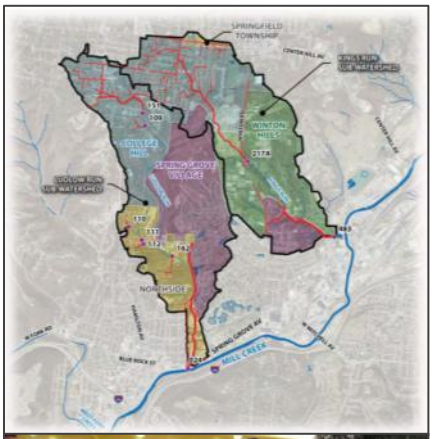
Kings Run Watershed
Open House Summary

Compiled by Hamilton County Planning and Development
Prepared for Metropolitan Sewer District of Greater Cincinnati
February 2012



Summary

The Metropolitan Sewer District of Greater Cincinnati (MSD) hosted an Open House for the Kings Run Watershed on **Thursday, March 1, 2012** at the **Harmony Lodge** in **Spring Grove Village**. The event lasted from 5:30 p.m. to 7:30 p.m. and attracted 54 community residents, business owners and other interested stakeholders, not including staffers. The Kings Run Watershed includes portions of College Hill, Northside, Spring Grove Village and Winton Hills.

Of the 54 attendees, 70% lived or owned property in the Kings Run Watershed.

Of the 54 attendees:

- 38 residents
- 2 businesses or property owners
- 7 government agencies (including MSD)
- 2 consultants
- 5 interested citizens (anonymous or did not live in the watershed)

The event was staffed by approximately 20-25 people including representatives from numerous government agencies, community service institutions and other civic organizations.

The goal of the event was to introduce the Kings Run Watershed community to the complex issues facing the Metropolitan Sewer District of Greater Cincinnati (MSD) and to begin a dialogue with stakeholders in advance of more detailed discussions about watershed-level solutions, such as Communities of the Future. These issues center on a legal agreement between the state and federal Environmental Protection Agency, ORSANCO, the U.S. Department of Justice and MSD, that mandates at least an 85% reduction of combined sewer overflows (CSOs).

Outreach Methodology

The Lick Run Watershed Open House that took place in January 2011 set the framework for all upcoming Watershed Open Houses, including Kings Run. To prepare for the Open House format, MSD sought consultation and support from various community and environmental planning professionals through an organization that MSD convened called the Communities of the Future Advisory Committee (CFAC). The Open House format was chosen by the CFAC as the best way to introduce complex subject matter to the public and to create an effective two-way dialogue.

To reach prospective attendees in Kings Run, MSD mailed more than 5,000 invitations to residents/businesses in the Kings Run watershed (see next page for image of postcard). The Kings Run Watershed Open House was also distributed thru press releases to the media and thru prepared flyers and articles for local municipalities and Cincinnati neighborhoods.

Kings Run Postcards – front and back

Station/Board Summaries

As attendees entered the Open House they signed in and were welcomed by a tour guide who would show them to the first of the seven stations. The seven stations were designed to first give the big overall picture of the combined sewer overflow problem faced by MSD across its whole region and then the following stations dive down into the details and get to the individual solutions of the Kings Run watershed.

The following section is a catalogue of station boards, handouts and a brief account of the primary message at that station. All stations are the same for all four Open Houses: Lick Run, West Fork, Bloody Run and King's Run, except Station #4 which is specific to the Open House's target watershed.

Station #1 – What's the Challenge?

Boards: Station #1 featured two boards: *What's the Challenge? How do Combined Sewer Overflows (CSOs) Affect Us?*

Handouts: Three handouts were distributed: Open House Terminology, Sewer Backups Fact Sheet and Project Groundwork Fact Sheet.

Message: Station #1 introduced residents to the history of storm sewers, described why combined sewers were originally built and detailed the reasons they have become obsolete. Pictures of stormwater overflows and backups showed the pollution that CSOs cause to our local waterways.

Station #2 – What is MSD's Proposed Solution? Implementing Project Groundwork

Boards: Station #2 featured the boards: *What's the Solution? What is Project Groundwork? What are the Benefits of Project Groundwork?*

Handouts: Project Groundwork Fact Sheet, Timeline, Economics Benefits of Project Groundwork

Message: Station #2 broadly defined Project Groundwork and educated the attendees about the three primary methods that a utility like MSD can take for addressing the stormwater that gets into the combined sewers: (1) source control, (2) conveyance/storage and (3) product control. The next boards at this station displayed a timeline showing the major Consent Decree milestones for the alternative solution include the 2 phased approach with Phase 1submittal due by Dec. 2012 and Phase II submittal due by 2017.

This station also broadly presents the integrated watershed approach that enables MSD and partner organizations to identify solutions to sewer overflows that simultaneously address community issues such as brownfields redevelopment, vacancy, and property abandonment.

ation #3 – How Will the Lower Mill Creek Watershed be Part of the Solution?

Boards: *What Role does the Lower Mill Creek Play? What is the Default Solution (Tunnel & EHRT)? Can We Fix the Sewers and Help Our Communities?*

Handouts: Lower Mill Creek Fact Sheet, Community Revitalization Resulting from Stormwater Management Case Studies

Message: This station introduced the attendees to the Lower Mill Creek Watershed, the primary area for solving the Consent Decree, which includes parts of 44 of the 52 Cincinnati neighborhoods, and parts of 16 of the County's other cities, villages, and townships.

This station also introduced attendees to the default solution, a 30-foot diameter, 1.2-mile long tunnel. This tunnel would be built deep underneath the Mill Creek and will end near the confluence to the Ohio River. The board described some quick facts about the deep tunnel solution, including the estimated cost, annual power demand, operations and maintenance costs and annual CO2 Emissions from operations and maintenance.

Station #4 –What is the "Alternative Solution" for the Kings Run Watershed

Boards: Station #4 featured six boards: "*What is the Kings Run Sub-Watershed and Ludlow Run Sub-Watershed?", "What's the Alternative Solution in the Ludlow Run Sub-Watershed?", "Proposed Projects in the Ludlow Run Sub-Watershed", "What's the Alternative Solution in the Kings Run Sub-Watershed?", "Proposed Projects in the Kings Run Sub-Watershed", "Benefits of an Alternative Solution in the Ludlow Run and Kings Run Sub Watersheds"*

*See Pages 15, 16 and 17 for images of these boards

Handouts: Kings Run Watershed Fact Sheet, Case Studies

Message: The previous station introduces attendees to the default solution, a deep tunnel. This station informs attendees of the alternative solution components that are happening in the Kings Run watershed.

This station was staffed by several MSD engineers with in-depth knowledge of the Kings Run watershed alternative solutions and by a MSD property specialist to answer any property related questions that could arise.

Station #5 – Other Projects in the Community

Boards: Station #5 featured one board: "*Pilot Projects in the Lower Mill Creek Watershed*"

*See Page 18 for image of this board

Handouts: Fact sheets on each project

Message: Station #5 displayed local examples of green infrastructure called Early Success Projects and Demonstration Projects. These small-scale site-specific stormwater projects can be replicated in any watershed, and provide immediate stormwater reductions for solving the consent decree. Their most important function is to provide real-world examples of these solutions.

The Early Success Projects focused primarily on green infrastructure approaches within the priority areas of the Lower Mill Creek Watershed. The Demonstration Projects are scattered throughout the Lower Mill Creek Watershed, and are targeted towards institutions and organizations involved with community education and outreach.

Station #6 – How Can I Get Involved

Boards: "*How Can I Get Involved?*", "*Mill Creek Watershed Water Quality*"

*See Pages 18 for image of this board

Handouts: Charrette Fact Sheet, Lower Mill Creek Watershed Action Plan Fact Sheet

*See Page 19 for image of LMC-WAP handout

Message: This station provided an opportunity for attendees to provide their opinion about the Open House and the information that was provided. They could fill out a comment card at this station or at the end if they preferred.

This station was staffed by Jen Eismeier the Executive Director of the Mill Creek Watershed Council of Communities (MCWCC) and Bruce Koehler, Senior Planner at Ohio Kentucky Indiana Regional Council of Governments and MCWCC Board of Trustees Chair. Bruce and Jen asked the attendees if they would like to register to the MCWCC organization or volunteer for a MCWCC event. Attendees could also join the Mill Creek Yacht Club (an organized canoe club) that conducts annual Mill Creek clean-up efforts.

This station featured some quick facts on how individuals can start taking small actions to improve water quality in their watershed. Jen and Bruce also discussed the ongoing efforts for creating a ***Lower Mill Creek Watershed Action Plan*** and explained how this effort would help to improve water quality and how watershed residents could get involved.

Also at this station, open house attendees could register in the free drawing for a rain barrel. Towards the end of the night, the rain barrel winner was selected and arrangements for delivery were made.

Station #7 – Business Relocation and Growth Assistance

Boards: *Business Growth Assistance* (prepared by City of Cincinnati Department of Community Development)

Handouts: Business Growth Assistance Handout

Message: Station #7 was manned by City of Cincinnati, Department of Community Development staff. The main goal of this station was to provide information to businesses in the Kings Run Watershed about city economic development services. These services include finding a new location, building or rehabbing their space and methods to finance growth.

Table 1 - Attendee Comments from Note Cards

Comments
I'm still wondering how often rainfall will lead to discharge of sewage into Kings Run at 217 and if there is anything that can be done to stop it all together.
Please stop the raw sewage from going into Kings Run! It is disgusting. Thank you.
#1 concern: No sewage in the daylight portion of Kings Run-- what else can be done upstream of Gray Road Landfill to minimize/slow/redirect runoff? Suggestion: Declare a moratorium on new pavement -- if anyone wants to pave green space they must remove and restore equivalent green space elsewhere.
The displays work great but too crowded to hear and see. Maybe if the displays work on 8.5x11 handouts, more info could be digested and understood and a review at a later time would be more useful.
I would like to see more source separation in North College Hill and Northside. I think there are missed opportunities integrating green space (Laboiteux Woods, Buttercup Valley, Spring Grove) into the existing plan.
There should be more of the green solutions, i.e. source control at Kings Run. Subsidizing rain barrels and low-flow toilets would be a better long-term cost option for taxpayers. This meeting should have been more of a group discussion. There is no comprehensive discussion and engagement of audience as a whole, which would lead to more constructive and comprehensive feedback. Landfill at lick Run not fully addressed.
Thank you for putting together such a thorough presentation. I would love to have the option of buying current source methane for cooking and heating, rather than fracking fossil methane. I hear MSD may be capturing gas. I would pay extra for it. Love the pervious paving, the wetlands, the open streams, all the lovely nature alternatives. I hope the extension service is retained.
Thanks for bringing this info to residents. Good to have time to discuss with your experts. Friendly, smiling greeters.

Table 2 - Attendance Sheet (Organized by Stakeholder Type)

Residents			
	Last	First	Affiliation
1	Ancrum	John	Homeowner
2	Bailey	Cathy	MSD & resident
3	Bowling	Mary	Property owner
4	Bushnell	Tim	Resident
5	Cargile	Ronnda	Resident
6	Clo	Ryan	Resident
7	Egan	Karen B.	Resident
8	Frechette	Eileen	Resident
9	Gardner	Mary Kay	Homeowner
10	Gardner	Gene	Homeowner
11	Gutfreund	Ed	Resident
12	Haglund	Lisa	Resident
13	Humble	Jim	Resident
14	Humble	Betty	Resident
15	Huttingor	Peter	Homeadow Song Farm
16	Kettler	Jean	Resident
17	Kettler	Ed	Resident
18	Kissel	Ann	Resident
19	Kraus	Diane Kissel	Resident
20	Kruse	Krystal	Resident
21	Laskey	Lisa	Homeowner
22	Mansoor	Vicki	Homeowner
23	Meinhart	Skip	NGI
24	Molloy	Pat	EECA
25	Mushaben	Robert J.	Resident
26	Mushaben	Diane	Homeowner
27	Newborn	Mary-Jane	
28	O'Brien	Dan	Resident
29	Radac	Heinz P.	Resident
30	Rissel	Dorothy	Home and Property Owner
31	Robbins	Gary	Resident
32	Sale	Sue	Resident
33	Schlensker	Dale	Homeowner
34	Slack	Steve	Homeowner
35	Staiger	Kate	Homeowner

36	Suer	Arnold	Resident
37	Turner	Judith	
38	Watkins	Elizabeth	Resident

Business Owners			
	Last	**First**	**Affiliation**
1	Bahr	Dale	Farm owner
2	Scott	Brad	Harmony Lodge

Government Agency			
	Last	**First**	**Affiliation**
1	Ball	Karen	Hamilton County
2	Bohl	Brian	Hamilton County Soil & Water
3	Kunkemoeller	Brian	University of Cincinnati
4	Trokan	Matt	Sierra Club
5	Wolf	Melody	Mill Creek Restoration Project
6	Vatter	Brandon	County Monitor
7	Wooton	Bill	MSD

Consultant			
	Last	**First**	**Affiliation**
1	Robbins	Valerie	Parsons Brinkerhoff
2	Wirtz	Jennifer	Parsons Brinkerhoff

Interested Citizens		
	Last	**First**
1	Anonymous	Man
2	Anonymous	Man
3	Anonymous	Man
4	Balestra	Alisa
5	Young	Charles

Table 3 – Open House Workers and Assignments

ASSIGNMENT	DESCRIPTION OF ROLE	PERSON ASSIGNED	HANDOUTS
SETUP/BREAKDOWN CREW, DOOR "GREETER" AND PARKING CONTROL	Help set up tables, tablecloths, easels, posters and handouts and break down after the meeting Help direct attendees to the meeting (this could be a partly outdoor job) Help with parking	Jack Dudley, MSD Henry Chapman, MSD Rick Hamant, MSD	
SIGN-IN TABLE	Encourage attendees to sign-in; assure any concerned that info is only to compile a list of interested parties so MSD can provide information on ongoing opportunities for dialogue about the effort	Ann Newsom, MSD Pam Taylor, MSD	
TOUR GUIDES		Jack Dudley, MSD Henry Chapman, MSD Rick Hamant, MSD Ken Perica, EQM Kelly Walsh, EQM	
MONITORS	Maintain "big picture" view of the open house flow; in order to ensure all attendees have access to the stations, assist with attendees who require more intensive one-on-one interaction to address their concerns; direct attendees to specific individuals who can engage them in productive conversation	Terry Cole, Jacobs (yellow dot) Deb Leonard, MSD (yellow dot)	
STATION TOPIC	**STATION CONTENT/MAIN MESSAGE**	**PEOPLE MANNING STATION**	**HANDOUTS**

Station #1 – What's the Challenge	Two posters:
	• What's the Challenge?
	  ○ History of sewers
	  ○ CSOs
	• How do CSOs Affect Us?
		• Jack Rennekamp, MSD
		• Dean Niemeyer, Hamilton County Planning & Development
		• Dustin Lester, Cincinnati Dept. of Planning & Buildings/MSD
			• PGW Fact Sheet
			• Sewer Backup Fact Sheet

Station #2 – What's the Solution	Three posters:
	• What's the Solution?
	  ○ Project Groundwork
	  ○ MSD's three-pronged strategy to reduce/eliminate overflows
	• What is Project Groundwork?
	  ○ Mandated by a federal Consent Decree to reduce and eliminate CSOs
	  ○ Two phased program
	• Benefits of Project Groundwork
		• Brian Wamsley, HCP&D
		• Cassandra Hillary, MSD
			• PGW Fact Sheet
			• Economic benefits of PGW

Station #3 – Lower Mill Creek	Three posters:
	• Lower Mill Creek: What's the Default Solution
	  ○ Description of the default solution
	• What's the Alternative Solution?
	  ○ Discussion of watersheds in Lower Mill Creek
	  ○ Examples of source control solutions
	• Can We Fix our Sewers and Help our Communities?
		• Dan Louis, MSD
		• Sharon Jean-Baptiste, MSD
		• Laith Alfaqih, MSD (move here if more traffic at this station)
		• Bruce Koehler, OKI (move here if more traffic at this station)
			• Lower Mill Creek
			• Communities of the Future Fact Sheet

Station #4 – Bloody Run Watershed	Six posters:
	• What is the Kings Run Sub-Watershed and Ludlow Run Sub-Watershed?
	  ○ Watershed characteristics
	  ○ Overflow history
	• What's the Alternative Solution in the Ludlow Run Sub-Watershed?
	  ○ Source control solutions
	• Proposed Projects in the Ludlow Run Sub-Watershed
	• What's the Alternative Solution in the Kings Run
		• Dave Lorei, MSD
		• David Russell, MSD
		• Brian Kwiatkowski, AMEC
		• Chris Limke, BHE Environmental
		• Katie Bollmer, BHE Environmental
		• Craig Straub, AMEC
		• Beth Sutherland, MSD
		• Brenda Brown, MSD
		• Pat Arnette, MSD (floating)
			• Kings Run Watershed Fact Sheet
			• Case Studies

	Sub-Watershed? ○ Source control solutions • Proposed Projects in the Kings Run Sub-Watershed • Benefits of an Alternative Solution in the Ludlow Run and Kings Run Sub Watersheds		
Station #5 –Mill Creek Watershed Quality	One poster: • Midwest Biodiversity Institute helping MSD monitor and evaluate water quality and aquatic habitat in the Mill Creek, Little Miami, Great Miami River and their tributaries ○ Examples of Early Success Projects ○ Examples of Green Demo Projects	• Laith Alfaqih, MSD • Vickie Gordon, Midwest Biodiversity Institute	
Station #6 – Pilot Projects in the Lower Mill Creek Watershed	One poster: • Pilot Projects in the Lower Mill Creek Watershed ○ Examples of Early Success Projects ○ Examples of Green Demo Projects	• John Herchl, MSD • Dave Gamstetter, Cincinnati Parks Board • Jessica Truman or Stacie Martin, Cincinnati Parks Board • Joe Schwind, CRC	• Enabled Impact Program Fact Sheet
Station #7 – How Can I Get Involved?	One poster: • How can I get involved? ○ Attend meetings ○ Help protect water quality	• Jen Eismeier, Mill Creek Watershed Council of Communities • Bruce Koehler, OKI • Robin Corathers, Mill Creek Restoration Project	• How Can I Get Involved Fact Sheet • Lower Mill Creek Watershed Action Plan Fact Sheet • Rain Barrel Fact Sheet

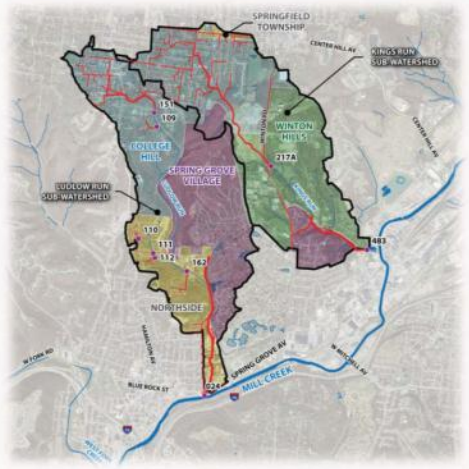
Station #4 Board: Kings Run Watershed

LUDLOW RUN & KINGS RUN SUB-WATERSHEDS: WHAT ARE THEY?

The Ludlow Run and Kings Run sub-watersheds cover approximately 2,217 acres and is home to nine combined sewer overflows (CSOs), which discharge approximately 500 million gallons of combined sewage into Mill Creek in a typical year.

Watershed Characteristics

- The Ludlow Run and Kings Run sub-watersheds overlap the Cincinnati neighborhoods of College Hill, Northside, Spring Grove Village, and Winton Hills and the jurisdiction of Springfield Township.
- The sub-watersheds were named after the Ludlow Run and Kings Run tributaries, which transport natural drainage from forested hillsides and stormwater runoff from developed areas to the Mill Creek.



Ludlow Run and Kings Run Sub-Watersheds: Existing Conditions

Legend
- Combined Sewer Overflow (CSO)
- Existing Combined Sewer
- Kings Run Watershed Boundary
- River/Stream

Overflow History

- In a typical year, nine CSOs discharge approximately 500 million gallons of combined sewage into the Mill Creek.
- Less than 25% of this overflow is sewage- the rest comes from stormwater and what was previously natural stream flow.
- Under MSD's Wet Weather Improvement Plan, the solution for the Kings Run watershed includes relief sewers, separation, regulator improvements, enhanced high-rate treatment (EHRT), and phase 2 of an underground storage tunnel.
- MSD is proposing an alternative solution that seeks to control CSOs by removing stormwater from combined sewers through source control.
- These solutions are often called "source control" solutions because they control the source of the problem: stormwater.

CSO 24

CSO 483

Ludlow Run Stream

Kings Run Stream

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Station #4 Board: Kings Run Watershed

KINGS RUN: WHAT'S THE ALTERNATIVE SOLUTION?

MSD is currently evaluating the use of "alternative" source control solutions in the Kings Run sub-watershed to reduce CSO overflow volume by approximately 230 million gallons in a typical year, based on a Phase 1 alternative.

Source Control Solutions

Source control solutions under consideration in the Kings Run sub-watershed include:

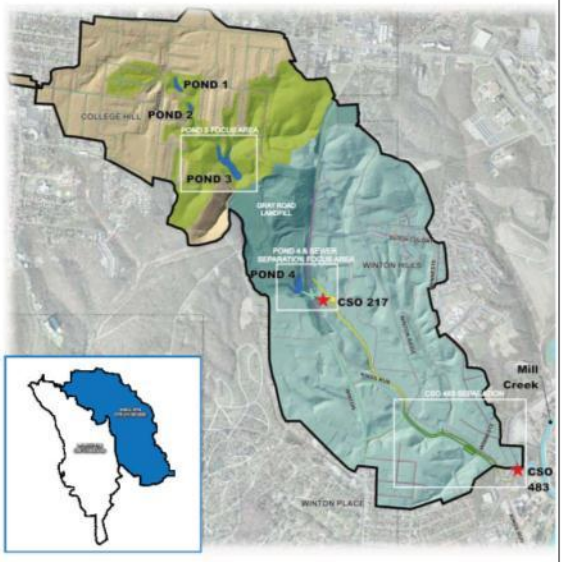
- Construct Stormwater Detention Basins (Pond 1, Pond 2, Pond 3)
  - Take advantage of separate storm sewers and natural wooded ravines to intercept stormwater runoff, store it in existing low points, and bleed it back into the combined sewer system at a reduced rate.

  Benefits: Reduced CSO volume in a typical year; Greater control of rainfall events; Reduced combined sewer storage or treatment in the Phase 2 future project
- Separate Storm and Sanitary Flows
  - Separate Gray Road Landfill runoff from the combined sewer system with a new storm sewer crossing Winton Road.
  - Install storm sewer on Winton Road, Kings Run Road, and Winton Ridge Road.
  - Install new combined sewer along Kings Run Road and convert 14'x 8' existing sewer to storm only with direct discharge to Mill Creek.

  Benefits: Reduced CSO volume in a typical year; Greater control of rainfall events; Reduced combined sewer storage or treatment in Phase 2
- Improve Development Detention Basin (Pond 4)
  - Maximize available volume for increased control of discharge to Kings Run Stream.
  - Incorporate stormwater quality measures to treat runoff prior to discharge to Kings Run Stream.

  Benefits: Mitigation of downstream erosion; Improved stream quality
- Phased Stream Restoration
  - Modify stream at CSO 217 outfall to stabilize banks, minimize future erosion, and improve conveyance of CSO discharge downstream.
  - Consider additional stream restoration of Kings Run Stream for implementation after construction of Phase 2 infrastructure.

  Benefits: Stabilization of adjacent property; Improved stormwater quality, stream habitat, and local aesthetics



Kings Run Sub-Watershed: Overview of Proposed Source Control Solutions

Legend
- Phase 2 Treatment/Storage
- Proposed Sanitary Sewer
- Proposed Storm Sewer
- Proposed Combined Sewer
- Potential Phased Stream Restoration
- Proposed Storage Tank
- Proposed Detention Basin
- Proposed Detention Basin Drainage
- Proposed Separation Drainage (CSO 483)
- Proposed Separation Drainage (CSO 217)
- Existing Combined Sewer
- Existing Sanitary Sewer
- Existing Storm Sewer

METROPOLITAN SEWER DISTRICT of greater CINCINNATI

Station #4 Board : Kings Run Watershed

LUDLOW RUN: WHAT'S THE ALTERNATIVE SOLUTION?

MSD is currently evaluating the use of "alternative" source control solutions in the Ludlow Run sub-watershed to reduce CSO overflow volume by approximately 180 million gallons in a typical year.

Source Control Solutions

Source control solutions under consideration in the Ludlow Run sub-watershed include:

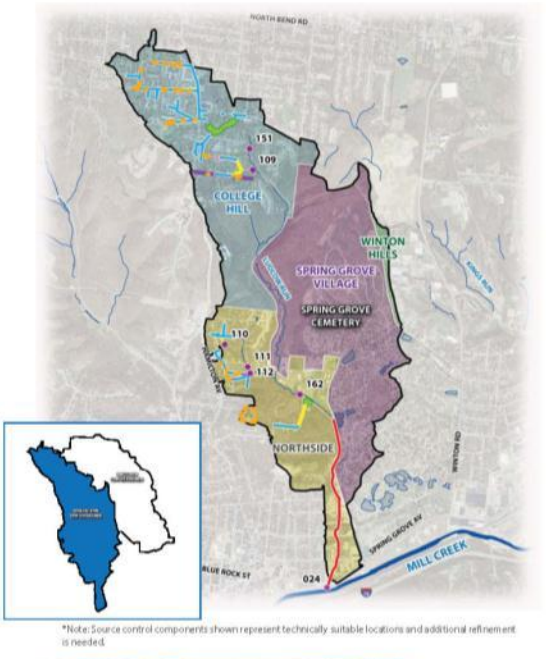
- Installation of separate storm and sanitary sewers (to separate storm and sanitary flows and minimize CSOs)
- Constructing wetlands in suitable locations to slow stormwater flows and provide water quality benefits
- Constructing curb bump-outs in parking lanes as necessary to slow stormwater flows and provide water quality benefits
- Installing permeable pavers in parking lanes as necessary to slow stormwater flows
- Constructing step pools in hilly areas to slow stormwater flows prior to entering Ludlow Run stream
- Evaluating restoration of Ludlow Run stream to reduce erosion and encourage habitat

Goals of a Source Control Solution

The goals of a source control solution are to:

- Reduce the volume of CSOs in a typical year at a cost potentially less per gallon as compared to traditional CSO technologies,
- Improve water quality, and
- Provide a potential community benefit

MSD's proposed source control solution for the Ludlow Run sub-watershed is an investment in new infrastructure that will help to reduce CSOs in a typical year and provide a potential community benefit.



Ludlow Run Sub-Watershed: Overview of Potential Source Control Components

Legend
- Combined Sewer Overflow (CSO)
- Proposed Interceptor
- Proposed Storm Sewer
- Proposed Curb Bump-Outs
- Proposed Step Pools
- Proposed Permeable Pavement
- Proposed Wetland
- Ludlow Run Boundary
- River/Stream

*Note: Source control components shown represent technically suitable locations and additional refinement is needed.

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Station #4 Board: Kings Run Watershed

KINGS RUN: WHAT ARE THE PROPOSED PROJECTS?

Alternative source control solutions in the Kings Run sub-watershed are intended to reduce CSO volume in a typical year, improve stormwater management, and contribute to stormwater quality improvements and stream restoration.

Pond 3

Existing Conditions: Gray Road Landfill is a physical barrier in the Kings Run natural drainage corridor, forcing stormwater runoff upstream of the landfill to enter the combined sewer system.

Source Control Solution: Take advantage of this barrier and utilize it as a dam to store stormwater runoff and bleed it back into the combined sewer system at a greatly reduced rate.

Project Component: Detention basin

Anticipated Results: Reduction of CSO volume at CSO 217 in a typical year and the mitigation of damaging discharge to Kings Run Stream during larger storm events.

Proposed Plan for Pond 3

CSO 483 Separation

Existing Conditions: Kings Run Stream is intercepted by a 14'x8' combined sewer that carries stormwater and stream flow mixed with combined sewage to CSO 483. Only CSO volume from this system reaches Mill Creek at CSO 483.

Source Control Solution: Convert the existing 14'x8' combined sewer to a separate storm sewer that will carry stormwater runoff and stream flow directly to Mill Creek.

Project Components: Extension of new storm sewer; installation of new combined sewer and an underground storage tank to intercept sanitary connections and to manage flow from areas that will continue to be served by combined sewer.

Anticipated Results: Significant reduction of CSO volume at CSO 483 in a typical year.

Proposed Plan for CSO 483 Separation

Pond 4 & Sewer Separation

Existing Conditions: Stormwater runoff from the 70-acre Gray Road Landfill site is managed by an existing detention basin at Winton Road (Pond 4).

Source Control Solution: Take advantage of the proximity of the landfill property to Kings Run Stream and separate the landfill and the adjacent Winton Road from the combined sewer system with a new storm outfall to the stream.

Project Components: Sewer separation; modifications to the landfill detention basin to enhance stormwater quality and reduce discharge rates to Kings Run Stream; improvements to the stream corridor to stabilize the banks and promote conveyance of both stormwater and CSO volume downstream.

Anticipated Results: Significant reduction of CSO volume at CSO 217 in a typical year; stream and stormwater quality improvements

Proposed Plan for Sewer Separation & Pond 4

Legend
- Proposed Sanitary or Combined Sewer
- Proposed Storm Sewer
- Proposed Conversion from Combined to Storm Sewer
- Potential Stream Improvements
- Proposed Water Quality Measure
- Proposed Detention Basin

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Station #4 Board: Kings Run Watershed

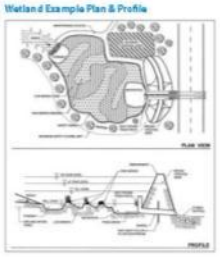
LUDLOW RUN: WHAT ARE THE PROPOSED PROJECTS?

As part of planning to reduce CSO volume into Mill Creek in a typical year, reduce sewer backups and improve stormwater management in the Ludlow Run sub-watershed, MSD is also evaluating water quality improvement solutions and Ludlow Run stream restoration.

Wetland Concept

- Wetlands may be constructed in low-lying vacant land to control stormwater flows and provide water quality.
- The preserved land north of Children's Hospital on Hamilton Avenue could support a 2-million gallon wetland able to control and treat stormwater from approximately 100 acres in College Hill.

Wetland Example Plan & Profile



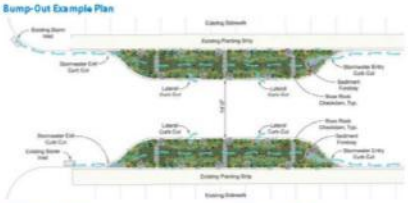
Preserved Land North of Children's Hospital

Wetland Example

Curb Bump-Out Concept

- Curb bump-outs could be placed in existing parking lanes, avoiding driveways and utilities.
- Stormwater in gutters would flow into and through the bump-outs.
- Bump-outs would provide storage, infiltration, green space, and control of small storms.

Bump-Out Example Plan



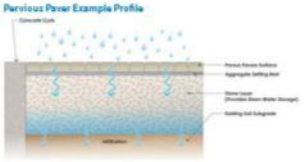
Bump-Out Example

Bump-Out Example

Pervious Pavers Concept

- Pervious pavers could replace existing parking lanes, curbs, and gutters.
- Stormwater would infiltrate as it flows over the lanes.

Pervious Paver Example Profile



Pervious Paver Example

METROPOLITAN SEWER DISTRICT of greater CINCINNATI

Station #4 Board: Kings Run Watershed

LUDLOW RUN & KINGS RUN SUB-WATERSHED: WHAT ARE THE BENEFITS?

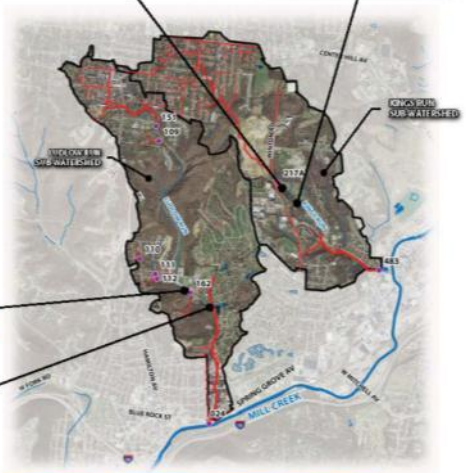
Proposed projects offer both direct stormwater quality and quantity benefits, as well as opportunities to partner with local property owners, municipalities, agencies, and redevelopment efforts.

Potential Watershed Benefits

- Remove stormwater runoff from the combined sewer system and reduce overflows from CSOs, improving stormwater quality in Ludlow Run, Kings Run, and Mill Creek.
- Separated stormwater and natural streams will be conveyed through new stormwater infrastructure, thereby providing additional capacity in the existing combined sewer system.
- Separated stormwater will be detained, controlling peak storm flows, before outletting into Ludlow Run, Kings Run, and Mill Creek.
- Enhance Ludlow Run and Kings Run streams to reduce erosion, encourage natural habitat, improve water quality downstream in Mill Creek, provide a natural amenity for the community, and provide a potential catalyst for community revitalization as part of MSD's Communities of the Future approach.
- Partnership and shared investment opportunities offer the ability to improve stormwater quality before directing it to separate storm sewers.
- Removing stormwater from the combined sewer system benefits capital as well as long-term maintenance costs.

CSO 217 Overflow into Kings Run Stream

Kings Run Stream Channel



Ludlow Run Stream Channel at CSO 162

Ludlow Run Stream Inlet into Combined Sewer

Property Acquisition

- To resolve CSOs in the Kings Run sub-watershed, MSD may need property to remove stormwater runoff from the combined sewer system and construct solutions that can serve as an amenity for the community.
- MSD may need to purchase property from interested property owners, and properties in foreclosure or otherwise available. Property may be used for short- or long-term stormwater solutions, as well as for construction staging and implementation.
- Relocation assistance is available to qualified tenants, property owners, and businesses.

METROPOLITAN SEWER DISTRICT of greater CINCINNATI

Station #5 Board: Other Projects in the Community

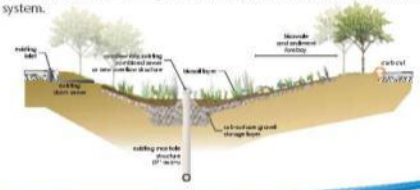
PILOT PROJECTS IN THE LOWER MILL CREEK WATERSHED

MSD is evaluating the effectiveness of various stormwater controls such as rain gardens, green roofs, pervious pavement, and green streets in managing stormwater and reducing the amount entering combined sewers. MSD is partnering with local organizations to sponsor or support pilot projects in the Lower Mill Creek Watershed.

Roselawn Park (Large Rain Gardens)

- This property is located on Seymour Avenue between Reading Road and Langdon Farm Road in the Roselawn neighborhood of Cincinnati. Stormwater runoff currently flows into catch basins throughout the parking lot, which ultimately discharge into the combined sewer system.

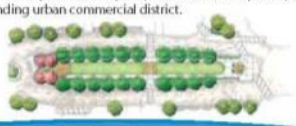
- A small depressed area within the parking lot will be converted into a bioinfiltration basin, planted with shrubs, grasses and perennials, all chosen for their adaptability to drought and flood conditions. The basin will capture, store and infiltrate stormwater runoff.
- A larger bioinfiltration basin was designed at the toe of slope on the western side of the park. A separate storm sewer allows excess runoff from the eastern basin within the parking lot to be conveyed to the western basin.
- This project will remove 394,000 gallons of stormwater runoff a year from the combined sewer system.



Oakley Green Street (Pervious Pavement, Stormwater Planters)

- Located in the main square of the Cincinnati neighborhood of Oakley along Madison Avenue.

- One of the first "Green Streets" in Cincinnati, featuring the following design elements:
  - 1,670 square feet of pervious concrete sidewalks that collect and filter stormwater runoff from adjacent traditional concrete sidewalks.
  - Eight urban stormwater planters totaling 730 square feet of vegetated areas. The planters were strategically located in the sidewalk to capture stormwater runoff and allow for an adequate egress zone for on-street parking. The planters include curb cuts with a trench drain to direct street runoff into the facilities.
  - 130 square foot rain garden that collects runoff from surrounding landscaped areas.
- The pilot project will improve water quality and reduce the quantity of stormwater runoff from the surrounding urban commercial district.



Station #6 Board: How Can I Get Involved?

MILL CREEK WATERSHED WATER QUALITY

The Midwest Biodiversity Institute is helping MSD monitor and evaluate water quality and aquatic habitat in the Mill Creek, Little Miami River, Great Miami River and its tributaries.

Watershed Assessment Plan Development

- The Midwest Biodiversity Institute is developing a comprehensive watershed-based monitoring and assessment plan for the Mill Creek, Little Miami River, Great Miami River and 11 sub-watersheds.
- Goals are to establish a baseline for water quality and aquatic habitat (e.g., fish and macroinvertebrates), identify stressors to water quality and aquatic habitat and assess use attainability issues (identify the overall health of the aquatic system).
- 2011 focus was on the Mill Creek watershed; 2012 focus will be on the Little Miami River watershed.
- Multi-step process that includes plan design, sampling and analysis, and assessment of the overall health of the aquatic system
- Once a larger database is compiled, an Integrated Priority System (IPS) tool will be developed to help prioritize restoration and water quality options for the waterways.

Watershed Bioassessments

- Sampling at about 100 sites each year
- Focusing on biological (e.g., fish, macroinvertabrates), chemical and physical indicators
- Geometric sampling design
- Level 3 Project Study Plan each year
- Level 3 data collection allows results to be used to affect water quality standards (WQS) and Total Maximum Daily Loads (TMDL)

Sampling in the Kings Run Watershed

Site MC97

- Mill Creek tributary in upper part of the Ludlow Run sub-watershed

Class III Primary HeadWater Habitat (PHWH):

- Drainage area of 0.84 square miles
- Intermittent flows, water present during summer
- Conducted a PHWH assessment
- Aquatic life occurs year round
- Water chemistry data suggests urban runoff impacts
- Threats to primary headwaters usually include culverting, filling, and water quality impacts from runoff and wet weather discharges

Sampling Results:

- No fish were collected
- 3 salamander species & aquatic invertebrates
- QHEI score = 61 (Good)
- HHEI score = 71 (Very Good)

Water Quality Summary:

- Total suspended solids, total phosphorous, and conductivity exceeded regional reference thresholds
- Other parameters were within "expected" concentrations
- Typical urban stream results

Site MC68

- Mill Creek tributary located in lower part of the Ludlow Run sub-watershed

Class I Primary HeadWater Habitat (PHWH):

- Drainage area of 0.20 square miles
- Ephemeral flows, dry during summer
- Conducted a Headwater Habitat Evaluation Index (HHEI) assessment
- Could not sample biota or water quality
- Aquatic life occurs seasonally & is comprised of temporal taxa – no fish or amphibians.
- These streams still serve an important function in a watershed by filtering and sequestering pollutants and sediment.
- Threats to these primary headwaters usually include culverting and filling.

Station #6 Handout: How Can I Get Involved?

PROJECT GROUNDWORK
your pipeline to clean water

Lower Mill Creek Watershed Action Plan

The Metropolitan Sewer District of Greater Cincinnati (MSD) — in partnership with communities, local government agencies and departments, watershed advocacy agencies, non-profits, residents and businesses — is developing a Lower Mill Creek Watershed Action Plan to protect and improve water quality and the environment. The Watershed Action Plan establishes a dialogue and framework for improving and protecting the streams, lakes and other valuable water assets of Cincinnati and the Lower Mill Creek Watershed. By having an approved Watershed Action Plan by the Ohio EPA and Ohio DNR, water quality improvement projects would be eligible for additional state and federal grants.

What is a Watershed Action Plan?

A watershed action plan (WAP) is a process for gathering information, learning more about your watershed and developing a strategy to improve and protect the watershed with other residents, businesses and stakeholders. The plan identifies the problems, priorities and activities that watershed stakeholders would like to see addressed. The WAP recognizes the many factors that play a role in the watershed's future and works cooperatively to find solutions that meet the needs of many.

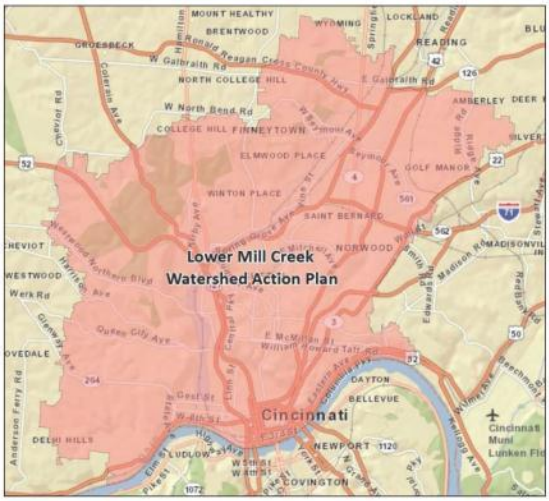
Why Should a WAP be Developed?

A WAP helps to identify pollutants and pollution sources affecting the watershed so that appropriate and effective solutions can be formulated. The quality of the water resource at any point in a stream is the product of all natural and human activities in the drainage area above that point. To improve water quality, a comprehensive approach is needed to identify all the sources of potential pollutants and to evaluate them based on their relative pollution contribution.

The Mill Creek is an asset to our region, conveying a unique sense of place. Along its path, you can enjoy scenic views, historic structures and wildlife, including soft-shelled turtles and black-crowned night hurons.

How Can You Help?

Join the conversation by participating in Project Groundwork community engagement events so that you can begin learning about the types of watershed conditions and potential solutions to improve water quality.



Need More Information?

For more information contact:

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Ms. Jennifer Eismeier, Mill Creek Watershed Council of Communities Executive Director at **(513) 563-8800**

or email **MSD.Communications@cincinnati-oh.gov**