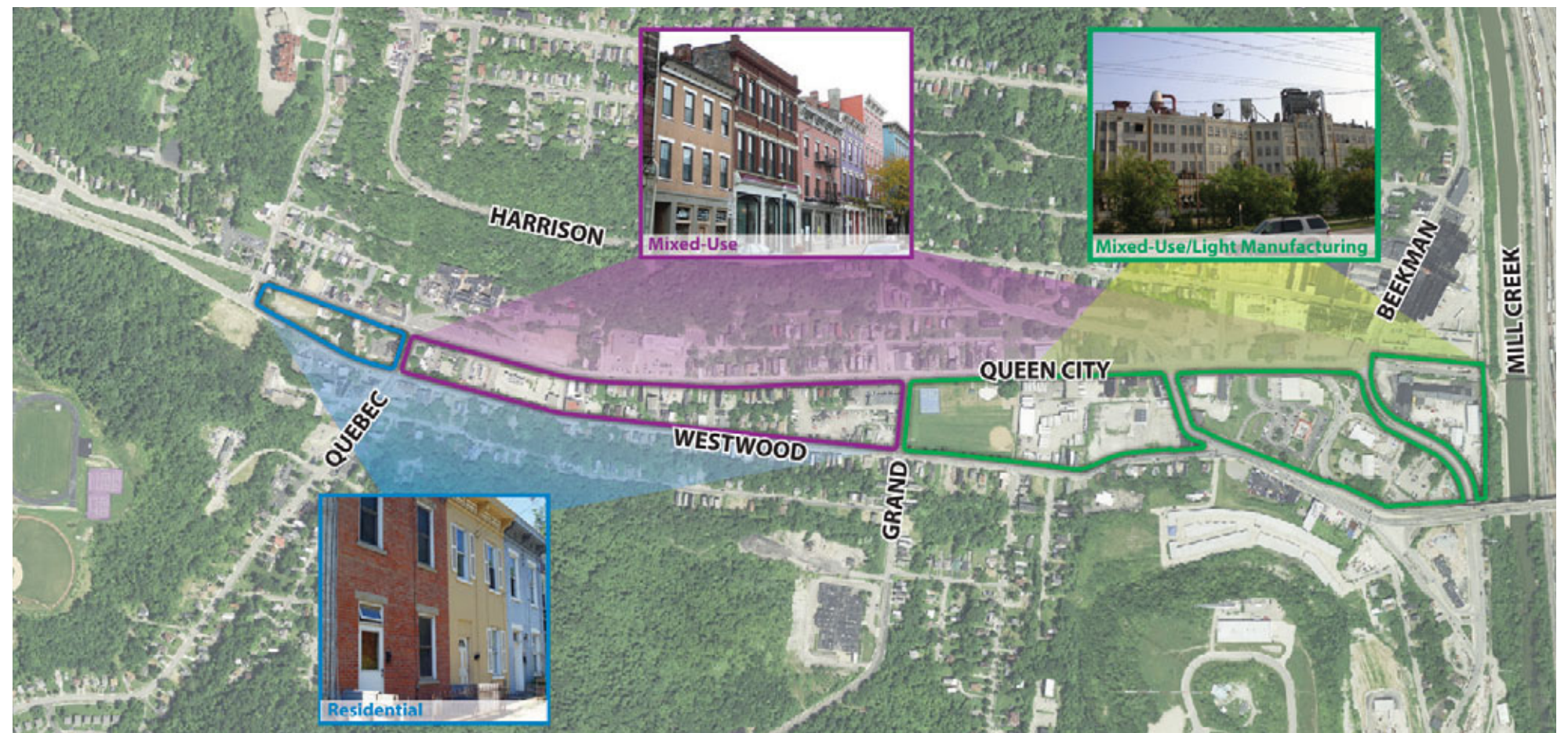
Successful districts require a more compact density, along with the supporting residential areas around it; therefore, it became necessary to think about the corridor as having three sub-districts with different land uses/types from one end to the other. Based on this model, the South Fairmount Business District would be subdivided into three walkable sections. These sub-districts could have distinct characteristics, uses, and styles that coincide with design guidelines and assumptions for the urban waterway zones.

### Uses: Live/Work/Play Zones

Since the corridor starts off very narrow and gradually widens as it reaches the Mill Creek, buildings with smaller footprints (e.g., residential/mixed-use) are best suited for the Western Gateway Zone while buildings with larger footprints (e.g., business/light manufacturing) would be best suited for the Eastern Gateway Zone. Essentially, the westernmost sub-district, with the smallest footprints and buildable areas, was most conducive to residential uses/infill and some small commercial or professional office. Moving eastward, the next sub-district allowed for mid-scale buildings and the most mixed use approach, which would be ideal for the concentrated business district, and would associate well with the recreational core. Finally, the last sub-district, east of Harrison Avenue, provided the larger lots and buildings that could be most compatible with more significant mixed use buildings that could also include light industry, construction, and larger commercial facilities (such as a pharmacy and/or a grocery store per community input).



Application of walkability guidelines in South Fairmount



South Fairmount Use Zones

## TRAIL NETWORK OPPORTUNITIES

To foster a viable, walkable neighborhood it is necessary to provide pedestrian-friendly amenities such as a trail network that connects residents to the business district and community amenities. Trails are also a viable form of alternative transportation. The following trail network opportunities were identified based on feedback from Community Design Workshop #1.



### Waterway Trails

(near-term opportunity)

- Multi-purpose and pedestrian trails within the urban waterway corridor



### Cultural Trails

(near- and long-term opportunities)

- Educational/interpretive elements that help connect places of local, cultural, and historical significance in South Fairmount



### Nature trails

(near- and long-term opportunities)

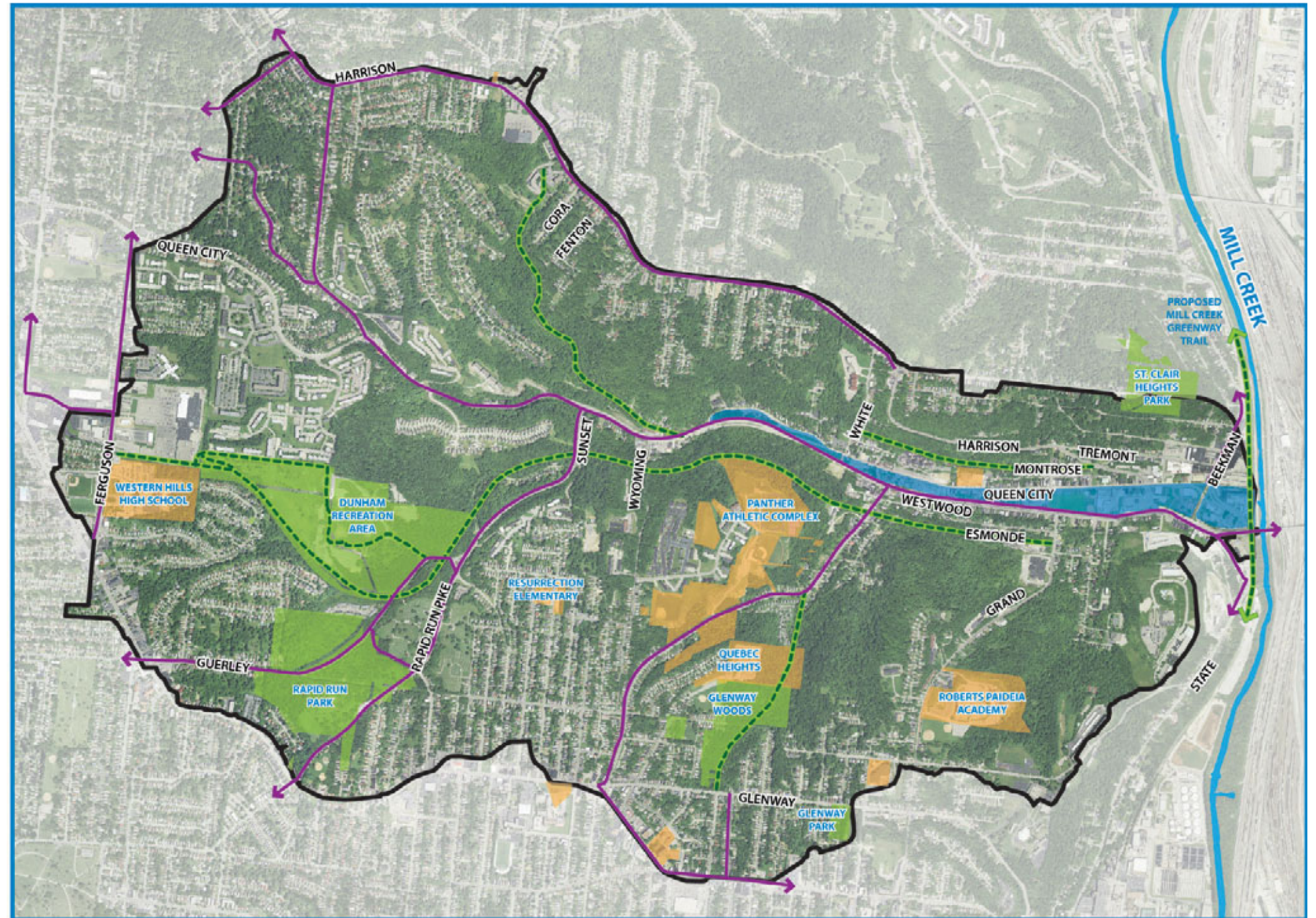
- Hiking/educational trails along abandoned rail corridors or within forested ravines where source control projects are proposed



### Potential On-Street Facility

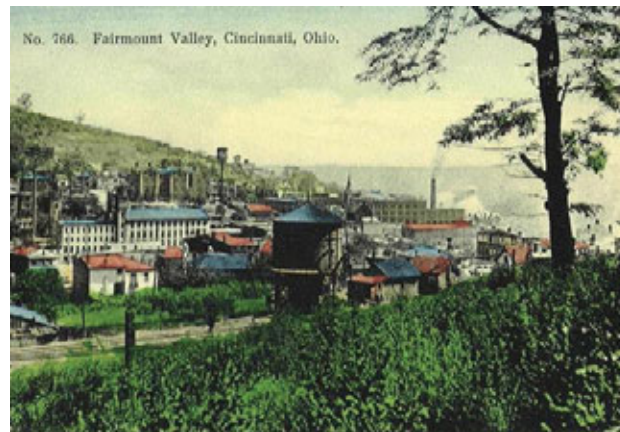
(long-term opportunity)

- Commuter route that could be part of the city's long-term bikeway master plan
- Based on Cincinnati Bicycle Transportation Plan (June 2010); Plan Review & Assessment underway



Trail Network Opportunities Map

## Lick Run Watershed Destinations



Historical Railroad Corridors  
photo: victorianantiquitiesanddesign.blogspot.com



Glenway Woods



Rapid Run Park



Dunham Recreation Area  
photo: hellocincinnati.com



St. Clair Heights Park  
photo: Cincinnati Enquirer



Panther Athletic Complex  
photo: bing.com



Western Hills High School  
photo: westernhillsalumni.com



Roberts Paideia Academy  
photo: pci-central.org



Orion Academy  
photo: facebook.com/pages/Orion-Academy

## Potential Regional Trail Connection



South Mill Creek Greenway Trail: Hopple Street to MSD Enlargement Plan

## WATERSHED PLANNING FRAMEWORK

Feedback from Community Design Workshop #1 showed a strong preference for applying a watershed-based planning approach not only to CSO reduction solutions, but also to future development and investment (e.g., stormwater management, hillside preservation, land uses, building types, aesthetics). In response, MSD and the design team developed a watershed planning framework (consisting of guiding principles and the watershed transect) to complement other local planning efforts, like the Land Development Code (LDC), Plan Cincinnati, and Form-Based Codes.

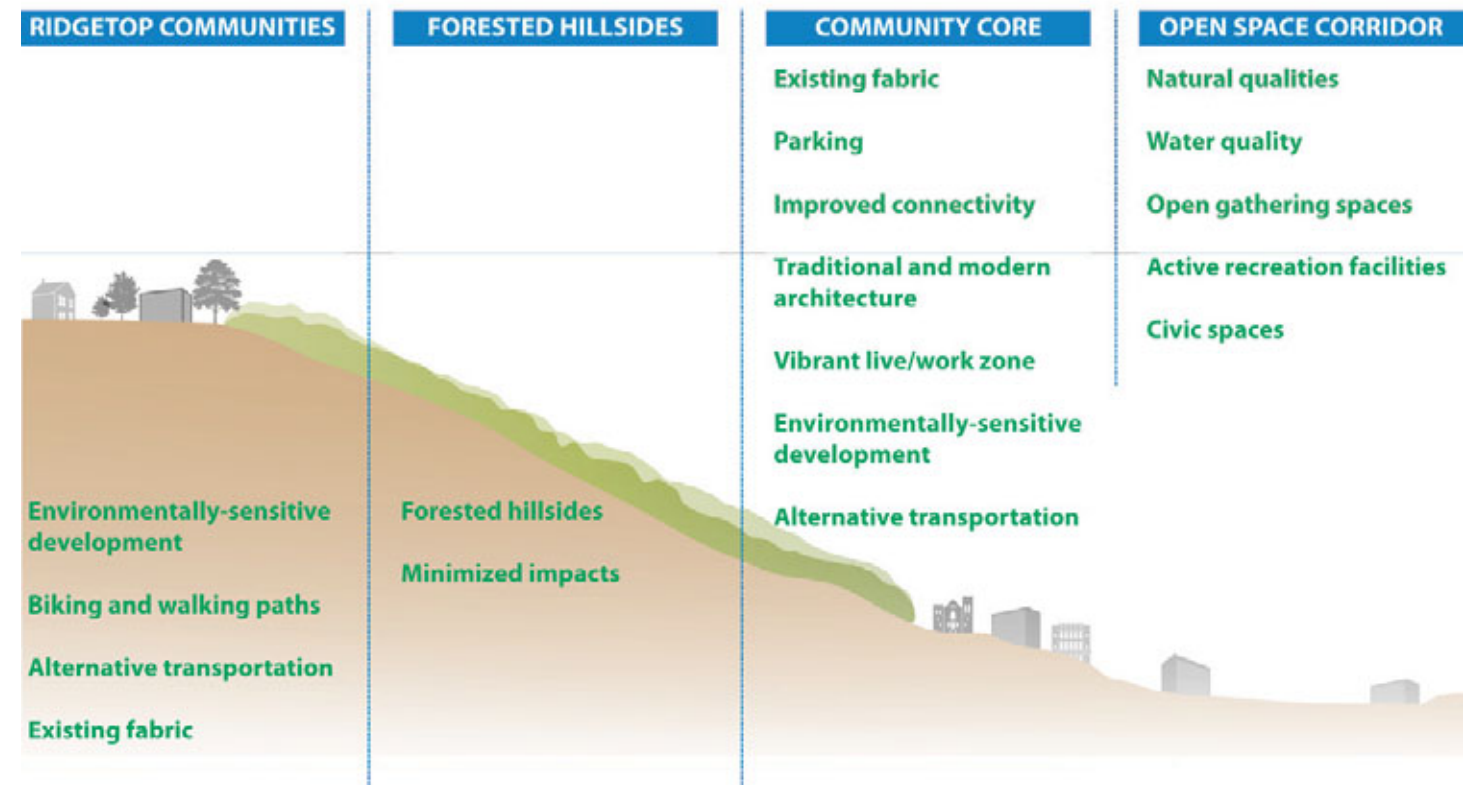
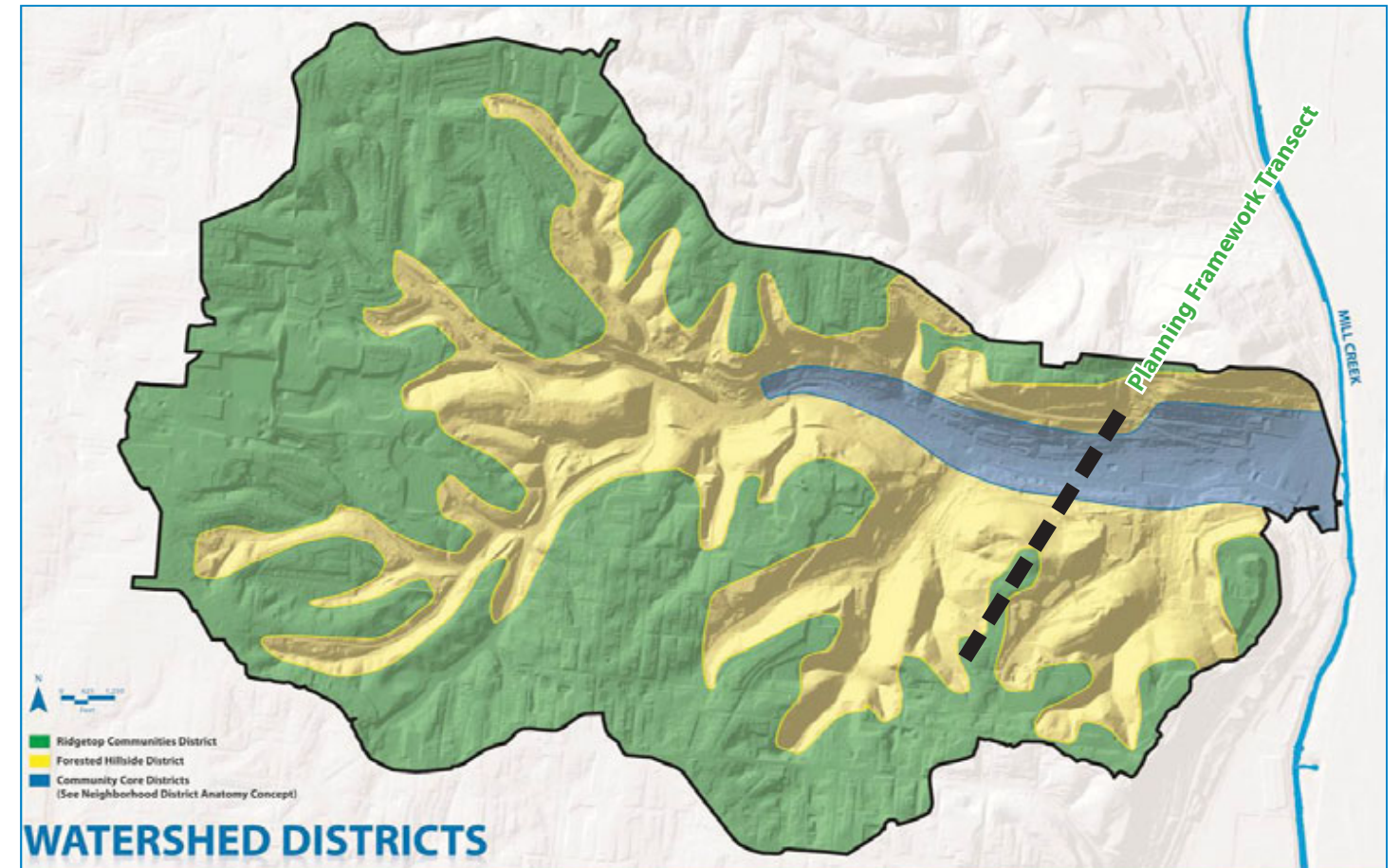
In fact, the Lick Run Watershed Master Plan serves as a pilot project for examining the city's current stormwater regulations, which in turn could be used to guide the LDC. The LDC is a planning tool that will consolidate development regulations and revise zoning, subdivision, and right-of-way codes. The project is funded by a \$2.4 million Community Challenge Planning Grant awarded to the city of Cincinnati in October 2010 by the Department of Housing and Urban Development (HUD).

### Guiding Principles & The Watershed Transect

- Coordinate policies and leverage investment
- Promote an integrated network of green infrastructure
- Revitalize the economy through creation of jobs and growth opportunities for local businesses
- Support existing communities
- Benefit the watershed communities through environmentally, socially, and economically sustainable solutions
- Provide more transportation choices
- Promote a balanced mixed-use neighborhood
- Use quality design to create an attractive public/private realm

The principles were developed based on Project Groundwork goals and objectives and HUD Livability Principles. They aim to guide infrastructure and revitalization decisions.

More specific principles were developed based on feedback from Community Design Workshop #1. They were organized according to a watershed transect, a tool that complements the watershed's unique physical characteristics (i.e., ridgetops, hillsides, and the valley).



**Planning Framework Transect:** A transect displaying the various physiographic districts of the Lick Run Watershed and highlighting the characteristics conducive to stormwater management and planning principles associated with each zone.

By analyzing the unique physical characteristics of the Lick Run watershed as a transect, opportunities to incorporate sustainable development strategies become quite apparent. These sustainable opportunities include:

- Alternative Energy
- Stormwater Management Features
- Form-based Codes

Adopting these strategies into a cohesive set of sustainable development guidelines creates a framework of common practices that can be adjusted to local conditions.

#### Alternative Energy

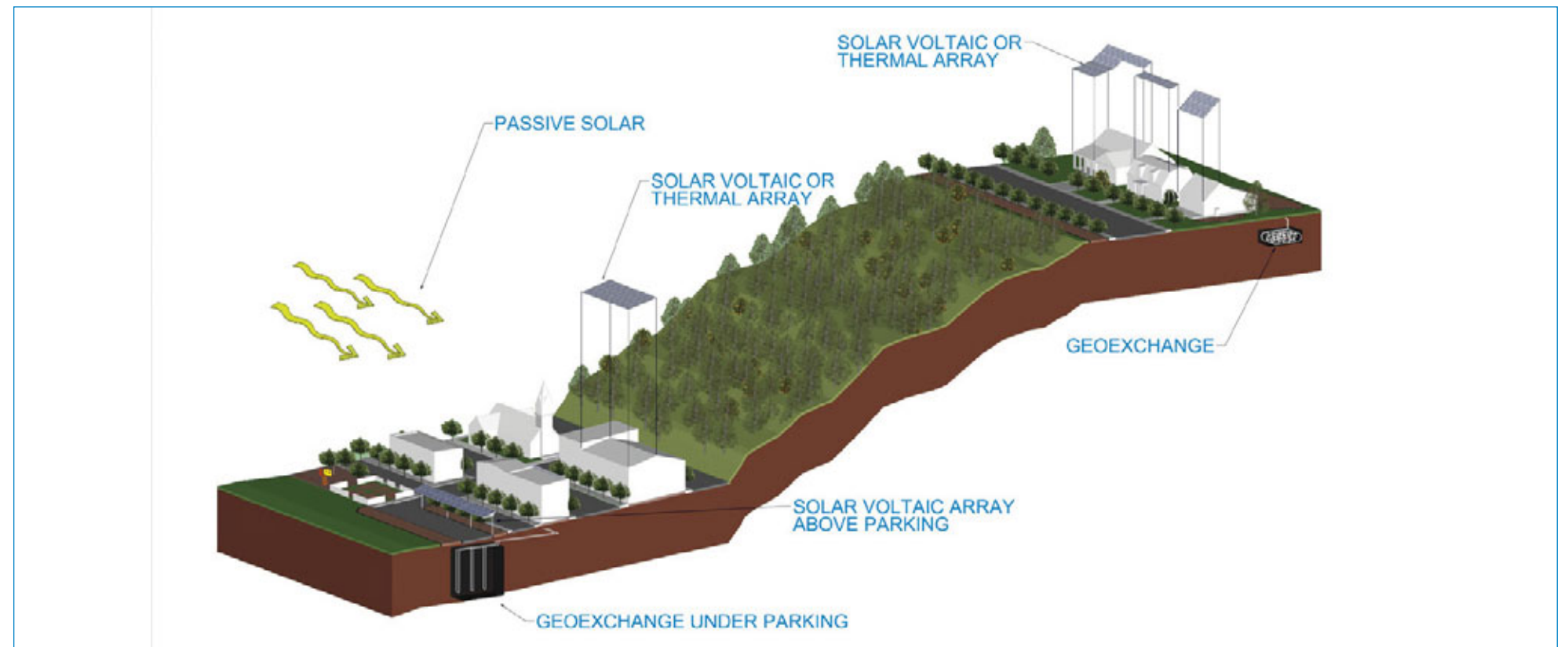
The watershed's steep hillsides provide a great opportunity for both passive solar and solar voltaic or thermal array units. In addition, homes on the ridges as well as new structures and parking lots in the corridor can take advantage of consistent sub-grade temperatures through geothermal heating and cooling.

#### Stormwater Management Features

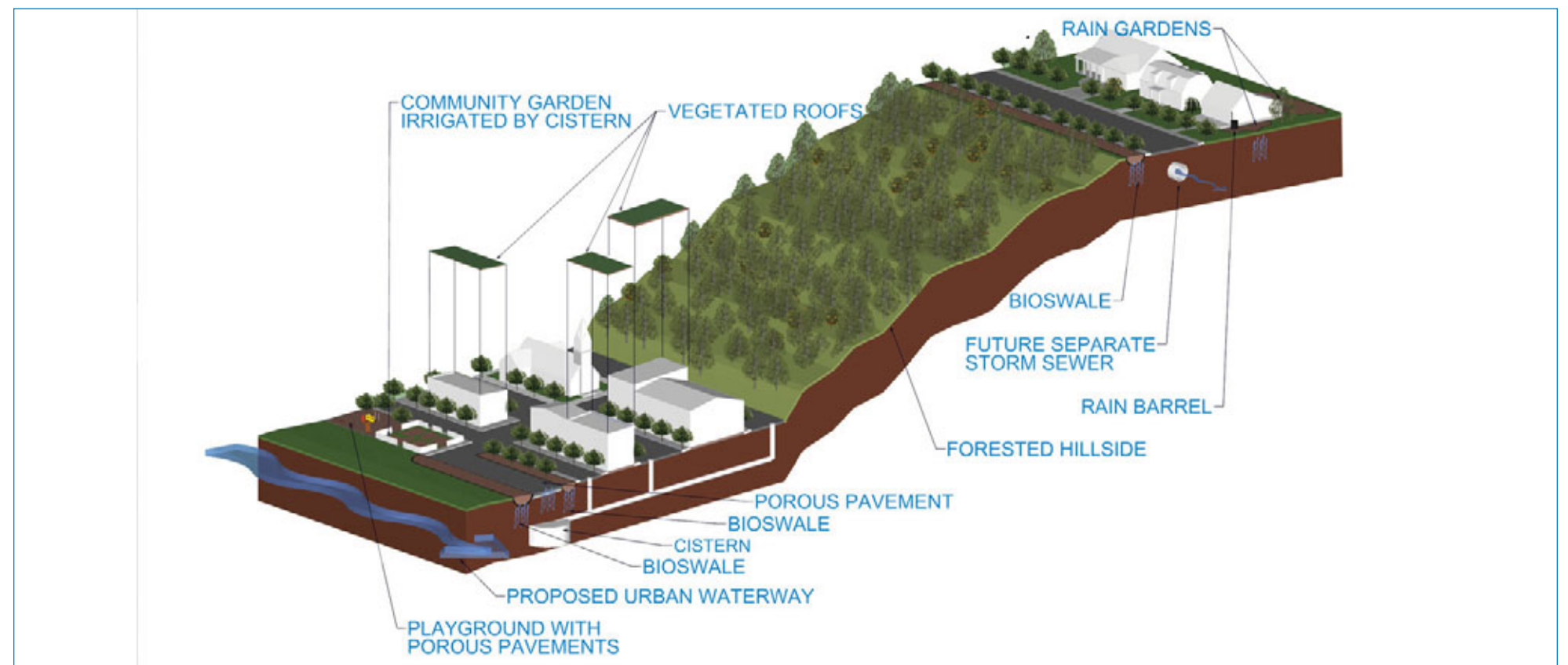
Due to the ridge and valley nature of the Lick Run watershed, it would be advantageous to include stormwater management techniques on the ridges that can cleanse stormwater and feed into the urban waterway in the valley. Such techniques might include rain gardens, bioswales, rain barrels, separated storm sewers, and protecting and enhancing the existing forested hillsides. Within the corridor, cisterns, porous pavement, and bioswales can efficiently cleanse and transport stormwater into the urban waterway.

#### Form-based Codes

Form-based codes offer a solution to the pitfalls of conventional zoning code, by offering a more predictable built environment based on community character protection and creating vibrant pedestrian environments. Form-based codes have also seen success as a tool for historic preservation, and for the creation of transit villages along new transit lines.



Alternative Energy Transect

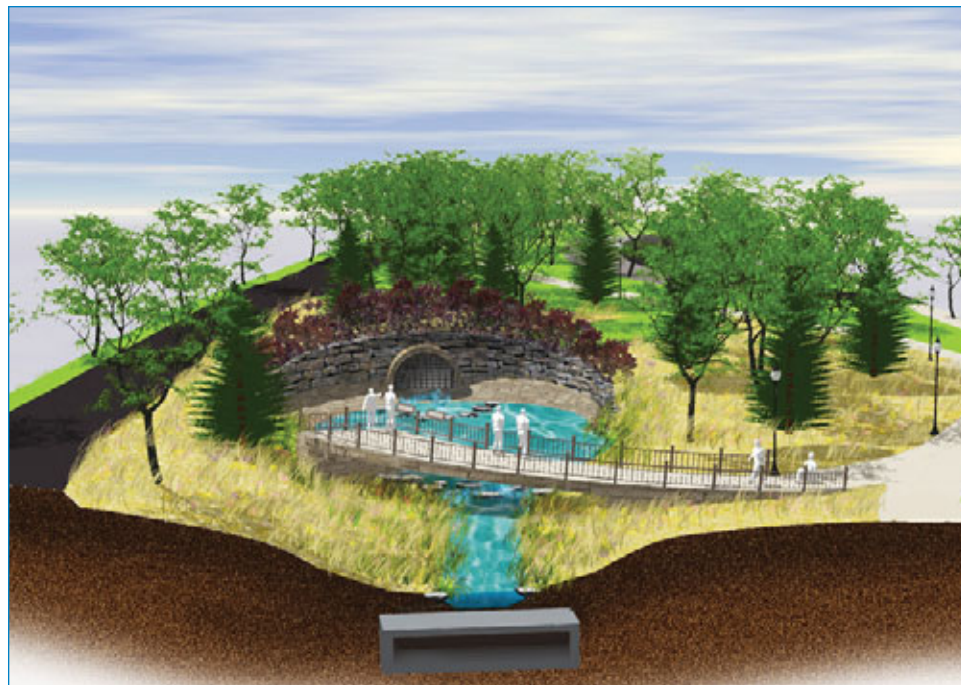


Integrated Stormwater Management Transect

## REFINED PRINCIPLES FOR URBAN WATERWAY CONCEPTS

### Western Gateway Zone

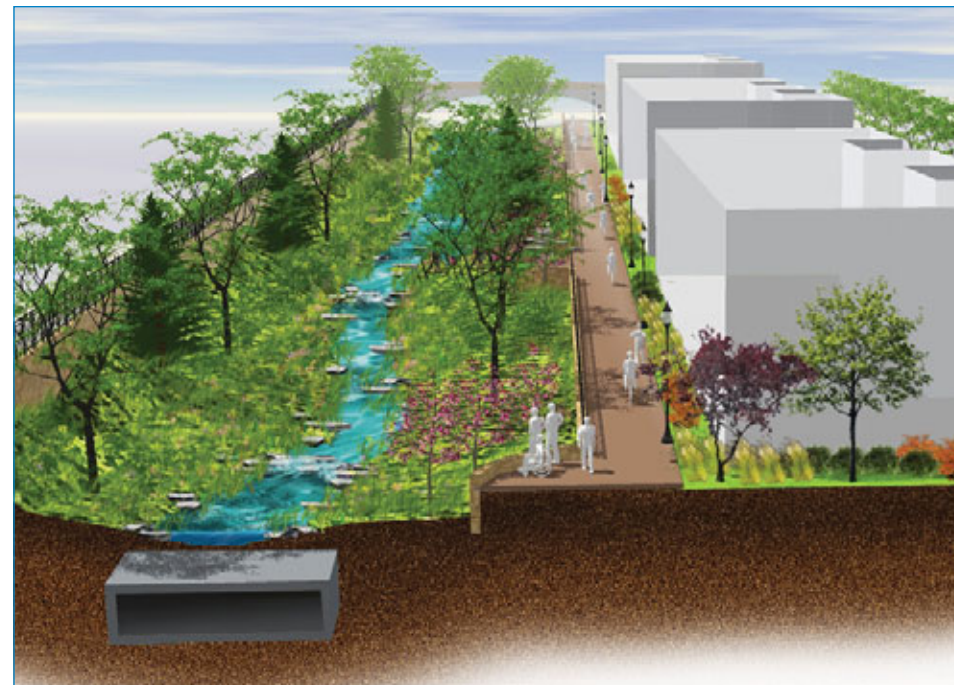
- The beginning of the urban waterway should provide ecological benefits (e.g. water quality features) and wildlife habitat, while incorporating opportunities for environmental education.
- Public uses (e.g., parking areas, trail networks, gateways) should be safe and well-maintained.
- Civic amenities could include greenspaces, gathering areas, biking facilities, trailhead parking, and Metro access.



Western Gateway Zone

### Narrow Channel Zone

- The urban waterway should be narrow with green spaces and retaining walls on both sides and should complement the surrounding urban environment.
- The urban waterway should contain natural stone, vegetation, and in-stream features (e.g. pools and riffles) to improve water quality.
- The Neighborhood/Business Zone should promote a walkable, mixed-use business district by improving pedestrian safety and addressing concerns about high-speed traffic through the corridor
- Civic amenities could include a pedestrian walkway north of the urban waterway, complementary on -street/off-street parking areas, and multipurpose trail south of the urban waterway. These amenities should connect people with the urban waterway, where possible, and enhance the pedestrian experience of the open space network.



Narrow Channel Zone: *Concept 1*

### Eastern Gateway Zone

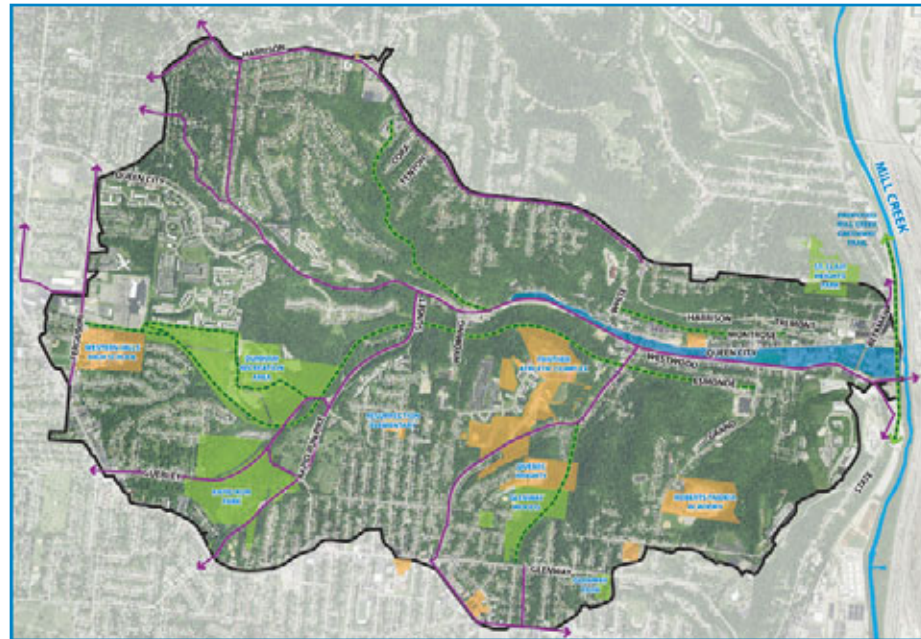
- The urban waterway should vary in width and meander through a well-vegetated floodplain.
- The location of a large-scale water feature (e.g., a lake and/or wetland) should make a dramatic statement by strengthening neighborhood identity and pride, and serving as a visual anchor for visitors entering the corridor.
- A more celebrated, concentrated recreation area should build upon existing facilities and allow for a variety of activity zones.
- Civic amenities could include additional amenities like multi-purpose trails, trailheads, access to the future Mill Creek Greenway Trail, sports fields, and civic gathering spaces.
- The Neighborhood/Business Zone should strive to balance the business district in the Narrow Channel Zone with well-integrated recreation areas, business areas, and community spaces.



Eastern Gateway Zone: *Concept 2*

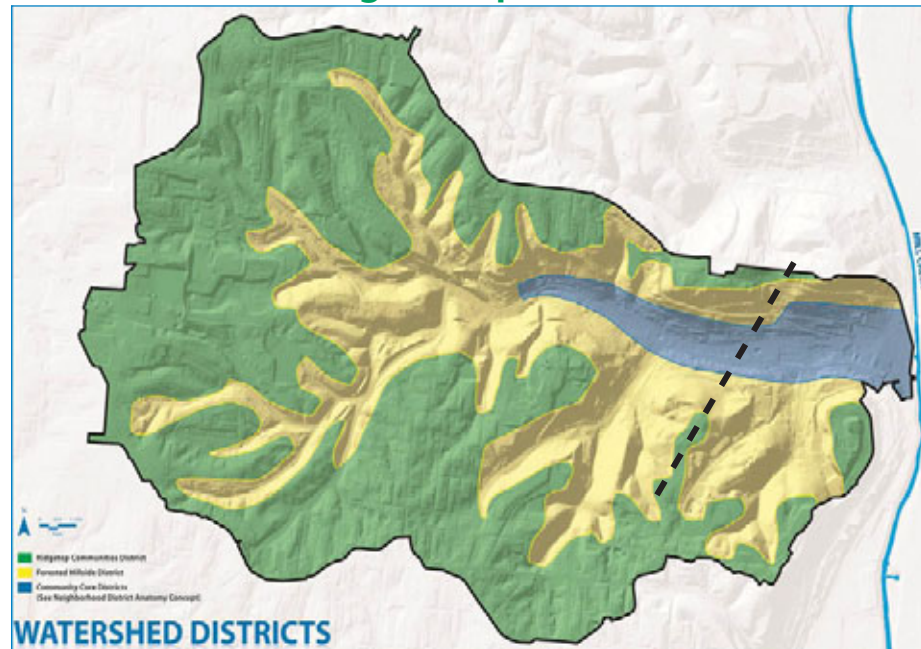
## REFINED PRINCIPLES FOR WATERSHED OPPORTUNITIES

### Trail Network Opportunities



- Incorporate design details for trail types and define trail maintenance plans
- Identify neighborhood landmarks connected by trails

### Watershed Planning Principles



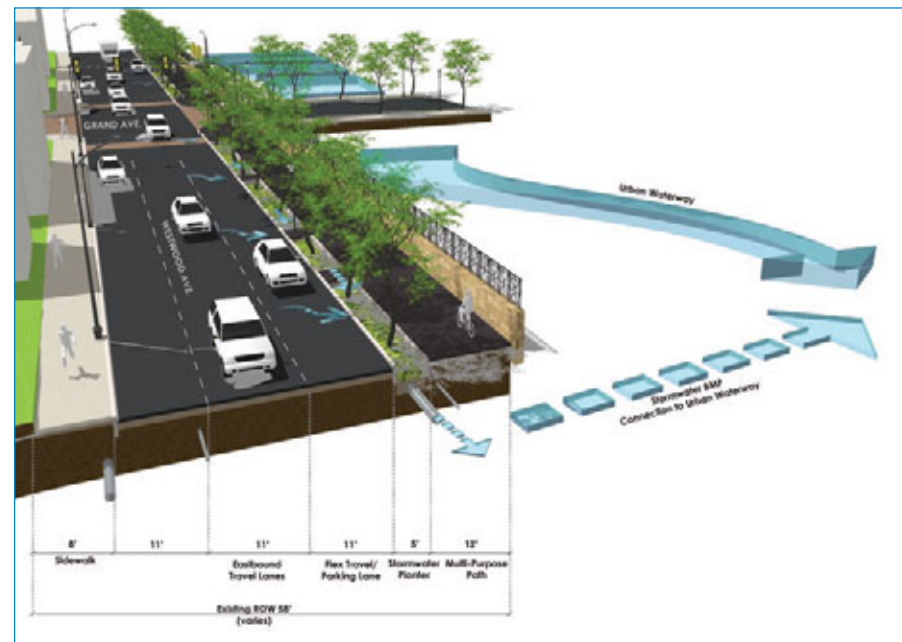
- Add specifics on cost, benefits, and maintenance
- Incorporate long-term projections for the watershed (e.g., population, traffic) and integrate considerations for alternative energy (e.g., geothermal)

### Transportation Network

- Where the urban waterway is adjacent to Queen City and Westwood, the transportation network should complement a sustainable community
- Near-term transportation improvements should focus on improving pedestrian safety and addressing concerns about high-speed traffic through the corridor.

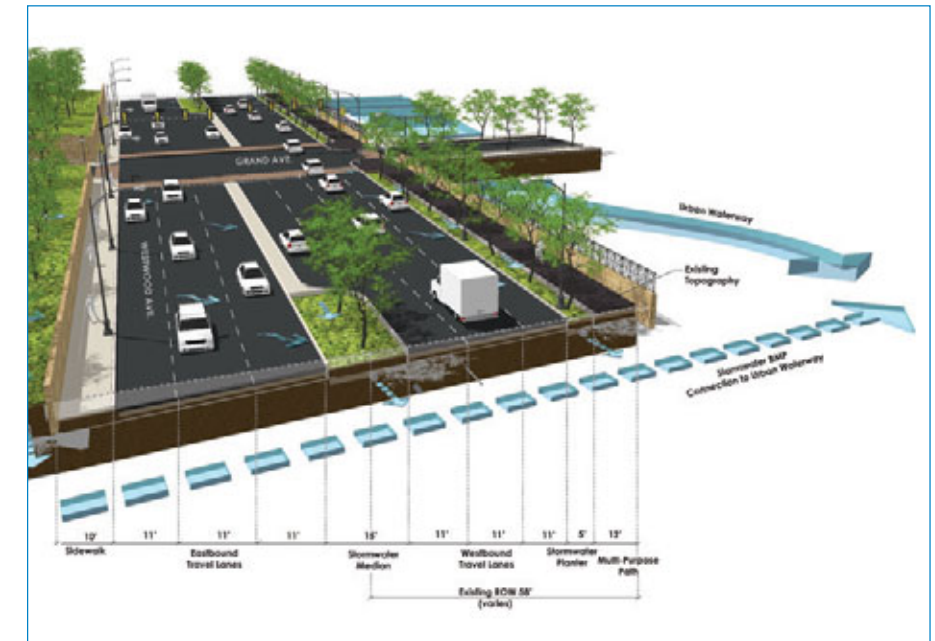


**Queen City Avenue:** *Reduced Roadway Width Concept*



**Westwood Avenue:** *Reduced Roadway Width Concept*

- Long-term transportation opportunities could convert Westwood Avenue to a(n) Complete Street/“Ecological Parkway” and Queen City Avenue to a two-way, community-oriented roadway conducive to a pedestrian-friendly mixed-use urban neighborhood.
- MSD and CDOTE shall continue to coordinate to ensure the urban waterway does not preclude a future boulevard. Considerations should be evaluated during design of the waterway.



**Westwood Avenue:** *Complete Street/“Ecological Parkway” Concept*





# 4

## Vision

MSD and the design team synthesized the best ideas from the various phases into an integrated vision for the urban waterway, the South Fairmount neighborhood, and the Lick Run Watershed. This effort was heavily influenced by concerns over which aspects of the plan would be funded by MSD, versus which would be funded and implemented by other partner organizations and entities. In order to address these concerns, the Vision phase was split into two separate but related plans: the Urban waterway Base Plan and the Long-Term Watershed Vision Plan.

Lick Run Alternative Project

Urban Waterway Base Plan

Ecological Features & Benefits

Transportation Enhancements

Cultural Resources Best Management Practices

Enabled Impact Projects

Long-Term Watershed Vision Plan

## LICK RUN ALTERNATIVE PROJECT

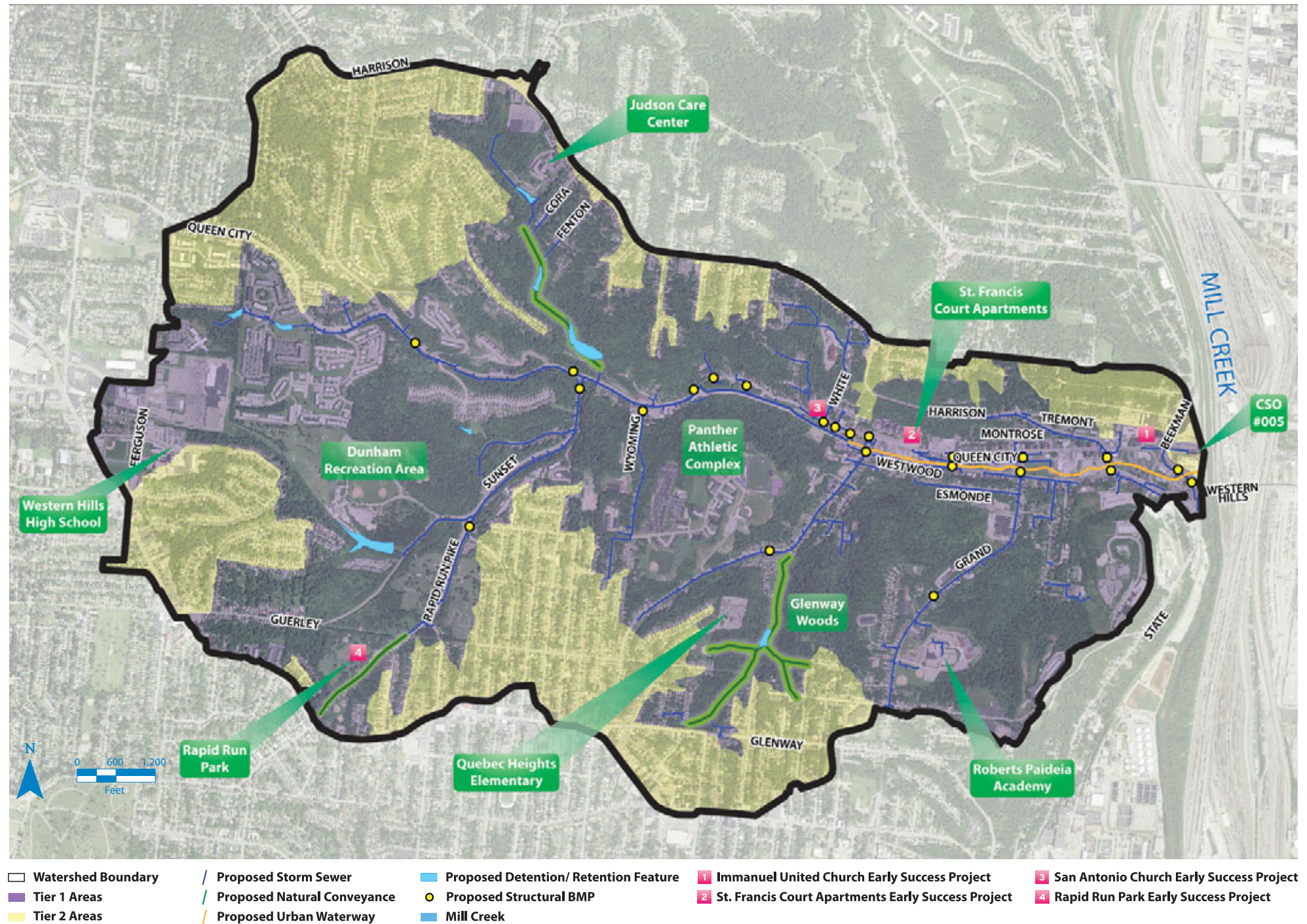
The Lick Run Alternative Project represents the comprehensive vision for CSO reduction - a vision based on technical evaluations, feasibility analysis, extensive coordination, and public feedback. The strategies included as part of the Lick Run Alternative Project were designed to:

- Remove stormwater and natural drainage from the combined sewer system via strategic storm sewer separation and natural conveyance (i.e., Glenway Woods, Fenton Ravine)
- Optimize infrastructure with detention/retention features and structural BMPs
- Demonstrate green infrastructure practices through Enabled Impact Projects
- Convey separated stormwater runoff through an urban waterway in South Fairmount

The result of implementing these strategies is that 1,861 acres (the Tier 1 areas) are captured by the separated storm sewer system and directed to the proposed urban waterway in South Fairmount.

The upland areas (Tier 2 areas) represent the remaining 900 acres of the watershed. Site-specific stormwater best management practices (BMPs) and green infrastructure are proposed for existing sites, future development, and within neighborhoods. The city's Land Development Code planning effort will help to consolidate development regulations along with revise zoning, subdivision, and right-of-way codes. Ultimately, this planning effort will enable opportunities for integrating stormwater BMPs within the Tier 2 areas.

The Lick Run Alternative Project represents an integrated network of CSO reduction solutions, which are described on the next page. Subsequent sections of this chapter describe other components of the vision, including the Urban Waterway Base Plan, ecological features, environmental education, transportation enhancements, cultural resources, Enabled Impact Projects, and the Long-Term Watershed Vision Plan.



Lick Run Alternative Project: The Comprehensive Vision for CSO Reduction



Integrated Network of CSO Reduction Solutions

CSO Reduction Solutions in the Tier 2 Areas



Stormwater BMPs that residents can incorporate at home include:

- Downspout disconnection (where permitted)
- Rain gardens & bioswales
- Rain barrels & cisterns
- Green roofs
- Trees and other plantings
- Porous pavements

Stormwater BMPs that can be integrated in neighborhoods, over time in conjunction with local projects, include:

- Reduced pavement width (where possible)
- Porous pavements
- Street trees and stormwater planters
- Collecting and treating stormwater in parks and open spaces

CSO Reduction Solutions in the Tier 1 Areas (Stormwater Runoff Directed to the Urban waterway)



Separated Storm Sewers

New storm sewers are proposed throughout the watershed to capture stormwater runoff and reduce the volume of stormwater entering combined sewers. In most instances, the new storm sewer pipes will parallel existing combined sewers.



Natural Conveyance & Detention

While separated storm sewers move runoff from point A to point B, natural conveyance systems provide many water quality benefits. Runoff flows through plant roots and soil that filter pollutants and oxygen is added to the water.



Structural BMPs

Structural BMPs trap heavy sediment like sand, and they collect floatables like trash and debris. These structures are proposed at main storm sewer junctions, before stormwater runoff from the hillsides and separate sewers enter the urban waterway. They are designed to be easily accessed and maintained.



Enabled Impact Projects

Enabled Impact Projects are "Early Success Projects" constructed to demonstrate innovative green infrastructure strategies (e.g., bioinfiltration, porous pavements) while helping reduce the volume of stormwater runoff entering MSD's combined sewer system. They also highlight the importance of partnerships with the community.



Urban waterway

The urban waterway is proposed to convey separated stormwater runoff through South Fairmount to Mill Creek. **This component represents the keystone of the integrated CSO reduction solution in the Lick Run Watershed**, and has the potential to create a strong community amenity as a leave-behind.

## URBAN WATERWAY BASE PLAN

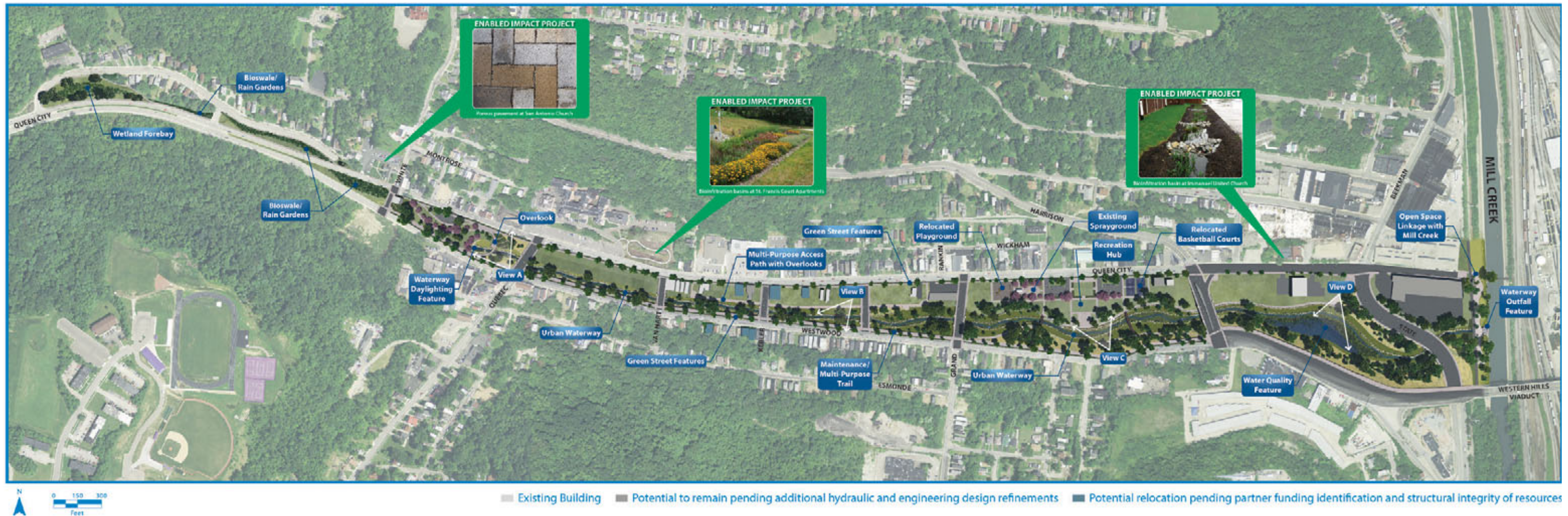
The Urban Waterway Base Plan addresses MSD's Consent Decree requirements by conveying captured stormwater runoff directly to Mill Creek. The character of the waterway varies along its length and is influenced by spatial constraints, topography, and the location of the large, underground combined sewer pipe.

The community preferred character for the waterway lies somewhere between an enhanced system and a designed system (see figure **Spectrum of Waterway Character on the next page**). The goal is to create an aquatic feature that is as ecologically functional as possible while accommodating the special hydrological needs of the waterway system.

This proposed investment also provides a base level of community improvements, including:

- Structural BMPs to filter out coarse sediment and other debris before it enters the urban waterway.
- Water quality features to clean stormwater runoff before it enters the Mill Creek. Features include structural BMPs, a wetland forebay, riffles, pools, stone, plants, and riparian areas.
- Internal trails and paths for maintenance, access, and recreation. Access lanes are needed for periodic cleaning and other maintenance. These same lanes can be used by pedestrians and bicyclists for exercise and to enjoy the waterway environment.
- Sidewalk improvements along the north side of Westwood and the south side of Queen City, including green street features such as stormwater planters and street trees (where possible).

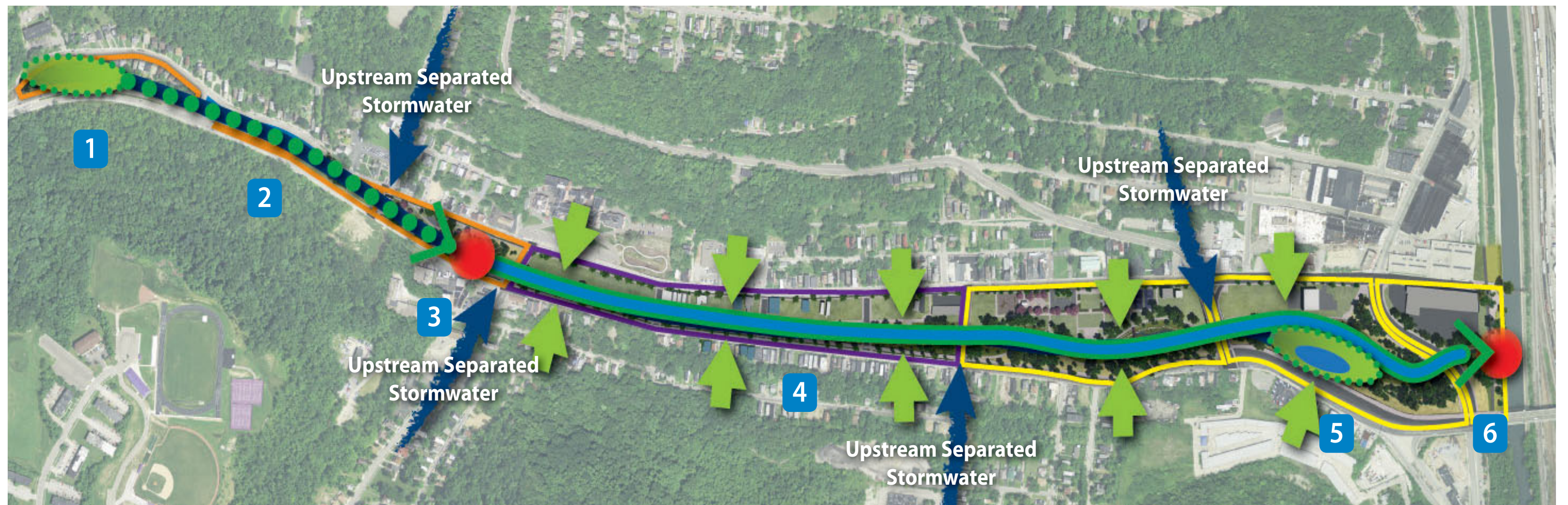
- Vehicular bridges across the urban waterway to provide multiple connections between Westwood and Queen City.
- Interpretive elements to inform residents about stormwater features, native habitats, and cultural assets. The interpretive elements consist of signage, kiosks, and artwork.
- Enhancements at the South Fairmount Recreation Area:
  - Relocated and improved basketball courts and playground
  - Sprayground
  - Sidewalk connections between recreation elements
  - Parking lots for community parking and for special events (for example: a weekly farmer's market)
  - General purpose plaza for special events and recreation
  - Relocated sports fields elsewhere in the watershed



Urban Waterway Base Plan



**Natural**  
Spectrum of Waterway Character



Components of the Urban Waterway System

● Daylighting/Outfall Feature    ■ Western Gateway Zone    ■ Narrow Channel Zone    ■ Eastern Gateway Zone Zone

## Journey through the Urban Waterway

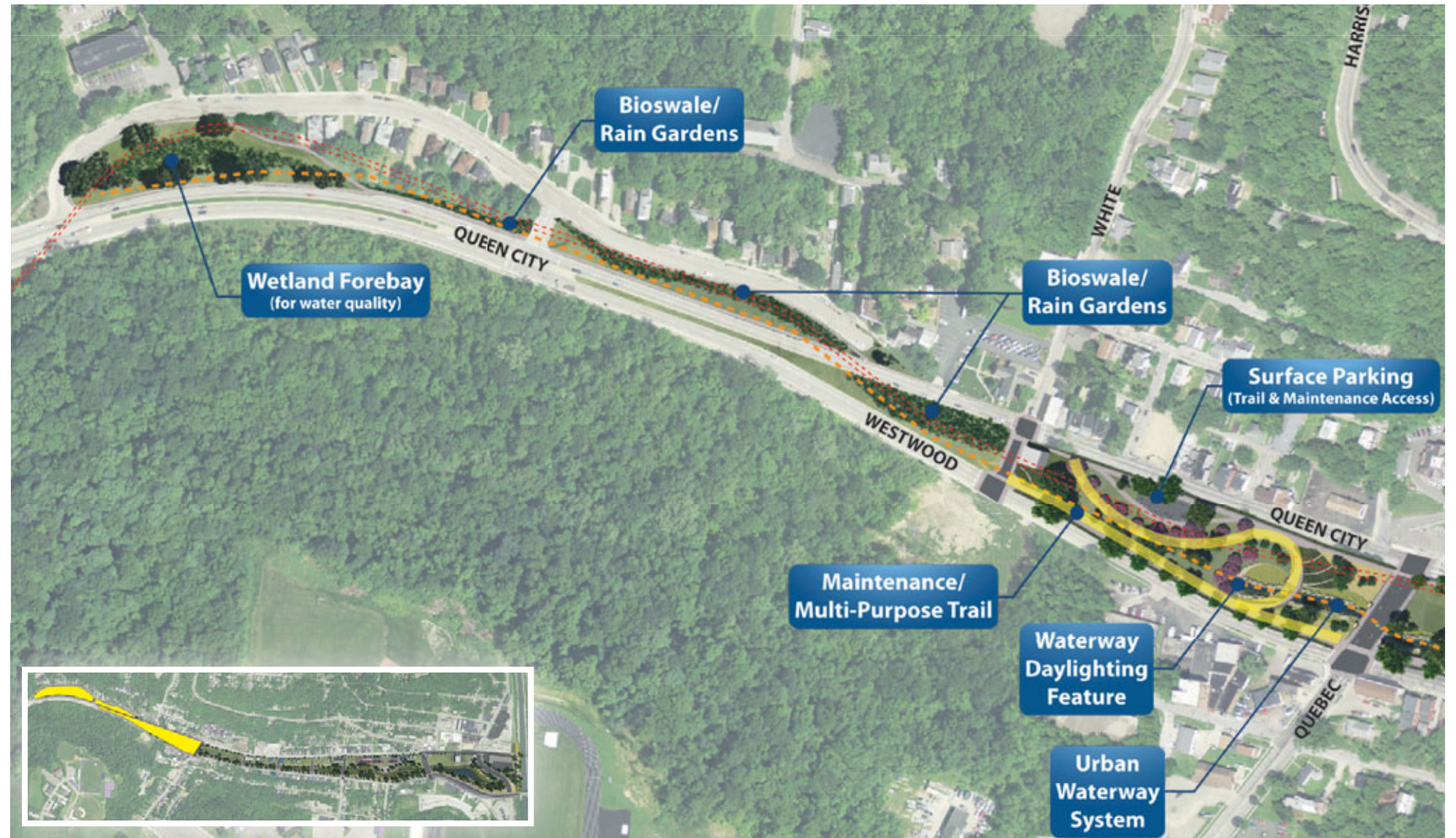
### 1 Wetland Forebay: Pre-Filtering Upstream Stormwater

The wetland forebay consists of zones of slow-moving water heavily planted with water-loving vegetation. Together, these elements slow down the runoff entering the wetland, allowing the fine sediment to settle out and collect on the vegetation. Because the forebay encourages the deposition of sediment, it is recommended that its final design easily accommodate access for periodic maintenance.

### 2 Stormwater Conveyance Box

After passing through the wetland forebay, stormwater runoff temporarily returns to an underground stormwater conveyance box due to spatial constraints, multiple street crossings, and the need for runoff conveyance during heavy rain events.

To maintain visual continuity between the wetland forebay and the downstream Waterway Daylighting Feature, a series of garden-like rain gardens (bioswales) run along the north side of Queen City Avenue. Because the rain gardens are a highly visible gateway to the neighborhood, they will look more like a horticultural garden than a typical bioretention feature. These features collect runoff from the streets, cleanse it, and then release it to the underground conveyance system.



### Urban Waterway Western Gateway Zone

At White Street, gateway signage and landscaping welcome motorists and pedestrians to South Fairmount. A small parking lot, with pervious pavement to capture and treat runoff, and a small arrival plaza with an informational kiosk define a trailhead for the proposed multi-purpose path that runs along the north edge of Westwood Avenue. Landscaped rain gardens frame the parking lot, maintaining the visual link to those west of White Street.

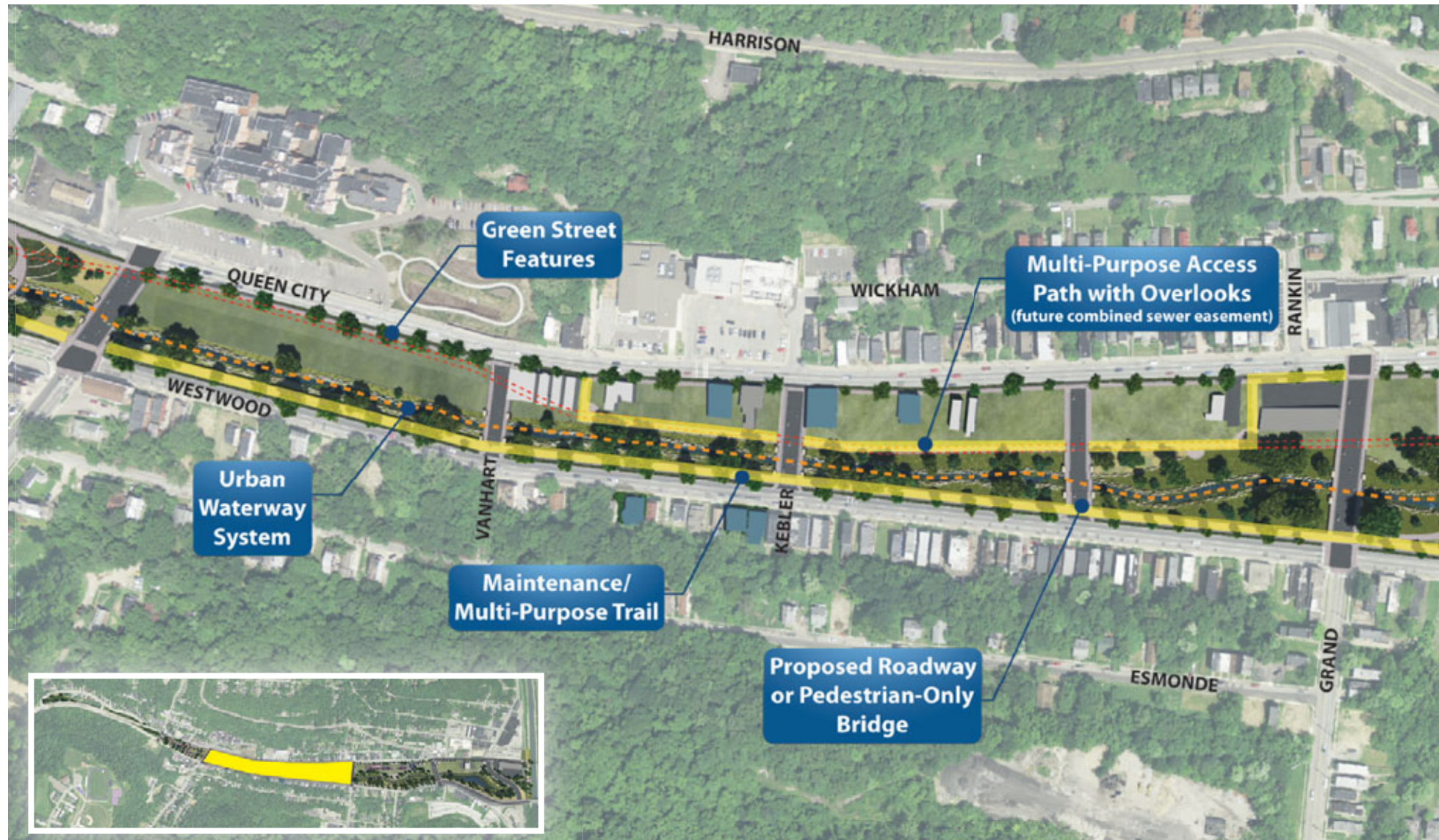
### Urban Waterway Daylighting Feature (Looking Northwest)

*This image depicts the daylighting of stormwater into the proposed urban waterway. The proposed urban waterway will contain water quality features (limestone rock) and a well-vegetated riparian edge. Rain gardens will help to intercept stormwater from Queen City Avenue and direct it into the waterway. Lighting is included to ensure the multi-purpose trail on Westwood is well lit and safe for pedestrians*

--- Existing Combined Sewer      - - - Proposed Box Conduit

### 3 Daylighting Feature: Beginning of the Urban waterway

Just east of the trailhead, the Waterway Daylighting Feature provides a dramatic moment where upstream stormwater exits the underground pipe and begins the urban waterway. This feature consists of a crescent of native limestone laid to echo the character of local geologic strata. The runoff flowing in the stormwater conveyance box exits through series of narrow, horizontal slits. As the water level rises during a large storm event, it exits the outfall feature at the next higher stratum of the stone and cascades down the face. This configuration allows the water to exit the pipe while restricting public access (an access point is incorporated into the feature to enable periodic maintenance and cleaning). A bridge and observation deck just east of the outfall provides views of the feature and includes interpretive signage describing how the urban waterway system works.



**Urban Waterway Narrow Channel Zone**

--- Existing Combined Sewer      - - - Proposed Box Conduit

**4 Urban Waterway: Creating a New Neighborhood Identity**

After the water leaves the outfall, it begins its above-ground journey toward the Mill Creek. At specific points along the waterway, runoff from upstream stormwater systems feeds into the channel via structural sediment chambers that filter heavy sediment and debris from the water before it is released into the waterway.

After the urban waterway passes below the new bridge at Quebec Avenue, it enters a narrow passageway defined by a low retaining wall on the north bank and by a taller retaining wall on the south bank along Westwood. Retaining walls are proposed in order to avoid impacts to the existing combined sewer, utilities, and roadways. These walls are intended to be green walls that support

a variety of plants. Given the narrowness of the channel in this zone, the primary habitat will be riparian with low growing meadows where more space is available.

A 15-foot wide, multi-purpose trail runs along the north side of Westwood. It begins at the trail head west of Quebec and continues along Westwood until it splits into two trails at Grand: one continuing along Westwood and the other dropping into the recreational area east of Grand. The street-side trail has AASHTO recommended guardrails as required when there are significant grade changes between the trail and the stream channel. In addition, 4-foot wide stormwater planters run along the curb side of the trail to provide separation between the trail and the roadway and stormwater benefits for runoff originating from Westwood and the trail.



**Waterway Access Path (Looking South toward Westwood)**

*This image depicts the character of the proposed urban waterway through the Urban Ravine. The waterway contains a heavily-vegetated riparian edge, trees, and limestone rock. The height of the retaining wall from Westwood is visible. A pedestrian railing and lighting along the maintenance path and overlooks are included for safety (and as required by code).*

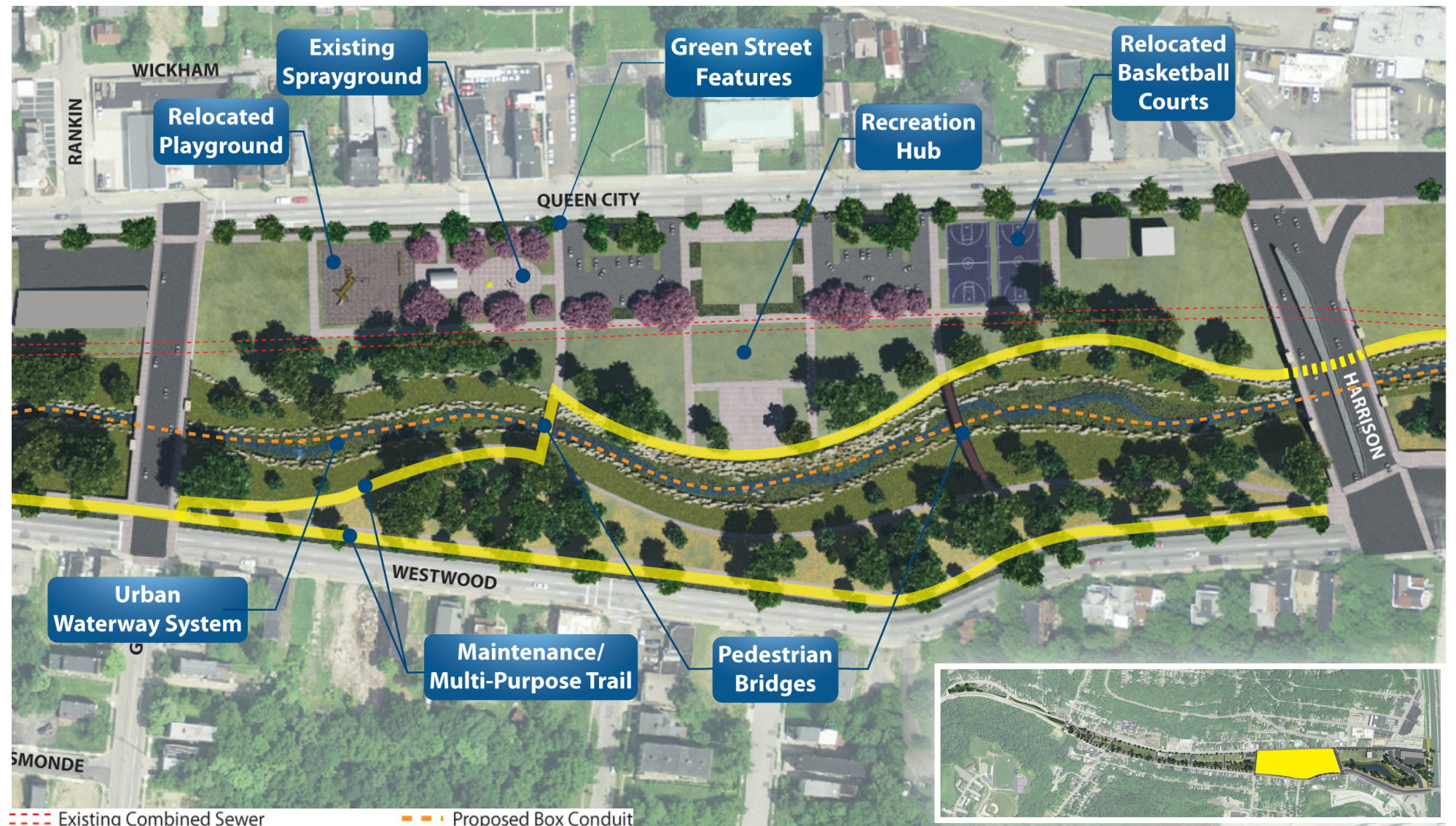
On the north bank of the Urban waterway behind existing (and future) buildings, a 20-foot wide multi-purpose, paved access drive doubles as a maintenance road and pedestrian path. Because the drive accommodates people, a decorative handrail on top of the retaining wall provides visual interest and safe barrier to the waterway because public access to the waterway is restricted in this area. Pedestrian scale, decorative lighting is integrated into the wall/fence design. Restricted access vehicles can use the drive for maintenance of the waterway and its landscape. **The access path also serves as a permanent easement for the existing combined sewer below.**

After the waterway crosses Grand, the landscape becomes much wider and provides more space to meander. This area represents the Civic Recreation Hub. The plan builds on the existing Cincinnati Recreation Commission site, keeping the existing sprayground and basketball courts while adding a new, more engaging playground, a multi-purpose lawn, and off-street parking, which can be used for special events (i.e., movie nights, a farmer’s market, etc.).

Along the edge of the multi-purpose path that runs through the middle of the Civic Recreation Hub, stone steps allow visitors to sit next to and interact with the waterway. Two pedestrian bridges cross the water channel and provide connections to trails and create vantage points for the enjoyment of nature and birdwatching.

The landscape character of the area north of the channel is mostly lawn with scattered trees to allow for a variety of recreational activities. South of the channel, a narrow riparian habitat hugs the water, and meadows blanket the landscape beyond the waters edge. The rich and varied meadow habitat has the potential to attract local wildlife.

The streetscape along Queen City is enhanced in the recreation core to create a strong pedestrian experience. A double row of trees create a shaded space where people can stroll or sit and linger a while. Stormwater planters and porous pavement are integrated into the streetscape system.



**Urban Waterway Civic Recreation Hub**

**5 Water Quality Feature: Using Wetlands to Treat Runoff**

At Harrison Avenue, the waterway widens more and a large, water quality wetland/pond is located just south of primary channel. During a large storm event when water levels rise, water flows through the surrounding wetland vegetation before entering the pond. The pond stores runoff to be used as source flow for the waterway during dry spells.

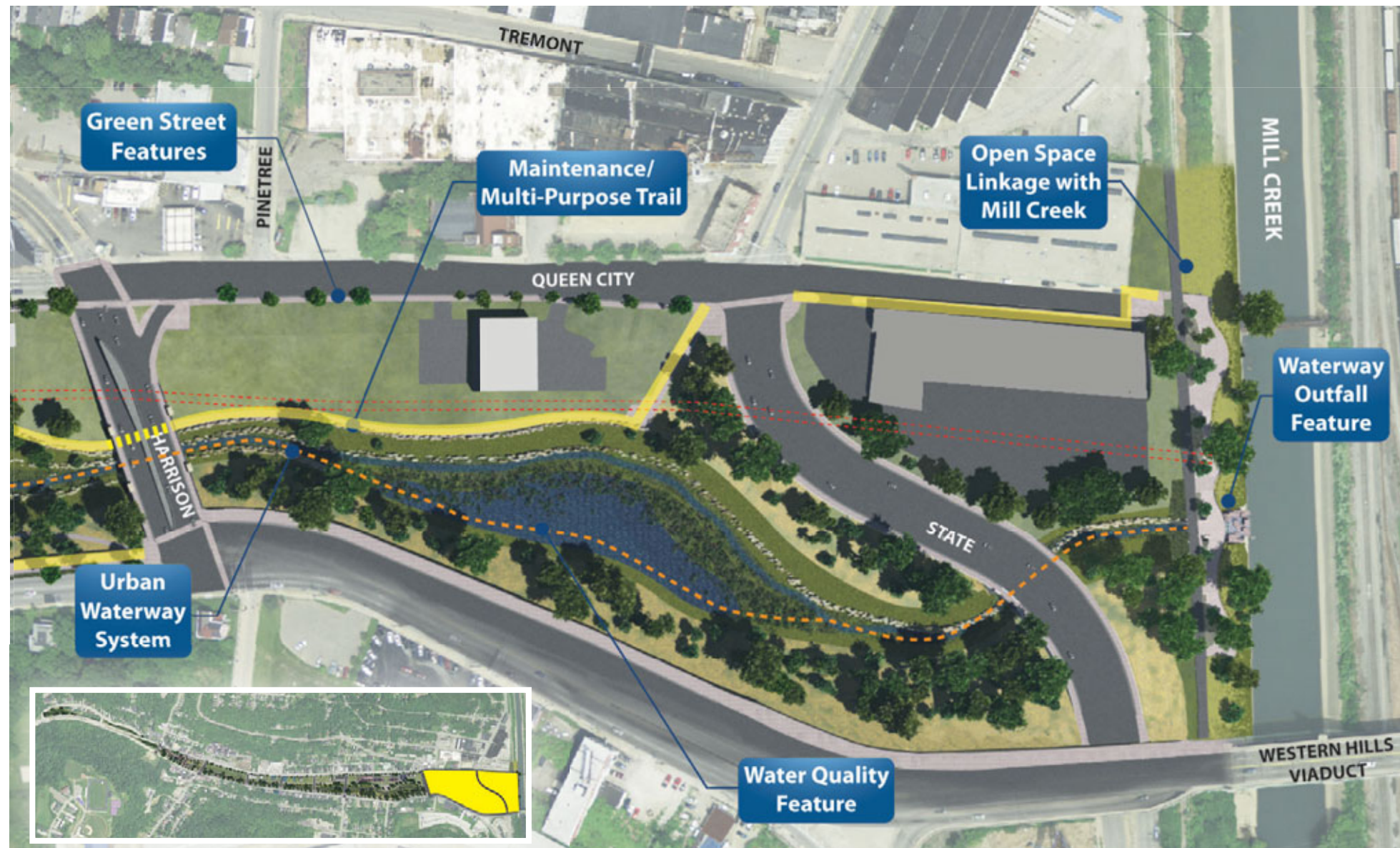
**Civic Recreation Hub (Looking Northwest)** *This image depicts the character of the proposed urban waterway near the Civic Recreation Hub. Native vegetation is included to help reduce maintenance needs and to provide water quality benefits during high flow events. The pedestrian bridge in the background is above the modeled 100-year floodplain elevation; so during large volume rain events, water elevations would be contained within the heavily-planted areas.*

Roadway bridges are proposed at Harrison and State. Harrison Avenue is slightly realigned at the intersection with Westwood. Beekman Street is eliminated and Queen City becomes two-way between Harrison and State.

The multi-purpose trail continues along the north edge of the waterway. Because the proposed bridge at State is not tall enough to accommodate bicycles, the multi-purpose trail turns northeast toward the corner of Queen City and State Avenue, where it crosses State and continues along Queen City before terminating at the future Mill Creek Greenway trail.

The predominant habitat in the area between Harrison and State is meadow, which in combination with the wetland surrounding the pond, should create an especially attractive home for wildlife. Smaller segments of riparian habitat flank portions of the waterway.





**Urban Waterway Eastern Gateway Zone**

--- Existing Combined Sewer      - - - Proposed Box Conduit

**6 Waterway Outfall Feature: Celebrating Lick Run**

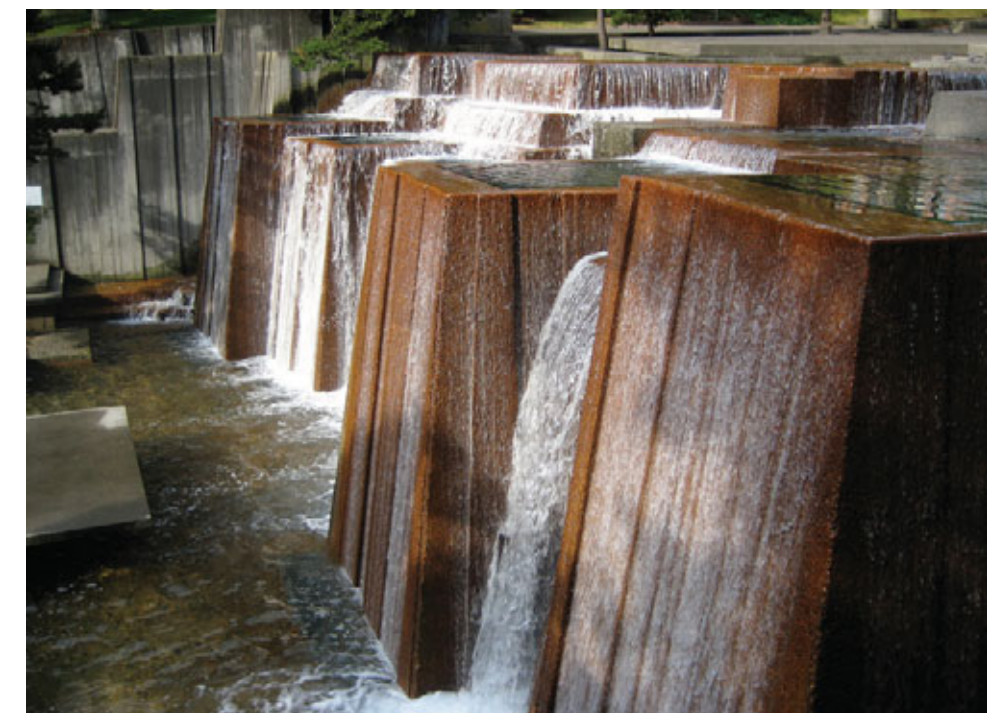
After crossing below State Avenue, the waterway soon crosses below a bridge for the future Mill Creek Greenway trail. Here, the water cascades over the Waterway Outfall Feature that consists of huge, sculptural blocks. The water drops several feet to the Mill Creek below. Inspiration for this feature is the Ira Keller Forecourt Fountain in Portland, Oregon. The goal is to create a dramatic moment that celebrates the release of the Lick Run urban waterway into the Mill Creek while providing a water quality feature that aerates the water one last time.

To take advantage of this special moment, a large overlook creates numerous opportunities to view the outfall feature, the Mill Creek, the rail yard across Mill Creek, and the city skyline in the distance. The overlook consists of curvilinear, stone walls that can be used for seating and for retaining landscape beds that create a garden on the edge of the Mill Creek. The overlook also includes interpretive signs that relates the history of the Mill Creek and provides a fitting location for public art.



**Eastern Gateway Zone (Looking South toward Westwood)**

This image depicts the character of the proposed urban waterway at the water quality feature. The multi-purpose path provides safe, well-lit access. During low volume rain events, runoff flows north of the water quality feature to Mill Creek. During high volume rain events, water flows both north of and into the water quality feature. This feature provides valuable terrestrial and aquatic habitat.



**Ira Keller Fountain (Portland, Oregon)**

## ECOLOGICAL FEATURES & BENEFITS

The Lick Run urban waterway represents the keystone of the watershed-based CSO reduction solution. This conveyance system is an innovative way to remove stormwater from the combined sewer system, and provides a multitude of ecological features and benefits. The urban waterway also demonstrates how South Fairmount can be a regional model for sustainable practices, while creating a unique landscape that naturally enhances the character of the community. Ecological features and benefits that are part of Vision for the urban waterway include:

### Water Quality Processes

Water quality is vital not only to the welfare and health of people; it is also a key component in the health of natural ecosystems and their inhabitants. Water quality processes along the length of the urban waterway focus on aerating, filtering, and absorbing stormwater runoff as it makes its way to Mill Creek

### Habitats

There are four primary native habitats in along the urban waterway:

- Wetland forebay habitat
- Riparian habitat
- Meadow habitat
- Bioswale/rain garden habitat

Each habitat consists of different plant species that correspond to the specific location and conditions in each area with the intent of maximizing the successful establishment of the plantings and to provide enough variety to create a diverse native landscape.

### Environmental Education

Water quality features and habitats along the conveyance corridor also provide a rich outdoor classroom for learning about these systems and about sustainable approaches to stormwater management. Environmental education programs can focus on the public at large, and be tailored for more active educational programs with local schools and institutions.



Urban Waterway Ecological Features and Habitats

## Water Quality Processes

The entire length of the urban waterway was designed to include integrated water quality features. These features rely on processes that maximize the time that water is in contact with vegetation, soils, stone. The processes include:

### Aerating

Riffles, pools and waterfalls adds oxygen to water and improve the health of the aquatic habitat along the urban waterway.



### Filtering

Structural BMPs, vegetation, and sand/gravel help to remove sediment and other materials by slowing down the water and allowing these elements to cling to plants or settle in the streambed or floodplain.



### Absorbing

Depending on the chemical and the types of plants, the plants can sequester, metabolize, or convert the chemical to a more benign form. Organic matter and microbes in the waterway also can help break down chemicals.



## Wetlands/Forebay Habitat

The westernmost section of the urban waterway consists of two large forebay wetlands. In stormwater management terms a forebay is one of the first links in the chain of elements that comprise a runoff treatment system. It consists of a pool or wetland cell that slows incoming runoff enough to allow coarse sediments to settle to the bottom before the water continues on its journey through the rest of the system. For the Urban waterway, the forebay wetlands consist of large, relatively flat basins filled with native wetland plants. These plants effectively slow and filter the incoming water, removing sediment and pollutants. The wetlands are designed to be accessible and easily maintainable, because all forebays require periodic cleaning to remove excess sediment and plant debris. Another wetland is proposed for further down the waterway between Harrison Avenue and State Street. This wetland will not function as a forebay but will provide additional filtration and absorption of runoff before it either enters an off-line pond or continues to flow toward the Mill Creek.

Wetlands, in general, support a wide array of animal and plant life. Plants thrive in the nutrient-rich water, and these, in turn, provide food and shelter for insects, amphibians, reptiles, bird, and mammals. Some potential plant species for the Urban waterway wetlands/forebays include the following:

### Trees

Swamp White Oak (*quercus bicolor*), Sweetgum (*liquidambar styraciflua*), Baldcypress (*taxodium distichum*), Black Tupelo (*nyssa sylvatica*)

### Shrubs

Black Chokeberry (*aronia melanocarpa*), Sweetshrub (*clethra alnifolia*), Sweetspire (*itea virginica*), Arrowwood viburnum (*viburnum dentatum*)

### Forbs

Blue Flag Iris (*iris versicolor*), Cardinal Flower (*lobelia cardinalis*), Spiderwort (*tradescantia ohioensis*), Swamp Milkweed (*asclepias incarnate*)

### Grasses, Sedges, and Rushes

Sedges (*carex* spp.), Rushes (*juncus* spp.), Prairie Dropseed (*sporobolus heterolepis*), Virginia Wild Rye (*elymus virginicus*)



Trees



Shrubs



Forbs



Grass-like Plants



## Riparian Habitat

Along the entire length of the urban waterway, the landscape is subjected to higher moisture and periodic flooding. This zone will be designed as riparian habitat. Water loving plants thrive in this habitat where they provide shade that cools the water and generate significant uptake of water through transpiration. This habitat is especially attractive to wildlife due to the abundance of food, shelter, places to perch, and access to water. Some potential plant species that could be found in the urban waterway riparian habitat include:

### Trees

Black Willow (*salix nigra*), Sycamore (*platanus occidentalis*), River Birch (*betula nigra*), Redbud (*cercis Canadensis*) and Red Maple (*acer rubrum*)

### Shrubs

Red Twig Dogwood (*cornus sericia*), Winterberry (*ilex verticillata*), Highbush Cranberry (*viburnum opulus v. americanum*), and Buttonbush (*cephalanthus occidentalis*)

### Forbs

Smooth Rose Mallow (*hibiscus laevis*), Lizard's Tail (*saururus cernuus*), Spotted Joe Pye Weed (*eupatorium maculatum*), and Goatsbeard (*aruncus dioicus*)

### Grasses, Sedges, and Rushes

Sedges (*carex spp.*), Rushes (*juncus spp.*) Fowl Manna Grass (*glyceria striata*), and Blue Joint Grass (*calamagrostis canadensis*)



Trees



Shrubs



Forbs



Grass-like Plants



## Meadow Habitat

The areas just outside of the riparian zone will be planted and managed as low-profile meadow. The goal of this planting strategy is to maintain visibility while creating a diverse natural habitat and minimizing maintenance/energy usage. The forbs and grasses will be less than 4 feet in height, and clusters of trees and shrubs will be included to create cover and visual variety. This habitat will require periodic mowing, 1 to 2 times per year, to minimize unwanted or invasive species and to maintain the visually open character of the landscape for safety/security purposes. Some potential plant species that could be found in the meadow habitat include:

### Trees

Smooth Serviceberry (*amelanchier laevis*), Shingle Oak (*quecus imbricaria*), Red Oak (*quercus rubra*), and Shagbark Hickory (*carya ovata*)

### Shrubs

Staghorn sumac (*rhus typhina*), Elderberry (*sambucus Canadensis*), Black Haw (*viburnum prunifolium*), and Fothergilla (*fothergilla gardenii*)

### Forbs

Butterfly Weed (*asclepias tuberosa*), New England Aster (*aster novae-angliae*), Black-eyed Susan (*rudbeckia hirta*), and Wild Quinine (*parthenium integrifolium*)

### Grasses

Switch grass (*panicum virgatum*), Side-oats Gramma (*bouteloua curtipendula*), Little Bluestem (*schizachyrium scoparium*), and Canada Wild Rye (*elymus canadensis*)



## Bioswale/Rain Garden Habitat

The final habitat that will be established along the Urban waterway corridor, will be an extensive bioretention zone that will essentially be a large, linear rain garden. Located between the wetland forebays at the west end of the corridor and the outfall structure where the waterway is daylighted near White Street, the bioswale/ rain garden habitat will consist of a series of connected rain garden cells that capture and treat runoff from Queen City Avenue. The south edge of the bioswale beds will be defined by a low limestone wall that creates a strong, decorative edge to the planted areas. Because the bioswale will be very visible and be part of the gateway experience to South Fairmount from the western neighborhoods, the plantings will be more horticultural or garden-like than the more naturalistic planting scheme used in the other habitats. The plants will consist of both native and non-invasive, adapted species with the intent of maximizing the aesthetic beauty and ease of maintenance necessary for such a highly visible location. Some of the potential plant species that could be grown in the bioswale/ rain garden habitat include:

### Trees

Baldcypress (*taxodium distichum*), Sycamore (*platanus occidentalis*), Serviceberry (*amelanchier laevis*) and Sweet Gum (*liquidambar styraciflua*)

### Shrubs

Sweetspire (*itea virginica*), Oakleaf Hydrangea (*hydrangea quercifolia*), and Arrowwood viburnum (*viburnum dentatum*)

### Forbs

Coneflower (*Echinacea purpurea*), Black-eyed Susan (*rudbeckia sirta*), Spiderwort (*tradescantia ohioensis*), and Autumn Joy Sedum (*sedum 'Autumn Joy'*)

### Grasses, Grass-like Plants, and Ferns

Lilyturf (*liriope muscari*), Prairie Dropseed (*sporobolus heterolepis*), Fountain Grass (*pennisetum alopecuroides*), and Cinnamon Fern (*osmunda cinnamomea*)



Trees



Shrubs



Forbs



Grasses & Ferns



## Stream Habitat

In addition to providing stormwater management and water quality benefits, the urban waterway is intended to function as an aquatic habitat. Between the stone slabs that line the bottom of the channel, cracks and fissures are filled with gravel and soil that provide places for animal species to live and hide and for plant species to become established. The banks of the waterway are defined with large stone slabs and boulders that protect the banks from erosion and provide locations for plants and animals to live. Because the water level in the channel will tend to vary, the species that reside there will tend to be hardy and tolerant of dynamic hydrological regimes.

Water naturally attracts wildlife. As the waterway and its surrounding landscape matures, the diversity of plant and animal species will surely increase, creating an ecological asset for South Fairmount. Some of the potential species that could be found in and near the waterway include:

### Plants

Branched Bur-reed (*sparganium erectum*), Lizard's Tail (*saururus cernuus*), Sweet Flag (*acorus calamus*), and Green Arrow Arum (*peltandra virginica*)

### Birds

Cedar Waxwing, Red-winged Blackbird, Green Heron, and Sharp-shinned Hawk

### Amphibians and Reptiles

Long-tailed Salamander, Eastern Box Turtle, Green Frog, and Red-backed Salamander

### Insects and Other Aquatic Species

Blue Dasher Dragonfly, Water Strider, Crayfish, and Great Spangled Fritillary Butterfly



Plants



Birds



Amphibians & Reptiles



Insects & Other Species





## Environmental Education

The urban waterway provides numerous opportunities for environmental education, yet another component of ecological features and benefits. The waterway itself consists of a complex system of water quality and quantity elements that can be difficult to understand. Therefore, interpretive signage throughout the corridor explaining the operation of the waterway and its role in enhancing the health of the Mill Creek and the community at large would be beneficial.

The various habitats (described previously) comprising the waterway could also be featured with signage listing plant and animal species that might be found in each zone. In addition, significant local landmarks and stories could be noted with signage, icons, kiosks, or artwork. The character of the signage will be integrated with the character of the rest of the site amenities for the neighborhood, including benches, trash receptacles, lighting, and fencing.



Opportunities for Demonstrating Green Infrastructure



Opportunities for Integrating Environmental Art



Examples of Interpretive Signage



Outdoor Classrooms and Partnerships with Local Schools

## Transportation Enhancements

Since the early feasibility study phases of the urban waterway, the transportation network was identified as a significant design challenge and opportunity to integrate into a refined Lick Run solution. The transportation network, as a one-way pair carrying significant volumes, has negatively impacted the community over the last 100 years. It was no surprise, then, that the transportation network was a major discussion topic during community and stakeholder discussions, as well as in Community Design Workshops #2 and #3.

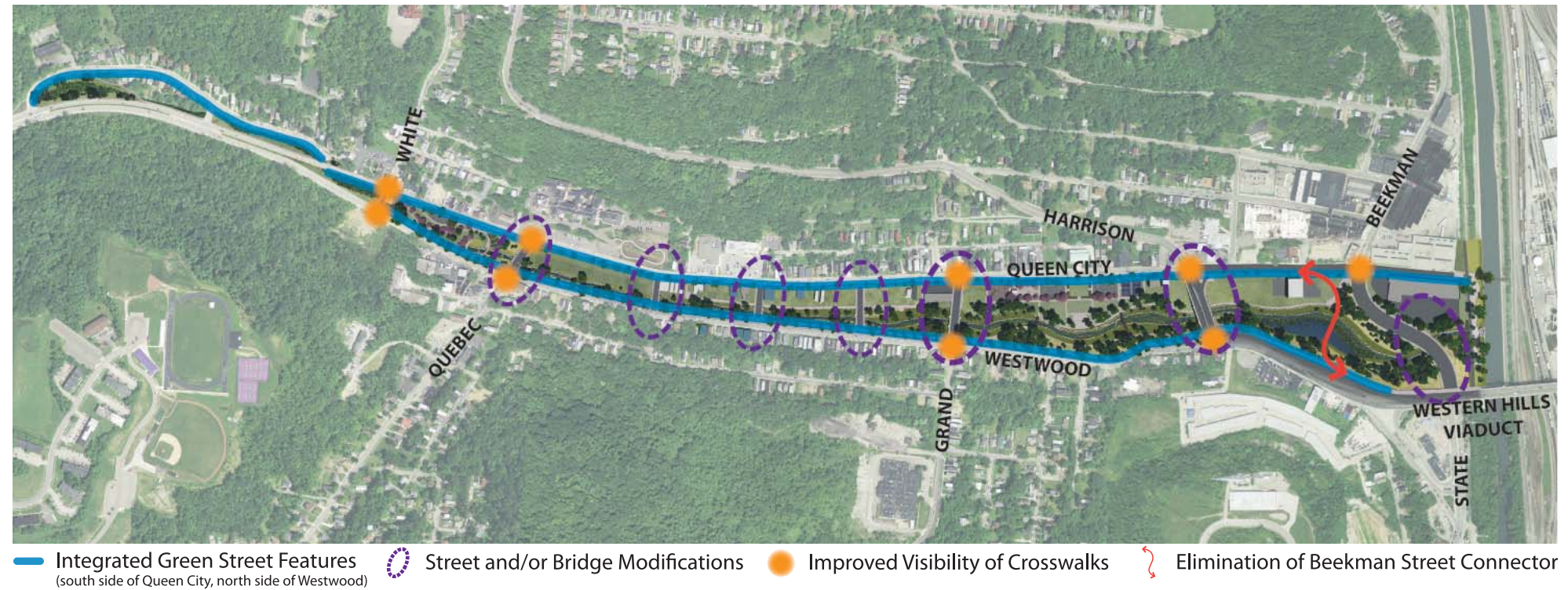
There are serious concerns about the speed and volume of traffic along Westwood and Queen City avenues, and there is a strong desire to modify the transportation network to better support a livable and walkable community. The Urban Waterway Base Plan attempts to address the first phase of these concerns **within the existing curb-to-curb width**. The extent of these improvements is shown on the adjacent plan.

To address stakeholder concerns about pedestrian safety at intersections, the plan proposes new, highly visible crosswalks and crossing signals. The crosswalks will have special pavement that contrasts with the asphalt roadway, and all corners will have accessible ramps that meet or exceed American with Disabilities Act (ADA) guidelines.

To further increase the walkability and also improve the pedestrian experience along these busy streets, the Base Plan recommends integrated stormwater BMPs (e.g., street trees where space allows, stormwater planters) as well as benches, trash receptacles, improved street lights, and a coordinated signage system. These improvements are focused on the southern edge of Queen City Avenue and the northern edge of Westwood Avenue because of the anticipated impacts from construction of the urban waterway. The sidewalks are also widened (where possible) to create a more generous street edge.

To maintain connectivity between north-south streets in the urban waterway corridor and Queen City and Westwood Avenues, new bridges and intersection modifications are included in the Base Plan and will serve as the urban street grid for the neighborhood and future redevelopment, while also providing opportunities to overlook the urban waterway.

## Transportation Enhancements Part of the Urban Waterway Base Plan



Improved Visibility of Crosswalks



Integrated Stormwater BMPs



ADA-accessible Ramps at Crosswalks



Improved Street Lighting

## Transportation Challenges To Livable Communities

Given the complexity of the traffic flow in South Fairmount, the Urban Waterway Base Plan assumes that a more extensive study will be performed before any additional transportation improvements are made beyond those recommended in the Base Plan. Furthermore, changes to the traffic strategy need to be coordinated with existing and future projects that affect the community, such as the Harrison Avenue and Western Hills Viaduct projects.

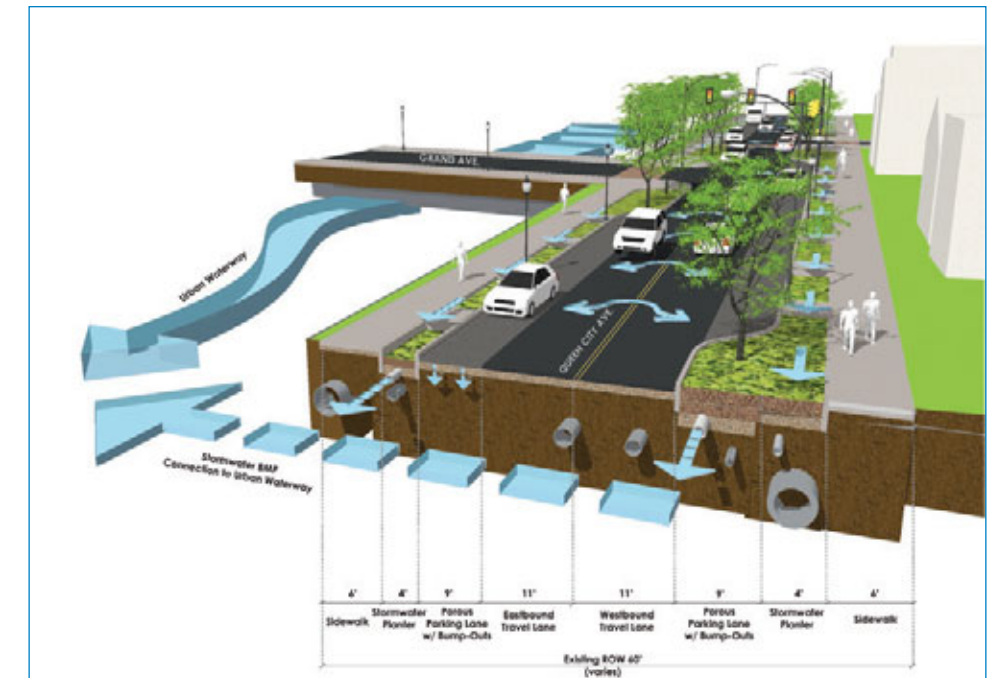
The current traffic system is functionally effective and efficient with regard to traffic flow, and CDOTE has no immediate plans to change or improve the streets. Beyond traffic flow, however, the current system does not address the community's concerns. The Urban Waterway Base Plan includes several components with potential to improve the safety of the streets. Another, bolder concept for enhancing transportation in the neighborhood was discussed during CDW #2. In this scenario, Westwood is widened to a 6-lane, 2-way "Ecological Parkway" with a landscaped lane separating eastbound and westbound traffic. Stormwater planters and bioretention areas are integrated into the streetscape to capture and treat runoff before releasing it into the urban waterway.

Queen City would be redesigned as a 2-lane, 2-way local street with on-street parking and a reduced speed limit. The thinking behind this strategy is that, by allowing Westwood to convey higher speed and volume traffic through the neighborhood as it does now, Queen City would become a pedestrian- and business-friendly street. The new configuration could support a rich streetscape with benches, trees, outdoor seating, and other amenities, and the slower traffic would benefit both pedestrians and businesses.

Several challenges stand in the way of implementing these concepts:

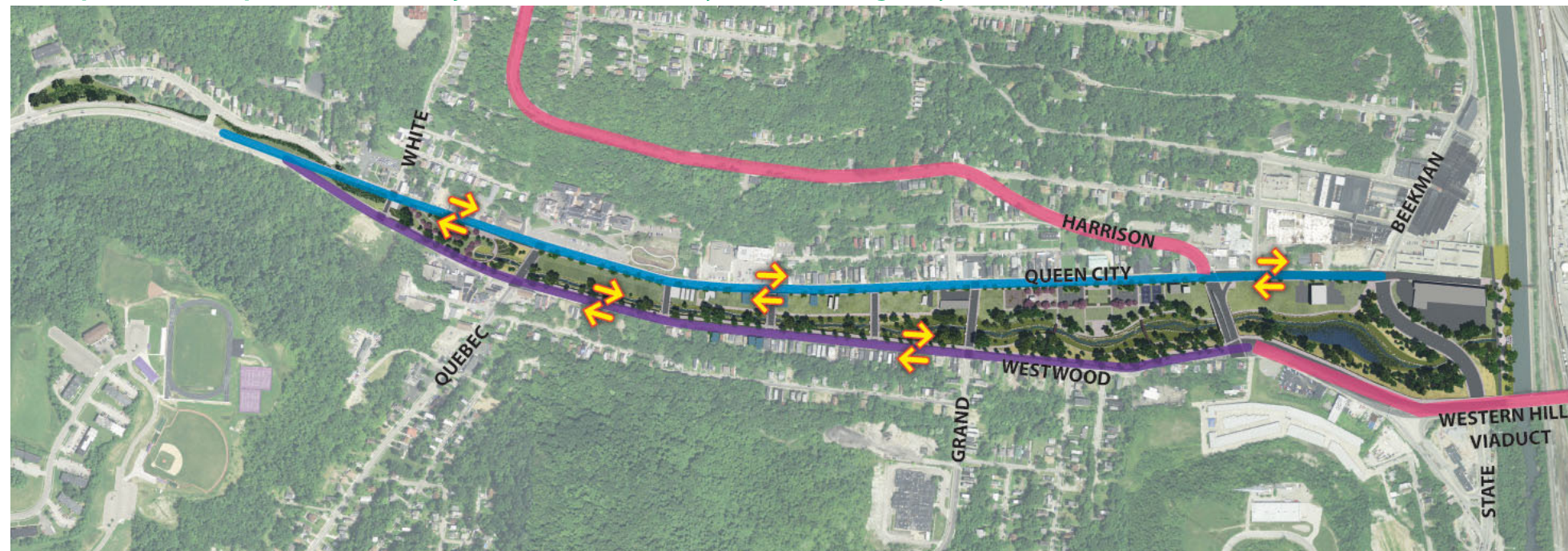
- Lack of an identified funding source
- Significant impacts on properties on the south side of Westwood
- Disruption of traffic during construction

With these challenges in mind, it is recommended that further study take place to address the transportation and safety needs of the community on these two important travel corridors. Ultimately, further study is required to evaluate the impacts of the Complete Street/"Ecological Parkway" concept on the business district.

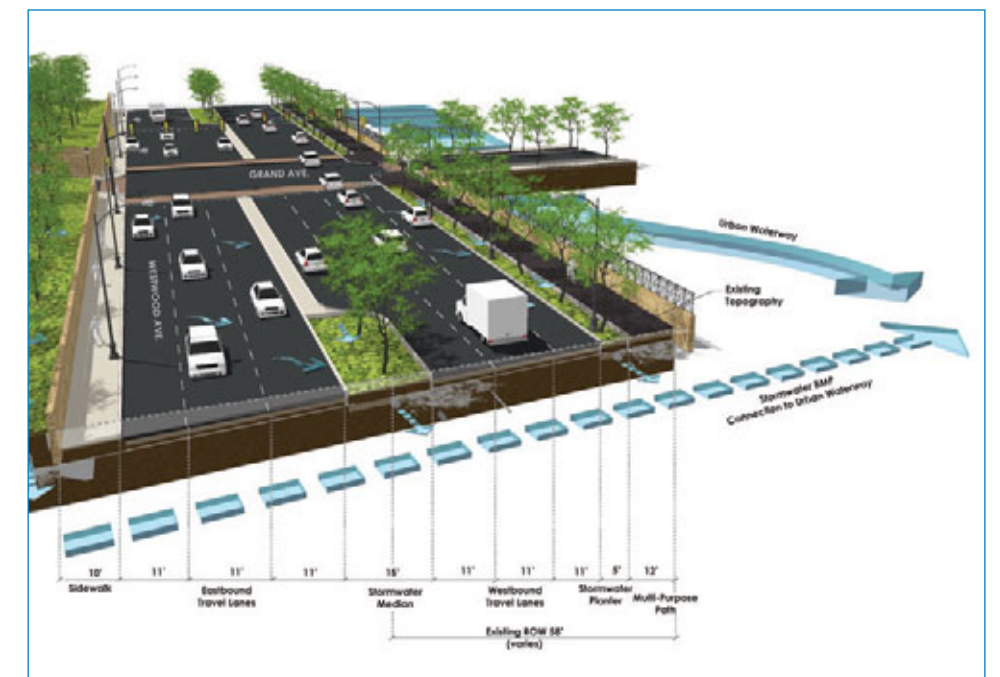


**Queen City Avenue:** Local Two-Way Street concept with bump-outs, stormwater planters, street trees, porous pavements in parking lanes, utilities underground, and new streetscape lighting.

## Transportation Improvements Subject to Further Study and Local Agency Coordination



- Conversion to Local Two-Way Street (Queen City Avenue)
- Conversion to Two-Way Complete Street/"Ecological Parkway" (Westwood Avenue)
- Adjacent Transportation Projects for Coordination



**Westwood Avenue:** Complete Street/"Ecological Parkway" concept with stormwater planters, median with street trees, multipurpose trail, turning lanes, and new parkway lighting.

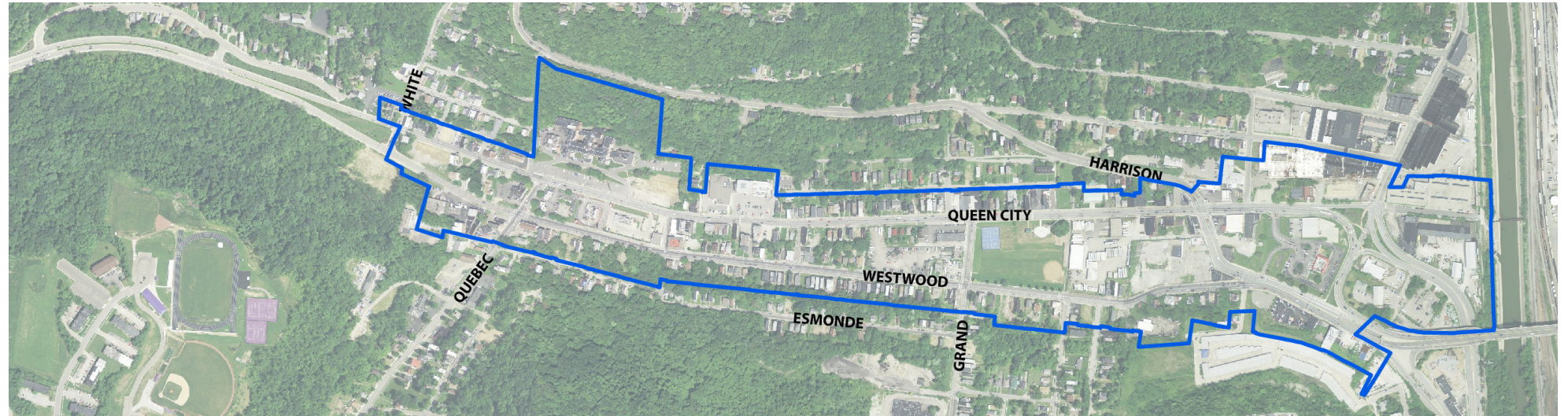
## Cultural Resources Best Management Practices

The Urban Waterway Base Plan represents a comprehensive solution to CSO reduction, but the construction of this system will result in some impacts to existing buildings. Throughout the planning process, and in order to assess potential impacts, MSD and the design team followed a cultural resources best management practices approach:

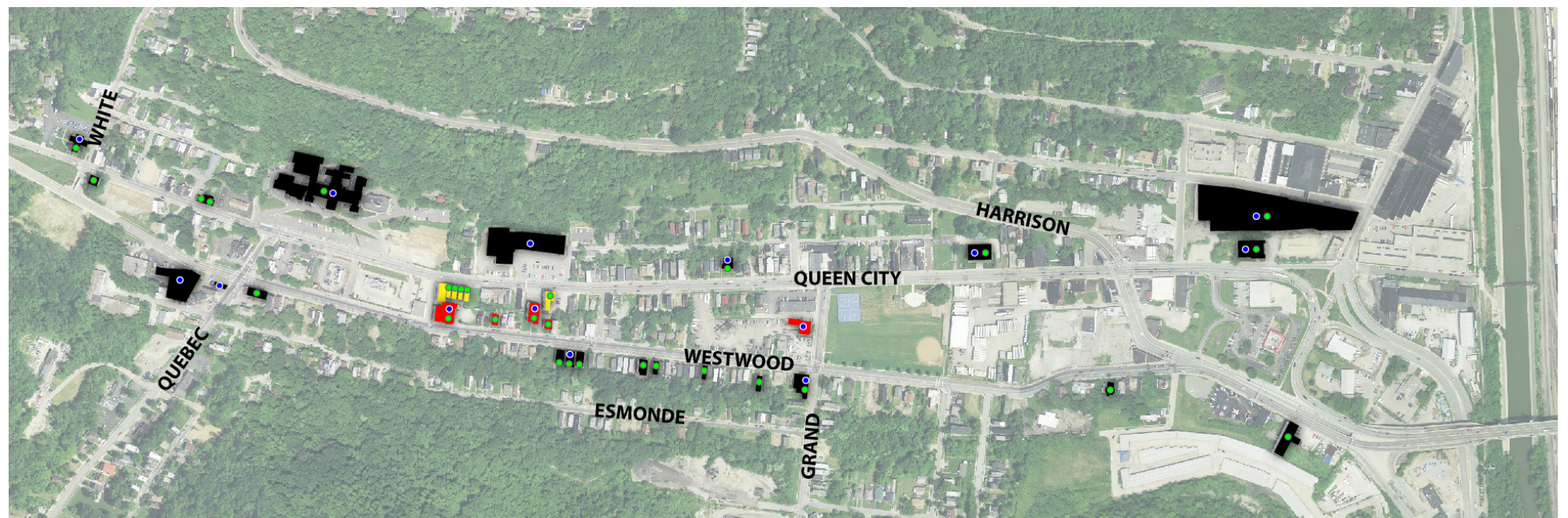
- MSD engaged the services of a qualified cultural resources consultant (Gray & Pape, Inc.) to initiate the Section 106 process, consistent with regulatory standards and to advise MSD and the design team
- MSD completed identification and evaluation of significant architectural resources within the Area of Potential Effect (APE); a map showing the APE is shown at the **top right** of this page
- MSD initiated public involvement and consulted with “consulting parties” to obtain input on historic preservation issues. Consulting parties include: The Ohio Historic Preservation Office, the City of Cincinnati, the South Fairmount Community Council, the Cincinnati Preservation Association, Communities of the Future Advisory Committee, and the public (at the Community Design Workshops)
- MSD organized public workshops to provide the public with opportunities to examine results of these efforts and to identify historic properties, evaluate their significance, and help define the APE

The Phase I History-Architecture Report, which summarizes these efforts, is contained in **Appendix L**. This report was completed by Gray & Pape, Inc.

Through the historic architecture inventory and input from Community Design Workshop #1, 36 buildings/sites are identified as important cultural/historical resources in the South Fairmount study area. The urban waterway alignment impacts five of these buildings (shown in red in the figure at the **bottom right**). The Base Plan assumes that these buildings are demolished; however, should an alternative funding source (and entity to own, restore, and occupy) be identified, MSD could work with local partners to potentially relocate structures and/or mitigate impacts.



**Area of Potential Effect (APE) within South Fairmount** The APE is defined as the parcels located between Queen City and Westwood avenues through which the existing combined sewer passes, and those parcels fronting Queen City Avenue on the north side of the street, and those parcels fronting Westwood Avenue on the south side of the street that have direct views into the block proposed for the urban waterway between the Mill Creek to White Street.



### Potential Building Impacts within the APE

- Buildings of Cultural Interest to the Community **14** buildings
- Historic Resources Recommended NRHP Eligible **32** buildings
- Cultural/Historic Resources **NO IMPACT** **26** buildings
- Cultural/Historic Resources **IMPACTED BY WATERWAY** **5** buildings
- Cultural/Historic Resources **IMPACTED BY HYDRAULICS/GRADING** **5** buildings

In consultation with project partners, MSD can develop plans to mitigate project impacts on historic properties by moving and reusing buildings, or through treatment/documentation, avoidance, project minimization or other appropriate mitigation. In cases where it is not feasible to move a targeted building due to project constraints, building condition, excessive costs or similar factors—the following are recommended best management practices:

**Documentation** – document buildings through detailed photography, historical research and informant interviews.

**Architectural Salvage** – buildings with sufficient historic character and integrity would be identified for bids using this approach. Examples of local services include Wooden Nickel Architectural Salvage, ReStore/Habitat for Humanity, and Building Value.

**Off-site Mitigation** - Develop community-based plan to enhance, protect or interpret historic properties in South Fairmount but outside the Urban Waterway project area. Examples might include preparation of an historic preservation plan or National Register nomination for a specific property, collection of oral histories, etc.



Examples of Significant Buildings along the proposed South Fairmount Cultural Trail

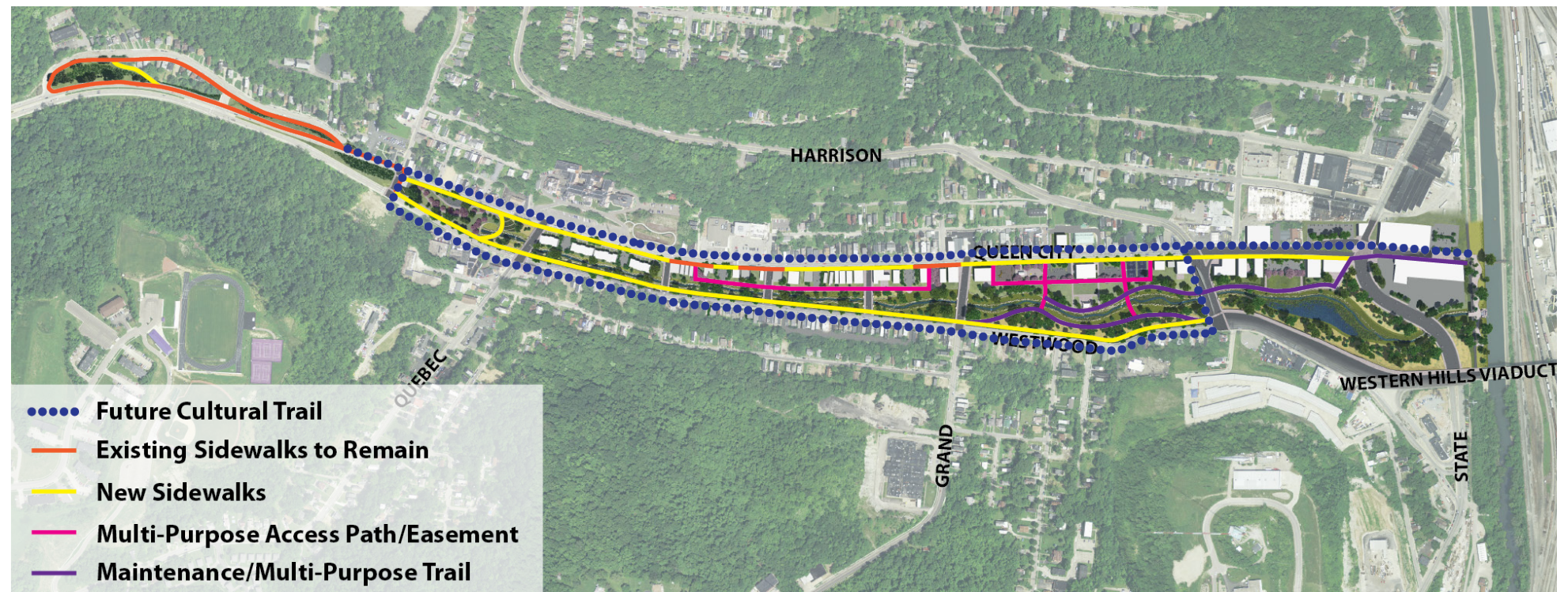


Examples of Interpretive Signs and Markers

### South Fairmount Cultural Trail

Early in the design process, an idea for a cultural trail surfaced and was warmly embraced by the community. The trail would consist of a designated walkway that would take people on a journey around the neighborhood to see significant buildings and places. In addition, places and events that are no longer visible but are meaningful to the residents would be described with interpretive signage, artwork, or both. Markers would be used along the trail routes to make it visible. This trail could serve as a potential mitigation strategy for impacts to historical and cultural resources.

The dark blue dotted line in the adjacent map shows the proposed route of the cultural trail. It would connect to the future Mill Creek Greenway Trail and then continue as a loop along Queen City and Westwood. Residents also mentioned that they would like the cultural trail to connect to potential nature trails that could be established along the old railroad rights-of-way—one north of Queen City and another south of Westwood.



South Fairmount Cultural Trail and Trail Connections

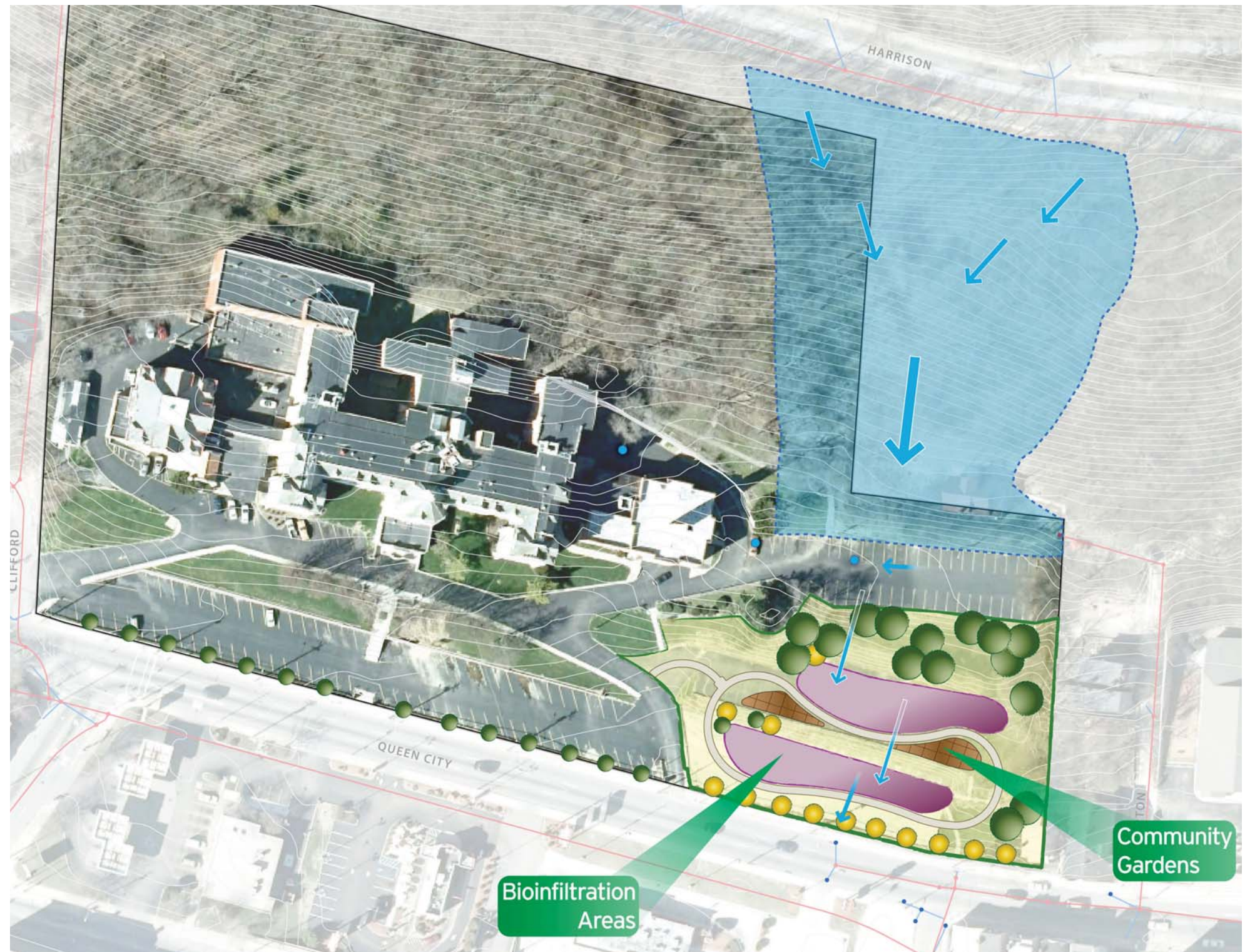
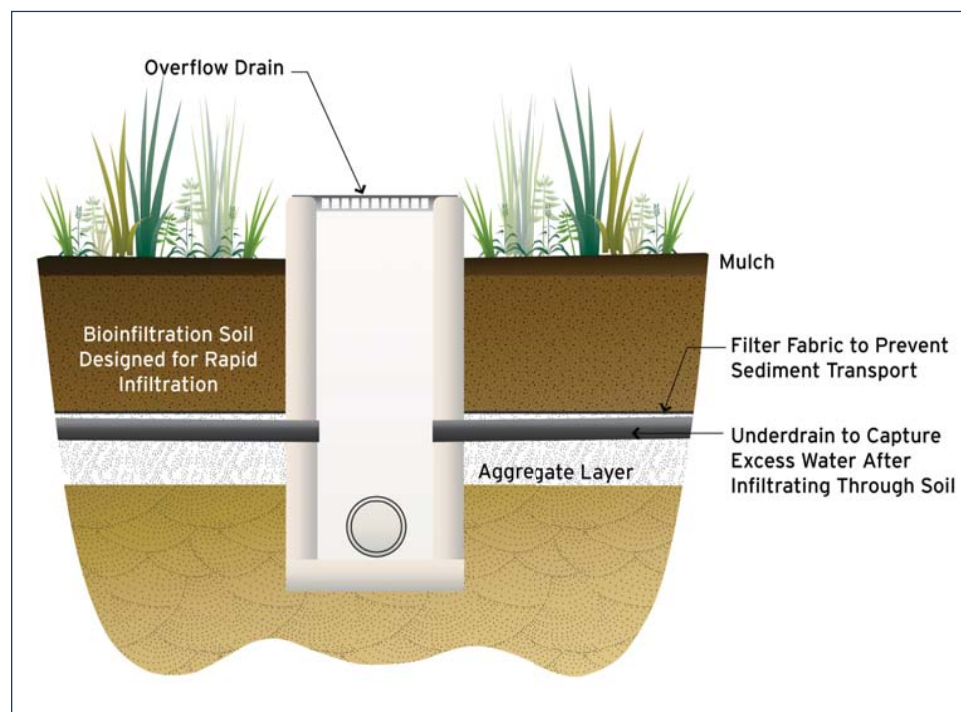
## ENABLED IMPACT PROJECTS

Enabled Impact Projects are green infrastructure “Early Success Projects” that demonstrate innovative stormwater BMPs (e.g., bioinfiltration, porous pavements) while helping reduce the volume of stormwater runoff entering MSD’s combined sewer system. They also provide highly-visible examples of the importance of partnerships in watershed-based planning.

The following are brief descriptions of Enabled Impact Projects completed or in progress in the Lick Run watershed.

### St. Francis Court Apartments (1860 Queen City Avenue)

- This property was converted from two unused parking lots to a bioinfiltration system utilizing two basins.
- Stormwater runoff is redirected to the upper basin where it is intercepted by a biosoil mix that is designed for rapid infiltration and plants that filter out pollutants.
- The basin is planted with shrubs, grasses and perennials, all chosen for their adaptability to drought and flood conditions.
- Overflow from the upper basin is then directed to a second lower basin.
- This project helps remove 360,000 gallons of stormwater runoff each year from the combined sewer system.



St. Francis Court Apartments Enabled Impact Project



St. Francis Bioinfiltration Basin (2011)



St. Francis Bioinfiltration Basin during Dry Conditions



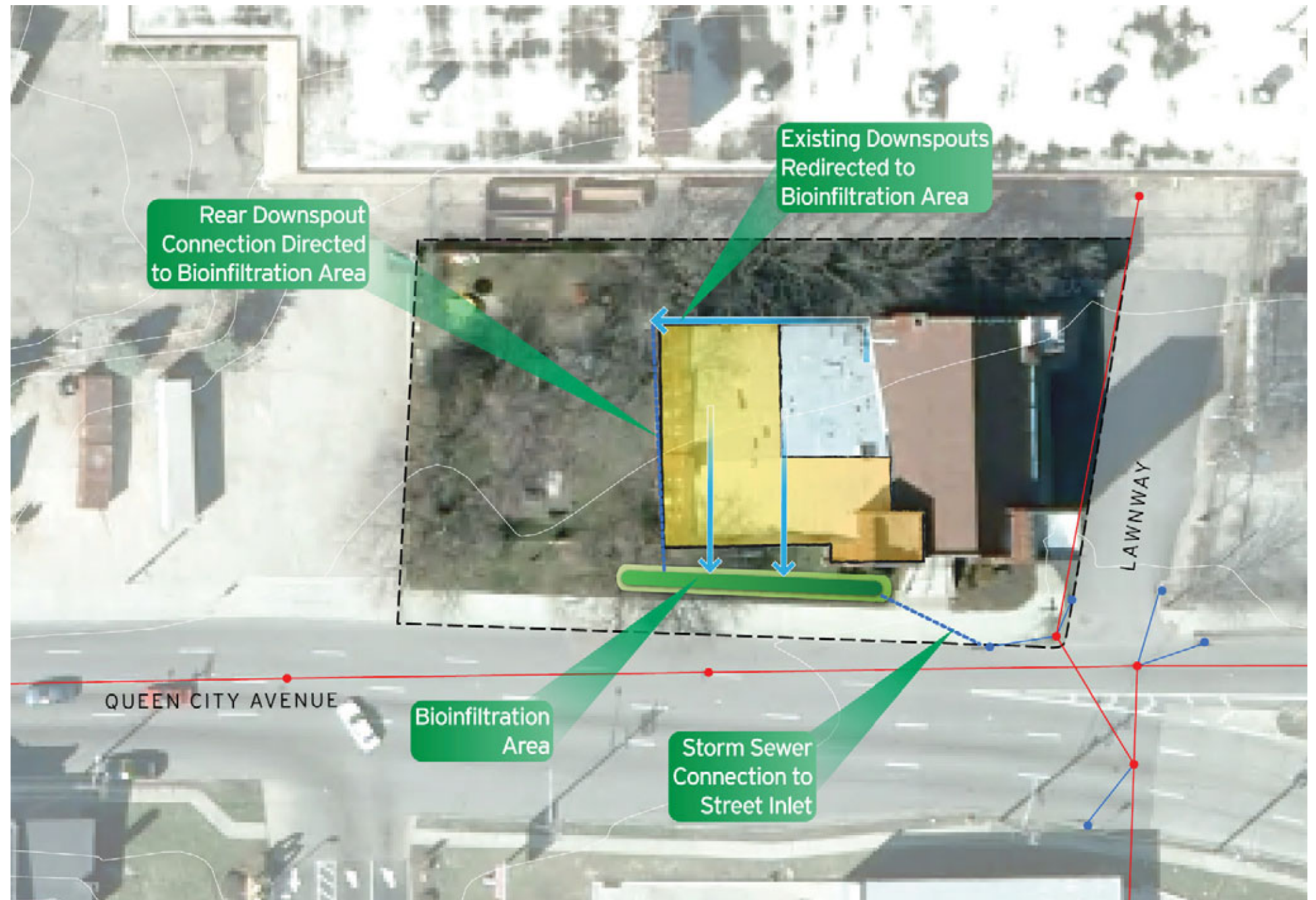
St. Francis Bioinfiltration Basin during a Rain Event

**Immanuel United Church (1520 Queen City Avenue)**

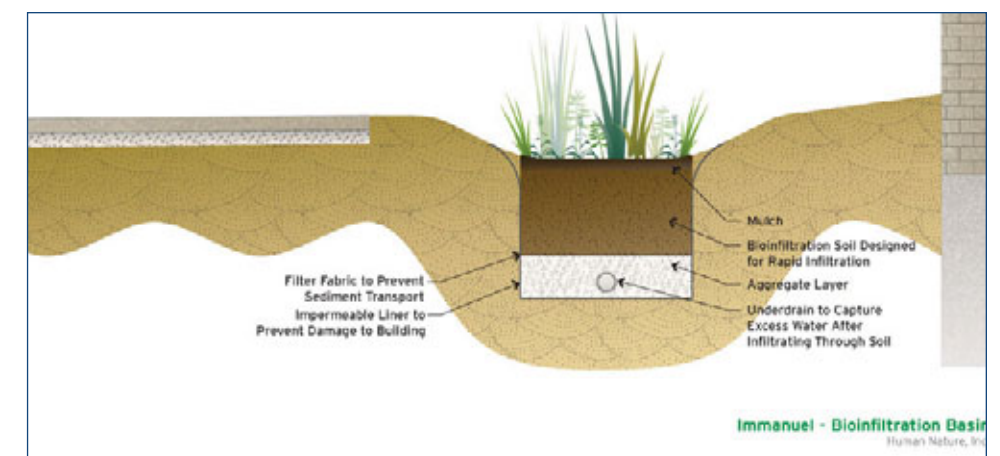
- This bioinfiltration basin was created to capture runoff from the building's roof.
- Pipes, connected to the building's downspouts, redirected the water to the constructed basin.
- The basin, which contains a highly-permeable biosoil, is planted both with grasses and perennials.
- Together, the soil and plants filter our pollutants, absorb water and provide a root structure that adds to the basin's sustainability.
- This project helps remove 8,000 gallons of stormwater runoff a year from the combined sewer system.



**Bioinfiltration Basin at Immanuel United Church**



**Immanuel Enabled Impact Project**





### San Antonio Church (1948 Queen City Avenue)

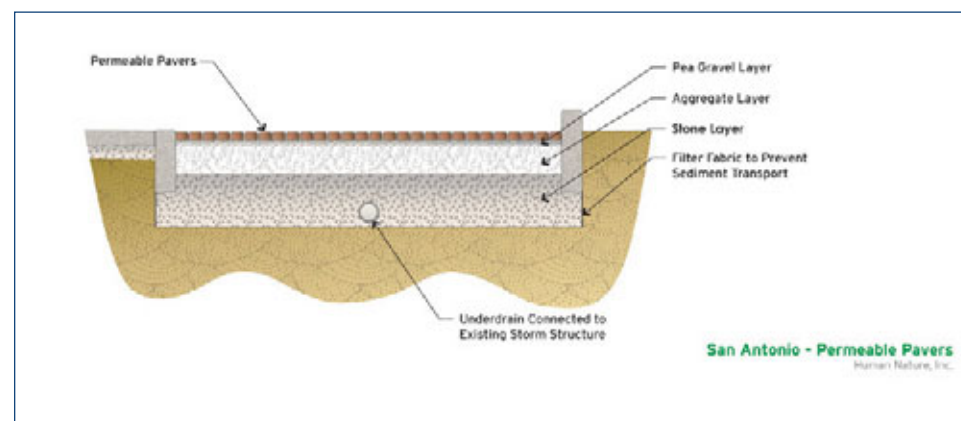
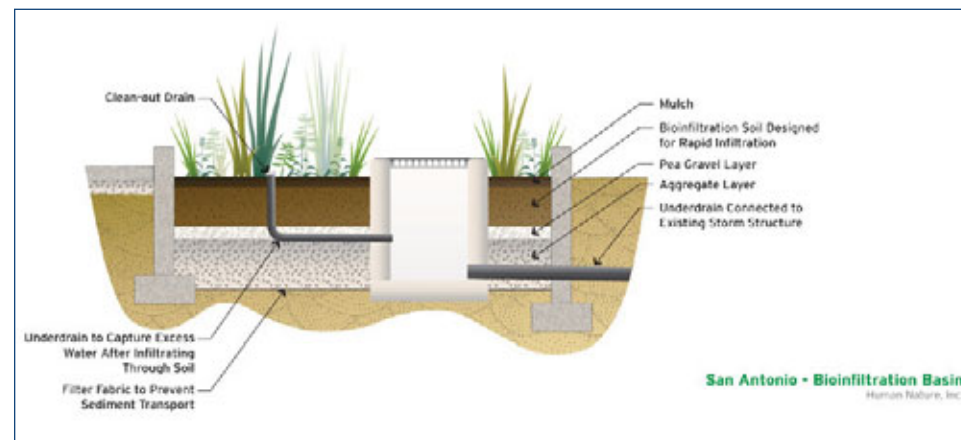
- Located on the corner of Queen City Avenue and White Street, this project was designed to capture stormwater runoff from the church's parking lot.
- Part of the blacktop parking lot was removed and replaced with permeable pavers.
- Permeable pavers, unlike traditional asphalt or concrete, allow stormwater to infiltrate into an aggregate storage layer underneath.
- The permeable pavers, along with four small bioinfiltration areas in the parking lot, capture stormwater runoff and then redirect the excess to the storm sewer.
- This project helps remove 73,000 gallons of stormwater runoff a year from the combined sewer system.



San Antonio Site Before Construction



San Antonio Site After Installation of Permeable Pavers



### Lick Run Reforestation

- Various reforestation projects have taken place in the Lick Run Watershed, including projects along Queen City Avenue and at Rapid Run Park.
- Tree roots help abate stormwater by improving the infiltration of the soil, in addition to absorbing water.
- In a forest, the canopy layer slows rainfall and reduces runoff and erosion.
- By both removing invasive species and planting tree seedlings, the health of the watershed's forest is renewed.



Lick Run Reforestation

## LONG-TERM WATERSHED VISION PLAN

The Urban Waterway Base Plan exemplifies how a federally mandated CSO reduction project can be a catalyst for transforming a former industrial urban community and preparing it for the future through this infrastructure investment. The Vision for the urban waterway shows that there are opportunities to leverage this investment in ways that could be even more supportive of creating a sustainable, livable, and walkable community of the 21st century to strengthen the greater Cincinnati region.

Recognizing the potential benefits from the Base Plan, MSD and the design team worked with its advisory committee, public agencies, property owners, policy makers, and community members to develop a Long-term Watershed Vision Plan. This plan aims to guide MSD's proposed investments for CSO reduction and stormwater management, and identify and consider schedule and cost of future investments from other public agencies and private entities. The Long-term Watershed Vision Plan builds upon the Base Plan and points to a powerful future vision for the South Fairmount neighborhood and the entire Lick Run watershed. It includes a set of overarching goals and describes plan components (e.g., cultural resources best practices, transportation enhancements, trail connections).

The success of the Long-Term Watershed Vision plan will ultimately rely on continued collaboration, alternative funding sources, and comprehensive approaches to future investments. The illustrations shown here of the Long Term Watershed Vision Plan focus only on the inner corridor area. Additional transportation enhancements have also been identified but are not illustrated here.

The following pages describe some components of the Long-term Watershed Vision Plan in more detail. These component descriptions are not as specific as those for the Urban Waterway Base Plan due to the fact that the impetus does not exist through a federal mandate as is the case with the urban waterway. The aim is to create a concept that sufficiently expresses the future design intent for the community and provides a framework for private investment and additional participation by other public agency partners.

*“This whole valley is ‘the’ piece of South Fairmount...it isn’t just this little corner or that little corner. The hills definitely have character and it’s a comforting feeling. I am proud of South Fairmount - past and present and you know, it’s not all past; there’s a heck of a lot of opportunity down here.”*

**JoAnn Metz**

Multi-generational South Fairmount resident, former community council president



**Urban Waterway Base Plan (Looking West)** This image depicts the character of the proposed urban waterway in South Fairmount. This represents the base investment for CSO reduction, and serves as the foundation for a long-term vision for the entire neighborhood.

## Goals

Goals of the Long-Term Watershed Vision Plan include:

- Work with existing businesses and residents to coordinate change, preserve as many jobs and homeowners as possible, and to assist with impacts and/or relocation as needed
- Promote economic growth by providing new jobs and commercial opportunities
- Build a stronger, mixed-use neighborhood business district that supports new businesses, residences and a better quality of life
- Support a safer pedestrian realm
- Promote more sustainable landscapes and buildings
- Improve transportation networks and connectivity between the neighborhood, surrounding developments and downtown
- Create a strong neighborhood character and identity
- Establish a planning framework and urban design guidelines for future development and infill

## Plan Components

- Stronger community core consisting of a combination of existing buildings and new, attractive in-fill buildings.
- Sustainable buildings and landscapes that protect and/or enhance local water quality and native habitats
- Several distinct character districts within the neighborhood that encourage land use diversity while attempting to create a stronger neighborhood business/commercial core.
- Richer mix of land uses that support commercial, office, and residential in close proximity to each other to create a true live-work-play community.
- Trail connections to nature trails (where former railroads were located), to the proposed city-wide bikeway network, and to downtown Cincinnati
- New market-driven redevelopment and revitalization along Queen City Avenue through closely coordinated private and public efforts.
- Streetscape improvements throughout the neighborhood, including new crosswalks and traffic signals, improved sidewalks along the northern edge of Queen City, and a new landscaped median at the intersection of Queen City and State/Beekman.
- An enhanced Civic Recreation Hub with a new amphitheater/shelter and a community center. The amphitheater establishes a venue for special events and performances, and it can serve as a shelter for large groups. The community center creates a gathering place for community groups to meet and hold special events. It also houses restrooms and meeting/gathering spaces that serve the entire recreational hub.
- Guidelines recommending options for increasing the overall sustainability of the community by incorporating a variety of practices and technologies into the neighborhood fabric as redevelopment occurs.
- A planning framework that builds on existing assets while shaping future growth that fits it and enhances the neighborhood.



Long-Term Watershed Vision Plan in South Fairmount



# Moving Forward

Moving forward means implementing components of the plan, in the near-term and over the long-term. This chapter contains key recommendations for moving forward, and describes foundations for ongoing and future efforts in the Lick Run Watershed and South Fairmount.

**Key Recommendations**

**Complementary Planning and Policy Efforts**

**Urban Design Guidelines: A Foundation for Form-Based Codes**

## KEY RECOMMENDATIONS

The master planning process was essential to understanding existing conditions and challenges, defining goals and priorities, and also to finalizing concepts for the urban waterway and watershed-wide CSO reduction solutions.

***The success of the Lick Run Master Plan relies on partnerships, and recommendations for moving forward emphasize the importance of continued coordination with local agencies, organizations, residents, businesses, and stakeholders.***

Recommendations focus on the near-term (i.e., today up to MSD's Consent Decree milestone in 2018) and the long-term (i.e., five, 10, 20, or more years).

### Near-Term Recommendations

**Continue multi-agency coordination and collaboration to advance project goals**

- Maximize the potential for leveraging infrastructure investments
- Work with public and private partners to define goals for repurposing vacant or under-utilized land
- Integrate community feedback from the Community Design Workshops with future, complementary projects in South Fairmount (e.g., Western Hills Viaduct, Westwood/Queen City modifications to support community revitalization, development of Form-Based Codes)

**Continue coordination with impacted property owners**

- Meet one-on-one with property owners to discuss potential impacts
- Develop specific plans and strategies to accommodate change

**Develop a robust maintenance and management plan**

- Work with community partners to clean up, secure, and enhance acquired properties and buildings
- Work with key partners (i.e., Cincinnati Park Board, Cincinnati Recreation Commission, Department of Transportation & Engineering) to agree on maintenance roles, responsibilities, and funding plans
- Define the maintenance and management needs of the urban waterway system and the integrated network of CSO reduction solutions
- Perform post-construction monitoring to quantify CSO reduction, and evaluate water quantity and water quality benefits



Urban Waterway Base Plan

#### Continue coordination with the Cincinnati Park Board

- Refine landscape character for the proposed open space network and gain input on proposed plant and tree species
- Continue to monitor the performance of Enabled Impact Projects (Early Success Projects) at St. Francis Court Apartments, San Antonio Church, and Immanuel United Church

#### Continue coordination with the Cincinnati Recreation Commission

- Coordinate changes to the South Fairmount Recreation Area
- Coordinate alternative locations in the Lick Run Watershed for athletic fields
- Identify alternative funding sources for proposed recreational components

#### Continue coordination with the Cincinnati Department of Transportation & Engineering

- Plan for and design the proposed improvements on Queen City and Westwood avenues
- Identify any potential short-term and long-term impacts to traffic flow
- Identify additional strategies for improving visibility of pedestrian crosswalks
- Refine strategies for incorporating stormwater management features within future roadway improvements
- Coordinate design and engineering of proposed bridges and their intersection with the existing roadway network
- Coordinate removal of Beekman Street connector



Urban Waterway Base Plan (looking west into South Fairmount)

#### Continue coordination with the Cincinnati Department of Planning & Buildings

- Seek to make South Fairmount the next community to develop Form-Based Codes based on community feedback and the urban design guidelines
- Incorporate the watershed boundary as a fundamental planning unit and an organizing tool for the Land Development Code and the city's Comprehensive Plan (the watershed boundary is a fundamental unit that considers local flow patterns, water resources, natural systems, and built systems)

#### Establish a "Project Headquarters" in South Fairmount

- Keep local residents and visitors up to date with project status, milestones, and Project Groundwork updates
- Continue interaction with the South Fairmount Community Council

#### Coordinate with the Cincinnati Preservation Association to identify funding sources for implementing Cultural Resources Best Practices.

- Assess the technical feasibility of relocating up to six "Recommended Eligible" buildings impacted by the proposed urban waterway
- Seek alternative funding sources for potential relocation of these six buildings
- Continue to refine Cultural Resource Best Practices and mitigation strategies

#### Incorporate Crime Prevention through Environmental Design (CPTED) principles into the design of the urban waterway and associated open space network.

- CPTED involves the proper design and implementation of site and building elements that minimize opportunities for criminal activities and increase the perceived safety of built facilities.
- CPTED principles and practices include natural surveillance, access control, well-defined territory, and target hardening.

#### Develop and maintain a Funding and Partnership Framework

- Define funding and implementation timelines for the base plan
- Investigate opportunities for national, state, and local funding sources
- Continuously update as the project progresses through design and construction

***The Funding & Partnership Matrix on the next page is a "working tool" that should be continuously refined and updated as the project advances to design and construction.***

***It is a starting point for tracking project components and community objectives relative to implementation timeframes and funding.***



**Additional Funding Opportunities** The Lick Run Alternative Project provides opportunities for leveraging MSD's initial investment for CSO reduction in ways that encourage other public and private investments.



### Funding & Partnership Matrix

	MSD	Potential Partners & Funding Sources					
		National (public)	National (private)	State (public)	State (private)	Local (public)	Local (private)
Urban Waterway	●					●	
Transportation Network	●					●	
Waterway & Infrastructure Maintenance Access, Public Access	●					●	
Cultural Resources: Mitigation Strategies	●					●	●
Recreation Facilities: Maintaining Existing Uses	●					●	
Natural Conveyance Systems	●			●		●	
Separate Storm Sewer Network, Detention	●					●	
Enabled Impact Projects	●			●	●	●	
Future Recreation/Open Space						●	●
Environmental Education	●	●	●	●	●	●	●
Queen City/Westwood: Further Technical Analysis		●		●		●	
Neighborhood/Business Zone Investment			●		●		●
Streetscape Improvements		●		●		●	
Improved Access to Public Transportation				●		●	
Urban Design Guidelines						●	●
South Fairmount Cultural Trail	●	●	●	●	●	●	●
Public Art, Interactive/interpretive Elements		●	●	●	●	●	●
Sustainable Systems	●	●		●		●	
Watershed Planning Tools	●	●				●	●

- Funding Source Identified
- Potential Partner Agency/Funding Source

### Examples of Potential Funding Sources

#### National (public)

- United States Environmental Protection Agency (US EPA)
- US EPA/HUD/DOT Sustainable Communities Partnership
- Federal Highway Administration (FHWA)
- National Park Services (NPS) Recreational Trails
- Department of Energy (DOE)

#### National (private)

- Corporate Foundations
- Non-Profits

#### State (public)

- Water Resource Restoration Partner Program (WRRSP)
- Ohio Environmental Protection Agency (OEPA)
- Ohio Department of Natural Resources (ODNR)
- Ohio Department of Transportation (ODOT)
- Ohio Department of Development (ODOD)

#### State (private)

- Corporate Foundations
- Non-Profits

#### Local (public)

- Cincinnati Department of Transportation & Engineering (CDOTE)
- Cincinnati Recreation Commission (CRC)
- Cincinnati Park Board (CPB)
- Greater Cincinnati Water Works
- Cincinnati Public Schools (CPS)

#### Local (private)

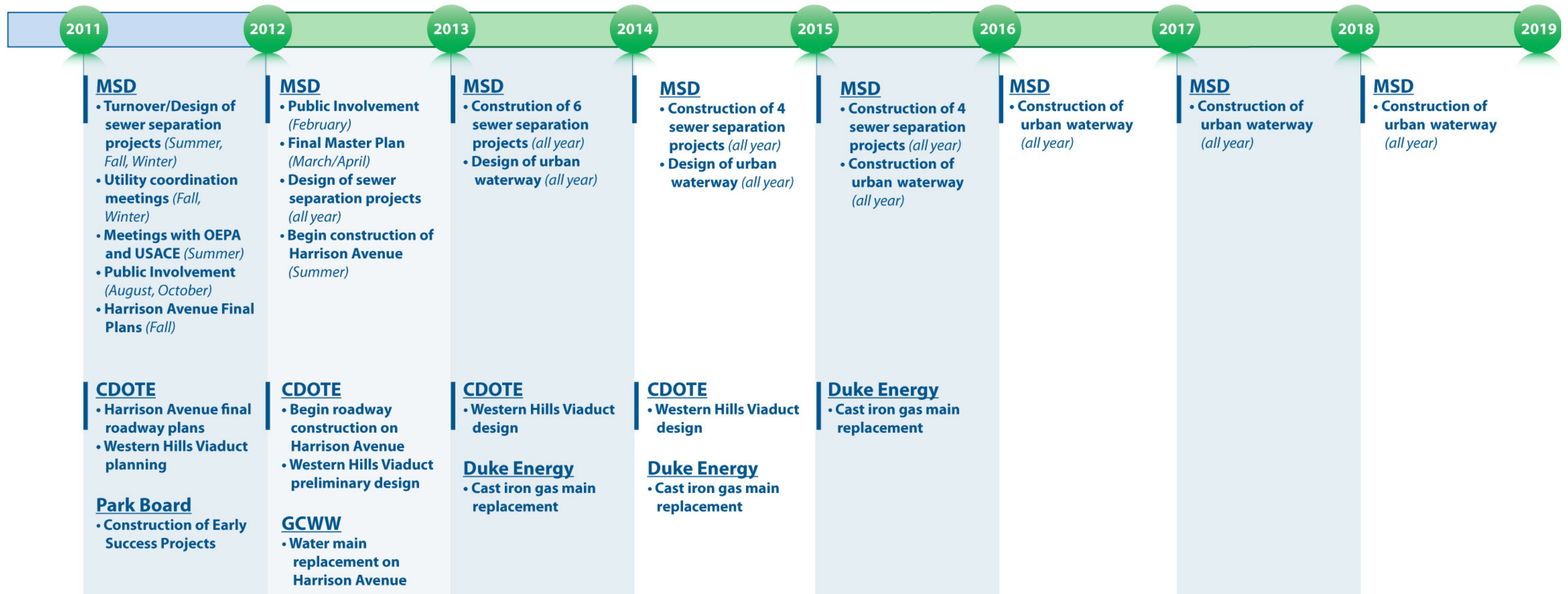
- Community Development Corporation(s)
- Greater Cincinnati Foundation
- Corporate Foundations
- Non-Profits
- Duke Energy
- Businesses (Existing and Future)
- Developers
- Banks

**Project Timeline**

MSD must follow an aggressive design and construction schedule in order to achieve CSO reduction milestones outlined in the Consent Decree. The schedule below identifies Implementation considerations and defines coordination efforts and needs relative to the Lick Run Alternative Project. It also mentions other complementary projects in the watershed, including Harrison Avenue improvements and the Western Hills Viaduct project.

This schedule is intended to serve as general guidance as the project progresses through design and construction. It is subject to change based on further coordination with MSD and local agency partners.

This schedule does not include all the near-term recommendations previously described; however, these items should be added as MSD and its public partner agencies further define roles, responsibilities, and implementation strategies.



**Timeline for Implementation of the Lick Run Alternative Project** This timeline serves as general guidance for outlining components of the Lick Run Alternative Project and corresponding dates for implementation. This schedule is subject to change based on further refinement and coordination.

## Long-Term Recommendations

Long-term recommendations focus on the next five, 10, 20, or more years).

### Coordinate with local public and private partners or create a Community Development Corporation (CDC).

- A CDC can assist with guiding public and private investments, attracting new investment, assembling land, working with local businesses, and coordinating with public and private stakeholders

### Coordinate with local partners to implement a South Fairmount Cultural Trails Strategy

- Define phases of the South Fairmount Cultural Trail and identify potential, alternative funding sources
- Develop guidelines for associated markers, site furnishings, and artwork
- Maximize educational opportunities/facilities and public art throughout the Urban Waterway corridor and the neighborhood.

### Identify potential funding sources (public and private) for components of the Long-Term Vision Plan

- Identify partners and develop funding, programming, and operational strategies for community center and amphitheater
- Develop educational curriculum in coordination with Cincinnati Public Schools, Mill Creek Restoration Project, and the Cincinnati Park Board
- Integrate the goals and objectives of the Mill Creek Greenway Trail to connect the Lick Run Watershed and South Fairmount to the Mill Creek valley

### Continue coordination with the Cincinnati Park Board

- Monitor the performance of future projects at Glenway Woods and Rapid Run Park
- Develop environmental education programs for stormwater management and landscape improvement projects
- Define design guidelines for future Nature Trail networks
- Identify opportunities for collaborative research with local institutions
- Identify strategies for measuring the performance of landscapes

### Continue coordination with Community & Economic Development

- Continue to work with existing businesses on retention and relocation strategies
- Develop a program to obtain and attract small businesses in South Fairmount
- Encourage the development of job creation strategies with local manufacturers and educational institutions
- Develop a program to address the basic services/needs identified by the community (i.e., grocery store, pharmacy, bakery, restaurants, etc.)
- Build upon the Stage I Market Analysis and develop a more localized an updated economic study focusing on neighborhood capacity, real estate, and an appropriate mix of business types
- Develop programs for infill residential and adjacent hillside residential districts

### Continue coordination with the Cincinnati Department of Transportation & Engineering

- Identify additional opportunities for incorporating stormwater management features within future roadway improvements
- Pursue in-depth study for reducing traffic speeds, increasing pedestrian safety, and improving the quality of the streetscape experience in South Fairmount. This effort should be closely coordinated with other transportation efforts, such as the Harrison Avenue project and the future Western Hills Viaduct.
- Identify potential alternative funding sources for long-term transportation improvements in South Fairmount (i.e., two-way traffic on Queen City and Westwood)
- Move above-ground utilities underground, where possible

### Continue coordination with the Department of Planning & Buildings

- Focus on a system-based approach for organizing future land use regulations, development codes, and zoning tools

### Maximize the sustainable performance of existing and future landscapes, infrastructure, buildings, and neighborhoods.

- Encourage public and private partners to develop metrics for measuring the performance and success of future projects/investments.



Long-Term Vision Plan

## COMPLEMENTARY PLANNING AND POLICY EFFORTS

Implementation of the Lick Run Master Plan is occurring at a unique time in the region’s history with complementary planning and policy efforts underway, which include the Land Development Code, Form-Based Codes, and the city’s update to the Comprehensive Plan (Plan Cincinnati). A detailed set of watershed planning principles, provided on the next page, serve as helpful guidance as the Lick Run Master Plan is integrated with these efforts. A set of sustainability planning principles are also included in **Appendix M**.

### Land Development Code (LDC)

The LDC will provide the City of Cincinnati with the new policy tools necessary to implement large-scale demonstration projects such as the Lick Run and Lower Mill Creek Master Plans, a transit project, and the Mill Creek Restoration Project. The LDC will exist as the central regulatory code to regulate all development in the City, and will replace current disjointed and outdated development regulations and policies (e.g. zoning code, subdivision regulations, building codes, and right of way policies).

### Form-Based Codes (FBCs)

Form-based codes (FBCs) are an alternative form of zoning that focuses on the creation and preservation of compact walkable areas. These codes use physical form, rather than separation of uses, as the organizing principle for the code. They are stronger than guidelines, as they are usually adopted as city regulations.

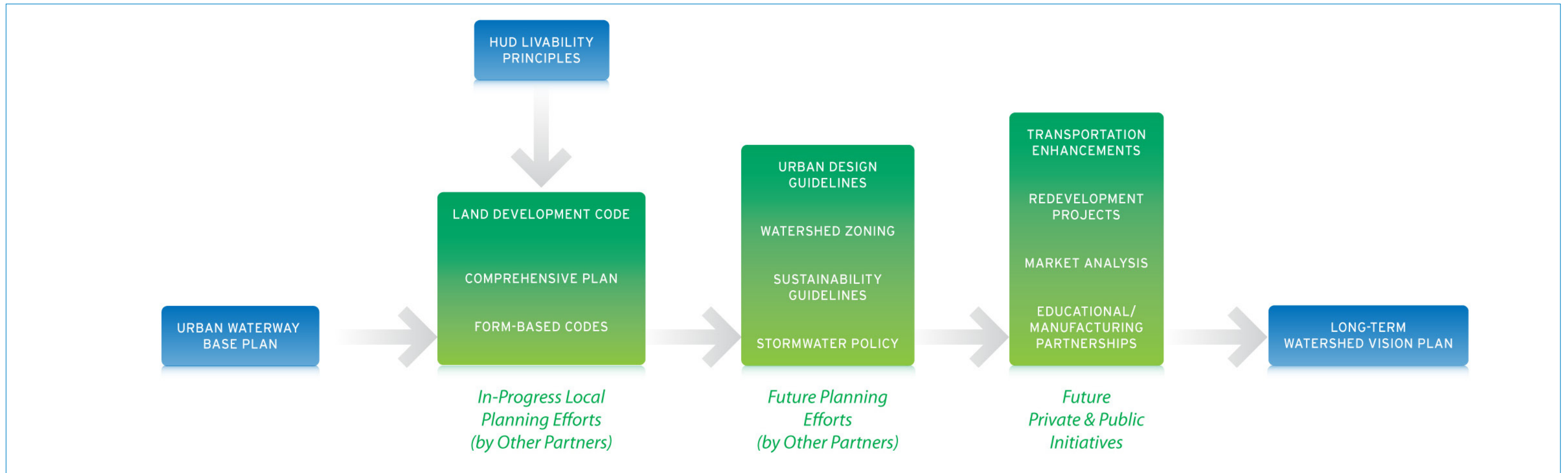
Currently, there are four communities within the city developing FBCs, and FBCs are considered a tool within the LDC.

A preliminary set of urban design guidelines for South Fairmount are provided starting on page 5-10. These urban design guidelines consider the complex and highly integrated environments (land uses, buildings, transportation, utilities, socio-economic issues, etc.) within South Fairmount.

### Plan Cincinnati

The City of Cincinnati is creating a new Comprehensive Plan that will guide future growth and development. The plan will inform current and future decision makers about where the city is, where the city wants to go, how they will get there and who will help along the way.

This long-range plan will address land use, transportation, parks, health, environment and open space, community facilities, utilities and infrastructure, institutions, urban design, historic preservation, community character and identity, housing and neighborhoods, and economic development.



## Watershed Planning Principles

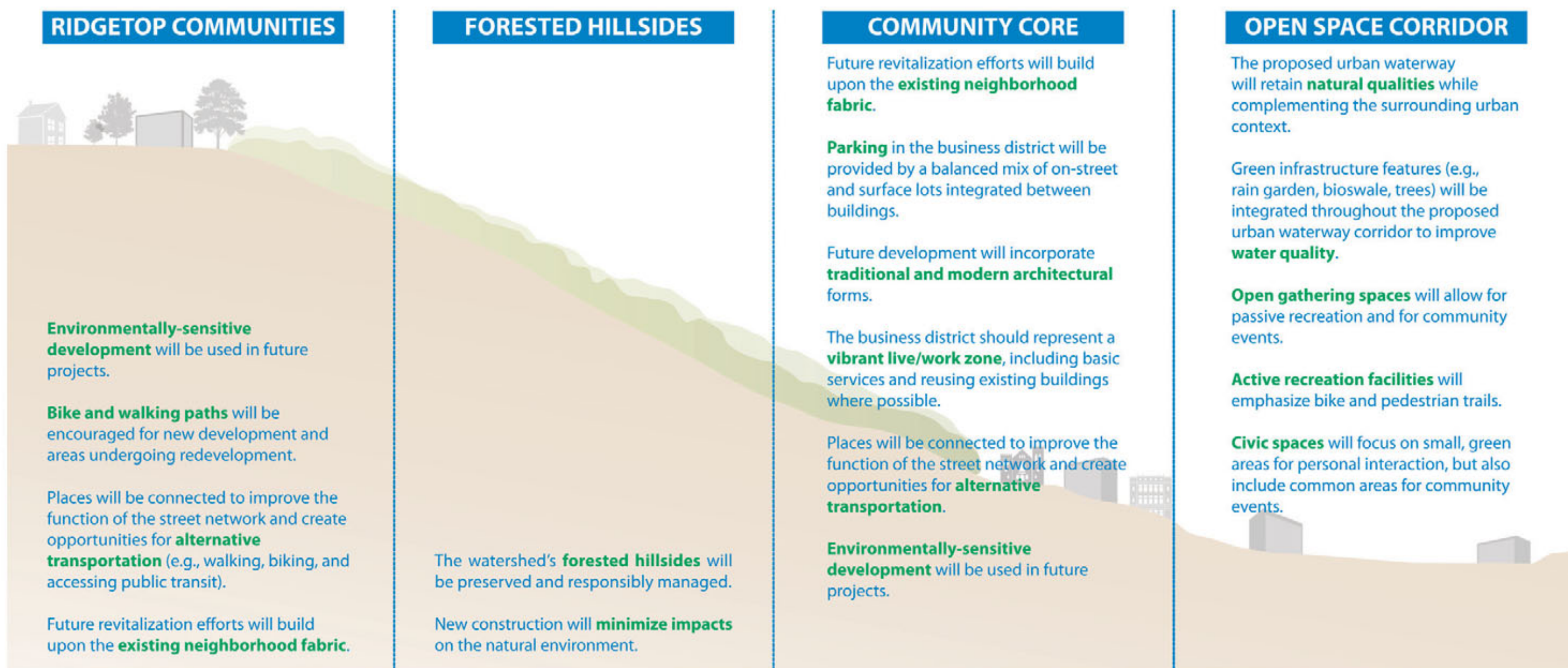


### WATERSHED GUIDING PRINCIPLES

Guiding principles are statements of intent that describe the conceptual direction of future growth. These principles should be used to help guide infrastructure and revitalization decisions and to foster a high-quality community with a distinct sense of place.

- Coordinate policies and leverage investment.
- Promote an integrated network of green infrastructure.
- Revitalize the economy through creation of jobs and growth opportunities for local businesses.
- Support existing communities.
- Promote a balanced mixed-use neighborhood.
- Benefit watershed communities through environmentally, socially, and economically sustainable solutions.
- Provide more transportation choices.
- Use quality design to create an attractive public/private realm.

**LICK RUN WATERSHED TRANSECT** A watershed transect is a method for organizing planning principles based on the watershed's unique physical characteristics.



## URBAN DESIGN GUIDELINES: A FOUNDATION FOR FORM-BASED CODES

All neighborhoods have a basic anatomy that either supports or hinders their success. Successful neighborhoods typically include a diverse mix of land uses rather than separated single uses, and they encourage higher densities that provides the critical mass of people to support a viable commercial and business district.

As the Urban Waterway project is being implemented, the South Fairmount community will have the opportunity to redefine itself into a growing and vibrant place to live, work, and play. The Long-Term Watershed Vision Plan envisions a new anatomy for the neighborhood. This new anatomy consists of several unique neighborhood character districts that build on existing community assets and characteristics. The districts and their associated guidelines are outlined as follows:

### General Neighborhood Guidelines:

- Pedestrian Shed - 1300' radius (comfortable 5 minute walk)
- Ultimately, Queen City conversion back to two-way street
- Cross streets / block lengths preferred to be 300'; maximum 400' - except at Civic Recreation Hub

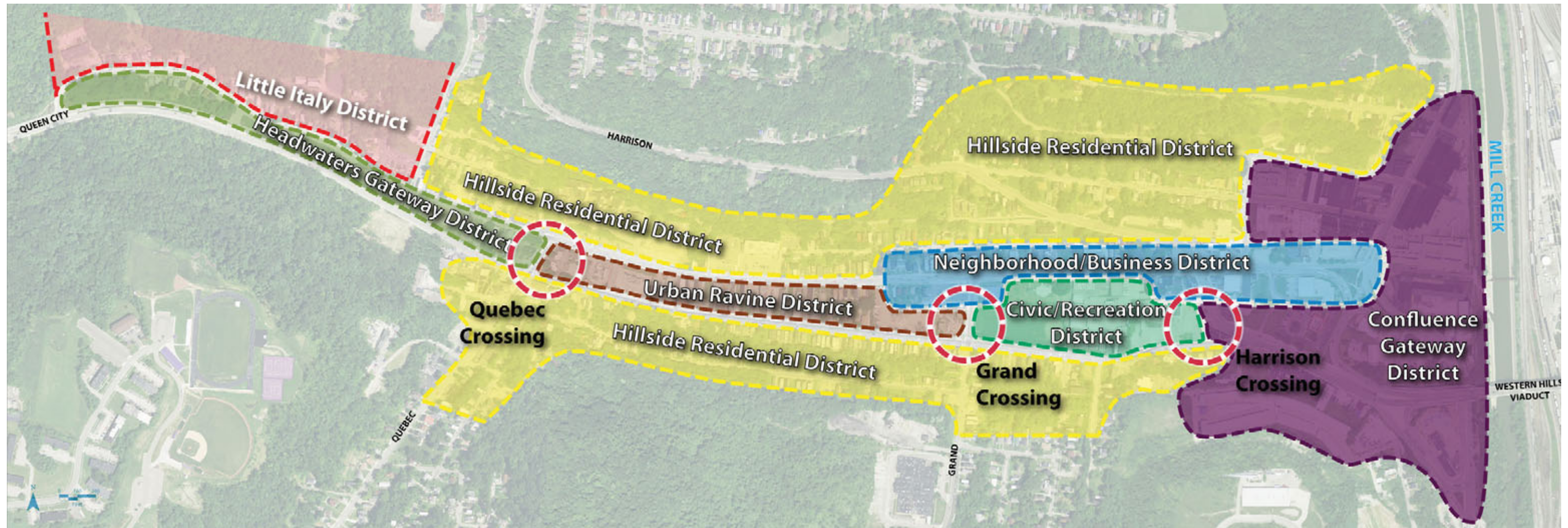
- Pedestrian-oriented greenspace with interpretive signage 6' to 10' sidewalks
- No on-street parking
- Bicycle "Sharrows" at right travel lanes
- 10' lane width; 25 mph maximum speed along Queen City; 35 mph maximum speed along Westwood

#### Headwaters Gateway District

This district welcomes visitors to South Fairmount from the west with a series heavily planted wetlands, bioswales, and gardens. The daylighting feature for the Urban Waterway originates in this zone. In general, this district is focused on providing a beautiful gateway the to community, encouraging a walkable community, and guiding stormwater runoff into the urban waterway.

#### Little Italy District

This district acknowledges the unique Italian heritage of South Fairmount. The homes and surrounding hillsides reflect a long relationship between Italian immigrants and the Cincinnati landscape. This district attempts to preserve the special character and history of this landscape, while also telling this special story.



Lick Run Neighborhood Districts

- “Fabric” building retention preferred along north side of Old Queen City
- Pedestrian-oriented, primarily residential character
- 6’ to 10’ sidewalks
- Front Setback: 0’ to 12’ maximum except where impractical due to existing underground utilities
- Primary front entries along Queen City Avenue required
- Shared parking allowed; no surface parking lots permitted fronting Queen City Avenue

#### Urban Ravine District

Due to the depth of the water channel and the small size of the remaining lots, this district primarily consists of existing and new residential units. Key intersections encourage some smaller-scale commercial that supports neighborhood residents. Ideally, denser redevelopment would be encouraged to increase the population living near the neighborhood business district.

- Pedestrian-oriented, mixed use character along Queen City Avenue
- Commercial / vehicular-dominant character along Westwood Avenue
- Signalized intersections at Quebec and 2 intermediate cross streets along Queen City
- Signalized intersections at Quebec and 1 intermediate cross streets along Westwood Avenue

#### Queen City Avenue and cross streets:

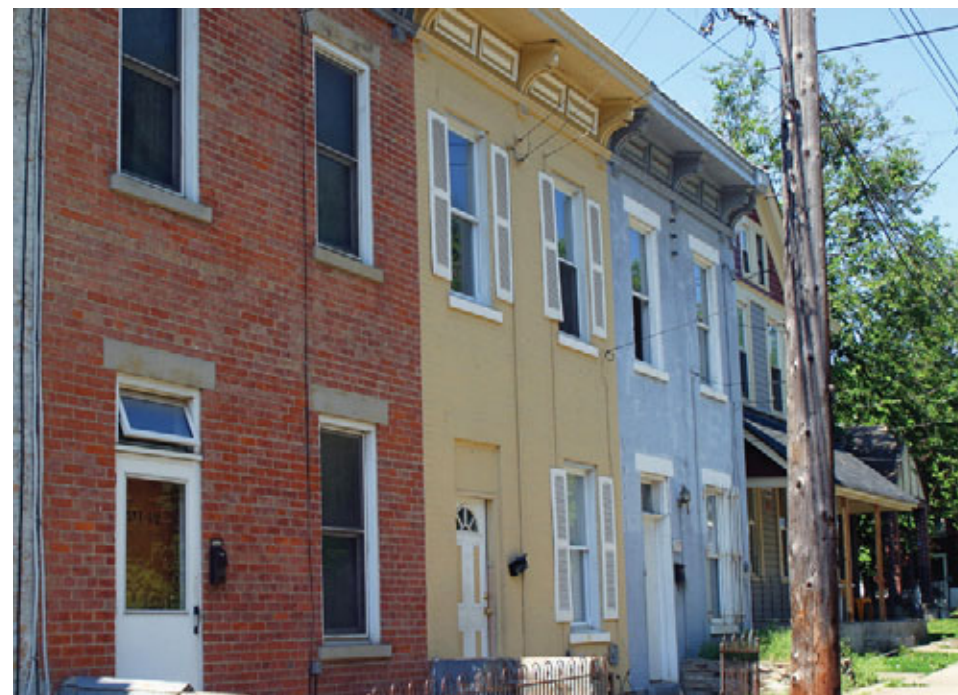
- “Fabric” building retention preferred along north side of Queen City and across from Orion Academy
- Pedestrian-oriented, primarily residential character
- Cross streets at 300’ preferred, 400’ maximum (measured along ROW line) except narrow, rowhouse block east of Quebec
- 2:1 street corridor proportion (street corridor width to building height)
- Minimum 2 story buildings
- 10’ lane width; 25 mph maximum speed
- Bicycle “Sharrows” at right travel lanes
- Metered, on-street, parallel parking; 8’ width - no rush hour removal
- 6’ grass strip with regularly spaced trees
- 7’ “Bump-outs” at cross streets; 10’ wide “Zebra-striped” cross walks at all intersections
- 6’ to 10’ sidewalks
- Commercial (retail, entertainment & professional service) uses allowed on first story at corner buildings
- Commercial, office, educational, institutional and residential uses allowed throughout
- Front Setback: 0’ to 12’ maximum except where impractical due to existing underground utilities
- Primary front entries along Queen City Avenue required
- Shared parking allowed; no surface parking lots permitted fronting Queen City Avenue

#### Westwood Avenue:

- “Fabric” building retention preferred along south side of Westwood Avenue
- 11’ lane width preferred; 35 mph maximum speed
- Bicycle “Sharrows” at right travel lanes
- Un-metered on-street, parallel parking; 8’ width
- New, squared and signalized intersection at Harrison Ave. & Westwood Ave.
- 8’ “Bump-outs” and 10’ wide “Zebra-striped” cross walk at all three signalized intersections
- 8’ grass strip with regularly spaced street trees
- 5’ minimum sidewalk width
- Commercial (retail, entertainment & professional service), office, educational, institutional and residential uses allowed
- Front Setback: 0’ allowed, 12’ maximum; no surface parking allowed in front of buildings



Residential/Mixed-Use Gathering Space



Existing Small Scale Residences in the Lick Run Watershed



Bike Lanes



Stormwater Planters/Street Trees

**Neighborhood Business District**

This important district serves as the commercial heart of the community. It recommends a mix of commercial, office, entertainment, and residential development to create a dynamic neighborhood core. The goal is to create a safe, walkable, and visually attractive district that serves the needs of residents and visitors.

- Pedestrian-oriented, mixed use character
- Cross streets at 300' preferred, 400' maximum (measured along ROW line)
- 2:1 street corridor proportion (street corridor width to building height)
- Minimum 2 story buildings
- 10' lane width; 20 mph maximum speed
- Bicycle "Sharrows" at right travel lanes
- Metered, on-street, parallel parking; 8' width - no rush hour removal
- 5' collector strip of colored or textured paving with regularly spaced trees in wells with grates
- 7' "Bump-outs" at cross streets; 10' wide "Zebra-striped" cross walks at all intersections
- 6' to 10' sidewalks
- Commercial (retail, entertainment & professional service) uses on first story with no-step primary entries

- Commercial, office, educational, institutional and residential uses allowed on upper stories
- Front Setback: 0' for 80% of frontage; 10' maximum for 20% frontage
- Required storefront glass of 70% along Queen City Avenue and 50% for first 30' of cross streets
- Primary front entries along Queen City required except at designated cross streets
- Shared parking allowed; no surface parking lots permitted

**Civic/Recreation District - General Urban Zone**

This district is the civic heart of the community. It primarily consists of recreational open space that builds on the existing Cincinnati Recreation Commission property. Important corners have been set aside for signature buildings. A gracious, tree-lined promenade runs along Queen City to encourage walkers and placed to people watch.

- Pedestrian-oriented, mixed use character along Queen City Avenue
- Commercial / vehicular-dominant character along Westwood Avenue
- All buildings to have primary facades facing recreation block
- All four corner intersections, and Grand & Westwood intersection, signalized

**Westwood Avenue:**

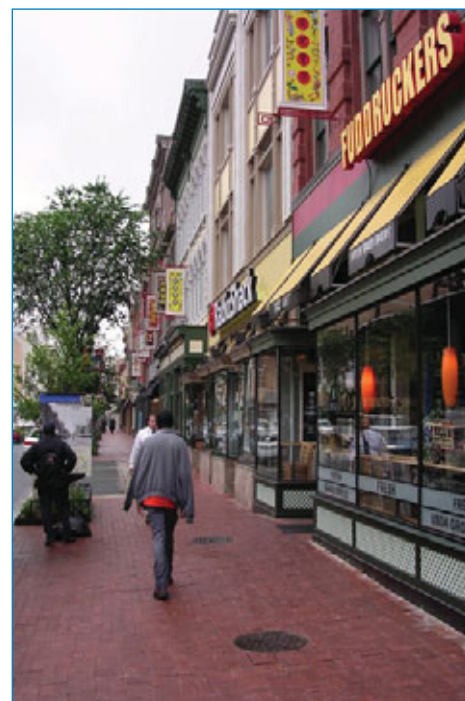
- "Fabric" building retention preferred
- 11' lane width preferred; 35 mph maximum speed
- Bicycle "Sharrows" at right travel lanes
- Un-metered, on-street, parallel parking; 8' width
- New, squared and signalized intersection at Harrison Ave. & Westwood Ave.
- 8' "Bump-outs" and 10' wide "Zebra-striped" cross walk at all three signalized intersections
- 8' grass strip with regularly spaced street trees
- 5' minimum sidewalk width
- Commercial (retail, entertainment & professional service), office, educational, institutional and residential uses allowed
- Front Setback: 0' allowed, 12' maximum; no surface parking allowed in front of buildings

**Confluence Business District**

This district welcomes visitors to South Fairmount from the east. A large portion of the area is set aside as open space to accommodate the hydrological requirements of the waterway. Frontage along Queen City is set aside for larger commercial and office developments. At the end of Queen City and north of Queen City along Beekman, these zones are meant to encourage small- to medium-scale manufacturing, commercial, and office development.



Mixed-Use Neighborhood District



Business District Streetscape



Civic Gathering Space



- Commercial / vehicular-dominant character
- No cross street / block length maximum
- 11' lane width preferred; 35 mph maximum speed
- Bicycle "Sharrows" at right travel lanes
- Metered, on-street, parallel parking; 8' width
- New, squared and signalized intersection at Harrison & Western Hills Viaduct
- 8' "Bump-outs" and 10' wide "Zebra-striped" cross walk at signaled intersection
- 8' collector strip with regularly spaced trees in wells with grates or grass
- 5' minimum sidewalk width
- Commercial (retail, entertainment & professional service), office, educational, institutional and limited manufacturing uses
- Front Setback: 0' allowed, 12' maximum; no surface parking allowed in front of buildings

#### Hillside Residential Districts

These hillside districts support the preservation of existing fabric while encouraging new development that protects the sensitive hillsides and that increases the overall residential density of the neighborhood. The majority of new development in these areas will be infill between existing buildings and along historic streets that terrace up the hillsides. Hillsides that are forested and/or unstable should not be developed.

- Fabric" building retention preferred
- Residential with some mixed-use commercial to serve local residents
- Minimum 2 story buildings; maximum 6 stories
- On-street and integrated parking
- 5' minimum sidewalk width
- Front Setback: 0' for 80% of frontage; 10' maximum for 20% frontage

#### Queen City, Grand and Harrison Crossings

These special street crossings provide opportunities for architecturally significant commercial, office, or civic buildings at corners.

- "Fabric" building retention preferred
- Minimum 2 story buildings
- 10' lane width; 25 mph maximum speed
- Bicycle "Sharrows" at right travel lanes
- Metered, on-street, parallel parking; 8' width - no rush hour removal
- 5' grass strip with regularly spaced trees or, paved strip with trees in wells with grates
- 7' "Bump-outs" at intersections; 10' wide "Zebra-striped"
- 6' to 10' sidewalks

- Commercial (retail, entertainment & professional service) uses on first story at corner buildings at both main intersections; required storefront glass of 70%
- Commercial, office, educational, institutional and residential uses allowed all other areas
- Front Setback: 0' for 80% of frontage; 10' maximum for 20% frontage
- Primary front entries to street required
- Shared parking allowed



Recreation Amenity



Mixed-Use/Adaptive Reuse: Light Manufacturing/Commercial



Forested Hillsides



