WET WEATHER STAKEHOLDER TEAM

2015 MEETINGS
VOLUME 1

Agenda

WWT Stakeholder Group Agenda
March 24, 2015
5:30 p.m. – 8:00 p.m.

5:15 – 5:45	Dinner served
5:45 – 6:00	Welcome, Introductions, Meeting Objective, Agenda Review and Stakeholder Meeting "Ground Rules" Review *Clay Kelly, Strand Associates*
6:00 – 6:15	MSD Update *Greg Heitzman, MSD Executive Director*
6:15 – 6:35	IOAP Update *Angela Akridge, Infrastructure Planning and Environmental Compliance Director* *Gary Swanson, CH2M Hill*
6:35-6:45	20-Year Comprehensive Facility Plan Introduction and Update *Gary Swanson*
6:45- 7:15	Facility Plan - Stormwater Service Area *Matt Newman, HDR* *John Lyons, Strand Associates*
7:15 – 7:45	Facility Plan - Wastewater Service Area *Mark Sneve, Strand Associates*
7:45 – 8:00	Observer Comments, Wrap-up and Adjourn *Clay Kelly, Angela Akridge*

Meeting Summary
Wet Weather Stakeholder Group Meeting
March 24, 2015
MSD Main Office, Louisville

The Wet Weather Team (WWT), chartered by the Louisville and Jefferson County Metropolitan Sewer District (MSD), met on March 24, 2015, at MSD's main office. The objectives of the meeting were to:

- Provide a Consent Decree program update,
- Introduce the Comprehensive Facility Plan, and
- Describe the efforts for the Comprehensive Facility Plan in the Stormwater and Wastewater Service Areas.

Welcome

Clay Kelly of Strand Associates opened the meeting by welcoming the members and reviewing the meeting objectives and agenda. The ground rules of the meetings were also reviewed.

MSD Update

Greg Heitzman, MSD Executive Director, provided an update on MSD, including:

- The recent snow and flooding event, which was the 29th worse flood on record. He noted that it was a good learning opportunity and chance to test MSD's preparedness. The response required significant coordination between many agencies, which went very well. MSD helped with snow removal, especially on catch basins to prevent flooding caused by blocked catch basins. 15 of the 16 flood pump stations were activated and pumped approximately 13 billion gallons of water (for comparison, the Louisville Water Company uses 39 billion over the course of an entire year). The overall cost to MSD to respond will be between $3 to $3.5 million, for which there are contingency funds.
- MSD is working on their annual budget update. Operating and capital costs are on track for the year. The projection is for a 5.25% to 5.5% rate increase next year which meets the promise of the former Executive Director to not increase more than 7% a year after the initial rate increase. MSD's average rates are moving from one of the higher in the region to one of the lower as other communities have to raise rates in larger amounts to meet their obligations. MSD has been able to increase rates at in smaller increments due to good management and an early start on their Consent Decree obligations.
- A complete merger with Louisville Water Company (LWC) will not happen due to two reasons:
    1. MSD's $2 billion debt would overly burden LWC and eliminate the dividend LWC pays the City of Louisville,
    2. The better model to merge would be to be under LWC because of its freedom and flexibility of its legal organization. To mimic that with MSD would require action by the state legislature, which has inherent risks.

  The plan is to continue to use inter-local agreement to share costs and consolidate similar functions. For example, instead of hiring two IT security people, LWC and MSD hired one that splits between both organizations. Goal is to save $100 million over 10 years by working towards one culture with one approach to business and when that happens and MSD's debt is eliminated or significantly reduced, a merger may be revisited.
- A study was recently completed that considered the feasibility of regionalization opportunities in the Salt River watershed. Consolidating into one "mega plant" did not make sense in today's economy but there are several sub-regional opportunities that will be explored as ways to increase efficiency and reduce costs.
- Regarding the topic of MSD-LWC merger, a stakeholder noted that the City and County merged in similar fashion and asked if the goal is to eventually have one central office and board? Greg responded, that is the goal. In the meantime they are working on combining back-office and administrative functions now until a more complete merger could happen one day.

IOAP Update and Implementation Progress

Angela Akridge, MSD Infrastructure Planning and Environmental Compliance Director, gave an update on overall IOAP Implementation progress.

- Currently MSD is about 50% through the schedule, with 50% of the projects complete, and are slightly under budget when compared to original estimates.
    - The major projects to control SSOs are in place and have eliminated 15% to 20% of the occurrences of SSOs and approximately 60% of the volume.
    - Before the end of this year, there will be only five water quality treatment centers (WQTCs) in Jefferson County. In the 1980s, there were over 300.
- MSD has begun design on the CSO control projects that will be the focus through 2020. Storage basins are a major component of these projects and public engagement will be a key component of the design process.
- MSD is moving ahead with the new public engagement strategy that was introduced at the last WWT group meeting and is seeing positive results already.
    - One component of this strategy is using performance metrics (similar in concept to what was used in the IOAP) to convert subjective information into quantifiable numbers so that progress and effectiveness can be tracked.
- Public meetings will be integrated into the design process at four key points with specific goals for each meeting, both from the public and MSD:
    - Orientation
    - Conceptual Design
    - Advanced Design
    - Construction
- MSD has hired a branding consultant and they are providing valuable feedback on MSD's communication approach already. Specifically, they have recommended changing MSD's voice from a "maker" perspective (why this is good for us) to a "user" perspective (why this is good for you).
- Wes Syndor, MS4 Program Manager, presented on a draft copy of Duke University's "Study on Consent Decrees and Use of Green Infrastructure". The study looked at six cities in depth and many others for background data. MSD compares very favorably with the second highest percentage of green and a high degree of supplier diversity. Brian Bingham, MSD Chief of Operations, noted that Philadelphia had the highest percentage of green but followed MSD's model and still has more gray than MSD. It was noted that the WWT advocated for green to be a part of the IOAP solutions and pushed MSD to make it happen. Now MSD is being recognized as a trail-blazer in this field.

20-Year Comprehensive Facility Plan Introduction and Update

Clay Kelly of Strand Associates began the topic by saying that today's presentations were background information to prepare the WWT to provide input starting in June and ramping up further in September.

- Gary Swanson of CH2M-Hill introduced the 20-Year Comprehensive Facility Plan (Facility Plan) by noting that the IOAP didn't consider things that weren't related to overflow reduction such as non-point source pollution, flood control, non-overflow related capacity, etc.
- The Comprehensive Facility Plan will consider climate change as utility resiliency. The intention is to avoid a debate on the validity of climate change and focus on the ability of our infrastructure to function under different storm patterns. Statistical data is showing us that we are receiving more rain in fewer events, i.e. more severe, intense storms.

Facility Plan - Stormwater Service Area

Matt Newman of HDR and John Lyons of Strand Associates presented an introduction to the scope of the Stormwater Study area in the Facility Plan.

- The Facility Plan will consider stormwater from quantity and quality perspectives to provide a holistic view of MSD stormwater program.
- MSD has completed over 45,000 drainage requests to address issues since 2003 and constructed 17 regional detention basins. Drainage requests occur throughout the county but particularly in west and southern Jefferson County.
- MSD has several stormwater programs ongoing:
    - Drainage Response Initiative (DRI) focuses on individual drainage requests and has invested over $125,000,000 from 2003 to 2010 to improve drainage in the county.
    - Property Buy-outs buy property in flood prone areas where it is more cost-effective to remove the structures from the floodplain than to control flooding in the area. There is currently a study underway to prioritize properties for buy-outs.
        - A stakeholder asked what happens to land after a buy-out and encouraged MSD to seek beneficial re-use of the property. MSD responded that have not decided for the current areas as they are still some time away from being completed. MSD has committed to a significant community engagement on what the leave-behind will be after the buy-out program.
    - MSD operated a robust development plan review and evaluation to protect existing properties from inadvertent impacts of new development.
- A significant part of the Facility Plan will be to evaluate the impact of using rainfall statistical data to quantify the probability of various sized storms. Currently uses definitions from 1979 to define the intensity and duration of storms for a specific reoccurrence interval (i.e. 10-year storm that has a 10% chance of occurring in any given year or 100-year storm that has a 1% chance of occurring in any given year). Newer rainfall statistics show that for storms with more frequent return intervals (less than 10-year storm) there is an insignificant difference in the volume of rain. However, for large, less frequent storms, there is a significant increase in the volume of rain anticipated.
- The definition of storms is important because different sized storms are used to design different pieces of stormwater infrastructure. For example, roadside ditches are designed using a 10-year storm. If the size of the 10-year storm increases, then the ditches must be larger to accommodate the additional flow.
- Additionally, the effects of increasing frequency of more extreme storms will have a range of impacts on existing structures and facilities.
- MSD has been monitoring 27 stream sites throughout the county and has seen trends showing that water quality is improving due to MSD's efforts.
- Future requirements for the MS4 program could be costly and difficult if retrofits of existing infrastructure are required.
- The Stormwater team will look at current problem areas, changes in storm definitions, changes in frequency of extreme storms, new regulations, condition assessments, and other factors to identify gaps in planning and develop future projects.
    - A stakeholder observed that MSD has saved many property owners a significant amount of money over the years by keeping their property out of the floodplain. If their property were to suddenly be in the floodplain again, the costs would be substantial.
    - After discussing recently issued Presidential Executive Order 13690 that requires federal agencies to consider an expanded floodplain, applicable to all federal actions, , several stakeholders noted that if the federal government is moving in this direction, then residential requirements are probably not far behind. The Stormwater team will evaluate the costs and benefits anticipated as a result of the Executive Order. Additionally the team will look at the cost and benefits of improving Louisville's Community Rating System (CRS) score from a 4 to

3. There are only a few communities in the country that are rated as high as Louisville. An increased CRS score would result in lower flood insurance premiums.

Facility Plan - Wastewater Service Area

Mark Sneve of Strand Associates presented an introduction to the scope of the Wastewater Study area in the Facility Plan.

- The Facility Plan will consider not just physical assets but also operational programs (Nine Minimum Controls, CMOM, etc.) and best management practices.
- MSD has recently constructed large wastewater projects and prepared several planning documents. These all addressed specific needs but were not prioritized across all of MSD's service areas.
    - MSD has identified over $565 million in projects in the wastewater area (including IOAP commitments).
- The regulations that define wastewater operations are always evolving based on new science (in the case of potential controls on pharmaceuticals and personal care products) and environmental impacts (such as the push to control nutrients to address the hypoxic area in the Gulf of Mexico). This is commonly referred to as a "dead zone" near the Mississippi River with severely reduced oxygen levels in the water.
- Similar to the approach in the Stormwater study area, the Wastewater team will determine if there are gaps in current planning and identify future needs.
    - A stakeholder encouraged the Facility Plan team to include an evaluation at the watershed level and not just at the point of collection. It was noted that open space such as farms can hold a tremendous amount of water. Even small properties can play a part. Getting private land-owners involved would go a long way. Several stakeholders followed-up on the comment with support for engaging individuals to be a part of the solution. This encouragement could come in the form of education and other more passive means but ultimately might have to be regulated in order to achieve the necessary results. Regulations could be done through smart growth policies enacted though Planning and Zoning (and other agencies). There are numerous examples from other communities that can be examined. One stakeholder pointed out that Louisville already has several such rules in place but they are often circumvented by waivers or exemptions.
    - Stakeholders commented that improved water quality opens up many more opportunities for outdoor recreation which ties into the City's efforts to attract more young professionals to Louisville.

- Stakeholders noted that customers will expect areas that already have higher water quality levels to be protected as they develop. Because of the recent economy, the need for facilities has lowered but as the economy picks up, there will be more needs for expansion. Mark Sneve of Strand Associates explained that most, if not all of MSD's planning documents are based on a complete build-out of an area within the next 40 to 50 years. However, if the development style changes (from single family residential to more dense high rises, for example) the planning would be updated.
- Gary Swanson of CH2M-Hill informed the WWT that the University of Louisville is studying growth patterns and projection as part of the Facility Plan. One expectation they have is that the East End Bridge will significantly change growth patterns. A stakeholder encouraged the Facility Plan team to look at other planning documents (such as the ones prepared by Develop Louisville and Louisville Forward) as part of the project.

Observer Comments, Wrap Up and Adjourn

- A stakeholder commended MSD for taking a holistic view in the Facility Plan and encouraged them to consider the entire watershed(s). It was noted that 20 years may not be a long enough planning period to see meaningful improvements in our streams' health.

Meeting Materials

- Agenda for the 3/24/2015 WWT Stakeholder Group Meeting
- Copy of the presentation slides
- Copy of Wet Weather Team Ground Rules

Meeting Summary
Wet Weather Stakeholder Group Meeting
March 24, 2015
MSD Main Office, Louisville

Meeting Participants

Wet Weather Team Stakeholders (Present)

Susan Barto, Mayor of Lyndon
Stuart Benson, Louisville Metro Council, District 20
Allan Dittmer, University of Louisville Provost Office
Arnita Gadson, Executive Director, Kentucky Environmental Quality Commission
Mike Heitz, Director, Louisville Metro Parks
Tom Herman, Zeon Chemicals
David James, Louisville Metro Council, District 6
Rick Johnstone, Deputy Mayor, Louisville Metro Mayor's Office (Retired)
Maria Koetter, Louisville Metro Government, Director of Sustainability
Bob Marrett, CMB Development Company
Kurt Mason, District Conservationist, Jefferson County Soil Conservation District
Jim Mims, Louisville Metro Planning & Design Services Department
Lisa Santos, Irish Hill Neighborhood Association
Bruce Scott, Kentucky Waterways Alliance
Tina Ward-Pugh, WaterStep
David Wicks, Kentucky Conservation Committee, Jefferson County Public Schools Center for Environmental Education (retired)

Wet Weather Team Stakeholders (Not Present)

Steve Barger, Labor (Retired)
Gina O'Brien, Brightside Executive Director
David Tollerud, University of Louisville, School of Public Health and Information Sciences

Wet Weather Team MSD Personnel (Present)

Greg Heitzman, MSD Executive Director
Angela Akridge, MSD Infrastructure Planning and Environmental Compliance Director
Steve Emly, MSD Chief of Engineering
Brian Bingham, MSD Chief of Operations

Technical Support

Gary Swanson, CH2M-Hill
Clay Kelly, Strand Associates
Paul Maron, Strand Associates
Matt Newman, HDR
John Lyons, Strand Associates
Mark Sneve, Strand Associates

Meeting Observers

John Loechle, MSD
Lopez High, MSD
Greg Powell, MSD
Mike Harris, JTL
Jeff Eger, HDR
Chuck Anderson, Strand Associates

Handouts

Louisville and Jefferson County Metropolitan Sewer District
Wet Weather Team Ground Rules
Final Version, 8/15/06 (updated 10/5/07)

A. Participants and Participation

1. Wet Weather Team (WWT) members are "participants." The Wet Weather Team consists of MSD personnel and a subgroup of stakeholders that will provide guidance to MSD. MSD personnel may participate in WWT discussions, but will not be included in decisions regarding stakeholder guidance to MSD. All participants in the stakeholder subgroup have equal representation.

2. The facilitation team is a neutral third party with no stake in the outcome of the discussions. The facilitation team, although under contract to MSD, works for the process and treats all Wet Weather Team participants as equal "clients."

3. To ensure an effective process, participants agree to make every effort to attend all meetings. If an alternate is needed, the suggested alternate will be recommended to and discussed with MSD in advance to ensure there will be appropriate balance and representation on the Wet Weather Team.

4. Observers are welcome at meetings, but are not participants in the Wet Weather Team's deliberations. A portion or portions of each meeting (not to exceed 15 minutes each) will be dedicated to receiving observer comments. Each observer's oral comments must not exceed two minutes, although written comments to the WWT and/or MSD will be welcome throughout the process.

5. MSD will consider requests from participants to invite outside experts to speak at Wet Weather Team meetings on relevant topics; however, MSD reserves the option of providing additional or alternative perspectives at meetings to ensure that the full range of perspectives and factual evidence is provided.

6. Wet Weather Team members are expected to participate through the entire process; however, any participant may withdraw from the process at any time without prejudice. In the event a participant chooses to withdraw, he or she should communicate the reasons for withdrawal and may be replaced by MSD with another representative with similar expertise and experience.

B. Meeting Discussions and Procedures

1. Each participant agrees to honest and direct communications.

2. Participants are encouraged to frame observations in terms of needs and interests, not in terms of positions; opportunities for finding solutions increase dramatically when discussion focuses on needs and interests.

3. Decisions will be made during meetings; if an alternate attends a meeting, he or she must be fully briefed on Wet Weather Team deliberations and able to participate in decision making.

4. The facilitator will manage the discussions, using more or less structure depending on the nature and tenor of the discussions.

5. Participants and/or the facilitator may request a caucus break at any time during the meeting. Individual caucus breaks are not to exceed 15 minutes.

6. A general summary of meeting discussions will be prepared; observations contained in the summary will not be individually attributed. Participants can, however, submit attributed comments directly to MSD and/or the MSD Board for consideration; all written comments will be made available publicly.

7. All meetings will start and finish on time.

C. Desired Outcomes

1. The stakeholder subgroup of the Wet Weather Team is a "consensus seeking" body. The desired outcome is one in which all stakeholder subgroup members support the products and are willing to say so publicly. Full consensus, however, is not necessary to enable the MSD Board to have a balanced and well-informed final decision process.

2. The perspectives of all WWT stakeholders—particularly in cases where consensus is lacking—will be gathered throughout the plan development process and made available to the MSD Board for consideration during their final decision making.

3. To help the process stay on track, agreed-upon, non-mainstream issues may be recorded and dealt with at a later date or referred to other, more appropriate forums.

D. Communications Outside of Wet Weather Team Meetings

1. Individual observations are not for attribution outside the meeting.

2. Participants are encouraged to refer inquiries from the press to the facilitation team or to final meeting summaries or other final Wet Weather Team materials. Individuals who choose to speak with the press agree to limit remarks to personal views and to refrain from characterizing the views of, or attributing comments to, other participants or the full Wet Weather Team.

3. Wet Weather Team participants may share information about the project's process and activities with peers outside the Team, as long as the communications make clear that the information is not an official product of the Team.

4. Wet Weather Team participants may share draft documents and communicate about the project's progress with managers and co-workers within their own organizations. Wet Weather Team participants agree to consult with the Team before sharing draft documents outside of the Team or their immediate co-workers and managers.

MSD

20-Year Comprehensive Facility Plan

Wet Weather Team

Stakeholder Group

March 24, 2015

Its Been a Long Journey

IOAP Development and Implementation

- Benefits of 19-year program to manage sewer overflows
  - Public health
  - Water quality
  - Property protection
  - Environmental enhancement
  - Eco-friendly solutions
- What didn't the IOAP cover?
  - Water quality treatment center upgrades and expansions (except where needed to accommodate capture of overflows)
  - Runoff-related non-point source pollution
  - Flooding not related to main-line sewer backups

How is the 20-year Comprehensive Facility Plan Different From the IOAP?

- IOAP focus was wet weather overflows
- This plan will address all asset needs
  - Growth
  - Asset management
  - Future regulations
  - Utility resiliency
- 20-Year Comprehensive Facility Plan will prioritize all projects/needs
  - Wastewater needs
  - Flood protection needs
  - Stormwater needs
  - Property needs

Tonight's Presentations Set the Stage

- Describe the facilities and the issues
- Provide background information about current status of all MSD's service areas
- Solicit feedback to ensure your understanding of the issues we will be addressing
- Identify additional areas of interest to you, potential gaps in what we are communicating
- Tonight we discuss the first two of the service offerings
  - Wastewater collection, treatment, and biosolids management
  - Stormwater runoff management
    - Quantity
    - Quality (non-point source pollution)

MSD

20-Year Comprehensive Facility Plan Wastewater Service Area

Wet Weather Team

Stakeholder Group

March 24, 2015

Discussion Topics

- How is this different from Integrated Overflow Abatement Plan (IOAP)?
- What assets will this include?
- What has MSD constructed recently?
- What plans has MSD prepared recently?
- What future projects has MSD identified?
- What regulatory framework might affect projects?
- Are there gaps in current planning?
- How will we identify future needs?
- What are the next steps?

2

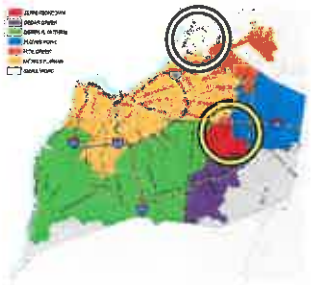
How is This Different From the IOAP?

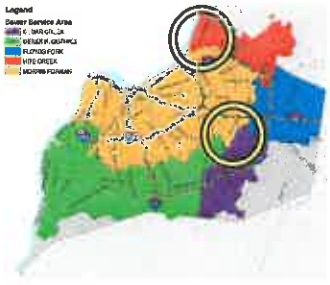
- IOAP focus was wet weather overflows
- This plan will address all asset needs
  - Growth
  - Asset management
  - Future regulations
  - Utility resiliency
- 20-Year Comprehensive Facility Plan will prioritize all projects/needs
  - Wastewater needs
  - Flood protection needs
  - Stormwater needs
  - Property needs

What Assets Will This Include?

Wastewater Collection and Treatment

- Assets include
  - Sanitary sewers
  - Combined sewers
  - Force mains
  - Wastewater pumping stations
  - Combined sewer storage and treatment systems
  - Water quality treatment centers
- Operational Programs and Best Management Practices
- Small WQTCs and Jtown WQTC (eliminated in 2015)





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What Has MSD Constructed Recently?

Key Projects:

- IOAP projects complete or under construction
  - Harrods Creek Pump Station – Prospect elimination
  - JTown WQTC elimination
  - Derek Guthrie WQTC expansion
  - Bells Lane Wet Weather Treatment Center
  - Buechel Basin
- Floyds Fork WQTC expansion
- Hite Creek WQTC Hydraulic Improvements

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What Plans Has MSD Prepared Recently?

- IOAP (2009)
- IOAP Modifications (2012)
- Floyds Fork Regional Facilities Plan (2012)
- Hite Creek Regional Facilities Plan (2014)
- Strategic Business Plan (2014)
- Salt River Feasibility Study (2015)

2012 IOAP Modification: May 2014

These projects address specific needs but are not prioritized across all areas.

6

What Projects are Coming Up in the Short-Term?

- IOAP Projects
  - Combined sewer storage basins
  - Real-Time Control of new facilities
  - Sewer evaluations and repairs
  - Green infrastructure
- Asset Renewal
- Hite Creek WQTC Expansion
- Morris Forman WQTC
  - Headworks replacement
  - Oxygen generation replacement
  - Louisville Green business case re-evaluation
- Pump Station Eliminations
- Nutrient Removal Upgrades

7

What Future Projects Has MSD Identified?

Wastewater Service Area	Number of Projects	Capital Cost
WQTC	24	$274M ++
Combined Sewer	20	$58M +
Sanitary Sewer	74	$233M +
Unclassified	26	TBD
TOTALS	144	$565M +++

Preliminary project count and capital needs, numbers will be refined

8

What Regulatory Framework Might Affect Projects?

Current Drivers

- Discharge permits
- Amended Consent Decree
- Biosolids disposal
- Air permitting
- Environmental Studies - Total Maximum Daily Loads (TMDLs)

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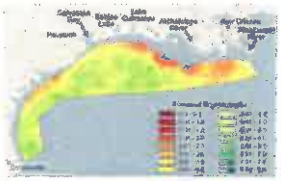
What Regulatory Framework Might Affect Projects?

Future Drivers

- TMDL Studies
- Nutrients
- Contaminants of Emerging Concern (pharmaceuticals, personal care products, etc.)
- Biosolids disposal
- Air pollution
- New enforcement priorities



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Are There Gaps in Current Planning?

- Regulations
- Growth
- Utility Resiliency
- Asset Condition & Performance
- Customer Expectations
- Level of Service/Protection

Are there other factors that could drive change?

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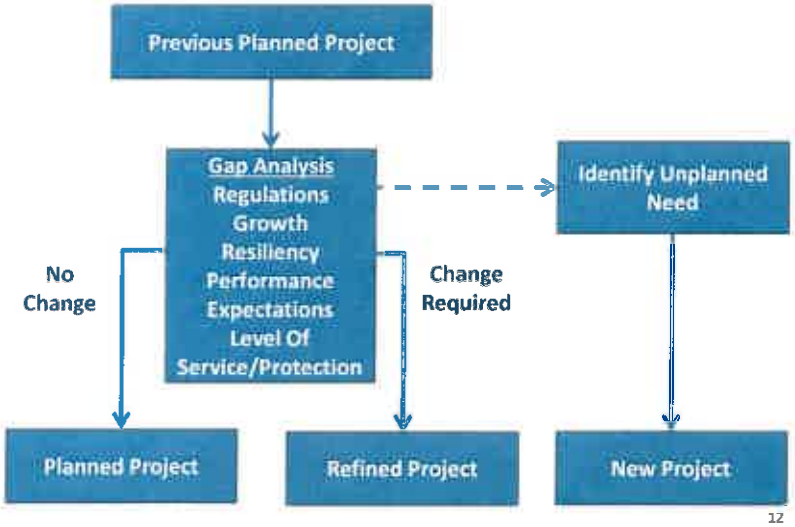
How Will We Identify Future Needs?



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What Are the Next Steps?

WW Team:

- Complete background document review
- Perform gap analysis
- Update projects
- Evaluate alternatives

Stakeholders:

- Provide input on performance measures
- Provide input on prioritization process
- Provide input as project develops

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MSD

20-Year Comprehensive Facility Plan Stormwater & Drainage

Wet Weather Team

Stakeholder Group

March 24, 2015

Discussion Topics

- **Stormwater Quantity**
  - Current problem areas
  - Current construction program
  - Design storm discussion
  - Gaps and approach to identifying future projects
- **Stormwater Quality**
  - MS4 program
  - Current actions/Controls implemented
  - Effects of green infrastructure
  - Future MS4 requirements

2

How is This Different From the IOAP?

- IOAP focus was wet weather overflows
- This plan will address all asset needs
  - Growth
  - Asset management
  - Future regulations
  - Utility resiliency
- 20-Year Comprehensive Facility Plan will prioritize all projects/needs
  - Wastewater needs
  - Flood protection needs
  - **Stormwater needs**
  - Property needs

3

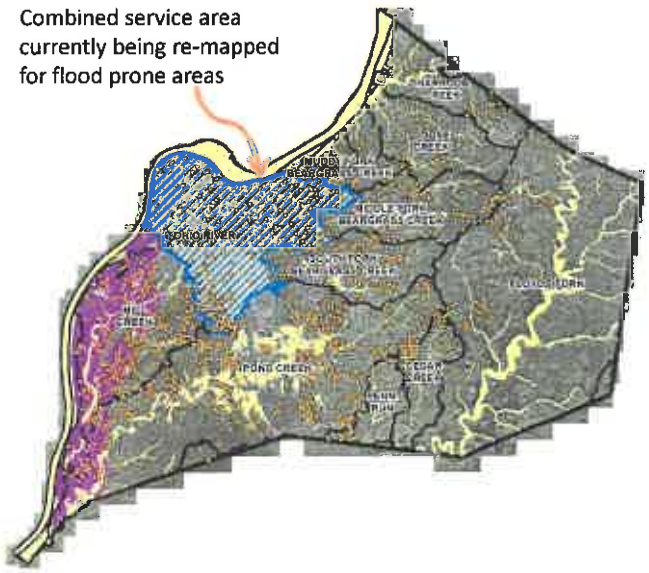
Major Projects Competed to Date

- Closed drainage request (since 2003)
- Regional detention basins constructed

4

Current Problem Areas

- Open Drainage Request
- Flood Prone Areas



Current Construction Program

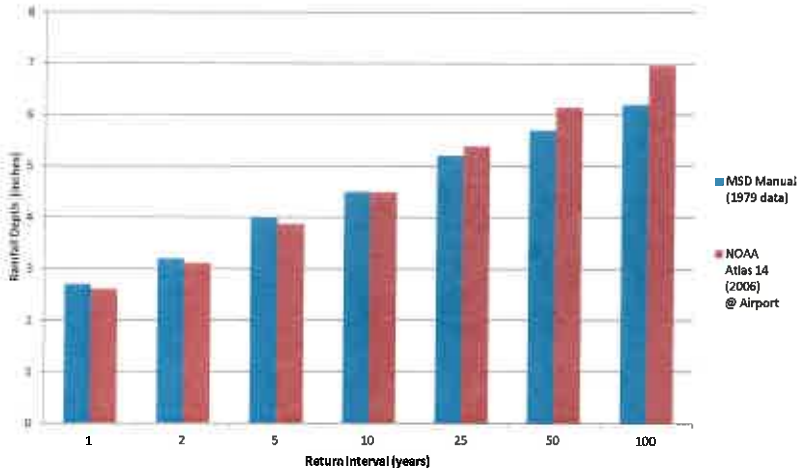
- Drainage Response Initiative (DRI)
  - Focuses on individual open drainage request.
  - $125,000,000 (2003-2010)
  - Drainage improvements include capital & maintenance projects
- Property Buyouts – i.e. Maple Street
- No Major Watershed "Umbrella" Type Projects Planned (> $1,000,000) i.e. Regional Detention Basins
  - Aluma Basin recently constructed
  - A total of 17 regional basins have been built
  - Mill Creek Study – possible levee work & property buyouts
- Robust Development Plan Review & Evaluation


Maple Street Mitigation

"Umbrella" projects are large scale projects that help protect large numbers of customers from major flooding.

6

MSD Design Manual vs. Current Industry Standard



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Design Storms Level of Service – Current & Future

Design Storm Return Interval								
Situation		Return Interval (years)						
Type of Analysis	Limiting Values	2	5	10	25	50	100	500
Bridge	ADT< 400			•			•	
	400<ADT<1,500				•		•	
	ADT>1,500					•	•	
Culvert Capacity	ADT< 400			•			•	
	400<ADT<1,500				•		•	
	ADT>1,500				•		•	
Bridge Scour Analysis							•	•
Storm Sewer				•			•	
Channel Change		•		•			•	
Roadway Ditch				•			•	
Drop Inlets				•			•	
Detention or Retention Basin		•		•			•	
Note: ADT=Average Daily Traffic								

- Return Interval Criteria will remain the same.
- What defines the return interval (rainfall amount) likely to increase due to current NOAA data and potential increasing frequency of extreme storms

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Potential Impacts of Increasing Frequency of Extreme Storms

- **More Rain → More Runoff**
  - Structures that see damage now will see it more frequently
  - Structures that do not experience flooding now may start to see flooding
  - More frequent localized flooding
  - Accelerated stream degradation / erosion

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Gaps and Approach to Identifying Future Projects

- Current problem areas
  - Open drainage request
  - Property buyout program for flood prone areas
  - USACE Mill Creek study
- Observed increases in frequency of extreme storms
- Regulatory (Executive Order 13690)
- Holistic watershed drainage modeling
- Viaduct Flooding
- FEMA CRS Program → Achieve higher rating / reduce insurance premiums
- Condition assessments

(MSD is currently a class 4 community - best in KY & one of the best in the nation)

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Why Include Water Quality in Stormwater Planning?

- Stormwater Runoff is a Leading Cause of Water Quality Impairments
- Non-Point Source Issues
- MS4 Permit Requirements

What is the Municipal Separate Storm Sewer System (MS4) Program

Purpose:

MSD is required to develop, implement, enforce and update, as needed, a Stormwater Quality Management Plan (SWQMP) which shall include controls intended to reduce the discharge of pollutants from its MS4 conveyances to the maximum extent practicable.

Co-Permittees Include:
City of Anchorage
City of Jeffersontown
City of Shively
City of St. Matthews
Louisville-Jefferson County Metropolitan Government

Stormwater Quality Management Plan

Elements of SWQMP

1. Public Education, Outreach, Participation and Learning Experiences
2. Illicit Discharge Detection and Elimination
3. Industrial Stormwater Program
4. Construction Site SW Runoff Control
5. Post-Construction SW Management
6. Pollution/Prevention/Good Housekeeping
7. Monitor and Control of Pollutants in SW Discharges
8. Program Assessment and Reporting

Benefits of MS4 Program…

Improved Water Quality from:

- Implementation of stream buffers
- Detection and elimination of illicit discharges
- Control of construction site runoff
- Construction of green infrastructure
- Behavior changes from environmental education and outreach

Stream Buffers

Runoff Control

Green Infrastructure

Public Education/Outreach

Illicit Discharge Detection & Elimination

Green Infrastructure Benefits

Combined System

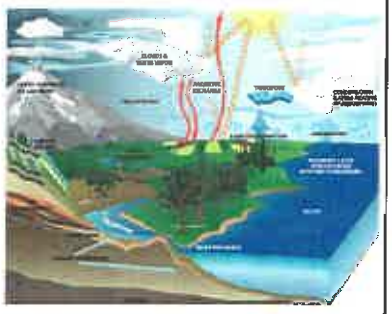
- Reduces runoff volume
- Reduces peak flow rates in sewers

MS4 System

- Reduces pollution in runoff
- Reduces runoff volumes in streams
- Enhances flood protection
- Improves stream stability

Future MS4 Requirements – What Can Be Expected?

1. Expand permit beyond urbanized areas.
2. Requirement for more stringent post-construction requirements and performance standards
   (Pre=Post Hydrology)
3. Require retrofits on existing sites, including roadways.



Potential Issues that Could Impact MS4 Program?

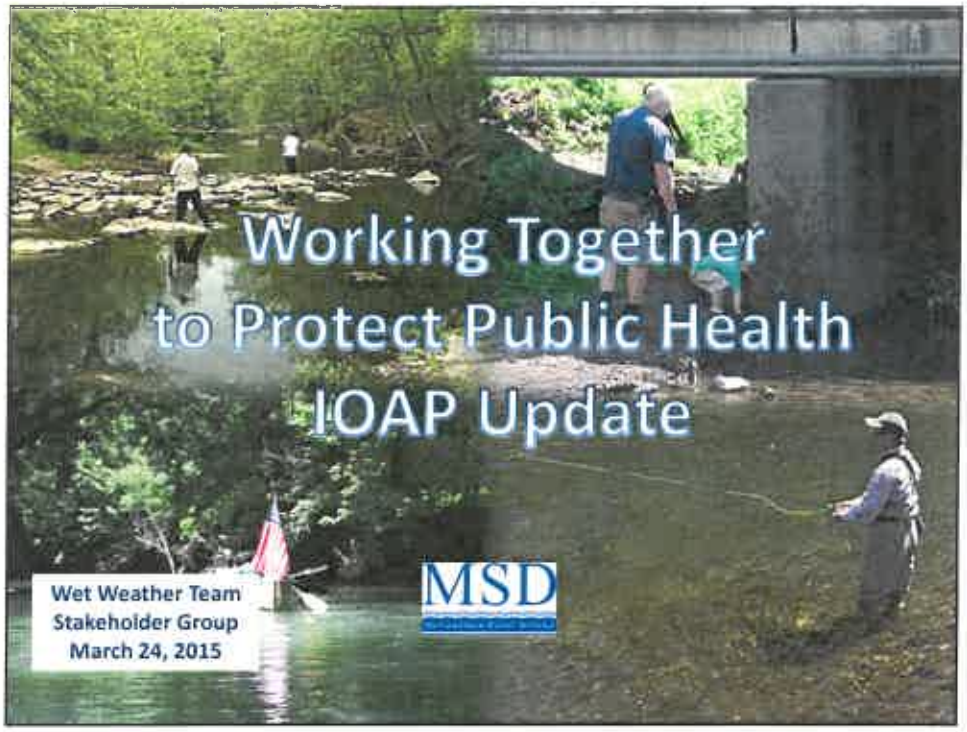
1. Changes to Water Quality Criteria (i.e., nutrients)

2. Total Maximum Daily Loads (TMDLs)
   - Numeric effluent limits vs. maximum extent practical
   - Retrofitting developed areas

3. Requirements to Reduce Stream Erosion

Next Steps

1. Continue data mining – Refine identified projects
2. Continue gap analysis.
3. Project Evaluations / Return Interval Discussions
4. Evaluate Quantity-Quality Integration Opportunities
5. Set project priority metrics and parameters.



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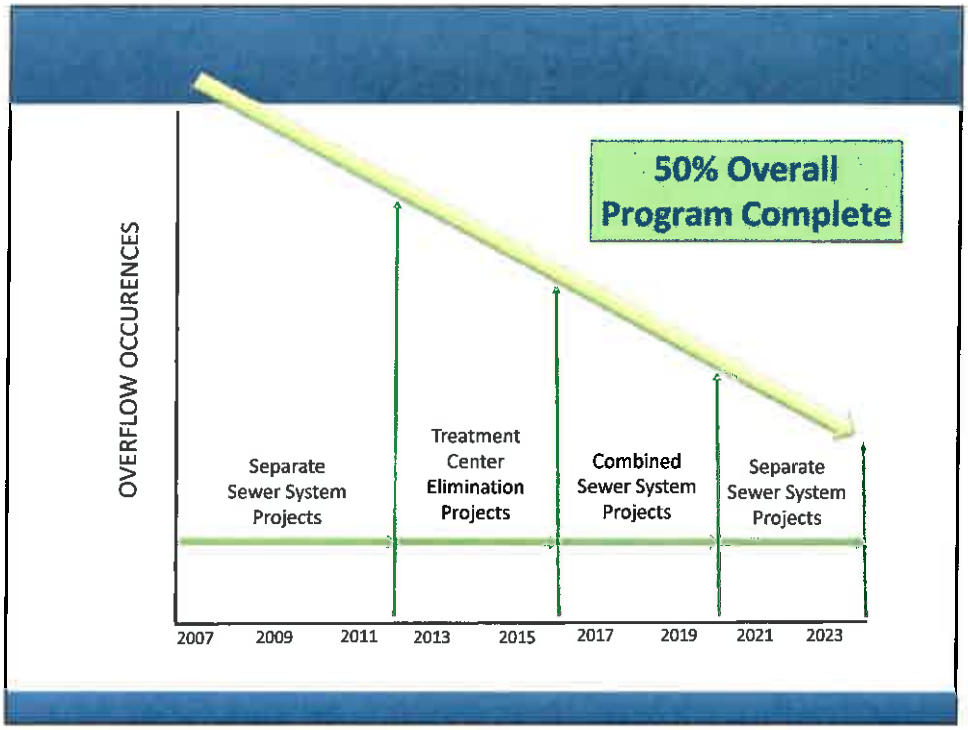
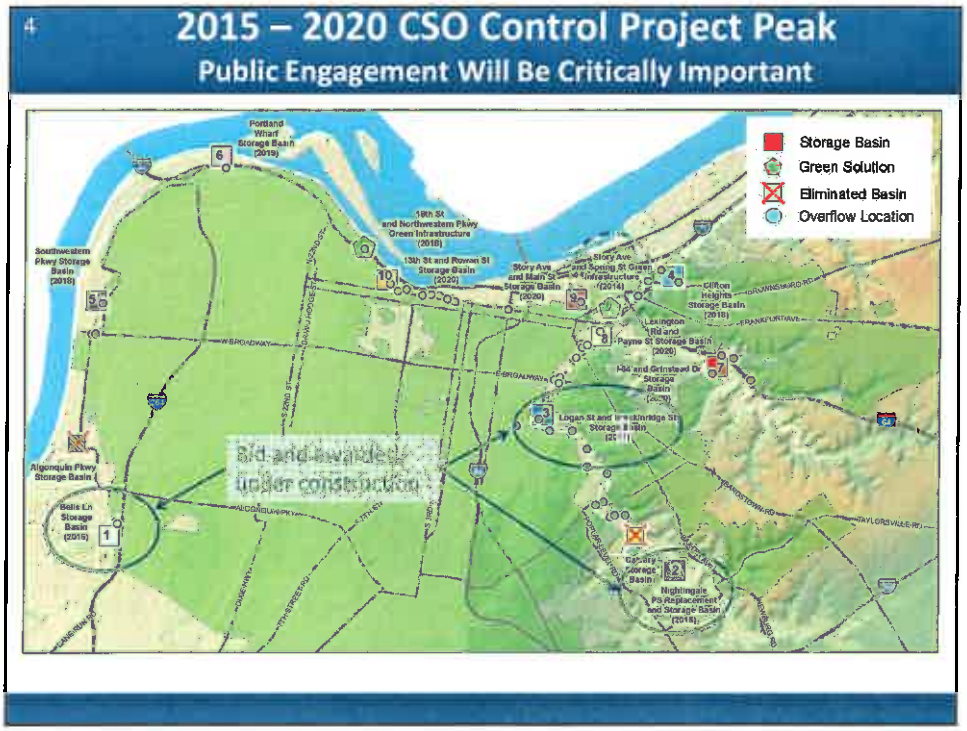
Discussion Objectives

- IOAP Project Look-Ahead: CSO Storage Basins
- Public Engagement Program Enhancement
- Duke University Study on Consent Decrees and use of Green Infrastructure


50% Overall Program Complete
OVERFLOW OCCURENCES
Separate Sewer System Projects
Treatment Center Elimination Projects
Combined Sewer System Projects
Separate Sewer System Projects
2007
2009
2011
2013
2015
2017
2019
2021
2023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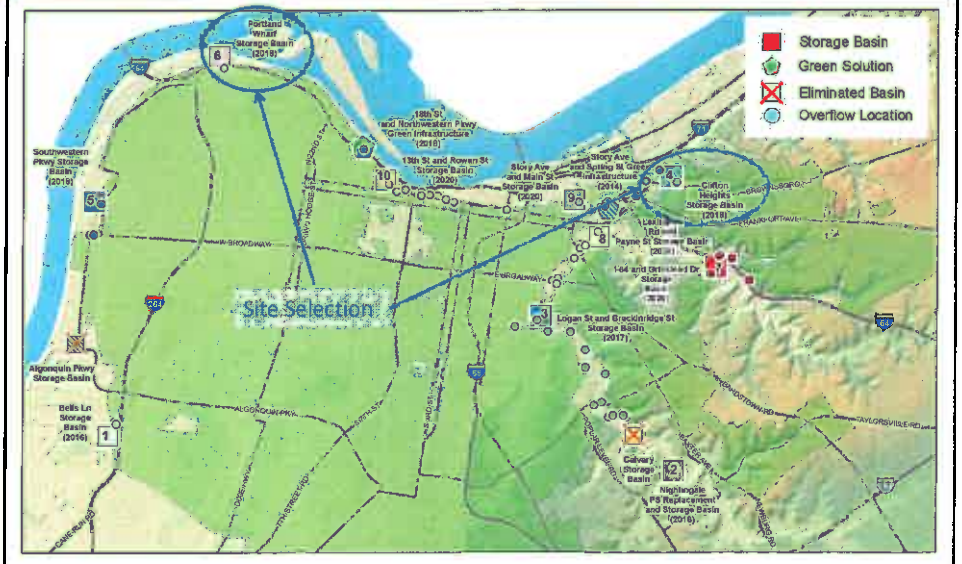
2015 – 2020 CSO Control Project Peak
Public Engagement Will Be Critically Important
Storage Basin
Green Solution
Eliminated Basin
Overflow Location
Bid and awarded - under construction

5 Current Design Projects Included Public Input

Sizing and Concept Changes Drove Site Discussions

6 Preliminary Design Includes Specific Site Selection

IOAP Found Potential Sites for Cost Estimating



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Typical Neighborhood Storage Basin Questions

- Odors – it going to stink?
- Public access and safety – will it be safe for my family to be around? Is there potential for a beneficial use of the site?
- Appearance – What will it look like? Will it fit into the neighborhood?
- Consideration of alternate sites – why does it have to be in my backyard?

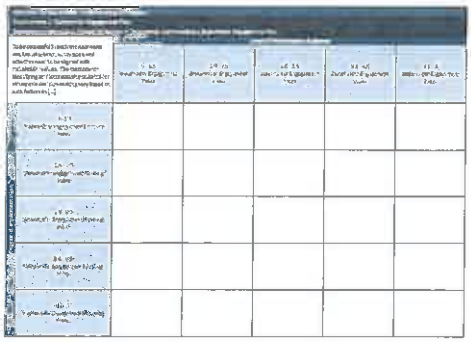
New York City, NY
Flushing Creek CSO Storage Tank

What Have We Learned Through This Process?

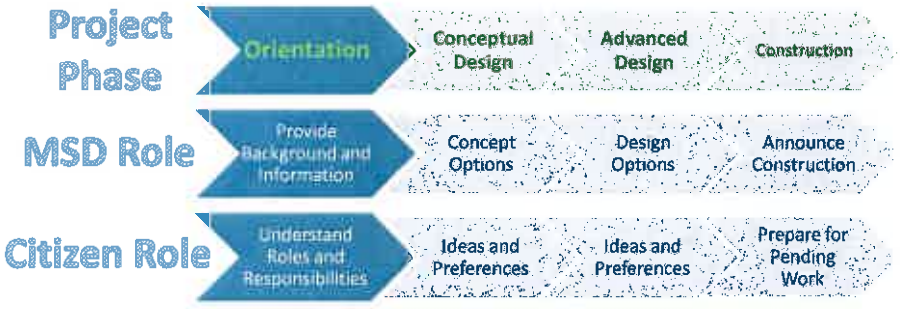
- Acceptance in 2008 does not ensure smooth sailing in 2015
  - Detailed site evaluations reveal previously unknown conditions
  - Neighborhood vision may change
  - "Why is this the first time I am hearing of this?"
- Public input process needs structured way to obtain and document balanced community input
- Outreach must engage broader group of "stakeholders"
- Traditional public meeting approach not effective

MSD's Enhanced Stakeholder Outreach Approach

- Stakeholder Identification
  - Interests Groups
  - Desired outcomes – what constitutes win/win?
- Engagement Strategy
  - Council Representatives
  - Targeted group meetings
  - Open public meetings
  - MSD re-branding roll-out
    - Print and electronic media
    - Social media (Facebook, twitter)
- Performance metrics
  - Degree of strategy implementation
  - Effectiveness at achieving desired outcomes



Project Phases and Responsibilities



Public Engagement Strategy Moving Forward

- Recognize MSD needs broad stakeholder engagement for success
- Specific objectives focus engagement approaches
- Performance metrics drive accountability and measure improvement
- Focus first on areas with highest early pay-back
- Adapt strategy and focus areas as metrics indicate changing needs
- Learn from others – and not just other utilities
  - Kentucky Transportation Center
  - Branding Consultant

Duke University Study on Consent Decrees and use of Green Infrastructure