Wet Weather Team Project Meeting Materials

Summer 2007–Spring 2008

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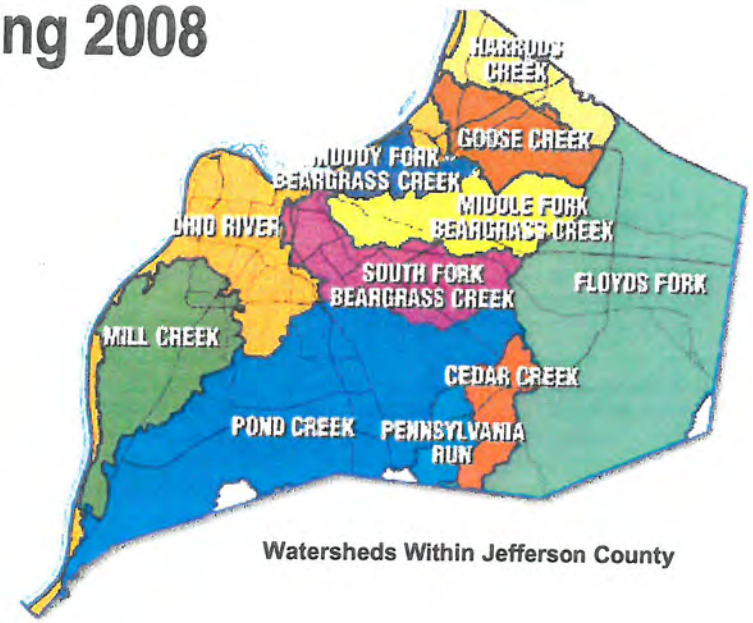
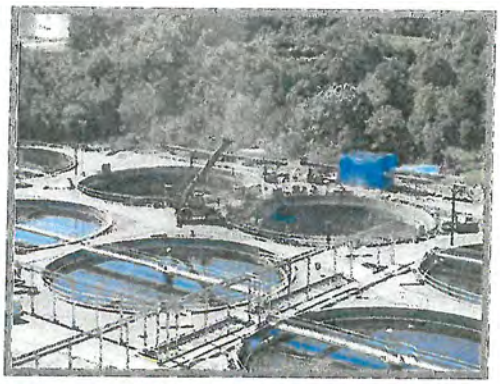
WWT Stakeholders Meeting # 23 5/11/2009

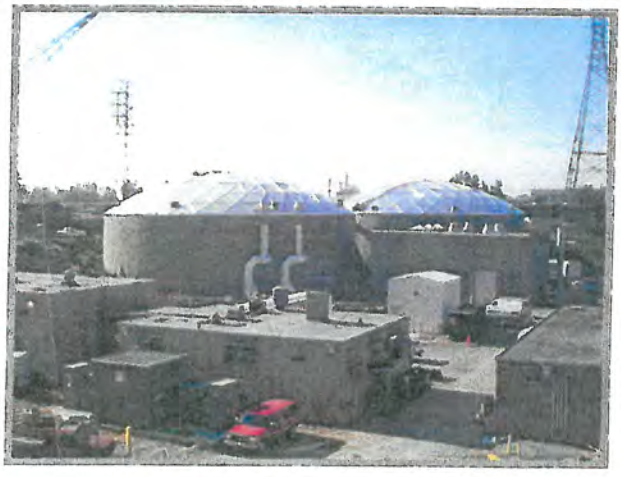
MSD

Louisville and Jefferson County
Metropolitan Sewer District



Watersheds Within Jefferson County





Agenda

Draft Agenda
Louisville and Jefferson County Metropolitan Sewer District (MSD)
Integrated Overflow Abatement Plan (IOAP) Implementation Stakeholders Meeting

Monday, May 11, 2009, 4:20-7:30 PM
MSD Main Office, Board Room
700 West Liberty St., Louisville

Meeting Objectives:

- Learn about MSD's proposed project changes and other developments since MSD submitted the Integrated Overflow Abatement Plan (IOAP) to EPA and the Kentucky Environmental and Public Protection Cabinet in December 2008.
- Review comments from EPA regarding the IOAP and discuss proposed responses.
- Discuss stakeholder preferences for keeping informed of and engaged in IOAP implementation efforts.

4:20 PM **Participants Arrive and Get Settled**

4:30 PM **Introductions, Review Agenda and Ground Rules (10 minutes)**

- Review meeting objectives and ground rules.

4:40 PM **Integrated Overflow Abatement Plan and Related Updates (20 minutes)**

- MSD updates on the consent decree submittal, the amended consent decree, and interactions with EPA and the Kentucky Division of Water regarding the IOAP.
- Stakeholder updates and announcements.

5:00 PM **IOAP Vision Review (10 minutes)**

- Briefly review the vision for the IOAP developed based on input from the Wet Weather Team.

5:10 PM **Proposed IOAP Project Changes (20 minutes)**

- Presentation reviewing the changes to IOAP projects that MSD has proposed since the consent decree submittal.

5:30 PM **Dinner Break (25 minutes)**

5:55 PM **IOAP Comments Overview and Discussion (70 minutes)**

- High-level overview of comments on the IOAP.
- Presentation and discussion of important substantive comment areas and implications for the IOAP.
- Discuss any changes needed to the IOAP vision based on the comments.

7:05 PM **Opportunity for Observer Comments (10 minutes)**

7:15 PM **Wrap Up and Next Steps (15 minutes)**

- Discuss how stakeholder participants would like to be kept informed of and engaged in MSD's implementation of the IOAP (e.g., quarterly report e-mail messages, semi-annual meetings, region/neighborhood-specific engagement related to projects, etc.).

7:30 PM **Adjourn**

Final Meeting Summary
Integrated Overflow Abatement Plan Implementation Stakeholders Meeting
Monday, May 11, 2009
MSD Main Office, Louisville

A group of stakeholders involved in the development of the Louisville and Jefferson County Metropolitan Sewer District's Integrated Overflow Abatement Plan (IOAP) to control sewer overflows—former members of the MSD-chartered Wet Weather Team—met on May 11, 2009, at MSD's main office. The objectives of the meeting were to:

- Learn about MSD's proposed project changes and other developments since MSD submitted the IOAP to EPA and the Kentucky Environmental and Public Protection Cabinet in December 2008.
- Review and discuss the implications of feedback from EPA regarding the IOAP.
- Discuss stakeholder preferences for keeping informed of and engaged in MSD's efforts to implement the IOAP.

Integrated Overflow Abatement Plan Updates and Announcements

The following IOAP updates and announcements were noted at the meeting.

- Big Four Sanitary Sewer Overflow (SSO) Projects: MSD is proceeding with work on the "Big 4" SSO projects. The first of two phases of the Beechwood Village project has begun, including installing a larger sanitary sewer line. The first construction for the Northern Ditch Interceptor is expected to start in 30–40 days. The Derek R. Guthrie Water Quality Treatment Center (formerly known as the West County Wastewater Treatment Plant) and the Hikes Lane Relief Sewer project are in the design phase; construction for the Hikes Lane project should begin in the fall.
- Potential Ordinance to Address Inflow and Infiltration (I&I) from Private Properties: MSD expects to have a new draft of an ordinance to address I&I from private properties available in June 2009. This draft would need to be considered by Metro Council. MSD staff also noted that it would be critical to have a large public education and outreach effort associated with the program and to ensure that the new requirements would not be a significant burden for property owners.
    - MSD is looking at developing an associated lateral replacement program that would operate similarly to MSD's existing Plumbing Modification Program (PMP) process. In that process, the property owner gets bids for the work, submits the selected bid to MSD, has the work performed, and has an inspection conducted; MSD pays the contractor for the work and then allows the property owner to pay MSD back for the work over a 2-3 year period.
    - Several participants recommended that MSD consider having a separate mechanism to address private property I&I issues in addition to having an inspection requirement associated with property transfers. There are likely to be certain areas of the sanitary sewer system that have significant I&I issues, yet the frequency of property turnover in those areas may be low.
    - A few stakeholders noted that since multiple agencies conduct inspections of private properties (e.g., during property transfers), it could be useful if multiple agencies had an enforcement mechanism to ensure that there were not illegal connections to the sanitary sewers.
- Amended Consent Decree: MSD's amended consent decree was signed April 10, 2009, and was effective starting on April 15. The IOAP that MSD submitted in December 2008 incorporated the content of the amended consent decree, as MSD presented at the December Wet Weather Team meeting. The changes included expanded requirements for record-keeping and reporting.

- Green Infrastructure: MSD has established schedules for the 18 demonstration projects that were included in the IOAP, and has been working with key partners to initiate other green infrastructure projects. With these partnership activities, MSD is using the green infrastructure "business case" analysis to determine appropriate subsidies or incentives for green infrastructure based on their unit costs and benefits to MSD in flow reduction. Two examples of these projects include:
  - MSD is working with Louisville Metro Economic Development on developing a 1-block green infrastructure demonstration area as part of the Park Hill neighborhood redevelopment effort.
  - Students at the University of Louisville developed concepts for green infrastructure projects in two semester-long classes. The University plans to select one of these projects and start construction on campus this summer. MSD is providing input to the University on the project concepts and evaluating options to provide credits for some of the drainage fees the University pays. These credits may be structured so that there are higher drainage credits initially but then smaller credits applied over a longer term, to provide an incentive for long-term site maintenance.
- Education Program: MSD has had some turnover of its education staff recently, but MSD will soon be applying more structure to the education program for Project WIN.
- Discussions with EPA Regarding the IOAP Submittal: MSD has experienced a positive back-and-forth relationship with EPA regarding MSD's consent decree submittals, which included the IOAP. EPA has had numerous discussions with MSD and the Kentucky Department for Environmental Protection (KDEP) about the IOAP since the beginning of the year. EPA's feedback to MSD about the green infrastructure components of the IOAP has been positive. (More information about the content of EPA's feedback is described later in this summary.)
- Alternatives for the J-Town Wastewater Treatment Plant (WTP): The State Legislature did not pass legislation to establish a new regional wastewater treatment plant for the Salt River. As a result, this limits MSD's alternatives for the J-Town WTP. Other factors that may influence the alternatives for the J-Town WTP include (a) development proposals that could take some flows offline and (b) plans for the expansion of the Floyds Fork WTP, which MSD is negotiating with KDEP.

IOAP Project Changes

Angela Akridge of MSD gave a presentation on changes to certain projects included in the IOAP that MSD has proposed to EPA and KDEP. MSD and its technical consultant team conducted an internal review of the IOAP projects in early 2009 to ensure that the IOAP included the best set of projects for the community. MSD did this on its own initiative, without being asked by EPA or KDEP. The review examined the interface of IOAP projects with other MSD projects, phasing of projects or project components to address urgent needs, the timing of known cost-share opportunities (including development proposals identified in the fall), and operational considerations (e.g., eliminating a pump station reduces operational costs). Based on this review, MSD proposed some changes to IOAP projects (primarily SSO projects) to EPA and KDEP and discussed the changes with the regulators in March. The project revisions will be included in MSD's resubmittal of the IOAP in June 2009.

Participants asked several clarifying questions in response to the presentation, including the following.

- A few stakeholders asked about MSD's ability to make changes to projects after EPA and KDEP approved the Final IOAP. In general, it would be difficult for MSD to make major changes to projects following approval of the IOAP. Examples of changes that could be made include:
  - MSD indicated that it can always complete projects earlier than scheduled, but cannot delay projects without approval or it will face penalties.

- For lower priority projects planned for later in the IOAP implementation, MSD may be able to reduce the sizing of facilities if monitoring results show that the overflow problems have been reduced or addressed through other mechanisms. This is the intent of the adaptive management component of the IOAP Post-Construction Compliance Monitoring Plan.

Regulatory Agency Review of the IOAP

Gary Swanson of CH2M HILL summarized MSD's discussions with EPA and KDEP about the IOAP and MSD's planned responses to the feedback and questions. He noted that EPA conducted a very detailed review of the IOAP and had numerous discussions with MSD since the beginning of the year. EPA asked a series of questions about the analysis that MSD conducted to develop the IOAP as well as the role of the Wet Weather Team stakeholder subgroup in influencing the IOAP. EPA's feedback on the IOAP included positive comments on the green infrastructure plan, the stakeholder involvement process, the values-based benefit-cost analysis, and the development of site-specific levels of protection.

Based on EPA's requests, MSD has done some additional analysis of project alternatives (e.g., examining whether starting from a different control level as the base case influenced the technology selected for projects) and provided additional documentation of some aspects of the IOAP (e.g., the Post-Construction Compliance Monitoring Plan, modeling assumptions for SSO design storms, etc.). MSD is in the process of responding to requests related to the green infrastructure plan, including: (a) conducting a review of local ordinances and design standards to identify barriers to green infrastructure implementation; and (b) developing a schedule for implementing the green infrastructure programs. MSD also continues to work with three other communities to develop a regional best management practice guide for stormwater management and green infrastructure. MSD will be resubmitting the three volumes of the IOAP to EPA and KDEP by June 19, 2009 for final review.

Comments and questions from participants included the following.

- Several stakeholders offered congratulations to MSD on the generally favorable review of the IOAP and indicated that they were glad to be involved in helping develop the plan.
- Some participants observed that EPA's response to the green infrastructure component of the IOAP appeared to differ from what EPA might have accepted a few years ago. Gary Swanson noted that a key reason this plan may have been better received is that MSD will need to demonstrate the effectiveness of green infrastructure projects based on monitoring results before it proposes to reduce the size of any planned gray infrastructure projects.
  - A few stakeholders observed that MSD had placed a strong emphasis on green infrastructure in the IOAP based in part on stakeholder suggestions, and suggested that MSD consider continuing to take a strong stance in future water quality improvement efforts.
- A few participants suggested that it would be useful to launch a new, constituent-driven effort to advocate for establishing a new regional wastewater treatment plant for the Salt River.
- In response to a question about communicating this information to the public, MSD indicated that this meeting summary would be posted on MSD's website, as have previous summaries, but that most of the communications and outreach about the IOAP would occur after it is finalized and approved.

IOAP Vision Review

Near the beginning of the meeting, Rob Greenwood of Ross & Associates briefly reviewed the final IOAP Vision that the Wet Weather Team developed in 2008. He asked participants to consider whether any changes were needed to the Vision based on the IOAP project changes MSD has proposed to EPA, EPA's feedback to MSD on the IOAP, and any of the other information presented during the meeting.

Following the meeting presentations, the group revisited the Vision to identify changes needed. The vast majority of the Vision—including the anticipated water quality and performance benefits of the IOAP, the summaries of the CSO gray and green infrastructure projects, and the cost and rate impacts in the funding plan—remains substantially the same. Changes to the IOAP that *will* affect the Vision include changes in the mix of technologies and control levels for SSO projects (control levels will become more protective in some cases due to improvements in the projects).

Rob Greenwood checked in with stakeholders individually regarding the Vision to ask whether everyone believed the Vision was stable and would be comfortable if MSD were to make minor revisions to the Vision to align it with the Final IOAP (e.g., the changes noted above), without going back through the group to discuss the revisions. All stakeholders present at the meeting indicated support for the Vision and the process for making minor revisions to ensure the Vision is consistent with the Final IOAP.

Future Engagement of Stakeholders in IOAP Implementation

Rob Greenwood of Ross & Associates summarized potential options that MSD had proposed for keeping former members of the Wet Weather Team stakeholder group informed of and engaged in MSD's implementation of the IOAP. These options included:

- E-mail notification when MSD releases its quarterly report, which includes substantive updates on IOAP implementation progress;
- Annual or semi-annual face-to-face meetings of this stakeholder group (with one meeting scheduled early in the year following the December publication of MSD's annual report);
- Briefings or updates for individual stakeholders regarding regional or neighborhood-specific projects or activities, when appropriate; and/or
- Invitations to tour selected IOAP project sites or facilities when major milestones are completed.

Stakeholder participants expressed interest in continuing to be engaged in MSD's IOAP implementation efforts and in general thought that meeting twice a year seemed like a reasonable frequency, at least for the next couple of years. Several people were interested in receiving quarterly e-mail notifications and being invited to tour project sites when appropriate. Other comments from the group included:

- Some participants suggested that MSD may want to solicit input from stakeholders on particular topics by e-mail, in addition to the semi-annual meetings.
- Some participants suggested that it would be important to make a concerted effort to work with other agencies and organizations on water quality efforts, in coordination with MSD's IOAP implementation efforts.
    - A few stakeholders noted that they had had initial conversations about the idea of setting up a group that would work with MSD and other agencies on efforts to improve water quality, recognizing that the IOAP will only solve a part of the community's water quality problems.
    - MSD staff said that MSD is planning to work on MS4 (Municipal Separate Storm Sewer System) issues soon, although the community's MS4 permit has not yet been released.

Observer Comments

There were no observer comments at this meeting.

Wrap Up and Next Steps

- MSD will be conducting additional analysis and responding to feedback and questions from EPA regarding the IOAP. Revised IOAP documents are due to EPA and KDEP in June 2009.
- MSD and the facilitation team will provide an e-mail update to IOAP implementation stakeholders in June 2009, when MSD resubmits IOAP documents to EPA and KDEP. Topics for the update will include:
    - Updated totals of the types of SSO projects;
    - Updated control levels for SSO projects (none will be less protective);
    - Schedule for implementing the green infrastructure programs;
    - Schedule for green infrastructure demonstration projects; and
    - Date when the private property ordinance will be available for consideration.
- Stakeholders who are interested in participating in MSD's future efforts to work on the community's MS4 stormwater program should contact Rob Greenwood (rob.greenwood@ross-assoc.com) and Jennifer Tice (jennifer.tice@ross-assoc.com).
- After EPA and KDEP approve the IOAP, MSD and the facilitation team will revise the IOAP Vision so that it is consistent with the Final IOAP. If any major changes are needed to the Vision (none are anticipated as of May 2009), the stakeholders will be consulted about the proposed changes.

Meeting Participants

Wet Weather Team Stakeholders

Stuart Benson, Louisville Metro Council, District 20

Allan Dittmer, University of Louisville

Arnita Gadson, West Jefferson County Community Task Force / Kentucky Environmental Quality Commission

Mike Heitz, Louisville Metro Parks

Tom Herman, Zeon Chemicals

Rick Johnstone, Louisville Metro Mayor's Office

Bob Marrett, CMB Development Company

Judy Nielsen, Louisville Metro Department of Public Health and Wellness (retired)

Lisa Santos, Irish Hill Neighborhood Association

Bruce Scott, Kentucky Waterways Alliance

David Tollerud, University of Louisville, School of Public Health and Information Sciences

Tina Ward-Pugh, Louisville Metro Council, District 9

David Wicks, Jefferson County Public Schools (retired)

MSD Personnel

Angela Akridge, MSD Regulatory Policy Manager

Brian Bingham, MSD Regulatory Management Services Director

Facilitation and Technical Support

Rob Greenwood, Ross & Associates Environmental Consulting

Gary Swanson, CH2M HILL

Jennifer Tice, Ross & Associates Environmental Consulting

Meeting Observers

Phyllis Croce, MSD
Kristen Crumpton, URS
Henry Cubero, Cubero Group
Kandris Goodwin, Cubero Group
Justin Gray, MSD
Sue Green, MSD
Clay Kelly, Strand Associates
Tim Kraus, O'Brien & Gere
Chad McCormick, URS
Julia Muller, MSD

Meeting Materials

- Agenda for the 5/11/09 IOAP Implementation Stakeholders Meeting
- Summary of the 12/4/08 Wet Weather Team Meeting
- Wet Weather Team Stakeholder Support Memo (Final Version, 12/10/08)
- Integrated Overflow Abatement Plan Vision (Final Version, 12/10/08)
- IOAP Project Reviews Presentation
- EPA/KDEP Review of IOAP Presentation

Handouts

MEMORANDUM

TO: Louisville and Jefferson County Metropolitan Sewer District Board

FROM: Stakeholder Members of the Wet Weather Team

DATE: December 10, 2008

SUBJECT: Draft Integrated Overflow Abatement Plan

As stakeholder members of MSD's Wet Weather Team (WWT), we wish to indicate our support for the Final Integrated Overflow Abatement Plan (IOAP) as MSD transmits the plan to the U.S. Environmental Protection Agency (EPA) and the Kentucky Environmental and Public Protection Cabinet. The attached document, "Vision for MSD's Integrated Overflow Abatement Plan," summarizes the Wet Weather Team's common understanding of the high-level architecture and components of the IOAP. As stakeholder members of the WWT, we played an active role in developing the IOAP Vision. Our support for the IOAP is based on the expectation that the complete plan is fully reflective of and consistent with the IOAP Vision. We support this vision for improving wet weather sewer overflow management in our community. In this memorandum, we review the composition and charge of the Wet Weather Team, describe the results of the stakeholder subgroup's deliberations, and outline our support for the IOAP.

Wet Weather Team Composition and Charge

The Wet Weather Team consists of community representatives, elected officials, MSD personnel, and technical consultants. The nineteen stakeholders on the Wet Weather Team include individuals recognized as community opinion leaders associated with environmental advocacy, business and industry, elected officials, local government, community neighborhood, recreation, public health, environmental justice, and organized labor interests. WWT stakeholders have not formally represented their specific affiliated organizations as part of the team, but rather have provided input reflective of the broad interest areas in which they lead.

MSD chartered the stakeholder subgroup of the Wet Weather Team to "provide guidance on the development of an integrated Wet Weather Program that will comply with applicable regulatory requirements and will minimize the impacts of wet weather discharges on water quality, aquatic biota, and human health." Through MSD's consent decree with EPA and the Kentucky Environmental and Public Protection Cabinet, the WWT was charged with two primary tasks: (1) preparing a plan for funding MSD's overflow abatement program and (2) developing a program for public information, education, and involvement. In addition to these tasks, MSD sought guidance from WWT stakeholders on MSD's overall investment, policy, and performance choices in the development of the IOAP.

Results of the Wet Weather Team's Deliberations

The Wet Weather Team met 22 times from July 2006 through December 2008 and provided input on all major components of the IOAP, as well as the analytic framework and the public involvement process MSD used to develop the IOAP. The WWT also met to review the public comments submitted on the Draft IOAP and discuss the changes proposed for the Final IOAP. There are four areas of the WWT stakeholder subgroup's deliberations that we would like to highlight, as follows.

1. Development of the Analytic Framework: The WWT stakeholders, along with other WWT members, identified and agreed upon a set of community values to use in the development of MSD's IOAP. We also advised MSD's technical team on a performance evaluation framework for using those values to evaluate project alternatives for MSD's IOAP. The performance evaluation framework includes both a benefit-cost scoring methodology for selecting the best alternatives at the project level and a systematic process for considering values that relate to the program as a whole. (This analytic framework is further described in the attached Vision.) We believe that this analytic framework is rigorous, transparent, and replicable, and that it provides an effective way to understand and balance tradeoffs among potentially conflicting community interests.

2. Application of the Analytic Framework: The WWT stakeholder subgroup has reviewed examples of how MSD's technical team has used the values-based performance evaluation framework to evaluate project alternatives to address combined sewer overflow (CSO) and sanitary sewer overflow (SSO) problems in our community. Moreover, we have also reviewed and provided input on how the technical team has evaluated the IOAP according to the WWT's programmatic community values—customer satisfaction, economic vitality, education, environmental justice and equity, financial equity, and financial stewardship. We believe that the analytic framework has been applied consistent with the WWT's expectations in the development of the IOAP and has produced a robust, replicable, and transparent analysis.

3. IOAP Vision: We helped develop the attached "Vision for MSD's Integrated Overflow Abatement Plan" along with the MSD personnel and technical consultants who are on the Wet Weather Team. The IOAP Vision summarizes the WWT's common understanding of the high-level architecture and components of the IOAP, and it documents the WWT's consensus about several crucial aspects of the IOAP. The Vision outlines and provides highlights of the expected water quality benefits of the IOAP; the levels of control for CSOs and SSOs in our community; the range of control options in the IOAP; the analytic framework and process used to select control options; the public information, education, and involvement program (known as "Project WIN"); the monitoring, evaluation, and adaptive management plan; future development considerations relevant to the IOAP; and the IOAP funding plan. As stakeholder members of the WWT, we support this vision for improving wet weather sewer overflow management in our community.

4. Summary of IOAP Projects: We believe the project mix and outcomes that form the backbone of the IOAP (as captured in the attached IOAP Vision) reflect responsiveness to MSD's consent decree and provide for a critical, first increment of water quality improvement for our community, while ensuring wise and effective use of our community's resources. The IOAP Vision draws on front end consideration of and investment in green infrastructure and other source control approaches, including "private side" inflow and infiltration (I&I) control. These early investments will act to test and demonstrate the effectiveness of these approaches, creating the prospect, based on demonstrated performance, for expanding their role and lowering community costs as MSD implements the IOAP. We understand that MSD, consistent with the Post-Construction Compliance Monitoring Plan, will closely monitor and report on the efforts for both regulatory and public education purposes. We further understand that MSD, over the coming months, will work with community members to further articulate and enhance the scope and scale of its IOAP public education and outreach program, including developing a robust approach for measuring the effectiveness of the program.

As MSD moves forward in coming years with IOAP implementation, we do anticipate the program will face, as all programs of this type do, project-specific challenges related to local community understanding and acceptance. In this context, we understand MSD is committed to using focused and sustained neighborhood education and outreach efforts to support project-specific and overall program implementation and will strive to address localized needs consistent with overall IOAP requirements. At the same time, we believe all localities throughout the MSD system must keep in mind that individual IOAP project locations and types have emerged from a rigorous and consistently applied technical analysis. The IOAP projects exist as critical building blocks for an overall community program framed by federal and state regulatory requirements, community water quality and public health improvement objectives, and overall rate payer capacity.

The stakeholder subgroup of the Wet Weather Team appreciates the opportunity to have contributed to MSD's IOAP development efforts. During our final meeting on December 4, 2008, we discussed the importance of an overarching, sustained community water quality education initiative directed at enhancing appreciation for water quality improvements and building understanding of the actions all members of the community can take to improve water quality. We understand this effort is substantially broader in scope than the CSO and SSO improvements addressed by the IOAP, but we believe it is important to take this opportunity to raise awareness for this need, particularly as our community turns its attention to stormwater management in the context of the multi-jurisdictional Municipal Separate Storm Sewer System (MS4) permit. We appreciate MSD's willingness to be a contributor to such an effort, even as we recognize the need for broader involvement and leadership throughout the Louisville community and across Louisville Metro Government.

We look forward to the MSD Board's review of the Final IOAP and MSD's submittal of the Final IOAP to EPA and the State of Kentucky by December 31, 2008. Thank you for the opportunity to contribute to this critical community improvement initiative. Please feel free to contact us individually or collectively with any questions or perspectives you may have.

Stakeholder Members of the Wet Weather Team

Member	Organization*
Steve Barger	Labor
Susan Barto	Mayor of Lyndon
Stuart Benson	Louisville Metro Council, District 20
Charles Cash	Louisville Metro Planning & Design Services
Allan Dittmer	University of Louisville
Laura Douglas	E.ON U.S. LLC
Faye Ellerkamp	City of Windy Hills
Arnita Gadson	West Jefferson County Community Task Force / Kentucky Environmental Quality Commission
Mike Heitz	Louisville Metro Parks Department
Tom Herman	Zeon Chemicals
Rick Johnstone	Deputy Mayor, Louisville Metro Mayor's Office
Bob Marrett	CMB Development Company, LLC
Kurt Mason	Jefferson County Soil and Water Conservation District
Judy Nielsen	Louisville Metro Department of Public Health and Wellness
Lisa Santos	Irish Hill Neighborhood Association
Bruce Scott	Kentucky Waterways Alliance
David Tollerud	University of Louisville, School of Public Health and Information Sciences
Tina Ward-Pugh	Louisville Metro Council, District 9
David Wicks	Jefferson County Public Schools

*Stakeholders on the Wet Weather Team do not formally represent their specific affiliated organizations, but rather seek to provide input reflective of the broad interest areas in which they lead. Along with the stakeholder subgroup, the Wet Weather Team includes MSD personnel and technical consultants.

Vision for MSD's Integrated Overflow Abatement Plan
December 10, 2008

This document summarizes the vision for MSD's Integrated Overflow Abatement Plan (IOAP), as understood and endorsed by the Wet Weather Team (WWT).

Scope of the Integrated Overflow Abatement Plan and Expected Water Quality Benefits

The Louisville and Jefferson County Metropolitan Sewer District's Integrated Overflow Abatement Plan is a long-term plan to control combined sewer overflows (CSOs) and sanitary sewer overflows (SSOs) in the community. The IOAP is expected to improve water quality in both Jefferson County streams and the Ohio River. The expected water quality benefits of the IOAP include: (a) reductions in the peak levels of bacteria in Beargrass Creek and other Jefferson County waterways; and (b) a reduction in the duration of wet weather impairment of local waterways (i.e., the number of days that bacteria levels exceed water quality standards during periods of wet weather). The IOAP—in coordination with other community water quality initiatives (further described below)—will also improve water quality under ambient conditions.

The specific benefits anticipated from the IOAP include the following:

- The suite of projects selected for the Long Term Control Plan (LTCP) for CSOs will result in approximately 95 percent capture and treatment of wet weather combined sewage during an average year. (As a point of reference, the "presumptive approach" in EPA's CSO Control Policy is based on a minimum of 85 percent wet weather capture.)
- Remaining CSO loads (after removing background) will no longer "cause or contribute" (as defined in EPA's CSO Control Policy) to water quality standard violations in the Ohio River. Peak fecal coliform counts are modeled to be reduced by 54 percent, from 100,000 colony forming units per 100 milliliter (cfu/100mL) to 46,000 cfu/100 mL (downstream from Morris Forman Wastewater Treatment Plant).
- In Beargrass Creek peak fecal coliform counts are modeled to be reduced by 18 percent, from 44,300 cfu/100mL to 37,400 cfu/100 mL (at the mouth of Beargrass Creek). The control level associated with these reductions exceeds the EPA CSO Control Policy "presumptive approach," 85 percent wet weather capture threshold and reflects a point of significantly diminishing returns under the "knee of the curve" benefit-cost analysis.
- The suite of projects selected for the Sanitary Sewer Discharge Plan (SSDP) for SSOs will result in the elimination of capacity-related SSOs up to the site-specific level of protection (described below).
- The SSO projects are anticipated to eliminate an average of 145 SSO events per year, based on 2005–2007 data.
- In terms of water quality, SSO projects will eliminate an average of 290 million gallons of overflow volume per year (average of 2005–2007 normalized for rainfall), eliminating 100 tons of 5-day biochemical oxygen demand (BOD5) and almost 200 tons of solids annually.

Along with delivering water quality improvements from sewer overflow control, MSD participates in other community water quality improvement efforts. Sewer overflow control is essential to improving water quality, but overflow control alone is not enough to meet water quality standards. In light of this challenge, MSD will continue to leverage its role in supporting broader water quality improvement efforts in the community. The IOAP will be one of the key elements of MSD's participation in those water quality improvement efforts. In particular, the IOAP will be complementary to other wet weather and water quality programs managed by MSD and/or by other community partners. These complementary

efforts include, but are not limited to, the Mayor's "Go Green Louisville" Initiative, the Partnership for a Green City, Metro Louisville's Municipal Separate Storm Sewer System (MS4) discharge permit, and initiatives of Jefferson County Public Schools (JCPS), private developers, and other entities.[1]

The specific ways in which MSD is collaborating with other entities on community water quality improvement initiatives include the following:

- Partnership for a Green City: MSD is actively working with Louisville Metro Government, JCPS, and the University of Louisville to improve water quality through the Partnership for a Green City. The Partnership has established a Stormwater Committee that will be identifying opportunities to improve water quality associated with planned capital projects.
- Metro Government: MSD is an active participant in the Mayor's Go Green Louisville Initiative, which includes in its vision a commitment to focus on financially sustainable measures that improve air and water quality, land use, and energy efficiency. In coordination with this initiative, MSD is partnering with Louisville Metro Government on several green infrastructure demonstration projects in the IOAP.
- MS4 Program: MSD will coordinate IOAP implementation with the agencies that share implementation of the MS4 Program—including Metro Louisville government, small cities that handle their own drainage, and the Kentucky Department of Transportation. The MS4 program will draw upon the opportunities identified through the green infrastructure analysis conducted by MSD's IOAP technical team and the ideas suggested by WWT members during the development of the IOAP. MSD further anticipates implementing demonstration projects, such as rain gardens in the separate sewer area, under the MS4 as part of a coordinated effort with the IOAP to test and evaluate green infrastructure approaches to wet weather management.

The IOAP—as part of MSD's wet weather consent decree response—will be a federally enforceable action plan for sewer overflow abatement. Although many IOAP projects and programs will provide multiple benefits to the community, the scope of the IOAP is limited to commitments that directly relate to MSD programs and activities to address combined sewer overflow (CSO) and sanitary sewer overflow (SSO) issues. Other community water quality programs, which may be partly or completely out of MSD's control, can provide synergistic benefits with the IOAP, but they do not fall under the same federal enforcement. These programs may, however, have different mechanisms for ensuring accountability (e.g., the State of Kentucky oversees the MS4 stormwater permit that MSD and several other agencies hold). As noted above, MSD anticipates coordinating IOAP implementation with the water quality improvement initiatives of Louisville Metro Government and other public and private entities, even though these broader initiatives may not explicitly be part of the IOAP.

Values-Based Performance Evaluation Framework Used to Develop the IOAP

MSD developed the IOAP using a values-based performance evaluation framework established by the Wet Weather Team. This analytic framework includes both a robust benefit-cost scoring methodology for evaluating and selecting project alternatives and a systematic process for evaluating the IOAP programmatically. The Wet Weather Team identified and agreed upon the following eleven community values that underpin the analysis and selection of alternatives for the IOAP.

[1] More information about these initiatives is available on the following websites: Go Green Louisville (www.louisvilleky.gov/GoGreen), Partnership for a Green City (www.partnershipforagreencity.org), and MS4 program (www.msdlouky.org/insidemsd/wwwq/ms4).

Project-Specific Values

- Asset protection
- Eco-friendly solutions
- Environmental enhancement
- Public health enhancement
- Regulatory performance

Programmatic Values

- Customer satisfaction
- Economic vitality
- Education
- Environmental justice and equity
- Financial equity
- Financial stewardship

Using the structured decision-making process as framed by the Wet Weather Team, MSD developed and evaluated overflow abatement control options for the IOAP based on managing risks to these community values. In particular, MSD's technical team analyzed each project alternative considered for the IOAP in terms of potential benefits and costs, where "benefits" are quantified based on the anticipated reduction in risks to the community values and "costs" reflect the total capital and operational costs of the alternative. The benefit-cost analysis influences the selection of site-specific abatement approaches or technologies, site-specific levels of protection (within the boundary conditions for CSOs and SSOs described below), and the relative priority of projects for implementation.

Several of the Wet Weather Team's community values relate to financial considerations, including the cost-effectiveness of individual solutions and the program as a whole (financial stewardship), the affordability of the program's total costs for the community (economic vitality), and how the costs are allocated among different segments of the population (financial equity). The Wet Weather Team has used the results of the values-based benefit-cost analysis of project alternatives to provide context to discussions about the appropriate level of investment in the IOAP.

The WWT's discussions about total program costs and the selection of projects for the IOAP have considered, as directed in EPA's CSO Control Policy, a "knee of the curve" analysis to determine where the increment of pollution reduction achieved in the receiving water diminishes compared to the increased costs. In addition to this analysis, the community's level of investment in the IOAP has been considered in the context of anticipated future requirements and other needs for MSD services, including stormwater compliance needs associated with Metro Louisville's MS4 permit and requirements to meet the forthcoming total maximum daily load (TMDL) allocations for Beargrass Creek. This consideration of other water quality investment needs is important since sewer overflow control alone will not be sufficient to meet water quality standards.

The technical team's analysis of the IOAP according to the WWT's programmatic values yielded the following conclusions.

- Customer Satisfaction: The IOAP ensures service continuity by eliminating several small wastewater treatment plants and pump stations and by incorporating redundant equipment and standby generators. Odor control guidelines have been consistently applied across all projects. Most storage basins proposed in the IOAP will be covered. Other storage basin and pump station improvement projects incorporate odor control equipment.
- Economic Vitality: MSD's current rates are near the national average. The anticipated annual rate increases of 5–6.5 percent are consistent with initial estimates of program costs, and they include allowances for future MSD programs as well as IOAP implementation. Even with these rate increases, MSD's rates are anticipated to remain at or near the national average, assuming other communities face similar inflation and regulatory pressures. These estimates are based on current data; many unknown factors (e.g., bond market, climate change, etc.) will also affect future rates.

- Education: Education is an integral and essential component of the IOAP. It supports a number of IOAP objectives, including promoting and sustaining participation in green infrastructure and source control efforts, and building a sense of personal responsibility and support for clean water initiatives.
- Environmental Justice and Equity: The site selection process followed uniform criteria across the county, with most solutions placed near overflow points and with no homes or private businesses permanently displaced. Furthermore, the configuration of facilities was based on a uniform application of written design criteria and odor control criteria. Other nuisance conditions will be minimized during the design and construction phases of projects.
- Financial Equity: MSD's rate structure is based on a cost-of-service model tempered by consideration of customers' ability to pay. The rate increases proposed to fund the IOAP and other MSD programs will continue to be based on the cost of service, but MSD will recommend to the Board that the existing low income, senior citizen discount program be expanded. The IOAP also proposes subsidies and incentives for green infrastructure and infiltration and inflow (I&I) control based on their business value for overflow abatement.
- Financial Stewardship: As described above, the IOAP is based upon a rigorous benefit-cost analysis that considered a broad range of technology alternatives and different levels of control that met or exceeded regulatory guidelines. The "knee of the curve" evaluations of IOAP projects demonstrated that the IOAP provides a high level of control, but does not exceed the point of diminishing returns.

Control Levels for Combined Sewer Overflows and Sanitary Sewer Overflows

Under the Clean Water Act, CSOs are permitted discharges in wet weather, as long as they are managed to avoid degradation of water quality in the receiving streams. EPA's CSO Control Policy[2] sets specific abatement targets for CSOs. To be permitted, wet-weather CSOs must be controlled so that either water quality standards are achieved or the permit-holder can show that the CSO discharges do not cause or contribute to exceedances of water quality standards. Based on EPA's CSO Control Policy, EPA may respond to MSD's proposed strategy for controlling wet weather CSO discharges indicating a need for a temporary variance or suspension of water quality standards during wet weather. Variances are temporary, not permanent, solutions to achieve compliance with the Clean Water Act. As stated in EPA's CSO Control Policy, variances are reviewable generally every three years.

CSO projects in the IOAP have the following levels of control:

- 6 projects result in no overflows in a typical year; these locations would only overflow as a result of very large storms.
- 1 project would result in four overflows per year in a typical year.
- 11 projects result in eight overflows per year in a typical year.

MSD's strategy for SSO control reflects the fact that SSOs, unlike wet-weather CSOs, are unauthorized discharges that must be "eliminated" under the Clean Water Act. In the IOAP, the values evaluation framework has been used to evaluate a range of site-specific design storms to establish the appropriate level of control of SSOs. Consistent with an analysis of sixty years of historical weather patterns for Jefferson County, the IOAP uses a three-hour "cloud burst" storm, with a statistically anticipated rainfall of 1.82 inches, as the minimum design storm considered. The Cities of Atlanta, Cincinnati, and Knoxville used similar design storms as the minimum protection level for SSO control. The approach of using the values evaluation framework to determine the SSO control level means that solutions to address certain SSOs have been designed to protect against larger storms (e.g., a 2.25-inch cloudburst storm

[2] EPA's Combined Sewer Overflow Control Policy is available at http://cfpub1.epa.gov/npdes/cso/cpolicy.cfm.

instead of a 1.82-inch cloudburst storm) because they yield a higher benefit-cost ratio in the analysis of project alternatives.

SSO projects in the IOAP have the following levels of control:

- 30 projects eliminate overflows up to a 1.82-inch cloudburst storm.
- 9 projects eliminate overflows up to a 2.25-inch cloudburst storm.
- 7 projects eliminate overflows up to a 2.60-inch cloudburst storm.

Components of MSD's Integrated Overflow Abatement Plan

Control options in the IOAP (the IOAP "toolkit") include source control (including green infrastructure and infiltration and inflow [I&I] reduction efforts), storage, conveyance/transport, treatment, and sewer separation. MSD's technical team has used the benefit-cost tool to compare the project alternatives and program elements considered for inclusion in the IOAP. The specific mix of control options for individual CSO or SSO locations in the IOAP is driven by the benefit-cost analysis of how the project alternatives affect the WWT's community values and site-specific considerations. Project alternatives are built around MSD's existing infrastructure (e.g., large diameter pipes and wastewater treatment plants) and draw on synergistic benefits from other MSD projects (e.g., the "Big Four" SSO projects). Furthermore, project budgets include an enhanced site restoration allowance to fund localized opportunities to reduce historical overflow impacts on aquatic and riparian environments near the sites of overflow abatement projects.

Driven by the values-based benefit-cost analysis, the IOAP reflects a balanced mix of green and gray solutions to prevent and control sewer overflows. "Green" solutions include options such as green roofs, rain gardens, rain barrels, porous pavement, and bioretention, while "gray" solutions include options such as storage, treatment, conveyance/transport, and sewer separation. As a guiding principle, MSD's IOAP has been developed based on front-end consideration of source control and green infrastructure. This means that more traditional "gray" infrastructure in the IOAP has been sized after considering both (1) the anticipated flow-reduction benefits of programmatic and site-specific green infrastructure solutions and (2) the anticipated effectiveness of other source control approaches, including reduction of private sources of I&I. Green solutions in the IOAP will be implemented as soon as possible, to allow data to be gathered on the flow reduction benefits that occur. Prior to the final design of supporting gray solutions, the actual flow reduction performance will be documented and compared against the estimated targets. The final sizing of the gray solutions will then be based on actual documented performance of green solutions, as well as any further green and source control investments justified by performance information. Green infrastructure investments are estimated to reduce the initial costs of CSO gray infrastructure projects by $40 million; potential future savings could double or triple this figure.

As defined in the IOAP, the 19 gray infrastructure projects to control CSOs include:

- 4 sewer separation projects;
- 13 storage basin projects (This includes in-line and off-line storage; most in-line storage projects have a Real-Time Control component.);
- Replacement and expansion of the Nightingale Sanitary Pump Station; and
- 1 high-rate wet weather treatment project (screening, settling, and disinfection).

The 46 gray infrastructure projects to control SSOs in the IOAP include:

- 15 conveyance capacity upgrades and interceptor relief projects;
- 19 storage projects (in-line and off-line storage, many with pipe upgrades also);
- 1 sewer replacement project for Beechwood Village (one of the "Big 4 SSOs");and
- 11 pump station and wastewater treatment plant upgrades, eliminations, or replacements. These projects include expanding the wet weather capacity of the Derek R. Guthrie Water Quality Treatment Center, elimination of 5 small wastewater treatment plants in the Prospect area, and potentially the elimination of the Jeffersontown Wastewater Treatment Plant.

The IOAP includes both an annual green infrastructure program and an initial set of green infrastructure demonstration projects. The green infrastructure program is front-end loaded to maximize benefits on downsizing future gray infrastructure. For example, the IOAP project schedule calls for a $40 million investment in green infrastructure programs and projects during the first six years. Programmatic green infrastructure components in the IOAP include a downspout disconnect program, green roof construction subsidies or incentives, green roads and alleys partnership incentives, and pervious pavement sidewalks and parking. MSD has based the proposed incentives and subsidies on a "business case" analysis of the financial benefit of green infrastructure in terms of costs per gallon of flow removed from the combined sewer system. Through the anticipated green infrastructure partnership, incentive, and education programs, MSD's initial $40 million investment in green infrastructure has the potential to leverage $60 million more from other private and public funding sources, thereby yielding up to $100 million in green infrastructure projects.

MSD plans to construct a series of new green infrastructure demonstration projects across Jefferson County. The proposed green infrastructure projects in the combined sewer area will be part of MSD's IOAP, while the proposed green infrastructure projects outside the combined sewer area will be a part of the community's MS4 stormwater program. These demonstration projects are designed to achieve three main objectives: (1) improve water quality and reduce sewer overflows, (2) provide data on green infrastructure effectiveness, and (3) educate community members about the value and benefits of green infrastructure. All green infrastructure demonstration projects in the IOAP will incorporate a monitoring component, so that the effectiveness of the projects can be tracked over time and regularly reported to regulators and the public. MSD will then use these monitoring results to guide future IOAP implementation, under the IOAP's adaptive management plan (further described below).

This vision currently reflects a minimum commitment to 18 green infrastructure demonstration projects in the IOAP. These proposed new green infrastructure demonstration projects (which are subject to partnership and regulatory approval) include:

- 6 bioswale and biofiltration projects (e.g., green parking lots and green streets);
- 4 rain gardens;
- 3 pervious concrete alleys; and
- 5 infiltration dry wells.

MSD plans to expand and enhance this proposed suite of demonstration projects in response to feedback from WWT members that the initial projects might not be sufficient to achieve the objective of educating the public and building support for green infrastructure. In particular, MSD will look to enhance the distribution of demonstration projects in Jefferson County (including considering green infrastructure projects in each Metro Council District) and the numbers of individual project types.

MSD's technical team has analyzed potential options to control private sources of I&I into the sanitary sewer system, including building laterals, downspouts, sump pumps, and foundation drains. This analysis

indicates that private-side I&I control is an essential part of the IOAP, and it will reduce the overall anticipated costs of overflow abatement. The technical team has analyzed options for adopting a requirement for inspections of private properties (e.g., during the property transfer process, when building permits are issued, when contractors install roof and gutter systems, when plumbers connect sump pumps, and/or at other times), along with providing some form of cost share and conducting an aggressive education campaign. MSD will work with Metro Government to support further development and adoption of an ordinance supporting these requirements. Although I&I reduction is particularly relevant to SSO control (since the sanitary sewer system was not designed to accept inflow), it may be useful to have similar requirements for the combined sewer system.

Public Information, Education, and Involvement Program

Education and public involvement are critical to the long-term implementation success of the IOAP. MSD uses the term "Project WIN" (Waterway Improvements Now) to describe its consent decree response activities to the public. The ongoing public information, education, and involvement program for Project WIN is designed to accomplish the following objectives:

1. Generate a sense of personal ownership and responsibility for clean water;
2. Promote and sustain participation in critical voluntary programs in the IOAP, including private-side I&I control and green infrastructure;
3. Promote public acceptance and support for the financial investments required to achieve consent decree and Clean Water Act compliance; and
4. Encourage support for other agency programs or legislation that supports overflow abatement efforts.

To achieve these objectives, the Project WIN education and public involvement program uses a wide range of communication media. In particular, the program includes the following elements:

- Public meetings and community events;
- Enhanced web portal for Project WIN;
- Speaker's bureau and technical support;
- Print and electronic media (e.g., print advertisements, press releases, targeted brochures and pamphlets, reports, newsletters, billing inserts, public TV video, radio announcements, etc.);
- Recognition programs;
- Demonstration projects;
- Tours, demonstrations, and workshops;
- Enhanced school partnerships; and
- Annual effectiveness monitoring through direct mail and phone surveys.

These public involvement efforts are focused on several key audiences, including the general public, schools and children, and target groups such as property owners, project neighborhoods, builders, and restaurants. Focusing education efforts on children is important to ensure the long-term sustainability of voluntary programs in the IOAP. For the general public, MSD is using five key messages:

1. Value clean water.
2. Your investment is paying dividends, and our water is getting cleaner.
3. Protecting public health is critically important.
4. MSD and many community partners are working hard to improve water quality.

5. You can make a difference in improving water quality.

Post-Construction Compliance Monitoring

MSD's IOAP will use an adaptive management implementation approach based on monitoring and evaluation efforts. MSD's post-construction compliance monitoring and evaluation plan for the IOAP includes: (a) water quality monitoring, (b) sewer flow monitoring, (c) overflow events analysis, (d) gray and green infrastructure project performance monitoring, and (e) measurement of the effectiveness of source control and behavior-change efforts. MSD will prepare both required regulatory and public education reports from these data and adapt the CSO management and SSO elimination approaches based on the monitoring and evaluation results. Adjustments may include recalibrating models, "right-sizing" gray solutions, reevaluating the effectiveness of green solutions, and adjusting the types and characteristics of projects planned for later phases of implementation, including additional investments in green infrastructure and source control beyond those proposed in the initial program. At this time there is recognition that historical weather trends may not be as reliable as in the past due to potential changes in the climate. The IOAP's adaptive management approach will allow MSD to monitor evolving weather pattern developments and adjust its plans as more data become available.

Future Development Considerations

Solutions in the IOAP consider future development based on the community's long-term land-use plan, Cornerstone 2020.[3] IOAP solutions are designed to accommodate the anticipated impacts of population growth and land-use development in that the solutions consider the effects of growth on connections to existing infrastructure that is upstream from existing overflow points. The IOAP is not, however, intended to provide capacity for all future growth predicted by Cornerstone 2020. Cases where the growth outlined in Cornerstone 2020 would logically be provided by new infrastructure, and not hydraulically dependent on or connected to the IOAP solution, have not been considered part of the IOAP. In summary, the solutions in the IOAP have been designed and sized to account for the impacts of anticipated growth on existing infrastructure, but the IOAP itself is not intended to build the capacity needed for growth.

MSD's Capacity, Management, Operations, and Maintenance (CMOM) Program, which is part of MSD's Consent Decree response but separate from the IOAP, includes standard operations and maintenance activities practices designed to, among other things, investigate capacity-constrained areas of the sewer system. The CMOM program also includes a System Capacity Assurance Program focused on providing capacity for current and future service needs.

Continued development in the community will require MSD to implement measures to reduce wet-weather flows. MSD will use a three-to-one offset of wet-weather flows from new development. This means that existing flows entering MSD's sanitary sewer systems will be reduced at a ratio of three gallons for every new gallon added. MSD's flow reduction efforts will be designed to correct deficiencies in the existing sewer system in the same geographic areas (sewersheds) of the system affected by the flows from new development. MSD will track flow reduction "credits" to ensure that the flow reductions occur in the appropriate geographic locations to offset the new flows. (This three-to-one offset approach is based on the City of Knoxville's Capacity Assurance Program.) The MSD Board will develop the fee structure for the offset plan.

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[3] For more information about the Cornerstone 2020 plan, see www.louisvilleky.gov/PlanningDesign/Cornerstone+2020.htm.

Funding Plan

The funding plan for the IOAP is designed to cover the 15-year period over which IOAP capital projects will be constructed to improve MSD's sewer infrastructure to meet the requirements of the consent decree. The IOAP funding plan is based on the following three principles:

- Rates and fees for the IOAP must pay MSD's operating costs and debt service.
- MSD's current bond rating (AA) should, at a minimum, be maintained.
- Rates and fees should allow for continued economic development in the community and a strong local economy.

These principles for the funding plan affect the amount of money MSD may borrow at any one time and the level of increases in rates and fees needed to fund capital and operating expenses for IOAP implementation.

MSD will fund the IOAP primarily through a combination of annual rate increases and bond issues or other loans. MSD also plans to pursue grants, line-item appropriations, and public/private partnerships (e.g., recapture agreements) to help pay for capital construction costs, as appropriate; however, the funding plan is not built around these funding sources since they are less certain. Using the estimate that the consent decree will cost $843 million in capital expenditures, average bills for residential customers are expected to increase from 5 to 6.5 percent annually through 2021. This means that the average residential bill would increase from $29.58 in 2008 to approximately $63.12 by 2024 due to the consent decree capital construction expenses. Along with these rate increases, MSD expects to borrow approximately $1.25 billion by 2024 based on the estimates of capital costs; this would increase MSD's debt service payments from $94 million annually to $163 million annually by 2025.[4] A mixture of fixed and variable rate borrowings is anticipated. These rate increases and loans would be used to address both IOAP construction costs and other MSD capital needs for infrastructure renewal, replacement, and expansion.

Estimates of IOAP costs appear to be within community tolerance for rate increases; however, the rate increases could nevertheless be difficult for some segments of the population to afford, especially in the context of other expenses. For this reason, the Wet Weather Team has considered potential ways to provide discounts to customers that face financial hardship. In the IOAP funding plan, MSD proposes a few changes to MSD's existing rate structure for the Board to consider. These changes are designed to accomplish two objectives: (1) provide discounts for low-income populations and (2) ensure steady and predictable revenue flows overall. The specific rate structure changes currently under study and reflected in the IOAP funding plan include the following:

- Residential customer billing based on winter consumption;
- Potentially billing customers on a monthly basis (in coordination with the Louisville Water Company).
- Expansion of the senior citizens discount program.

As noted above, MSD will construct the capital projects in the IOAP over a 15-year period, in order to meet the regulatory requirements of the consent decree and achieve compliance with the Clean Water Act. Many of the elements of the IOAP—including the Project WIN education program, operations and maintenance of IOAP projects, and monitoring and evaluation programs—will also continue past the construction phase of the IOAP. MSD is committed to making sure that the IOAP programs and projects provide for long-term improvements in water quality in Louisville and Jefferson County.

[4] This estimate assumes that interest rates are in the 5 to 6 percent range.

Project WIN

IOAP Project Reviews

MSD Internal Project Review Process

- Five review meetings with MSD staff
  - Engineering and construction managers
  - Regulatory Service project managers
  - MSD Development review staff
  - Operations managers
- Each project reviewed considering the following
  - Interface with current projects
  - Phasing to address urgent needs with early action components
  - Timing of known cost-share opportunities
  - Operational considerations

Project Phasing Changes

- Mellwood System Improvements and Pump Station Eliminations
  - Accelerate Mellwood PS and Force Main improvements to facilitate cost share opportunity with planned hotel addition (2012)
  - Keep rest of project at current completion date (2024)
- Camp Taylor System Improvements
  - Add fourth phase to capture final rehab recommendations and complete off-line storage if still required

PROJECT WIN
Waterway Improvements Now

Project Phasing Changes

- Anchor Estates In-Line Storage and Pump Station Eliminations
  - Complete Vannah Way pump station elimination per current schedule (2013)
  - Revise project scope to eliminate both Anchor #1 and Anchor #2 pump stations, as this allows for new customer connections in the future. Elimination schedule revised to 2016 due to added easement acquisition requirements
- Outer Loop and Caven Avenue Wet Weather Storage
  - Break into three phases to allow pipe upgrades earlier
  - Continue with two storage projects on current schedule, re-evaluating storage need in 2020

Project Phasing Changes

- Raintree & Marion Ct PS Elimination
  - Break into two phases (interceptor and PS elimination) to allow for potential cost sharing of interceptor. Keep schedule the same in case cost share does not happen.
- Goose Creek PS & Wet Weather Storage
  - Break into two phases (storage and pump station improvements) to allow for potential cost sharing of interceptor. Keep schedule the same in case cost share does not happen.

Replace Storage with Pump Station Elimination

- Original cost evaluation did not consider condition of pump stations and cost for required rehabilitation if retained in operation
- Revised pricing changed B/C evaluation to favor elimination of several pump stations
  - Cinderalla Pump Station
  - Government Center Pump Station
  - Avanti Pump Station
  - Leven Pump Station
  - Running Fox Pump Station

Additional Project Review Changes

- Schedule modifications
  - Accelerate Lee Ann Way System Improvements from 2021 to 2015 to address worsening overflows in residential neighborhood
  - Defer Meadow Stream PS Upgrade from 2012 to 2016 to facilitate cost share opportunity and ensure correct upgrade sizing
  - Bardstown Road Pump Station may be accelerated from current schedule (2021) by cost share agreement

Additional Project Review Changes

- Cost estimate review revised B/C evaluation to favor pump station expansion over storage
  - Fairmont Road Pump Station
  - Eden Care Pump Station
- Condition assessment questioned need for 2 projects
  - Lantana #1 SSO may be corrected by pipe rehabilitation
  - Leland Road Relief Sewer may have been corrected by removing blockage

Regulators Agree Continued MSD Project Reviews Appropriate

- Discussed with EPA/KDEP during review meeting in March
- Revisions will be included in IOAP re-submittal in June 2009

Project WIN

EPA/KDEP Review of IOAP

Agenda

- Describe EPA/KDEP discussions re: IOAP
- Significant questions or requests for additional information
  - Volume 1 Issues
    - Continuing Public Involvement
    - Post-Construction Compliance Monitoring
  - Volume 2 Issues
    - Presumption vs. Demonstration
    - Ecological Reach Characterization
    - WQ modeling calibration
    - Starting point for technology selections
    - Green Infrastructure
  - Volume 3 Issues
    - Hydraulic modeling assumptions
    - Boundary conditions and starting point for technology selections
    - Validate assumptions on B/C trending
- Path Forward

PROJECT WIN
Waterway Improvements Now

Regulatory Review Included Open Communications

- Bi-weekly conference calls
- Presentation of IOAP at 1-day meeting in Louisville prior to detailed regulatory review
- Discussion of questions and clarifications at 1-day meeting in Atlanta
- E-mails and ad hoc phone calls
- Resubmittal will address questions and provide additional information to facilitate final regulatory review

EPA/KDEP Overview Feedback
Very Complementary

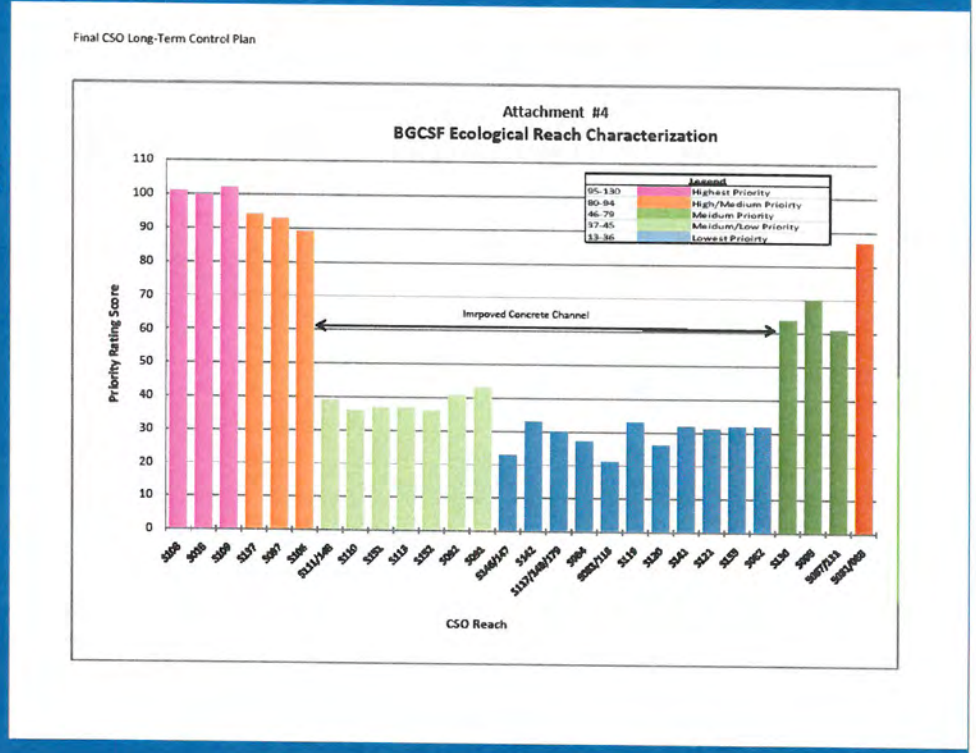
- Green Infrastructure approach "one of the best, if not THE best ever submitted"
- Stakeholder involvement process a model for others to follow
- Values-based risk management determination of project benefits "the right way to do it"
- Site specific levels of protection recommended as a model for other communities
- EPA Region 4 referring other communities to MSD for guidance in overflow abatement planning
- Region 4 reviewer noted - "I am placing a great deal of faith and credibility in the results of your public involvement program"
- Our investments of time and resources are paying off

Volume 1 Questions

- How will MSD continue public outreach as IOAP implementation evolves?
  - Discussion topic for later tonight
- Provide more detail on Post Construction Compliance Monitoring Program
  - Draft guidance document provided
  - Need link to current data collection practices described in Vol. 2
  - How are we using data
  - Want specificity on sample locations, parameters analyzed, and duration of monitoring each location

Volume 2 CSO Long-Term Control Plan Questions, Requests For Information

- EPA suggests demonstration approach most appropriate
  - We did the WQ model, and the data supports this approach
  - Capture statistics helpful, but not the basis for regulatory acceptance
- Ecological Reach Characterization
  - Presentation of data did not clearly show why reach scores were averaged, not totaled
  - Low-flow calibration not as accurate as storm conditions



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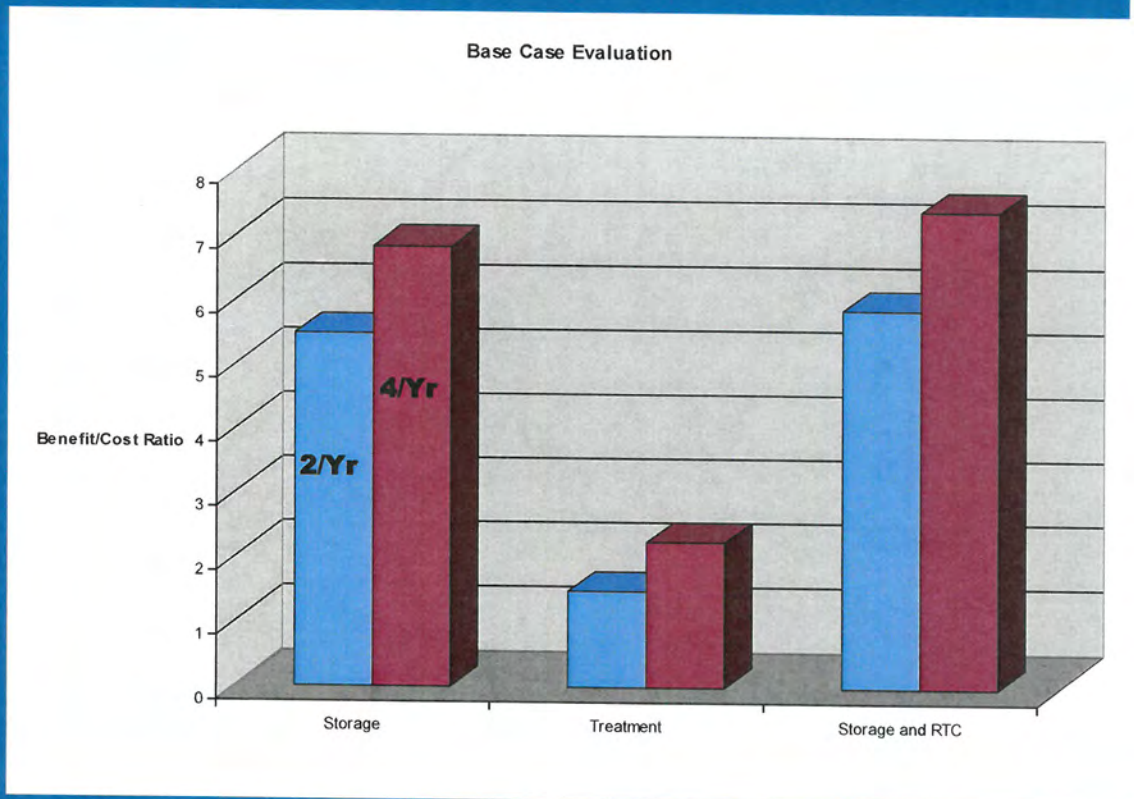
Waterway Improvements Now

Technology Selection Based on 4 Overflows per Year Questioned

- If the base case was 2 OF/Yr would the technology selection have been different?
- EPA selected 3 sites to test assumption that starting point does not matter

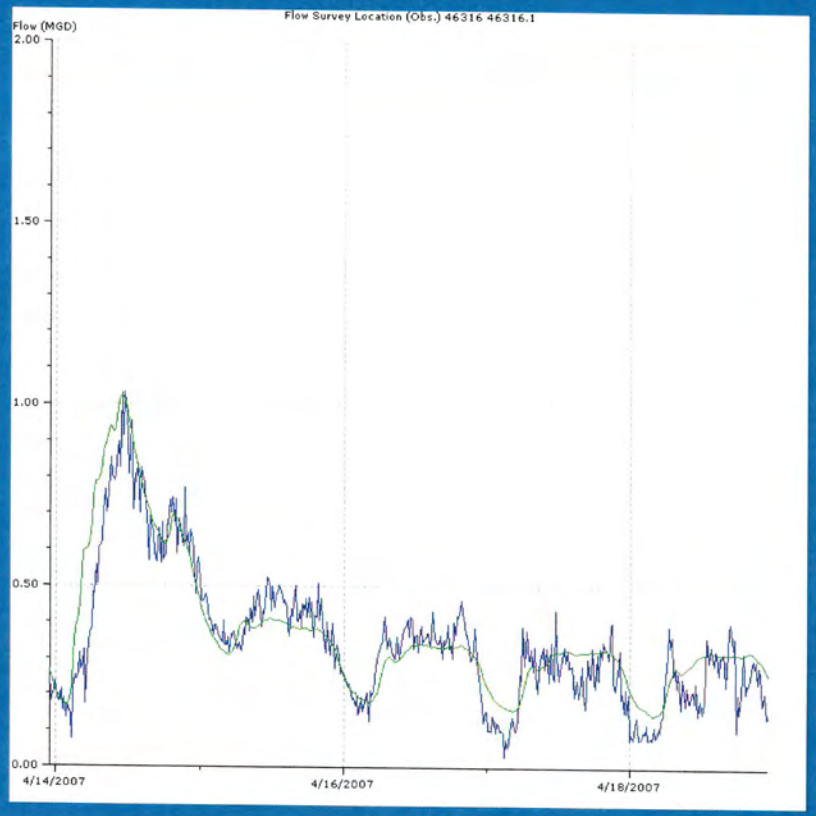


Green Infrastructure Requests for Specific Programs and Schedule Commitments

- Review of local ordinances and design standards suggested to remove barriers to green infrastructure implementation
  - Requirements for public infrastructure construction
  - Also suggest private-side green infrastructure can be required by ordinance, not just encouraged by practice
  - Low-flow appliance requirements or incentives suggested
- Assign specific schedule dates to implementing each of the green infrastructure programs
  - Incentive structure
  - Cost-sharing
  - Inspection and follow-up
- Clarify difference between stormwater retention and CSO volume reductions

Volume 3 – Sanitary Sewer Discharge Plan Comments and Requests for Information

- Clarify/validate hydraulic modeling assumptions
  - Cloudburst storm
  - Lower boundary for level of protection the 50% probability storm
  - Use of 50%, 20%, and 10% probability storms for analysis
  - Calibration conditions



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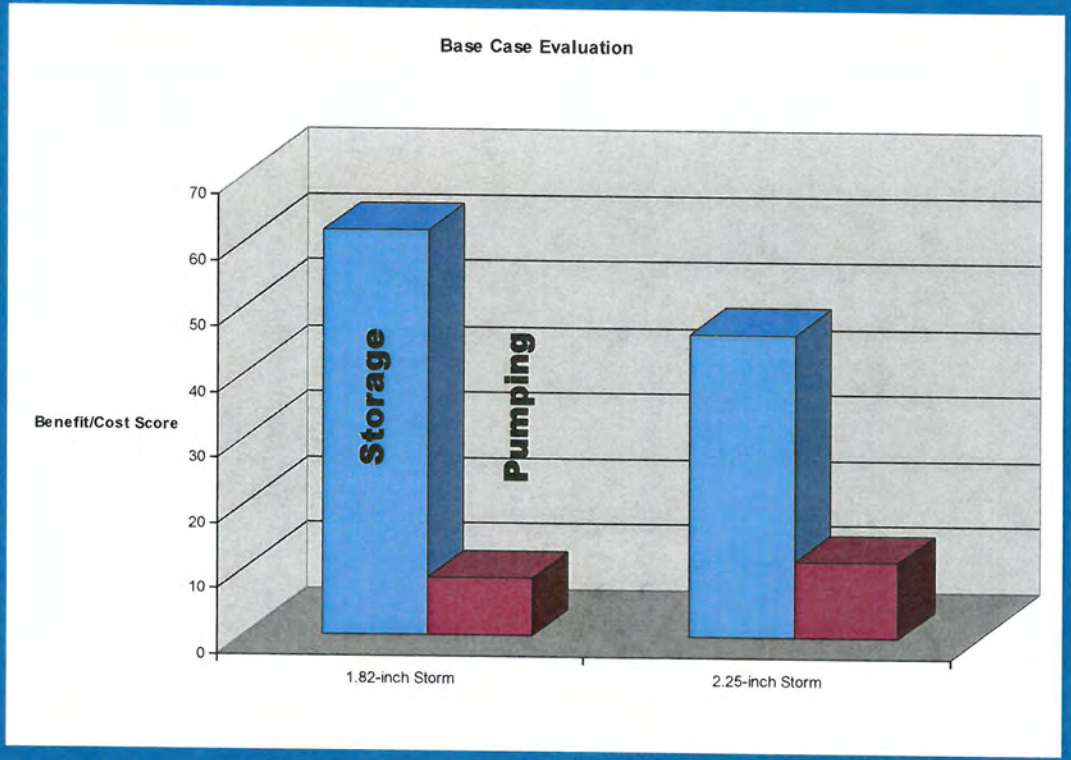
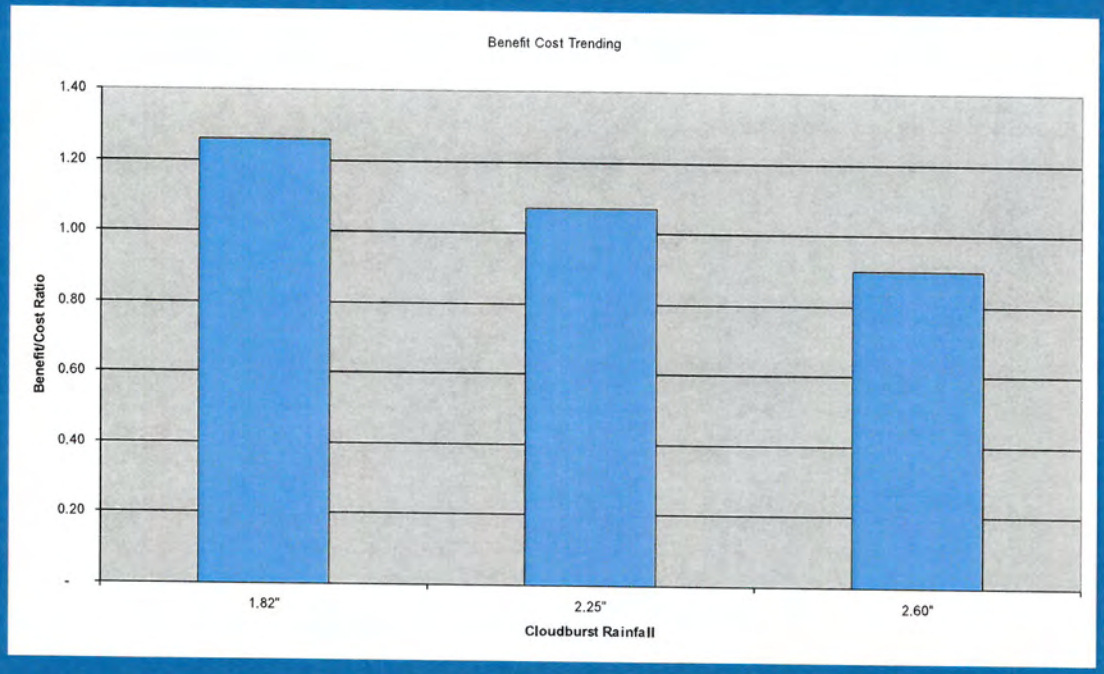
Technology Selection Based on 50% Probability Storm Questioned

- If the base case was 20% probability storm would the technology selection have been different?
- EPA selected 3 sites to test assumption that starting point does not matter



Assumption Questioned Regarding B/C Trends

- Analyze B/C of selected technology at 50% and 20% storms. If 50% storm better than 20% storm, assumption is 10% storm will be lower also
- EPA selected 3 sites to test assumption that B/C trend is consistent going to larger storms



PROJECT WIN
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Path Forward

- Submit revised CSO LTCP by May 29, 2009
- Submit revised SSDP by June 12, 2009
- Submit Volume 1 by June 19, 2009
- EPA/KDEP to review revised submittals and prepare formal comments or approval based on revisions
- Big party planned when approval is received.