

Wet Weather Team Project Meeting Materials

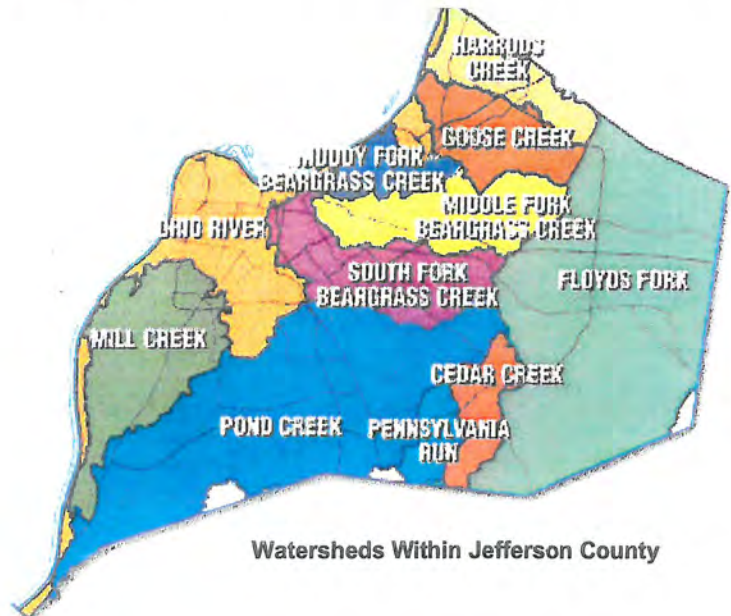
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WWT Stakeholders Meeting # 15 1/15/2008



MSD

Louisville and Jefferson County
Metropolitan Sewer District



Watersheds Within Jefferson County



Agenda

Draft Agenda
Louisville and Jefferson County Metropolitan Sewer District (MSD)
Wet Weather Team Meeting #15
Tuesday, January 15, 2008, 4:20-8:30 PM
MSD Main Office, Board Room
700 West Liberty St., Louisville

Meeting Objectives:

- Review and discuss examples of the implications of using different mixes of funding sources for the Wet Weather Program, and review and discuss potential refinements to MSD's rate structure.
- Review potential elements of an ordinance (based on stakeholder input and technical team analysis) to address private sources of infiltration and inflow (I&I) into the sanitary sewer system, including associated plans for financial assistance and public education.
- Review and provide feedback on the technical team's initial work to identify stream reaches in Jefferson County that represent the highest priorities for water quality improvement and public health protection.
- Review the preliminary results of water quality monitoring, and discuss regulatory compliance approaches and other implications of the modeling results.
- Identify next steps and expectations for the next meeting of the Wet Weather Team.

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 Wet Weather Project Updates and Observations (10 minutes)

- Updates on issues related to the Wet Weather Team Project and follow-up items from the last Wet Weather Team meeting.
- WWT stakeholder updates and announcements.

4:50 PM Funding Plan Discussion–Funding Sources and Rate Structure (50 minutes)

- Review and discuss examples of the implications of using different mixes of funding sources for the Wet Weather Program (e.g., loans, bonds, pay-as-you-go).
- Review and discuss potential refinements to MSD's rate structure.

5:40 PM Opportunity for Observer Comments (10 minutes)

5:50 PM Dinner Break (25 minutes)

Dinner will be provided for Wet Weather Team members.

1/15/08 Wet Weather Team Meeting Agenda, Continued

- 6:15 PM Review Potential Elements of an Ordinance to Address Private Sources of Infiltration and Inflow (20 minutes)**
- Review potential elements of an ordinance (based on stakeholder input and technical team analysis) to address private sources of I&I into the sanitary sewer system, including associated plans for financial assistance and public education.
- [Note: The technical team will be soliciting comments on the potential elements of an ordinance following the meeting, since discussion time at the meeting will be limited.]*
- 6:35 PM Prioritization of Sensitive Areas Discussion (20 minutes)**
- Review and provide feedback on the technical team's initial work to identify stream reaches in Jefferson County that represent the highest priorities for water quality improvement and public health protection.
- 6:55 PM Water Quality Modeling Results and Regulatory Compliance Approaches Discussion (80 minutes)**
- Review and Q&A discussion of the preliminary results of water quality modeling for Beargrass Creek and the Ohio River.
 - Discuss potential regulatory compliance approaches and other implications of the modeling results.
- 8:15 PM Opportunity for Observer Comments (10 minutes)**
- 8:25 PM Wrap Up and Next Steps (5 minutes)**
- Review plans and expectations for the Tuesday, February 26, 2008 Wet Weather Team meeting.
- 8:30 PM Adjourn**

**Final Meeting Summary
Wet Weather Team Meeting #15
Tuesday, January 15, 2008
MSD Main Office, Louisville**

The Wet Weather Team (WWT), chartered by the Louisville and Jefferson County Metropolitan Sewer District (MSD), met on January 15, 2008, at MSD's main office in Louisville. The objectives of the meeting were to:

- Review and discuss examples of the implications of using different mixes of funding sources for the Wet Weather Program, and review and discuss potential refinements to MSD's rate structure.
- Review potential elements of an ordinance (based on stakeholder input and technical team analysis) to address private sources of infiltration and inflow (I&I) into the sanitary sewer system, including associated plans for financial assistance and public education.
- Review and provide feedback on the technical team's initial work to identify stream reaches in Beargrass Creek that represent the highest priorities for water quality improvement.
- Review the preliminary results of water quality modeling for the Ohio River and Beargrass Creek, and discuss implications of the modeling results for regulatory compliance approaches.

Wet Weather Project Updates and Announcements

The following wet weather project updates and announcements were noted at the meeting.

- Angela Akridge of MSD noted that MSD employees have been hanging up "New Year's Resolution" posters throughout the community. The list of resolutions appeared in the latest issue of the magazine *Today's Woman*. A WWT member also referenced an article on page 57 of the magazine.
- MSD has posted its latest Annual Report on the MSD website.
- Ms. Akridge also said that she would be working with three volunteers from the WWT as well as about six other individuals on planning outreach for the next set of Project WIN public meetings. MSD will schedule a prep meeting with the group soon.
- Derek Guthrie of MSD reported that MSD's Morris Forman Wastewater Treatment Plant has had another year with zero permit violations.

Wet Weather Program Funding Plan—Funding Scenarios and Rate Structure Options

Marion Gee, MSD's Finance Director, presented four hypothetical examples of funding scenarios for MSD's Wet Weather Program: (1) finance the consent decree with internally generated funds (i.e., rate increases, without borrowing funds); (2) issue bonds with balloon payments; (3) issue bonds with traditional amortization periods; and (4) borrow funds from the Kentucky Infrastructure Authority (KIA).

MSD will likely use a mix of funding from KIA, bond issues, and federal grants (MSD has received about \$2 million per year in federal grants); however, the examples were developed to show the WWT implications of different funding sources. All the examples were based on the assumption of an \$800 million consent decree and an additional \$40 million per year in capital projects not related to the consent decree. These numbers are not necessarily representative of the Program's specific cost, which has not yet been determined. The scenario involving no bonds would require tripling MSD's rates with 9 percent annual rate increases. The other scenarios would involve annual rate increases of 4-6 percent, roughly doubling the current rates by 2021.

The second part of Mr. Gee's presentation involved potential options for changing MSD's rate structure. He presented two options: (1) billing based on average winter usage; and (2) adopting multi-tiered volume charges. Some of the drivers for considering changes to the rate structure include increasing the predictability of revenues, equity among rate payers, and the burden on certain classes of customers (e.g., low-income residents). Mr. Gee noted that MSD would soon be conducting a rate study (as it does every five years) to examine its rates, including potential refinements to MSD's current rate structure.

WWT members asked several clarifying questions in response to the presentation, as well as offered a number of comments. Highlights of the discussion are as follows.

Total Rate Impacts

- A few WWT members referred to the U.S. Environmental Protection Agency's affordability criteria, which were discussed at a previous WWT meeting, and observed that according to those criteria the community should be able to pay much more for its water and wastewater rates.
- Some WWT members commented that doubling or tripling rates seemed like large increases. Others noted that there is a difference between looking at those rate increases in today's terms, as compared to what the rates might be twenty years from now.
- Some WWT stakeholders stated that increases in rates should not be so high that they drive companies or residents to move elsewhere.
- A few WWT stakeholders pointed out that MSD should coordinate with other agencies to examine the total impacts of all utility costs (water, wastewater, energy, gas) on customers.
- WWT stakeholders indicated that the community could probably manage and be prepared for annual rate increases in the range of 4 to 6 percent, but several people noted the importance of education and outreach regarding rate increases (see additional comments on rate increases and education below).

Education and Outreach Related to Rate Increases

- With regard to the potential increases in rates, multiple WWT stakeholders commented that it would be critical how the rate increases were communicated to the public. Specific comments included:
 - The message is everything.
 - Part of the message should be the alternative to the Wet Weather Program is having the federal courts impose requirements on the community.
 - Keep the message positive. Tell residents what they are getting for their money and how these efforts are improving people's health.
 - People should feel that they are involved in the process and have some responsibility for helping solve the problem. There is a difference between communications that ask, "Can you help us?" and a message forced on people that "We're going to do this."
 - People need to understand what they are paying for and what the community has to do to improve water quality and comply with the consent decree.

Rate Structure Refinements

- Some WWT stakeholders noted that charging based on winter water usage could potentially remove an incentive to conserve water, since water usage varies more in the summer.
- A few WWT members noted that there could be drawbacks from the potential rate structure refinements aimed at providing better predictability.
- In considering rate structure refinements and total rate impacts, some WWT stakeholders suggested that MSD: (1) consider how rates affect fixed income populations; and (2) provide flexibility in rates to encourage desired behavior changes.

Other Comments on Funding Sources and Rate Structure Options

- Some WWT members noted a concern with how much debt would be left for future generations, and requested that future funding presentations include information on the amount of debt remaining to be paid after the consent decree implementation period. A few WWT stakeholders also suggested that it might be better to have higher rates in the near term to avoid future balloon payments.
- A few WWT members noted that they would support spreading payments over a longer time period if it would mean that it would reduce the burden on lower income residents.
- Some WWT participants expressed a need for a balance between what the community pays now and what the community pays later.
- Some WWT members suggested that MSD should consider how the community develops, and make sure that everyone pays into the solution.

As part of this discussion, Rob Greenwood of Ross & Associates specifically polled all WWT members on whether they saw the potential rate increases (which were 4-6 percent per year in most of the funding scenarios) as going beyond the community's ability to accept rate increases. Several WWT members indicated that the potential rate increases seemed high, but each individual member agreed that the increases were likely to be manageable within the community, provided, as mentioned earlier, effective education and outreach were conducted to explain the necessity for the increases.

Potential Ordinance Framework for Controlling Private Property Infiltration and Inflow

Brian Bingham of MSD gave a presentation on the framework the technical team has worked on for a potential ordinance to address infiltration and inflow (I&I) from private properties. The presentation included the format and content of a potential ordinance, the types of inspection triggers and penalties, and information on financial assistance and public education. MSD Executive Director Bud Schardein added that MSD is considering starting to repair building laterals when requested/needed as well as offering optional insurance against sewer back ups on people's wastewater bills. Jennifer Tice of Ross & Associates reminded participants that the technical team was working on the details of what a potential ordinance could look like at the same time as conducting analysis on potential options for control of private property I&I, including the costs and benefits of an ordinance compared to other alternatives.

Because discussion time for this topic was limited, the facilitation team requested that WWT members provide additional comments and feedback on the proposed framework for a private property ordinance by Friday, January 25, 2008. Comments shared during the meeting included the following.

- A few WWT member stakeholders cautioned that participants should be careful to note that MSD and the technical team are looking at what an ordinance *could* look like, not indicating what it will be. The group is still in discussion stages about the idea of an ordinance. It is important to not get ahead of the education and outreach needed for this effort.
- Some WWT members asked whether research supported a proactive approach to private property inspections. Brian Bingham of MSD responded that MSD had found that 34 percent of the homes in Beechwood Village had illegal connections, so there is potentially a high rate of noncompliance.

Beargrass Creek Ecological Reach Characterization Study

Tim Kraus of O'Brien & Gere introduced the presentation on a study by the technical team that characterized sections of Beargrass Creek based on the potential for water quality improvements. He noted that EPA has said that all of the streams in Jefferson County should be considered "sensitive" for the long-term control plan for combined sewer overflows (CSOs). However, Mr. Kraus also said that prioritizing stream reaches would nevertheless be useful in developing MSD's Wet Weather Program, for the analysis of the environmental enhancement value and for the prioritization and staging of projects.

Ron Thomas and Brian O'Neill of Redwing Ecological Services reviewed the methodology and results from the Beargrass Creek ecological reach characterization study. They noted that for this study, stream reaches were prioritized based on aquatic ecology using ten parameters, with higher scores indicating greater potential for aquatic habitat restoration potential. In the results of the study, the higher priorities tended to be in the upper parts of the watershed and the lower priorities tended to be the concrete-lined channels in the South Fork of Beargrass Creek. The presentation included examples of particular stream reaches that were found to be high, medium, and low priorities based on the analysis.

WWT members asked some questions about the study and offered suggestions for improving or refining the analysis. As with the ordinance presentation, the facilitation team asked the group to provide additional comments on the Beargrass Creek study for the technical team following the meeting. Comments made at the meeting included the following.

- A few WWT stakeholders observed that this study focused on potential immediate improvements to current conditions and suggested that it would also be useful to consider water quality improvements over a longer time period.
 - Ron Thomas of Redwing said that the technical team has discussed potentially developing a baseline assessment of stream health that could be used to evaluate improvements over time.
- Participants noted that there should be a coordinated approach to water quality improvement in which multiple issues are considered together.
- One issue that WWT members suggested be considered was the flow in the streams. One potential reason why more vegetated areas tended to score higher was that vegetated areas help control the volume and velocity of water entering the streams.
- A few WWT members said that even the concrete channels of the low priority areas would benefit from improvements such as adding shade or ripples.

Water Quality Modeling Results and Regulatory Compliance Strategy Presentation

Adrienne Nemura of Limno-Tech gave a presentation outlining the requirements for compliance with the consent decree, differences between how compliance is determined for sanitary sewer overflows (SSOs) and CSOs, results from water quality modeling of bacteria levels in Beargrass Creek and the Ohio River, and options for demonstrating regulatory compliance. She noted that water quality is a watershed problem involving multiple contributors. Although the consent decree focuses on CSOs and SSOs, other sources of water pollution include groundwater, stormwater, and upstream sources. SSO and CSO compliance will be determined differently. SSOs must be "eliminated" under the Clean Water Act, while CSOs are allowed but must not "cause or contribute to" violations of water quality standards. Ms. Nemura described some options for demonstrating compliance for SSO control and for CSO control.

The technical team's water quality modeling looked at two different ways to assess compliance: (1) the geometric mean or average of data over a 30-day period and (2) an instantaneous maximum or peak level at a certain point in time. The modeling examined a single rain event that occurred in 2001, showing the

effects of that event on water quality (fecal coliform levels) under current conditions and under a scenario in which all CSOs and SSOs were eliminated. These results were compared to the water quality standards for the recreation season and the non-recreation season for both the Ohio River and Beargrass Creek. The results showed that even high levels of CSO and SSO control will not result in dramatic changes to compliance with current water quality standards for bacteria, even though eliminating overflows does improve water quality.

In addition to asking clarifying questions, WWT participants made the following comments about the water quality modeling and regulatory compliance presentation.

- Some WWT members suggested that there might be better ways to present the water quality modeling results so that they better show the benefits from overflow abatement. Focusing on bacteria levels only during rain events obscures the fact that streams usually meet the bacteria criteria at other times.
- MSD and WWT stakeholder participants commented that it will be important to use the community's resources wisely; that will involve dealing with issues such as the Big 4 SSOs, but also working on long-term strategies to improve water quality such as promoting behavior change through education.
- WWT members observed that the community will need to address stormwater and non-point source pollution in addition to CSOs and SSOs to get better water quality results. The community will need to get behind a watershed approach to solving the problem.
- A few WWT members suggested that it could be helpful to model the water quality benefits of stormwater reduction efforts and present that information to EPA, along with benefits of overflow abatement efforts.

Observer Comments

There were no comments from observers at the meeting.

Wrap Up and Next Steps

- The technical team will begin to draft a potential private property ordinance and associated financial assistance and public outreach plans, based on the ordinance framework presented at the meeting and any additional comments received from WWT members. The technical team will also continue to analyze options for control of private property infiltration and inflow.
- The next WWT meeting will be on Tuesday, February 26, 2008, at MSD's main office. Potential meeting topics include:
 - Review of the technical team's work to identify green infrastructure opportunities in CSO watersheds and updates on other community green initiatives;
 - Discussion of high-level CSO control strategies for the Wet Weather Program;
 - Continued discussion of regulatory compliance strategies for the Wet Weather Program; and
 - Discussion of potential changes to user fees for funding MSD's Wet Weather Program.

Meeting Participants

Wet Weather Team Stakeholders

Stuart Benson, Louisville Metro Council, District 20
Allan Dittmer, University of Louisville
Faye Ellerkamp, City of Windy Hills
Mike Heitz, Louisville Metro Parks Department

Tom Herman, Zeon Chemicals
Rick Johnstone, Deputy Mayor, Louisville Metro Mayor's Office
Bob Marrett, CMB Development Company
Kurt Mason, Jefferson County Soil and Water Conservation District
Judy Nielsen, Louisville Metro Health Department
Lisa Santos, Irish Hill Neighborhood Association
Bruce Scott, Kentucky Waterways Alliance
Tina Ward-Pugh, Louisville Metro Council, District 9
Dawn Warrick (alternate for Charles Cash), Louisville Metro Planning & Design Services
Department
David Wicks, Jefferson County Public Schools

MSD Personnel

Angela Akridge, MSD Regulatory Policy Manager
Brian Bingham, MSD Regulatory Management Services Director
Derek Guthrie, MSD Director of Engineering/Operations & Chief Engineer
Bud Schardein, MSD Executive Director

Facilitation Support

Rob Greenwood, Ross & Associates Environmental Consulting
Jennifer Tice, Ross & Associates Environmental Consulting

Meeting Observers

Vicki Coombs, MSD	Tim Kraus, O'Brien & Gere
Phyllis Croce, MSD	Julia Muller, MSD
Marion Gee, MSD	Adrienne Nemura, Limno-Tech
Justin Gray, MSD	Brian O'Neill, Redwing Ecological Services
Christine Horn, The Cubero Group	Phillip Scott, O'Brien & Gere
Clay Kelly, Strand Associates	Ron Thomas, Redwing Ecological Services

Meeting Materials

- Agenda for the 1/15/08 WWT Meeting
- Summary of the 12/6/07 WWT Meeting
- Wet Weather Team Meeting Topics and Schedule, February–June 2008
- Solution Ideas List (updated January 2008)
- Education and Outreach Ideas List (updated January 2008)
- Data Requests and Monitoring Suggestions List (updated January 2008)
- Wet Weather Team Consensus Items (updated January 2008)
- Project WIN Funding Plan Presentation for WWT Meeting #15
- Debt Service Requirements Handout
- Addressing Private Property Infiltration and Inflow Presentation
- WWT Understanding of SSO Strategies and the Role of Source Control (Final Draft, December 2007)
- Beargrass Creek Ecological Reach Characterization Presentation
- Regulatory Compliance Strategy Briefing Presentation

**Wet Weather Team Meeting Topics and Schedule, February–June 2008
(As of January 2008)**

(Color key: blue = education and outreach; green = financial topics; red = cost-benefit and programmatic analysis of Wet Weather Program alternatives; purple = monitoring and evaluation; black = other topics)

Remaining Wet Weather Team Meeting Dates

Meeting Number	Proposed Date	Tentative Location
16	Tuesday, February 26, 2008	MSD Main Office, Downtown Louisville
17	Thursday, April 3, 2008	MSD Main Office, Downtown Louisville
18	Thursday, May 15, 2008	MSD Main Office, Downtown Louisville
19	Thursday, June 19, 2008	MSD Main Office, Downtown Louisville

Wet Weather Team Meeting Topics

WWT Meeting #16 (February 26, 2008)

- Continue to discuss regulatory compliance approaches
- Report on green infrastructure opportunities in CSO watersheds
- Discuss potential additional user fees (or changes to user fees)
- High-level CSO control strategy discussion

[March 2008 – Optional Project Review Open House with the Technical Team (Specific Date TBD)]

WWT Meeting #17 (April 3, 2008)

- Review and discuss summary results from the cost/benefit analysis of project alternatives and discuss implications for potential regulatory compliance approaches
- Review and discuss Draft Monitoring & Evaluation Plan
- Review and discuss Draft Education & Outreach Plan
- Project WIN public meeting series #3 preview

[April/May 2008 – Project WIN public meeting series #3]

WWT Meeting #18 (May 15, 2008)

- Project WIN public meeting series #3 debrief
- Introduction to programmatic evaluation and selection of Wet Weather Program alternatives:
 - Introduction to financial stewardship evaluation (“knee of the curve” analysis), review the preliminary results of the prioritization of projects, and discuss implications for potential regulatory compliance approaches
 - Review total costs of the Wet Weather Plan

- Discuss process for analyzing environmental justice and customer satisfaction issues

WWT Meeting #19 (June 19, 2008)

- Continue to discuss programmatic evaluation and selection of Wet Weather Program alternatives:
 - Review the draft ranked list of projects and the results of the financial stewardship evaluation.
 - Review sensitivity analysis of how value weights affect the prioritization of projects based on benefit-cost ratios
 - Discuss implications of the financial stewardship evaluation for potential regulatory compliance approaches
 - Review how total program costs compare to affordability limits (economic vitality evaluation)
 - Discuss rate impacts of the Wet Weather Plan
 - Review and discuss results of analysis of environmental and regulatory outcomes
 - Review and discuss analysis of environmental justice and customer satisfaction issues

Note: MSD and the technical team are in the process of assessing the specifics of the schedule between July and December, but anticipate an interest in further engagement of the Wet Weather Team stakeholder group in some form. MSD and the technical team expect to understand the schedule of technical products and the possibility of additional WWT meetings no later than the April meeting.

Wet Weather Team Solution Ideas Working Draft – January 2, 2008

The following is a list of potential “solution ideas” identified by Wet Weather Team (WWT) members that will be considered in the design of the Wet Weather Program. The list will act as a resource for the technical team as they consider project and program alternatives. These ideas were identified both at WWT meetings and through individual communications with WWT members (e.g., via e-mail). This list will remain “live” throughout the remainder of the WWT effort to capture ideas as they are shared. WWT members are encouraged to send additional ideas to the facilitation team for inclusion in this list.

New ideas will be listed under a “What’s New” section at the beginning of the document for easy reference, as well as under the appropriate section later in the document. After the “What’s New” list, this document is organized into three sections:

- Section I, “Project Alternatives,” is organized into five sub-categories: Stormwater Best Management Practices (Non-Structural), Stormwater Best Management Practices (Structural), CSO and SSO Point Source Controls, General/Other Solutions, and Site-Specific Solutions.
- Section II, “Funding Ideas and Incentives,” is organized into three sub-categories: Cost Allocation Strategies, Financial Incentives, and Funding Sources/Options.
- Section III, “Ideas Partly or Completely Outside the Scope of MSD’s Wet Weather Consent Decree,” includes municipal government actions that are only partly within MSD’s control, MSD actions that are not related to sewer overflow issues, and green infrastructure ideas that are not directly related to sewer overflow issues.

What’s New (December 2007/January 2008)

1. (I-D-9) – Consider wet weather sewer overflow control strategies that reduce future maintenance issues.
2. (II-B-3) – Consider additional user charges that could be used as a result of adopting a different rate schedule.
3. (II-B-4) – Maintaining a certain level of bond rating could be a way of setting limits on how much money MSD borrows versus how much it generates in internal revenues.
4. (II-B-5) – Consider not borrowing any money.
5. (II-B-6) – Balance the impact of potential financial packages on MSD’s bond rating, rates, and cash flow/liquidity.
6. (III-A-Regulatory Requirements/Policies-8) – Additional ideas related to an ordinance to address private sources of infiltration and inflow.
7. (III-A-Other Entities-6) – Consider where development will occur in the future, in order to avoid having similar wet weather problems related to private sources of infiltration and inflow in the future.
8. (III-A-Other Entities-7) – Partner with other cities and states that have wet weather consent decrees to collectively ask federal representatives to seek additional government funds for wastewater and stormwater management improvement efforts.
9. (III-B-4) – Do not give rebates during droughts and do not give special rates for irrigation meters for residential or commercial entities for lawn care, as this could be seen as encouraging lawns, which can contribute to water quality problems (e.g., runoff containing fertilizers and pesticides).

I. Project Alternatives

A. Stormwater Best Management Practices (Non-Structural)

1. Influence behavior of residential and commercial landowners through education. [Note: See the Education and Outreach Idea List for more ideas about educational efforts to influence behaviors.]
 - a. Promote water conservation practices: rain gardens, rain barrels, and responsible alternatives for sump pumps and downspout connections.
 - b. Encourage stewardship: removing invasive vegetation from riparian zones, planting wetlands, litter cleanups, etc.
 - c. Conduct education on environmentally sustainable ways of using fertilizer and weed killer, and other stormwater best management practices to neighborhood groups.
 - d. Discourage chemical treatment of and mowing near waterways to help keep debris from waterways.
2. Regularly distribute billing inserts (like LG&E's) to MSD customers with facts and tips to encourage certain behaviors (e.g., lawn chemical management, pet waste management, landscaping practices).
3. Conduct a baseline survey and follow-up surveys of residents to determine whether education and outreach efforts are effective in changing behavior and perceptions on issues related to the Wet Weather Program.
4. Hold "CSO Action Days" during or right after a hard rain to promote behavior change (e.g., don't use your dishwasher, wait to do your laundry, etc.).
5. Encourage the use of best management practices for chemical use in lawn management practices.
 - a. Inform greens keepers about best management practices (BMPs), since non-point source runoff is made worse by golf course chemicals.
6. Develop a pledge for customers that clearly lays out behaviors that will help MSD meet Consent Decree requirements. For an example, see <http://www.watershedpledge.org> (see also II-B-4).
7. Invite people to "join" Project WIN by installing rain gardens, rain barrels, reducing their use of lawn chemicals, etc.
 - a. Add a page to MSD's website where people can submit notes or pictures of their efforts.
 - b. Give out plaques or other awards to those who "join."

B. Stormwater Best Management Practices (Structural, including Green Infrastructure Solutions)

1. Use landscaped areas to control stormwater runoff.
2. Encourage homeowners to construct rain gardens and use rain barrels.
3. Install French drains along roads to accept stormwater runoff (see also detailed suggestions listed for Beechwood Village below).
4. Develop specific design parameters or standards for stormwater best management practices and low impact development techniques and include these in an MSD Design Manual. The Design Manual should provide guidance for approaches including, but not limited to, the following:
 - a. Pervious pavement
 - b. Level spreaders
 - c. Riparian buffers
 - d. Vegetated swales
 - e. Wet ponds
 - f. Wet ponds with forebays (small basins that settle out incoming sediment before it is delivered to a stormwater BMP)

- g. Wetlands
- 5. Consider incorporating aspects of the LEED green building standards into MSD design manuals for structural BMPs.
- 6. Increase tree canopy.
 - a. Ensure that urban CSO areas have at least a 30 percent tree canopy.
 - b. Initiate a tree-planting program with a goal to increase tree canopy in neighborhoods.
- 7. Work with the community group "Women of Vision" to create a meditation garden in the West End that could also act as a rain garden or roof runoff demonstration.
- 8. Conduct demonstration projects. [Note: Overlaps with demonstration projects in Education and Outreach Ideas List.] Specific ideas for projects include:
 - a. Create a demonstration area in each Jefferson County watershed to demonstrate and interpret healthy stream habitats and what MSD is doing to study and protect them.
 - b. Create some sustainable lawns as pilot projects
 - c. Develop a green infrastructure best management practice site similar to SD1 (Sanitation District Number 1 of Northern Kentucky).
 - d. Add green demonstration/education facilities to old urban schools.
 - e. Use the Butchertown Greenway Pump Station that is offline for an education and demonstration facility.
- 9. Plant native plants with deep root systems.
- 10. Maintain existing detention/retention basins – many may not function properly due to lack of maintenance.
- 11. Design structural stormwater best management practices to be multiple use and eco-friendly.
 - a. Design detention ponds and stream buffers for recreational use.
 - b. Make use of detention facilities as sports fields
 - c. Incorporate trails along streams to provide recreational opportunities.
- 12. Convert alley stormwater systems into infiltration systems using pervious pavement.
 - a. Potential areas could include the central business district and the west end.

C. CSO and SSO Point Source Controls

- 1. Disconnect downspouts and/or sump pumps (e.g., by developing educational initiatives aimed at landowners).
 - a. One potential target for a downspout disconnection program could be school buildings.
 - b. Yard signs similar to those used in Portland's residential Downspout Disconnection Program could be useful for education and outreach about MSD's Wet Weather Program. [Note: This idea overlaps with the Education Ideas List.] Specific ideas for signs include:
 - i. Messages such as "I disconnected my downspout" and/or "I have a rain barrel."
 - ii. The bottom of the sign could invite readers to "ask me" for more information.
- 2. Increase enforcement and inspections of downspout and sump pump connections.
 - a. Incorporate inspections into the property-transfer process (e.g., as another inspection with the sale of existing homes). For example, MSD could deputize the state plumbing inspector, which has the authority to go into private property, to conduct inspections of downspouts. MSD could pay on a per building basis for those inspections.
- 3. Look at large parking lots as potential sites for wastewater storage facilities. Organizations might be willing to have a covered storage facility built below a ground-level parking lot. In addition, there could be opportunities to add value for the property owner, by building a parking garage as a

replacement and/or by providing credit for any non-point source pollution reduction associated with the project.

4. Repair and seal all building laterals.
5. Act on any sump pump or other illegal connection issues uncovered during the course of MSD's regular operations and maintenance work on the sanitary and combined sewer systems.

D. General/Other Solutions

1. Leverage and coordinate the Wet Weather Program efforts with MSD's MS4 stormwater management permitting responsibilities.
2. Conduct green infrastructure demonstration projects with monitoring components built in, to help demonstrate the overall effectiveness of green infrastructure solutions.
 - a. Start with small, visible projects ("quick wins" – e.g., in a particular neighborhood, near a Rubbertown plant).
3. Preserve rural character where possible.
4. Create a localized resource database to support green infrastructure development efforts (e.g., provide information on contractors that install pervious pavements). Specific ideas include:
 - a. Develop a list of environmentally approved chemicals for use in lawn/landscape management.
 - b. Landscape architects could provide green options for projects and developments.
5. Do not rule out flow-reduction techniques to address SSOs for any watershed.
6. Look at combining different types of control options, including opportunities to reduce flows of water into the sewer system (e.g., from housing units) in tandem with other types of solutions. For example, combining storage and flow-reduction approaches could make it possible to use a smaller-sized storage facility.
7. Involve community members in addressing the root causes of SSOs (e.g., by working with the Metro Council, community organizers, and neighborhood groups).
8. Challenge preconceived notions of what U.S. EPA will accept in terms of the role of source control in an SSO elimination plan.
 - a. Use technical feasibility and cost effectiveness as the primary basis for deciding the level of source control to meet regulatory compliance obligations, and work with relevant regulatory bodies to justify the basis for this approach.
9. Consider wet weather sewer overflow control strategies that reduce future maintenance issues.

E. Site-Specific Solutions (Considered in Addition to the Solutions Listed Above)

Beechwood Village

1. Construct a park-like wet detention area in the wooded area of St. Matthews Park.
2. Install new sanitary lines and laterals to homes, and pumps for basement facilities when requested by the homeowner.
3. Install French drains on either side of roadways to accept stormwater runoff. The drains would be continuous trenches filled with gravel and covered by turf. The drains could also accept discharges from sump pumps and downspouts.
4. Install perforated pipe in the French drains so they can discharge more freely when they flood. The piped drain system would need to be a combination of gravity and pump depending on the topography and discharge point(s).

5. If a solid pipe system is used, the system could discharge to constructed wetlands designed to treat stormwater. Possible sites for constructed wetlands are the forest north of the Community Park and the detention pond for the bank on Shelbyville Road at the Beechwood Village entrance.
6. Restore natural stream banks for the Sinking Fork north of Shelbyville Road where the big pump now sits.

Beargrass Creek – Middle Fork

1. Restore the Middle Fork between Grinstead crossing and confluence.
 - a. Restore wetlands and improve aquatic health in the following areas:
 - i. The isolated quarry areas to the north of the interstate between Grinstead and Payne (which receives a small CSO discharge). One specific idea is to remove sediments from these areas.
 - ii. The old meander into which CSO 127 discharges and the wet meadow in its bend.
 - b. Work with the City of Louisville, the Parks, and the private sector to turn this area into a greenway that connects the waterfront with Cherokee and Seneca Parks, and eventually with parks in Saint Matthews, with a bikeway from Saint Matthews to downtown.
 - c. Close CSOs in this area using projects that reduce flooding and improve water quality.
2. CSOs 125, 126, 127, 144, and 166; and CSOs 86 and 140 could potentially be treated at one facility (some pumping would be required). This could be a visible project that could help link areas in the community.
3. Potentially develop the River Metals property (a brownfield near the Girl Scouts Building) as a storage or wetlands treatment area.
4. Establish wetlands at Seneca Park and Old Cannons Lane.
5. Consider locations/sites for storage solutions that are closer to the SSOs in the Anchor Estates Pump Station watershed than the potential location presented at the 9/20/07 WWT meeting.
6. Utilize parks property orphaned by I-64 as a detention basin for the Beals Branch sewershed CSO. Restore the sediment-filled wetland at the confluence of Beals Branch and the Middle Fork as a treatment wetland for the basin's discharge.

Beargrass Creek – South Fork

1. Restore the South Fork between I-264 and Eastern Parkway.
 - a. Restore the stream channel, along with the wet meadows and woods in the floodplain.
 - b. Coordinate with landowners (e.g., the City of Louisville and Bellarmine College) on the restoration of the stream segment, which is part of a "nature education" corridor and is subject to MSD conservation easements.
 - c. Potentially make this area into a bikeway as part of the solution.

Beargrass Creek – Muddy Fork

1. Restore Eva Bandman Park.
 - a. Convert the park into restored wetlands with a boardwalk for visitors.
 - b. Include the park as part of the solution for the CSOs that discharge at the confluence by having it receive their stormwater.
2. Tie the impaired section of Beargrass Creek to newly created wetlands, near Eva Bandman Park.
3. Incorporate green infrastructure into the Arts Center.
4. Turn the MSD pump station into an interpretive center.

5. For CSOs 132, 154, and 167:
 - a. Conduct a concentrated effort to disconnect downspouts in this area.
 - b. Use incentives to get people to help solve the problem in this area. In particular, educate people about ways to reduce non-point source pollution.
 - c. Acquire properties in flood-prone areas by paying more than fair market value for the homes (as compensation to homeowners for having to move). These areas could then be used to create detention or retention basins, or other facilities/structures to reduce wet-weather sewer overflows. [Note: Purchasing properties in flood-prone areas is also listed in Section III.]

Floyds Fork Watershed

1. Look for opportunities for green infrastructure in the Floyds Fork watershed, as it is the last undeveloped area in Jefferson County.
2. Protect Floyds Fork with riparian buffers and other preservation efforts.

Other Watershed and Site-Specific Solutions

1. Create an 800-acre lake in the southwest portion of Jefferson County. Use a dam/flood wall to build it and include marshes around it.
2. Examine other sites for green infrastructure opportunities, such as:
 - a. Pond Creek Lake and the southwest pump stations (this area has been studied already by the Corp of Engineers)
 - b. The Bradley Property

II. Funding Ideas and Incentives

A. Cost Allocation Strategies

1. Equitably assign costs (focus areas for the financial equity value):
 - a. Consider the burden on fixed income and low-income populations
 - b. Rates and fees that are linked to the cost to serve (i.e., the level of impact)
2. Charge residences differently depending on the area of impervious surfaces on properties (and therefore the amount of stormwater runoff that would be generated).
3. Require lower development fees for areas that already have sewer capacity (e.g., urban areas in need of re-investment).
4. Bill based on increased water usage—the more you use, the higher the rate.
5. Develop an equitable plan for joint funding for permeable pavement efforts.

B. Funding Sources/Options

1. Consider using volunteers to reduce costs.
2. Consider solutions that could meet the objectives of multiple agencies (e.g., water quality and flood control improvements) and therefore could potentially receive funding from multiple sources.
3. Consider additional user charges that could be used as a result of adopting a different rate schedule.
4. Maintaining a certain level of bond rating could be a way of setting limits on how much money MSD borrows versus how much it generates in internal revenues.
5. Consider not borrowing any money.

6. Balance the impact of potential financial packages on MSD's bond rating, rates, and cash flow/liquidity.

C. Incentives [Note: Incentives related to a potential ordinance to address private sources of infiltration and inflow are located in Section III-A-Regulatory Requirements/Policies]

1. Provide incentives for "preferred" behaviors.
2. Offer incentives for developers to use cost-effective, eco-friendly solutions (e.g., low impact development techniques, stormwater best management practices).
3. Charge reduced wastewater rates to property owners that use eco-friendly techniques to reduce stormwater runoff.
4. Reduce fees for families or businesses who sign a pledge that clearly lays out behaviors that will help MSD meet Consent Decree requirements (see also I-A-5).
 - a. In critical CSO neighborhoods, provide free rain barrels to people who sign the pledge.
5. Develop compensation credits to help alleviate financial burden to developers and property owners.
6. Reduce rates for houses that are certified (i.e., through inspections) as eliminating inflow from their properties into the sewer systems.
7. Develop and administer a "forgivable loan" program that would cover the replacement of a private lateral line when an inspection reveals that it contributes to an SSO.
 - a. The loan would be up to a maximum amount set by MSD for the private contracting work and would be forgiven at the end of, for example, 20 years, if the homeowner made no illicit connections. If illicit connections were made, the loan would be due in its full amount, civil penalties would apply, and water would be disconnected after a grace period if the illicit connections weren't removed.
 - b. The loan program would require regular inspections.
 - c. The loan would come due via lien if the homeowner sold the property, but the new homeowner could negotiate with MSD for a new loan but with a new twenty year term.

III. Ideas Partly or Completely Outside the Scope of MSD's Wet Weather Consent Decree

A. Municipal Government Actions (Only Partly within MSD's Control)

Regulatory Requirements/Policies

1. Improve the development review process for new subdivisions. Deny permits for subdivisions or any new homes if the plant in the area is above capacity.
2. Require that regional detention ponds in post-developed areas provide filtration for storms that occur every two years or less.
3. Require post-development runoff to be equal to pre-development runoff.
4. Develop mandatory or alternative green solutions for development projects (e.g., by changing development codes).
5. Determine impervious surface limits for individual watersheds.
6. Deny permits for sites within CSO or SSO sewersheds that have any incidents of illegal connections to the sewer system to limit impacts on already overloaded systems.
7. Use wet weather capacity (instead of dry weather capacity) of the sewer system as the baseline for approving new development.
8. Develop an ordinance to address private sources of infiltration and inflow. Ideas related to a potential ordinance include:

Authority and Responsibility for Inspections and Enforcement

- a. Develop an ordinance that would allow MSD or a plumbing inspector to enter homes to identify sources of infiltration and inflow (e.g., broken foundation drains). MSD could subsidize or help pay for the costs of the inspections.
- b. Require contractors and plumbers working on private property to check for sources infiltration and inflow.
- c. Adopt a requirement for inspections of private properties for sources of infiltration and inflow any time a building permit is issued (e.g., for an addition to an existing home).
- d. The ordinance should have the flexibility to allow people other than plumbing inspectors to conduct inspections of private properties.
 - i. Allow other types of inspectors to do the inspections.
 - ii. Allow property owners to do the inspections themselves.
 - iii. It may be better from an accountability perspective to not have MSD do the inspections, repair work, and enforcement.

Trigger for Inspections

- e. Use a proactive approach to inspecting properties (such as the approach used in Johnson County, KS) that would allow MSD to target high-priority areas.
- f. Use two approaches for triggering property inspections: require inspections during the property transfer process, and also proactively target certain neighborhoods/areas for inspections.

Scope

- g. Have the ordinance address issues with the combined sewer system as well as the sanitary sewer system (e.g., look at ways to reduce runoff and limit impervious cover in the CSO area).
- h. Expand the scope of the ordinance to include:
 - i. An outright ban on downspouts, sump pumps, and basement drains.
 - ii. A requirement that new parking lots and parking lots that are going to be repaved have more stormwater controls.

Financial Assistance

- i. MSD should provide financial assistance to the community related to the ordinance.
- j. The ordinance should include a cost-sharing component.

Other

- k. Develop legislation related to private sources of infiltration and inflow that would:
 - i. Prohibit clear water connections to the sanitary system.
 - ii. Require homeowners to maintain the lateral line.
 - iii. Provide for civil penalties for homeowners and plumbers for illicit connections or failure to repair the lateral line.
 - iv. Disconnect water supply after a brief grace period if the problems aren't corrected.
 - v. Give MSD the authority to inspect when an SSO occurs downstream of any sanitary connection.
 - vi. Describe a process MSD would use when it must inspect sanitary connections upstream from an SSO, including notice and information about the program.
 - vii. This new inspection process should begin immediately with the "Big 4" SSOs, but could be implemented when MSD detects others.
- l. A draft ordinance should be reviewed by a county/city attorney.

Opportunities to Encourage/Use Green Infrastructure in Development Projects

1. Utilize very large basins or lakes in new development areas and in rural areas. For new developments, create larger detention/retention basins.
2. Preserve existing natural systems, vegetation, and trees during development, rather than removing and rebuilding them. Take advantage of existing assets in development opportunities.
3. Look at green parking opportunities along business corridors.
4. Look at opportunities to develop more upward and infill already developed areas (i.e., increase density).
5. Develop a "complete streets" program policy to encourage "parkway-like" streets and reduce stormwater run-off.
6. Form partnerships with housing developers to minimize impervious surfaces.
7. The parking lot on Frankfort Avenue could utilize porous pavement for public parking.
8. Develop a recognition program for those who use green infrastructure.
9. Opportunities in schools:
 - a. Incorporate green elements into the three new research facilities being planned at the University of Louisville.
 - b. Turn school grounds into "ecological playgrounds" for neighborhoods.

Opportunities to Link MSD Efforts to Existing Partnerships and Programs

1. Develop a "comprehensive solution" for local environmental improvement and education efforts.
 - a. Fund and staff a collaborative planning effort to link the environmental education programs of multiple local agencies (MSD, Louisville Water Company, Metro government departments, Mayor's Office, TARC, etc.) together, develop specific goals and assessment systems, and then hold agencies accountable to those goals.'
2. Encourage local government agencies (e.g., Jefferson County Public Schools, Metro Parks) to adopt preventative practices to decrease stormwater runoff and wastewater volumes (e.g., low-flow toilets, pervious pavement, additional tree coverage, etc.).
3. Integrate green projects into planning efforts underway.
4. Work with the Green City Partnership (an initiative involving the Louisville Metro Government, Jefferson County Public Schools, and the University of Louisville) on green infrastructure efforts. The Metro Green Initiative should be a leader for the community's Green City Partnership.
5. Consider green infrastructure in the context of healthy activity improvement projects and projects that promote greater walk-ability in neighborhoods.
6. Make use of neighborhood plans. There could be opportunities to incorporate green infrastructure into the 14 neighborhood plans and 6 neighborhood assessments that are being developed, as well as in neighborhood plans that will be developed in the future.

Opportunities for MSD to Collaborate with Other Entities

1. Coordinate with planning and zoning departments and other governmental entities around the value of green infrastructure.
2. Partner with schools to relate students' community service efforts with green projects.
3. Coordinate with other regional entities to build a major treatment plant near the Salt River.
4. Consider linking Wet Weather Program construction projects to road construction efforts.

- a. One potential place for such a linkage is the road construction occurring in the Goose Creek Pump Station area.
5. Work with governmental entities to “lead by example” by eliminating infiltration and inflow entering the sewer systems from government-owned properties.
6. Consider where development will occur in the future, in order to avoid having similar wet weather problems related to private sources of infiltration and inflow in the future.
7. Partner with other cities and states that have wet weather consent decrees to collectively ask federal representatives to seek additional government funds for wastewater and stormwater management improvement efforts.

B. MSD Actions Not Related to Sewer Overflow Issues

1. Purchase properties within the floodplain.
 - a. Buy land that is flooded on a regular basis and turn it into parks.
 - b. When building a detention basin, buy properties in the floodplain that are most impacted.
2. Improve implementation and enforcement of the Sediment Control Act.
3. Partner with local lawn care companies to promote Louisville Green (MSD’s organic fertilizer).
4. Do not give rebates during droughts and do not give special rates for irrigation meters for residential or commercial entities for lawn care, as this could be seen as encouraging lawns, which can contribute to water quality problems (e.g., runoff containing fertilizers and pesticides).

C. Green Infrastructure Ideas Not Related to Wet Weather Issues

1. Heine Brothers Coffee is looking for five acres for an urban farm to grow produce and sell to local restaurants.
2. The “86-64” community effort to remove portions of I-64 could be an opportunity to reclaim the waterfront and promote public transportation such as light rail.
3. Utilize the open space in parks for green infrastructure.
4. Develop and educate residents about urban farming opportunities.
5. Teach and promote sensible/responsible development.
6. Require parking lots to provide shaded areas.
7. Establish a tree ordinance to protect specific trees (identified based on species, age, etc.) and require mitigation if the protect trees are damaged or removed.
8. Protect or improve water quality and flood control for developments.

Wet Weather Team Education and Outreach Idea List

Working Draft – January 2, 2008

The following is a list of education and outreach ideas identified by Wet Weather Team (WWT) members for consideration for the Wet Weather Program. The list will act as a resource for MSD and the technical team as they develop and refine the draft education and outreach plan for MSD's Wet Weather Program. (The focus of this list is on long-term education, outreach, and public engagement efforts, rather than near-term activities such as public meetings occurring during the WWT process.) These ideas were identified both at WWT meetings and through individual communications with WWT members (e.g., via e-mail). This list will remain "live" throughout the remainder of the WWT effort, and WWT members are encouraged to send additional ideas for this list to the facilitation team.

New ideas will be listed under a "What's New" section at the beginning of the document for easy reference, as well as under the appropriate section later in the document. The remainder of the document is organized into two main sections, Section I, which focuses on MSD Wet Weather Program education and outreach efforts, and Section 2, which covers efforts that are only partly within MSD's control.

What's New (December 2007/January 2008)

1. (1-B-5-m) – Help people understand the differences between the combined sewer system and the sanitary sewer system.
2. (1-B-5-n) – Explain funding concepts and choices to the public. Showing side-by-side cost comparisons could be a particularly useful way of doing this.
3. (1-B-5-o) – Thoroughly explain the financial assistance component of any private infiltration and inflow reduction program.
4. (1-B-5-p) – Some information from MSD's Sewer Overflow Response Protocol training (such as how MSD prepares for wet weather events) could be useful to share with the public, potentially during weather forecasts.
5. (1-C-1-l) – hold a speaker's forum and/or have a group of people available that could speak at community meetings and events
6. (1-C-1-m) – work with the Mayor's press staff and the Louisville Metro Neighborhoods Department to get the word out
7. (1-C-1-n) – hold a press conference

I. MSD Wet Weather Program Education and Outreach Efforts

A. Education/Outreach Program Characteristics

1. MSD should expand upon its existing education and outreach efforts, including Project WIN and other MSD programs such as Living Lands and Waters.
2. Education efforts should be comprehensive, adequately resourced, and human scale to encourage behavior changes (e.g., stewardship practices).
3. To be successful, public involvement efforts should include:
 - a. A corporate or programmatic identity: logo, leader, advisory board, budget, mission, goals, website, etc.
 - b. Communications: announcements, fliers, newsletters, radio/TV appearances, etc.
 - c. Stewardship: removing invasive vegetation from riparian zones, planting wetlands, [and yes] litter cleanups

- d. Education: stream science, water quality monitoring
 - e. Conservation: promoting rain gardens, rain barrels, and responsible alternatives for sump pumps and downspout connections.
 - f. Coordination: linking the public involvement activity with MSD and the wet weather team
 - g. Celebration: festivals, canoe floats, and other events that call positive attention to the area's waterways.
4. Outreach efforts should show people that there is an open and transparent process within which MSD is making decisions on behalf of the community.

B. Audiences, Objectives, and Messages

- 1. Target education efforts in "critical CSO neighborhoods" and schools in those areas.
 - a. Use a targeted direct-mail approach to help address local, site-specific problems.
- 2. Involve commercial and industrial customers and solutions through PR and planning, not just residential customers.
- 3. Make a presentation to the full Metro Council.
- 4. Work with schools (in conjunction with Earth Day and river/creek cleanups) to involve both students and parents.
- 5. Message ideas:
 - a. Develop positive educational messages about the value of clean water to supplement other education and outreach messages. (CSO warning signs, river sweeps, and other elements of MSD's outreach activities send a negative message about the community's water resources.)
 - b. Can the "water is dirty, stay away from it" signs that EPA designated include a promise that the public can change the situation?
 - c. Translate Consent Decree activities into dollar impacts for residents.
 - d. Communicate that we have no choice but must comply with the requirements of the consent decree in a timely manner.
 - e. Help people understand how they are connected to the problem.
 - f. Help change the perception people have of streams to a positive one (people think that streams are "dead").
 - g. Help people understand that green infrastructure can be incorporated into urban areas, since urban areas can be redeveloped.
 - h. Craft messages explaining the importance of addressing private sources of infiltration and inflow, and people's personal responsibility for addressing it.
 - i. Create community ownership of the solutions.
 - j. Stress that there are two sides to EPA compliance, and note that programs will affect some people more directly than others because of the way the sewer system has developed over time:
 - i. What MSD is going to do with its infrastructure that will affect the whole community.
 - ii. What citizens and businesses will be asked to do.
 - k. Inform the community that EPA is targeting three parts of the sewer system: CSO sewersheds, the "Big 4" SSO sewersheds, and the other SSO sewersheds.
 - l. Help people understand that, even though MSD is paying the EPA Consent Decree rate surcharge, the community as a whole must help solve the problem.

- m. Help people understand the differences between the combined sewer system and the sanitary sewer system.
 - n. Explain funding concepts and choices to the public. Showing side-by-side cost comparisons could be a particularly useful way of doing this.
 - o. Thoroughly explain the financial assistance component of any private infiltration and inflow reduction program.
 - p. Some information from MSD's Sewer Overflow Response Protocol training (such as how MSD prepares for wet weather events) could be useful to share with the public, potentially during weather forecasts.
6. Involve neighborhoods in identifying potential green infrastructure solutions (e.g., by having a neighborhood competition to get grassroots ideas for potential solutions).
 7. Develop education programs for schools that allow children to take information home.
 8. Educate local leaders on the need for source reduction. One way to do this would be to show them the cost of specific solutions to SSO and CSO problems.
 9. Explain problems and programs related to SSOs directly to homeowners (individually if necessary), and enlist neighborhood associations and other neighborhood institutions to help when appropriate.
 10. Conduct an aggressive education effort before instituting any new requirement that would address private-side infiltration and inflow sources.
 11. Develop and implement a public information and involvement strategy for each of the three parts of the sewer system that EPA is targeting: the "Big 4" SSO sewersheds, the other SSO sewersheds, and the CSO sewersheds.
 - a. Each area should be mapped and made publicly available on MSD's website.
 - b. Public information should roll out in consecutive waves so the different programs can be explained to the larger community and the direct effects can be explained to the parts of the community that may need to do more to make them work.
 - c. The first wave of public information should address the "Big 4" SSO sewersheds, followed by the other SSO sewersheds, and then the CSO sewersheds.

C. General Outreach and Education Strategies and Techniques

1. Use a variety of communication media to inform Louisville residents about issues, opportunities, and activities related to the Wet Weather Program and the Consent Decree. Examples include:
 - a. feature articles and/or advertisements in the Courier Journal
 - b. direct mail
 - c. public service announcements on television
 - d. radio (WLOU/WLLV 1350 and 101.3 FM for the west)
 - e. e-mail lists ("UofL announcements" to University of Louisville employees, e-mail lists for Metro Council members)
 - f. website(s) (provide information, as well as solicit input and questions)
 - g. community meetings ("piggy back" on other events/meetings such as the Mayor's Night Out, community association meetings, Metro Council meetings, etc.)
 - h. media "groundbreaking" events
 - i. 5-minute DVD video (highlight the central issues and indicate the short and long-term consequences)
 - j. hold a "creek concert" to raise awareness of stream issues to young people

- k. develop/use a Kentucky State Fair Exhibit (permanent or traveling)
 - l. hold a speaker's forum and/or have a group of people available that could speak at community meetings and events
 - m. work with the Mayor's press staff and the Louisville Metro Neighborhoods Department to get the word out
 - n. hold a press conference
2. Develop/use posters and visual displays to illustrate concepts to the public and provide context to Wet Weather Program activities. Specific suggestions include:
 - a. Schematic of a combined sewer overflow
 - b. Schematic of sump pumps and downspouts connected to sanitary sewers
 - c. Map of the combined sewer area and outfalls against blue line streams and landmarks (road system would do)
 - d. Map of SSO outfalls including the sewersheds of the "big four," as above
 - e. Water Quality maps from the Beargrass Creek report card, also water quality info about Ohio River related to CSO outfalls
 - f. Comparison of city sewer rates indicating which cities have consent decrees
 - g. Time frames for the major deliverables in the Consent Decree
 - h. Create visible representations of the solution, since they can be helpful for explaining project concepts to the public. Use these visual representations when soliciting community input.
 3. Initiate a dialog with neighborhoods, potentially including door-to-door outreach, to better understand local water quality problems and to solicit local input on potential solutions.
 4. Develop a speakers bureau to attend chamber/business association meetings and other groups that use speakers.
 5. Conduct demonstration projects (Note: Overlaps with demonstration projects in Solution Ideas List). Specific ideas include:
 - a. Create a demonstration area in each Jefferson County watershed to demonstrate and interpret healthy stream habitats and what MSD is doing to study and protect them.
 - b. Strategically place demonstration projects (e.g., porous pavement) near neighborhoods.
 - c. Create some sustainable lawns as pilot projects
 - d. Develop a green infrastructure best management practice site similar to SD1 (Sanitation District Number 1 of Northern Kentucky).
 - e. Add green demonstration/education facilities to old urban schools.
 - f. The Clifton neighborhood is motivated, so would be a good demonstration area to show the effects of behavior change.
 - g. Use the Butchertown Greenway Pump Station that is offline for an education and demonstration facility.
 6. Present "Where is your CSO or SSO?" information on-line: On the MSD or LOGIC website, have the ability to type in your address and have it call up the location of the CSO or SSO that the property owner's waste goes to. The website could describe the watershed that contributes water and runoff to that individual CSO or SSO.
 7. Support the identification of public watershed advocates for each Jefferson County watershed. Each watershed needs a public advocate. It could be connected with a nature center, or be an independent citizen advocacy group.

8. Make MSD facilities visitor friendly. For example, add educational exhibits around the flood wall, the history of flooding, etc. to the Beargrass Creek Pump Station and near the flood detention basins at the Fairgrounds.
9. Have MSD employees be educational ambassadors, as a way of making Louisville environmentally literate.
10. Public meeting ideas:
 - a. To increase attendance, consider latching onto other meetings.
 - b. Ideas for places/ways to advertise the public meetings:
 - i. Churches
 - ii. PTA meetings.
 - iii. Metro Council and neighborhood newsletters
 - iv. Channel 25 (Metro Louisville programming)
 - v. Short recorded messages on phones
 - vi. Send announcements about the public meetings through the Department of Neighborhoods distribution list to get word out to neighborhood groups.
 - vii. Listservs
 - viii. Get the word out at local schools so kids can take information home to their parents.
 - ix. Local TV or NPR piece
 - x. Homeowners Association newsletters
 - xi. Suburban city newsletters
 - c. Start public meeting presentations with information on rates to get people's attention.
 - d. At public meetings, consider the fact that people need time to digest information from presentations and written materials.
 - e. Avoid using acronyms in presentations and discussions with community members.
 - f. Conduct direct outreach to block watch groups, neighborhood associations, and business associations to identify neighborhood leaders.
 - g. Give people at least two weeks advance notice of the public meetings.
 - h. Have the Metro Council representative for the local area host the public meetings.
 - i. Hold public meetings at local schools, maybe in conjunction with other meetings that are already taking place.
 - j. Give information that is as specific in terms of location as possible at the public meetings.
 - k. Advertise some of the potential solutions being considered, and hold the meetings near some of the likely places of disruption, as a way to get people to attend public meetings.
11. Add a portal to MSD's website where people can submit comments on Project WIN; run a public service announcement to inform people about the issues and the website address for submitting comments.
12. Develop and run an information booth at selected festivals in the community (similar to the booth used for Project XL).
13. Use the potential disruption along Hikes Lane (part of the Big Four SSO plan) as an opportunity for broader education of the public about wet weather sewer overflow issues.
14. Yard signs similar to those used in Portland's residential Downspout Disconnection Program could be useful for education and outreach about MSD's Wet Weather Program. [Note: Overlaps

with CSO and SSO Point Source Controls in Solution Ideas List.] Specific ideas for signs include:

- a. Messages such as “I disconnected my downspout” and/or “I have a rain barrel.”
 - b. The bottom of the sign could invite readers to “ask me” for more information.
15. Invite people to “join” Project WIN by installing rain gardens, rain barrels, reducing their use of lawn chemicals, etc.
- a. Add a page to MSD’s website where people can submit notes or pictures of their efforts.
 - b. Give out plaques or other awards to those who “join.”

D. Education to Change Behavior [Overlaps with Behavior Change Strategies in Solution Ideas List]

1. Influence behavior of residential and commercial landowners through education.
 - a. Promote water conservation practices: rain gardens, rain barrels, and responsible alternatives for sump pumps and downspout connections.
 - b. Encourage stewardship: removing invasive vegetation from riparian zones, planting wetlands, litter cleanups, etc.
 - c. Conduct education regarding fertilizer, weed killer, and other stormwater best management practices to neighborhood groups.
 - d. Develop and educate residents about urban farming opportunities
 - e. Teach and promote sensible/responsible development.
 - f. Discourage chemical treatment and mowing near waterways to help keep debris from waterways.
2. Regularly distribute billing inserts (like LG&E’s) to MSD customers with facts and tips to encourage certain behaviors (e.g., lawn chemical management, pet waste management, landscaping practices).
3. Hold “CSO Action Days” (like Ozone Action Days) during or right after a hard rain to raise awareness and promote behavior change (e.g., don’t use your dishwasher or clothes washer, wait to drain your bathtub, etc.).
4. Develop a pledge for customers that clearly lays out behaviors that will help MSD meet Consent Decree requirements. For an example, see <http://www.watershedpledge.org>
5. Encourage the use of best management practices for chemical use in lawn management practices.
 - a. Inform greens keepers about best management practices (BMPs), since non-point source runoff is made worse by golf course chemicals.
6. Provide technical assistance to support behavior-change efforts.
 - a. Develop a program in which residents could pay a small fee for MSD or another agency to conduct a water/wastewater audit on a house similar to the energy audits offered by LG&E.

E. Monitoring, Evaluation, and Accountability

1. Conduct a baseline survey and follow-up surveys of residents to determine whether education and outreach efforts are effective in raising awareness and in changing behavior and perceptions on issues related to the Wet Weather Program. [Note: This is also included in the Solution Ideas List.]
 - a. Develop a survey instrument (potentially with a coalition of cities) and use it every year.
2. Collect baseline data, monitor performance, and ensure “high stakes accountability” for all of the education and outreach objectives of the Wet Weather Program.

- a. Evaluate the extent to which citizens value clean water, support MSD, understand best management practices for homes and businesses, and have a basic understanding of ecological conditions and processes.
3. Consider creating/supporting an evaluation center to evaluate and document the effectiveness of education and outreach programs.
4. Develop a “report card” for MSD’s Wet Weather Program to post on MSD’s Project WIN website and publish it in print format regularly (e.g., annually). This report card would report on performance measures related to the goals of MSD’s Wet Weather Program and implementation of the consent decree.

II. Ideas Partly or Completely Outside the Scope of MSD’s Wet Weather Consent Decree

A. Municipal Government Actions (*Only Partly within MSD’s Control*)

1. Develop a “comprehensive solution” for local environmental improvement and education efforts.
 - a. Fund and staff a collaborative planning effort to link the environmental education programs of multiple local agencies (MSD, Louisville Water Company, Metro government departments, Mayor’s Office, TARC, etc.) together, develop specific goals and assessment systems, and then hold agencies accountable to those goals.
[Note: This is also included in the Solution Ideas List.]
2. Transform governmental facilities to be role models and learning laboratories—demonstrate how to do the right thing.
 - a. Encourage local government agencies (e.g., Jefferson County Public Schools, Metro Parks) to adopt preventative practices to decrease stormwater runoff and wastewater volumes (e.g., low-flow toilets, pervious pavement, additional tree coverage, etc.).
[Note: This is also included in the Solution Ideas List.]
3. Work with other building inspectors to raise awareness of wet weather issues during inspections.

Wet Weather Team Data Request and Monitoring Suggestions List **Working Draft – January 2, 2008**

The following is a list of data requests and monitoring suggestions made by Wet Weather Team (WWT) members for consideration for the Wet Weather Program. This includes requests for information to support the WWT's deliberations and suggestions for the research, monitoring, and evaluation efforts associated with MSD's Wet Weather Program. These ideas were identified both at WWT meetings and through individual communications with WWT members (e.g., via e-mail). This list will remain "live" throughout the remainder of the WWT effort, and WWT members are encouraged to send additional suggestions to the facilitation team. Requests that have been responded to will be kept on this list, but marked as "Addressed." New ideas will be listed under a "What's New" section at the beginning of the document for easy reference, as well as under the appropriate section later in the document.

Note: For monitoring and evaluation suggestions related to the Wet Weather Program public education and outreach plan, please see the Wet Weather Team Education and Outreach Idea List.

What's New (December 2007/January 2008)

1. (1-A-8) – Information on the differences between what is legal and required in the sanitary sewer system and the combined sewer system (e.g., whether or not it is legal to connect a sump pump to the combined sewer system).
2. (1-B-4) – Information on the costs and benefits of a regulatory approach to address private I&I as compared to other control strategies.
 - a. Include information showing how the marginal costs of this approach compare to costs of other approaches and overall program costs, as there could be a lot of opposition to a new private I&I reduction program because of costs.
 - b. One potential cost comparison could be comparing the costs of a private I&I reduction program using an ordinance to the costs of building a large underground storage facility to recover a similar amount of I&I.
3. (1-C-3) – Examine how choices about funding sources affect the total wastewater and stormwater rates that residents pay.
4. (1-C-4) – Examples illustrating the implications of different combinations of funding sources (e.g., loans, bonds, pay-as-you-go) for funding the Wet Weather Program, in order to better understand the tradeoffs. *[Note: Examples will be presented at the January 15, 2008 Wet Weather Team Meeting.]*
5. (1-C-5) – Ask someone from the Kentucky Resources Council or one of the MSD consultants to look at the current Kentucky Plumbing Code to see if it is as strong as it needs to be as it relates to CSOs and SSOs.
6. (1-C-6) – Involve experts in making financial decisions, given the relationships among the timing of projects, cash flows, bond rating, and other factors.

I. Requests for Information to Support WWT Deliberations

A. Requests for Information on Current Conditions

1. Data on how fecal coliform levels change with flow volumes.
2. Data on where water quality sampling is currently done in relation to recreational areas.

3. Current data MSD has on water quality in stream reaches (as aquatic health is an issue in some, but not all, stream reaches).
4. How MSD's development fees compare to development fees in other places.
5. Specific information on the percentage of backups that are the result of MSD's activities as opposed to private property issues.
6. Cincinnati's rates before the community started to respond to its consent decree.
7. Information on the "root causes" of wet weather CSO and SSO problems (e.g., the CSO volume attributable to residential downspouts) to assist with Wet Weather Program decision making. *[Note: This is an ongoing request.]*
8. Information on the differences between what is legal and required in the sanitary sewer system and the combined sewer system (e.g., whether or not it is legal to connect a sump pump to the combined sewer system).

B. Requests for Information of the Effectiveness and Costs of Potential Solutions

1. Information on the long-term effectiveness of strategies that rely on source prevention (e.g., rain gardens).
2. Quantitative information on the benefits and/or effectiveness of eco-friendly solutions currently used by MSD.
3. Additional information on the benefits and challenges of different control approaches (e.g., why a storage solution might be preferable to a transport solution for a particular area). *[Note: This is an ongoing request.]*
4. Information on the costs and benefits of a regulatory approach to address private I&I as compared to other control strategies.
 - a. Include information showing how the marginal costs of this approach compare to costs of other approaches and overall program costs, as there could be a lot of opposition to a new private I&I reduction program because of costs.
 - b. One potential cost comparison could be comparing the costs of a private I&I reduction program using an ordinance to the costs of building a large underground storage facility to recover a similar amount of I&I.

C. Process Suggestions

1. Conduct assessments of different watersheds to find the best opportunities for green infrastructure.
2. Conduct additional analysis of the potential effects of behavior change and green infrastructure strategies at reducing flows into MSD's sewer systems.
3. Examine how choices about funding sources affect the total wastewater and stormwater rates that residents pay.
4. Provide examples illustrating the implications of different combinations of funding sources (e.g., loans, bonds, pay-as-you-go) for funding the Wet Weather Program, in order to better understand the tradeoffs. *[Note: Examples will be presented at the January 15, 2008 Wet Weather Team Meeting]*
5. Ask someone from the Kentucky Resources Council or one of the MSD consultants to look at the current Kentucky Plumbing Code to see if it is as strong as it needs to be as it relates to CSOs and SSOs.
6. Involve experts in making financial decisions, given the relationships among the timing of projects, cash flows, bond rating, and other factors.

II. Suggestions Related to the Wet Weather Program Monitoring, Evaluation, and Research Plan

A. Suggestions Related to Water Quality and Public Health Monitoring

1. Consider monitoring water quality and flow at additional locations, based upon the Wet Weather Program's objectives and the performance measures developed for the program. Potential new monitoring locations to consider include:
 - a. Intensely used public access sites within Beargrass Creek
 - b. Stream segments MSD does not monitor currently, such as Buechel Branch and upper South Fork of Beargrass Creek
 - c. Additional locations within the Floyds Fork watershed
2. Environmental performance data such as biological indexes of aquatic health (fish counts, macro-invertebrate sampling, etc.), nutrient sampling, downstream pollutant load, and tree cover or other measures of habitat restoration efforts.
3. Data on the public health impacts of polluted water (collected by the School of Public Health or the Health Department and included in an annual report).
4. Involve the research community (e.g., students at the University of Louisville's School of Public Health) in water quality monitoring and data analysis.
5. Consider whether to use EPA's quality control protocols for water quality monitoring efforts.

B. Suggestions Related to the Effectiveness of Green Infrastructure Projects

1. Build monitoring components into green infrastructure projects to help demonstrate the overall effectiveness of green infrastructure solutions.
2. Pick a CSO catchment area and study the effects of rain barrels and rain gardens.
3. In order to gain information on the long-term effectiveness of strategies that rely on source prevention, conduct a demonstration project in a small area, and compare the changes in pollutant loading and stormwater flows to those of other areas.

C. Suggestions Related to the Effectiveness of Behavior Change Efforts

1. Conduct separate research and data analysis to supplement any data collected through surveys about people's behavior.

D. Other Suggestions

1. Monitor customer satisfaction data (e.g., number of hits on MSD's website, number of requests for information, customer satisfaction surveys).

Wet Weather Team Consensus Items
Working Draft – January 2, 2008

The following is a list of items on which the Wet Weather Team (WWT) has come to consensus, organized by the date of the WWT meeting at which consensus was reached. The facilitation team will maintain and update this list throughout the remainder of the WWT effort.

Consensus Item	Wet Weather Team Meeting	Reference Document
1. Wet Weather Team Charter	Wet Weather Team Meeting #2 (August 15, 2006)	Wet Weather Team Charter (August 15, 2006)
2. Wet Weather Team Ground Rules	Wet Weather Team Meeting #2 (August 15, 2006)	Wet Weather Team Ground Rules (August 15, 2006)
3. Wet Weather Team Community Values	Wet Weather Team Meeting #6 (February 13, 2007)	Wet Weather Team Community Values
4. Performance Evaluation Framework for Project-Specific Values	Wet Weather Team Meeting #9 (May 22, 2007)	Final Draft Performance Measurement Matrices
5. Approach for Incorporating Programmatic and Project-Specific Values into Decision Making	Wet Weather Team Meeting #9 (May 22, 2007)	Values-Based Decision- Making Flowchart
6. Weights for Project-Specific Values	Wet Weather Team Meeting #10 (June 21, 2007)	See: Summary of the June 21, 2007 Wet Weather Team Meeting
7. Understanding of Sanitary Sewer Overflow Strategies and the Role of Source Control	Wet Weather Team Meeting #14 (December 6, 2007)	Wet Weather Team Stakeholder Group Understanding of Sanitary Sewer Overflow Strategies and the Role of Source Control (December 2007)

Debt Service Requirements

Bond Year Ending	Interest	Principal	Debt Service	Existing Debt Service*	Estimated Combined Debt Service
2008	\$1,503,425	\$1,460,000	\$2,963,425	\$82,047,198	\$85,010,623
2009	2,948,450	1,670,000	4,618,450	\$83,743,961	88,362,411
2010	2,881,650	1,810,000	4,691,650	\$83,666,921	88,358,571
2011	2,809,250	1,880,000	4,689,250	\$83,658,463	88,347,713
2012	2,715,250	2,000,000	4,715,250	\$83,656,784	88,372,034
2013	2,615,250	2,065,000	4,680,250	\$83,645,361	88,325,611
2014	2,512,000	2,160,000	4,672,000	\$83,631,188	88,303,188
2015	2,404,000	2,265,000	4,669,000	\$83,618,806	88,287,806
2016	2,290,750	1,390,000	3,680,750	\$83,677,363	87,358,113
2017	2,221,250	1,460,000	3,681,250	\$83,680,290	87,361,540
2018	2,148,250	1,525,000	3,673,250	\$83,692,871	87,366,121
2019	2,072,000	1,700,000	3,772,000	\$83,600,159	87,372,159
2020	1,987,000	1,675,000	3,662,000	\$84,187,966	87,849,966
2021	1,903,250	1,765,000	3,668,250	\$84,228,188	87,896,438
2022	1,815,000	1,830,000	3,645,000	\$84,256,630	87,901,630
2023	1,723,500	2,000,000	3,723,500	\$84,251,029	87,974,529
2024	1,623,500	17,825,000	19,448,500	\$69,465,863	88,914,363
2025	<u>732,250</u>	<u>14,645,000</u>	<u>15,377,250</u>	\$69,480,569	84,857,819
2026				\$88,181,469	88,181,469
2027				\$89,737,944	89,737,944
2028				\$89,758,588	89,758,588
2029				\$89,778,063	89,778,063
2030				\$89,807,713	89,807,713
2031				\$89,815,013	89,815,013
2032				\$89,822,913	89,822,913
2033				\$89,827,475	89,827,475
2034				\$89,807,900	89,807,900
2035				\$89,572,900	89,572,900
2036				\$89,678,400	89,678,400
2037				\$60,353,400	60,353,400
2038				<u>\$60,199,650</u>	<u>60,199,650</u>
Totals:	\$38,906,025.00	\$61,125,000.00	\$100,031,025.00	\$2,584,531,038.00	\$2,684,562,063.00

*Based upon various assumptions provided by the Financial Advisor, including an assumed annual interest rate of 4.075% for the Series 2003A and 2003B Bonds. Excludes remarketing and liquidity fees associated with the Series 2003A and 2003B Bonds and debt service on the Prior Bonds to be refunded.

Wet Weather Team Stakeholder Group
Understanding of Sanitary Sewer Overflow Strategies and the Role of Source Control
(As of December 2007)

This document aims to summarize the Wet Weather Team (WWT) stakeholder group's understanding of sanitary sewer overflow (SSO) strategies and the role that infiltration and inflow (I&I) reduction efforts can have in them, based on the information presented by the technical team and the group's discussion at WWT meetings on October 18 and December 6, 2007.

WWT Understanding about Background Research Findings

The WWT stakeholder group understands that the technical team's plan for developing strategies and project alternatives for control of SSOs is based on the following background research findings.

- The experience of many other wastewater utilities nationwide shows that source-control approaches to reduce infiltration and inflow of clear water into the sanitary sewer system are an important component of effective control of SSOs.
- This experience also shows that source-control approaches alone are not likely to be effective at eliminating all SSOs over the near or long term.
- Other sewer agencies have found that the most cost-effective solutions to address SSOs include a combination of source-control approaches and strategies that rely on storage, treatment, and conveyance (transport/diversion). Source control is part of all solutions, but rarely the entire solution.
- Successful efforts to reduce I&I into sanitary sewer systems have addressed sources of I&I on private properties (including building laterals, sump pumps, downspouts, drains, etc.) as well as sources of I&I from publicly maintained parts of the sewer system (including sewer main lines, manholes, etc.).
- In that context, private-side I&I reduction efforts have been most effective when they contained the following elements.
 - Public Education: Community members need to understand the problem and their role in it, so that they can accept ownership and responsibility for addressing it.
 - Regulatory Requirements: Strictly voluntary efforts to reduce private-side I&I have produced deficient results. Programs that enable home inspections, establish certain connection types as illegal (e.g., sump pumps), and mandate line maintenance have been needed to ensure adequate participation.
 - Cost Share: Programs that reimburse or subsidize property owners for repairs are more successful and politically acceptable than those do not.

WWT Understanding about Analysis the Technical Team Will Conduct

Given the above research findings, the WWT stakeholder group understands that the technical team will work to identify and evaluate SSO-related project alternatives that reflect the following elements.

- Technical analysis supporting MSD's overall SSO control strategy will reflect a balance of solutions, including source control (I&I reduction), storage, conveyance, and treatment.
- Opportunities to address SSOs using source control will be pursued for all watersheds to the extent that they are technically and cost effective, and MSD will work with relevant regulatory bodies to justify the basis for this approach.

- Technical analysis supporting MSD's SSO control strategy will need to include private sources of I&I into the sanitary sewer system. Based on the experience of other communities, this analysis will need to consider:
 - Addressing all potential sources of I&I including building laterals, downspouts, sump pumps, and foundation/area drains;
 - 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);
 - Providing some form of cost share, so that property owners do not have to pay the full cost of repairs;
 - Using an aggressive education campaign to help people understand the problem and take ownership over solving it, including stressing that there are two sides to effective wet weather management (public and private responsibility) and recognizing that some residents may be affected more than others; and
 - Addressing programmatic aspects of managing new flows into the sewer system from future development
- It will be necessary to lay the foundation for any future private-side I&I reduction effort by increasing public (and community leader) understanding and ownership of the problem.
- Technical analysis will also include how local government entities can "lead by example" by eliminating illegal connections to the sanitary sewer system from public buildings and by improving line maintenance.



Project WIN Funding Plan

Wet Weather Team
Stakeholder Group Meeting
January 15, 2008



Purpose of this Presentation

- Review and discuss examples of the implications of using different mixes of funding sources for the Wet Weather Program.
- Review and discuss potential refinements to MSD's rate structure.



Consent Decree Requirements for the Wet Weather Team

“The team will prepare a plan for funding the program and will develop a program for public information, education, and involvement.”



EPA's Long Term Control Plan (LTCP) Guidance on Funding

Indicates that the method of financing can be selected or modified based on public input.

Method of financing should be determined by:

- Availability of each option in the community
- Advantage and limitations of a specific type of financing

The LTCP should identify a specific capital and annual cost funding approach.



EPA's Long Term Control Plan Funding Guidance (cont'd)

Potential funding sources include:

- ↗Bonds
- ↗Loans
- ↗Grants
- ↗Privatization
- ↗Other Capital Funding Sources (e.g., special reserves or “pay-as-you-go”)



Funding Options

- Finance consent decree with internally generated funds (rate increases)
- Issue bonds with balloon payments
- Issue bonds with traditional amortization periods
- Borrow funds from KLA



MSD

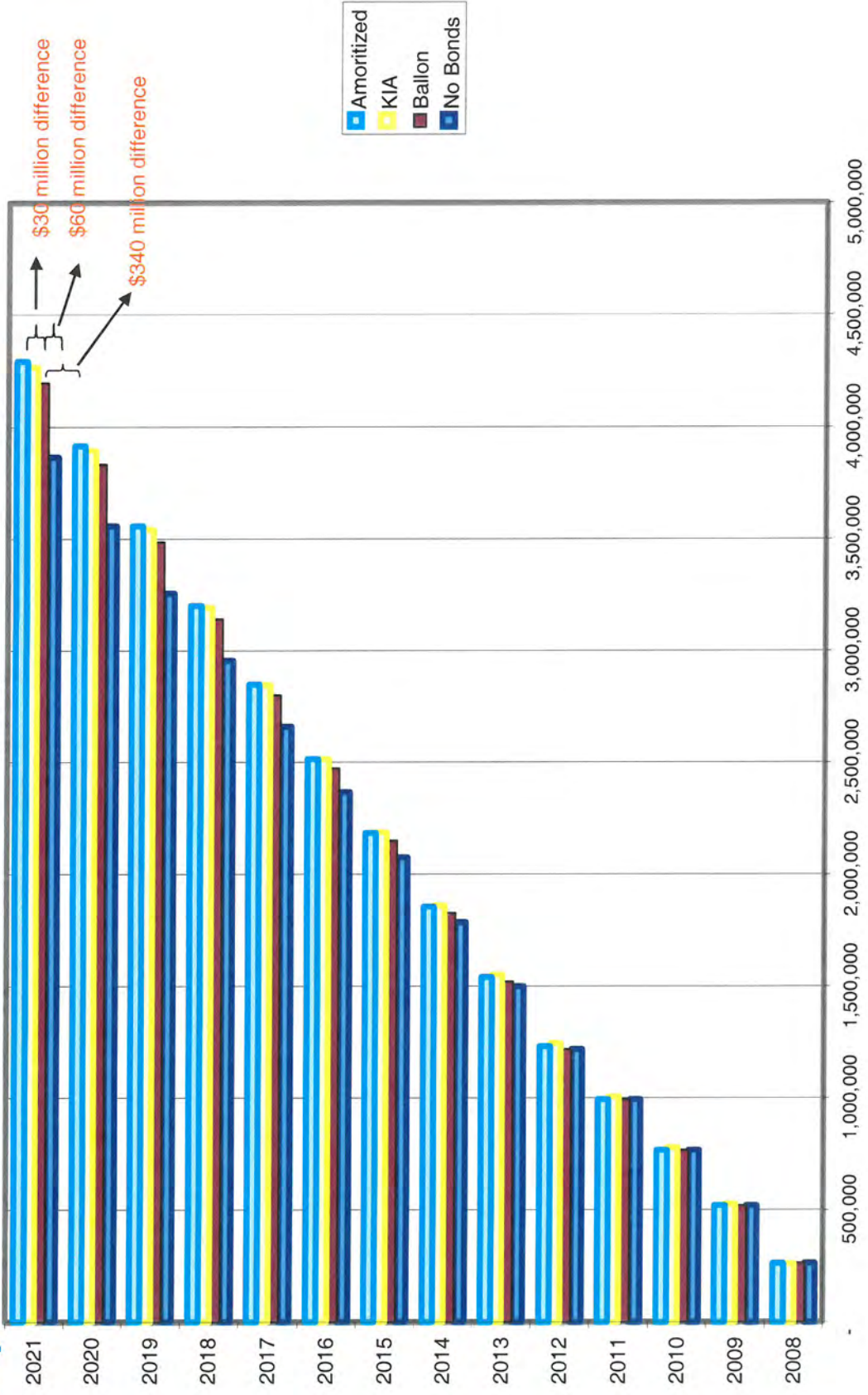
Projected Expenditures thru FY 2021

- ↗ No Bonds - \$3.86 billion*
- ↗ Balloon Payments - \$4.20 billion
- ↗ KIA Funding - \$4.26 billion
- ↗ Amortized Bonds - \$4.29 billion

* - Expenditures exceed available revenues



MSD Cumulative Expenditures
(000's)





No Bond Issues

- Would result in a funding short-fall of \$390.3 million
- MSD would have to raise rates by approximately 9% annually to cover this short-fall
- Avg. residential wastewater rate would increase to approximately \$78.30 from current rate of \$28.20 by FY 2021.



MSD

Balloon Bond Structure

- Could be funded at avg. rate increases of 6% and 4% thru FY 2012, respectively for Regular & Consent Decree Surcharge and at 5% increases for both from FY 2013 through FY 2021.
- Best structure for minimizing the need for rate increases.



MSD

Kentucky Infrastructure Authority Loans

- ↗ Could be funded at avg. rate increases of 6% and 4% thru FY 2012, respectively for Regular & Consent Decree Surcharge and at 5% increases for both from FY 2013 through FY 2021.
- ↗ Not realistic due to limits on KIA funding.
- ↗ MSD may be able to borrow 15% to 20% of the estimated \$800 million from the KIA.



Bond Issues – Traditional Amortizing

➤ Could be funded at avg. rate increases of 6% and 4% thru FY 2012, respectively for Regular & Consent Decree Surcharge and at 5% increases for both from FY 2013 through FY 2021.



MSD

Potential Refinements to Rate Structure

- Move to billing based on avg. winter usage
- Would allow MSD to better predict revenue streams by eliminating unpredictably of water usage.
- Volume charges and/or fixed fees would have to increase.
- Could impact smaller & lower-income households.
- Would eliminate customer concerns regarding sewer charges based on water usage for irrigation purposes.



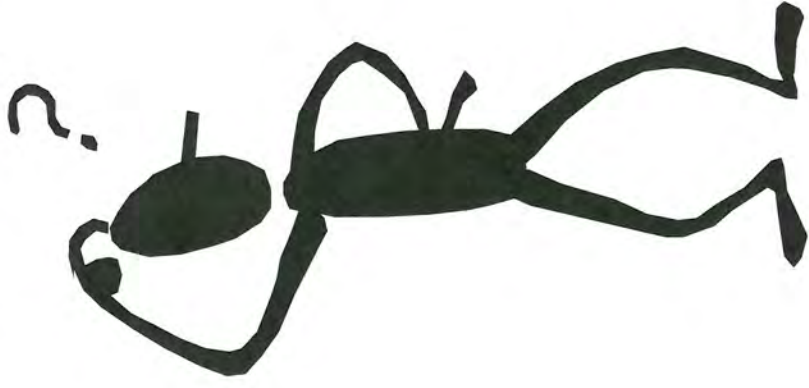
MSD

Potential Refinements to Rate Structure

- Adopt multi-tiered volume charges
 - MSD currently charges the same volume charge regardless of usage (i.e. – residential customers pay \$2.20 per thousand gallons of water used).
 - If higher rates are charged for initial usage, would allow for better predictability of revenues and could minimize impact of charges during dry periods.
 - Would need to evaluate the impact on low income customers and customers that don't use much water on a regular basis.



Additional Questions



Ordinance Framework for Controlling Private Property Infiltration and Inflow

Wet Weather Team
Stakeholder Group Meeting No. 15
January 15, 2008

Louisville & Jefferson County
Metropolitan Sewer District

Discussion Outline

- Summary of discussion from December meeting
- Proposed approach to a private property ordinance for I&I reduction:
 - Ordinance format
 - Coverage and exclusions
 - Inspection triggers
 - Action and penalties for non-compliance
 - Financial assistance
 - Public information and education

December Discussions Supported a Private Property Ordinance

- Proactive inspection triggers preferred, potentially in addition to property sale or home improvements
- Scope should include illicit connections and property service connection leakage
- Recognize differences between combined and separate areas, but address both areas to the extent practical
- Provide financial assistance through cost share and interest free financing
- Make inspections easy and allow homeowners to do own improvements if desired

3

Louisville & Jefferson County
Metropolitan Sewer District

New Ordinance Preferred Over Amending Existing Property Maintenance Code

- Keeps focus on I&I reduction – does not dilute purpose or confuse issues
- Allows assignment of enforcement responsibility to MSD through Chapter 50 revisions

4

Louisville & Jefferson County
Metropolitan Sewer District

Coverage and Exclusions

- Ordinance would address:
 - Illicit connections
 - Service lateral condition
 - blockages
 - leakage
- Exclusions would include:
 - New construction, subject to recent plumbing code inspection
 - Properties inspected in previous 5 years
 - Combined sewer area requires same inspections, but only service lateral repair is required (other disconnections voluntary, but not required)

5

Louisville & Jefferson County
Metropolitan Sewer District

Inspection Triggers Are Both Proactive and Reactive

- Condition disclosure as part of property transfer
 - inspection credentials include licensed plumber, engineer, architect, or certified home inspector
- Comprehensive plumbing system inspection part of any improvements requiring building permit
- Proactive inspection by authorized personnel
 - service lateral TV inspection allowed from public right-of-way without homeowner notification
 - Properly credentialed MSD employees or agents have same right of entry as building inspectors
 - allows prioritized inspections as part of neighborhood I&I reduction program
- Public education key to understanding and acceptance of these inspection triggers

6

Louisville & Jefferson County
Metropolitan Sewer District

Actions and Penalties Depend on Inspection Trigger

- Property transfer inspections impact timing of closing the sale
 - Repair condition and submit building permit sign-off, or
 - Escrow funds to repair after closing
- Building permit inspections impact issuing Certificate of Occupancy
- Proactive inspections require correction within 1 year
 - timing could be relaxed based on MSD financial assistance program
 - if proof of correction not submitted, reinspection can trigger fines or disconnection of service
 - for leaking service laterals, MSD can correct condition and back-charge property owner if no action taken within 1 year

7

Louisville & Jefferson County
Metropolitan Sewer District

Financial Assistance Has Been Key to Success in Other Programs

- Limited duration financial assistance available to make required repairs
- Financial assistance through MSD (not written into ordinance) provides flexibility
- Interior disconnects addressed through MSD's existing Plumbing Modification Program
- Lateral lining or replacement options
 - MSD does with own forces, cost shares, or
 - Plumbing Modification Program expanded to laterals (cost-shared)

8

Louisville & Jefferson County
Metropolitan Sewer District

Public Information and Education Key to Acceptance and Implementation

- Technical team provides analysis of probable cost savings
- Information and education in several stages
 - problem and responsibility recognition
 - benefits of program
 - support for ordinance
 - promotion of grace period action (after ordinance in place)

Next Steps

- Technical team completes analysis of costs and benefits of private side I&I reduction
- Draft the ordinance for Metro Council consideration
- Develop financial assistance package and get MSD Board approval
- Start the public education program

Beargrass Creek Ecological Reach Characterization

**Wet Weather Team
Stakeholder Group Meeting No.15
January 15, 2008**

**Presented by
Redwing Ecological Services, Inc.
and
O'Brien & Gere, Inc.**

Beargrass Creek Ecological Reach Characterization

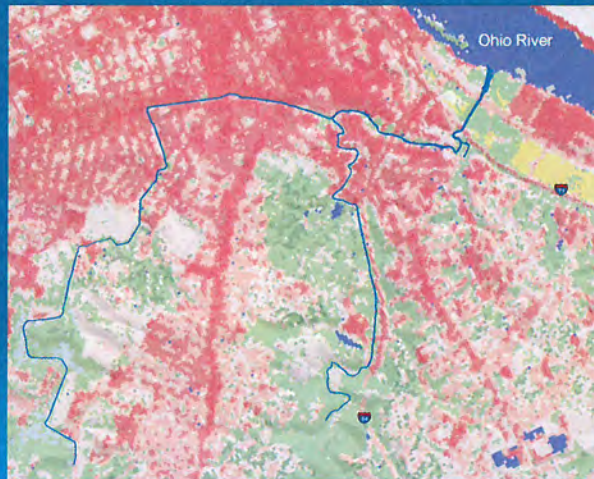
- Study Area Overview
- Purpose
- Methods
- Results
- Examples

Beargrass Creek Ecological Overview

Urban Setting

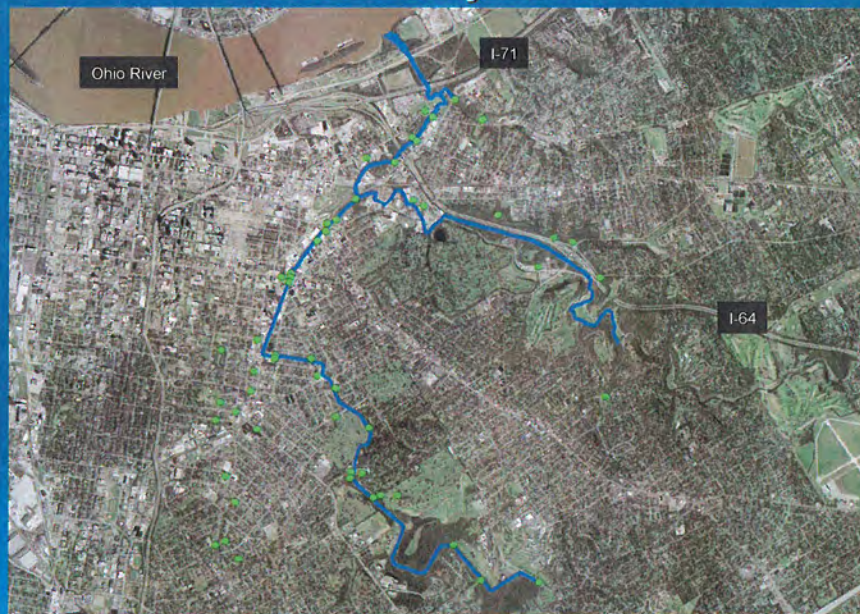
Red = Developed

Green = Vegetated



3

CSO Study Area



Green = CSO

4

Purpose

5

Purpose

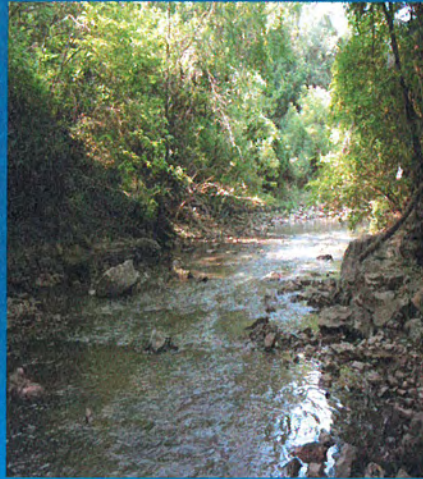
- Provides ecological component of decision making regarding phasing of CSO control
- Provides WWT a measure for distinguishing stream reaches and CSO control projects based on aquatic ecology
- Rates / ranks stream reaches based on 10 ecologically-related parameters, with high scores indicating those reaches that will benefit most from water quality improvements

6

Ecological Value



POOR



GOOD

7

Methods

8

Parameters

- 1) **Accessibility**
 - Potential for human contact
 - Qualitative field observations
- 2) **Threatened / Endangered Species (T/E)**
 - Component of sensitive areas definition - occurrence or habitat
 - USFWS / KSNPC data bases and qualitative field observations
- 3) **Aquatic Habitat Assessment (RBP)**
 - USEPA Rapid Bioassessment Protocol
 - Cumulative score of 10 field measurements
- 4) **Bank Erosion Hazard Index (BEHI)**
 - Potential for streambank erosion
 - Quantitative field measurements (2006 MSD study)
- 5) **Index of Biological Integrity (IBI)**
 - Fish population rating as measure of stream health
 - Quantitative field sampling (MSD Long Term Monitoring Network)

9

Parameters

- 6) **CSO Average Annual Overflow Volume (AAOV)**
 - Discharge modeled for each CSO for typical year
 - Existing MSD data and XP-SWMM software model
- 7) **Landuse**
 - Classification of human impact within immediate watershed
 - Data from Louisville Metro Planning and Design Services
- 8) **Landcover**
 - Vegetation or man-made cover type along stream
 - USGS National Landcover Database
- 9) **Restoration Potential**
 - Level of effort required to restore aquatic/riparian functions
 - Qualitative field observations
- 10) **Reach Length**
 - Physical distance between CSO(s)
 - GIS / map measurement

10

Results

11

Final Reach Rating



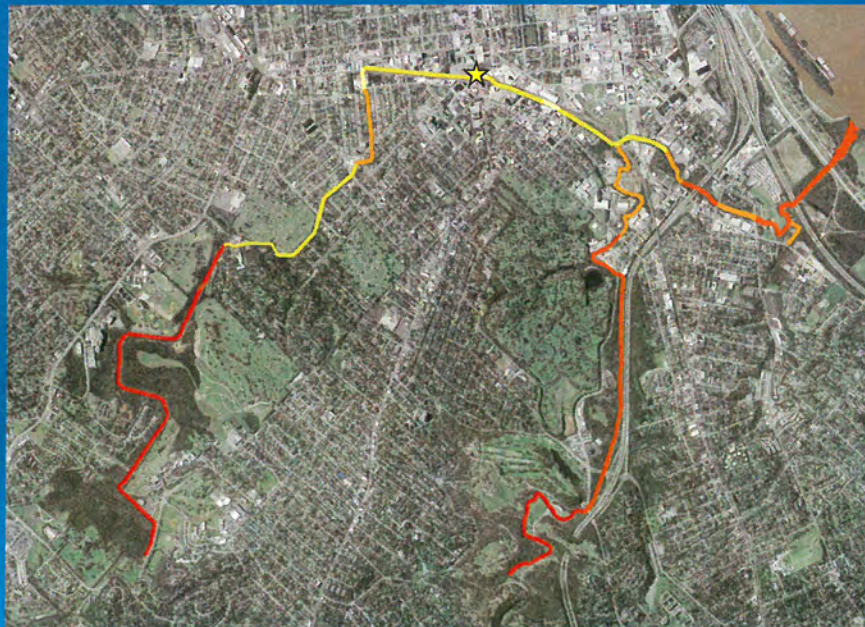
Red = High Orange = Medium Yellow = Low

12

Examples

13

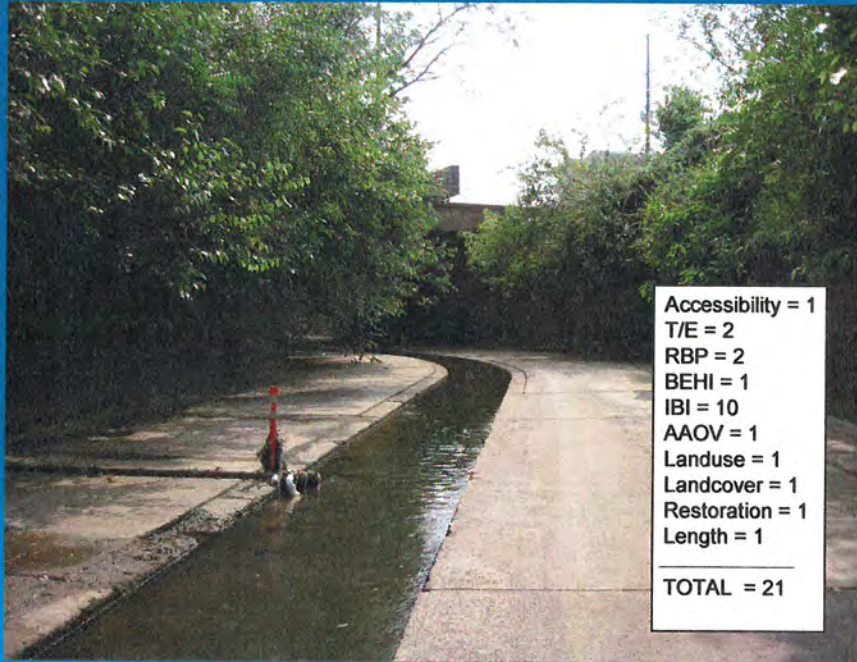
Lowest Priority Example



Red = High Orange = Medium Yellow = Low

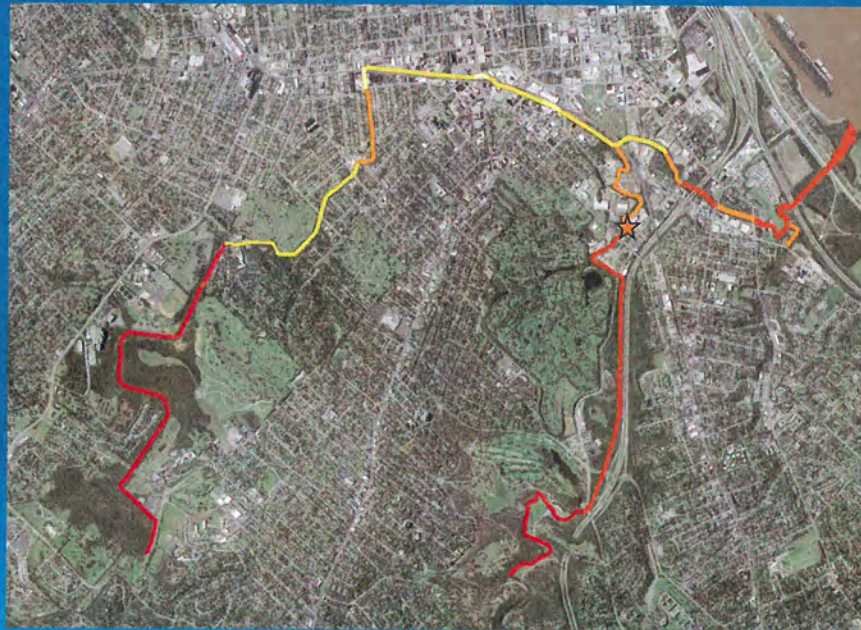
14

South Fork CSO 083 / 118 – Lowest Priority



15

Medium Priority Example



Red = High Orange = Medium Yellow = Low

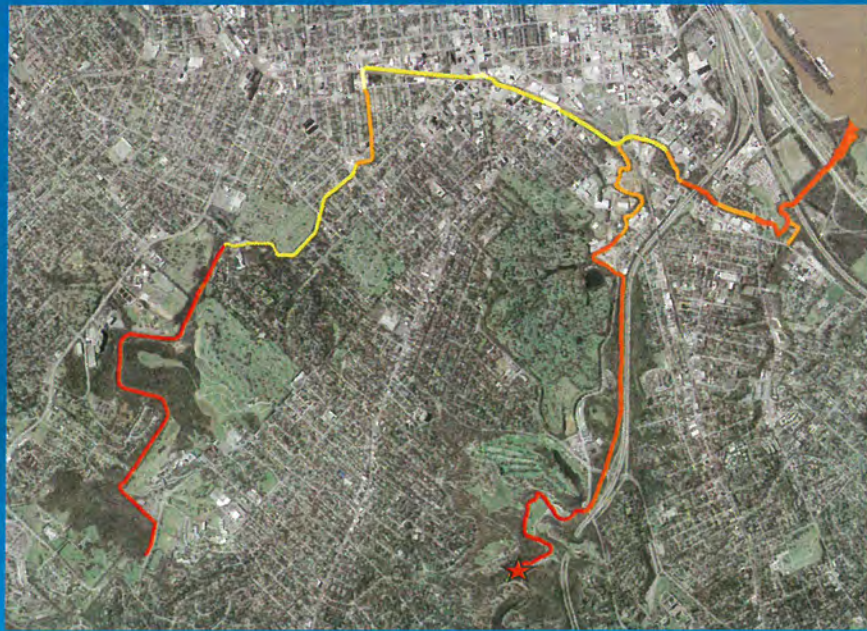
16

Middle Fork CSO 086 – Medium Priority



17

Highest Priority Example



Red = High Orange = Medium Yellow = Low

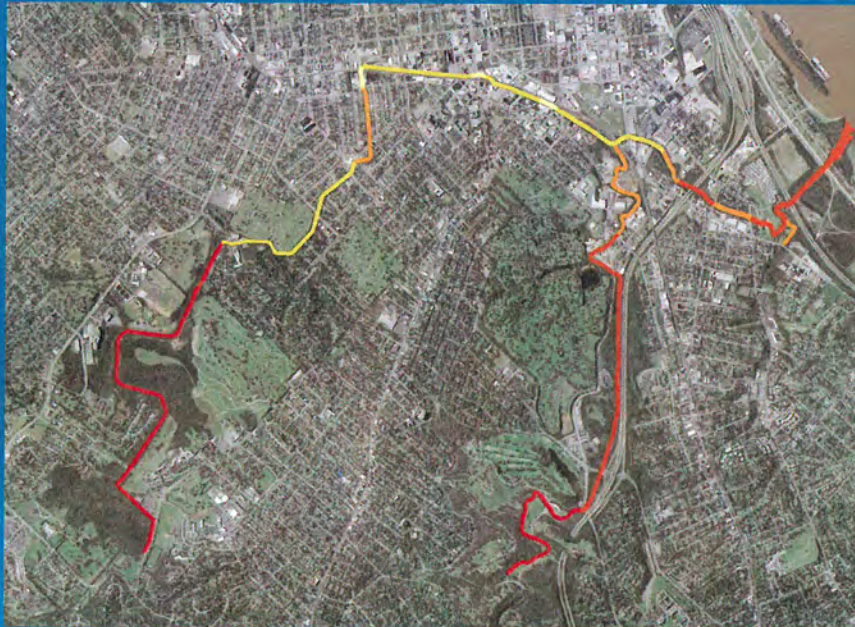
18

Middle Fork CSO 206 – Highest Priority



19

Summary



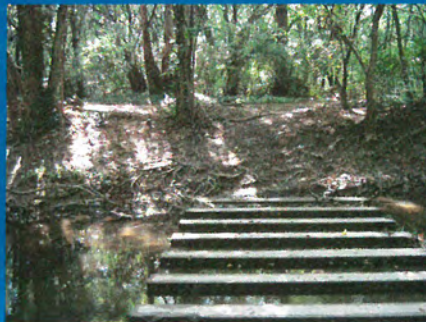
20

End

21

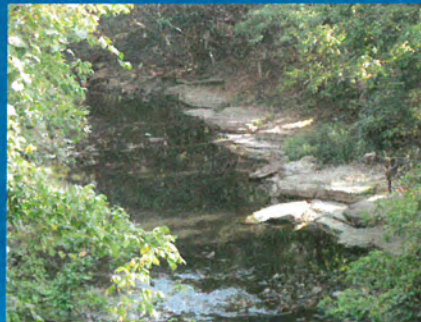
Parameter Examples

Cherokee Park



High accessibility
Moderate bank erosion
High restoration potential

Mellwood / Story Avenues



Low accessibility
Low bank erosion
Low restoration potential

22

Parameter Examples

CSO 140 Middle Fork



Middle Fork / I-64 Corridor



Low accessibility

High accessibility

Medium AAOV

High restoration potential

Low landuse / landcover

Medium landuse / landcover

Low bank erosion

High bank erosion

23

Value: Environmental Enhancement												
Scoring												
Aspect	-5	-4	-3	-2	-1	0	1	2	3	4	5	Assumptions Score Per Aspect
Aquatic and Terrestrial Habitat Protection	Elimination of habitat for rare or endangered species	Elimination of significant amount of common habitat	Elimination of minor amount of common habitat	Significant habitat impairment	Minor impairment to existing habitat	No impact on habitat	Minor enhancement of existing habitat	Significant enhancement of existing habitat	Creation of minor amount of common habitat	Creation of significant amount of common habitat	Creation of critical habitat for rare or endangered species	
Aesthetics - Solids and Floatables	75%+ reduction in volume of flow with no S&F capture	50-75% of flow with no S&F removal	25-50% of flow with no S&F removal	10-25% of flow with no S&F removal	Reduces efficiency of existing S&F control device, 0-10% of flow with no S&F removal	No change in S&F removal	0-10% of discharged flow treated with positive S&F removal (screens)	10-25% of discharged flow treated with positive S&F removal (screens)	25-50% of discharged flow treated with positive S&F removal (screens)	50-75% of discharged flow treated with positive S&F removal (screens)	75%+ of discharged flow treated with positive S&F removal (screens)	
Aesthetics - Odor and Air Emissions	Create annoying odor source affecting > 20 customers often	Create annoying odor source affecting > 20 customers occasionally	Create annoying odor source affecting > 20 customers occasionally	Create detectable odor source affecting > 10 customers often	Create detectable odor source affecting < 10 customers occasionally	No impact on odor	Eliminate detectable odor source affecting < 10 customers occasionally	Eliminate detectable odor source affecting < 10 customers often	Eliminate annoying odor source affecting < 20 customers occasionally	Eliminate annoying odor source affecting < 20 customers often	Eliminate annoying odor source affecting > 20 customers occasionally	
Dissolved Oxygen Impacts	Reduction of in-stream DO by 2 mg/l during critical flow periods	Continuous reduction of in-stream DO of 2 mg/l	Continuous reduction of in-stream DO of 2-4 mg/l during critical conditions	Intermittent reduction of in-stream DO of 2-4 mg/l possible during non-critical conditions	Intermittent reduction of in-stream DO of 2 mg/l possible during non-critical conditions	No DO impacts	Intermittent improvement of in-stream DO 0-2 mg/l	Intermittent improvement of in-stream DO 2-4 mg/l	Continuous improvement of in-stream DO 0-2 mg/l	Continuous improvement of in-stream DO 2-4 mg/l	Continuous improvement of in-stream DO of 2 mg/l	
Downstream Impacts	75%+ increase in annual BOD or nutrient loads	50-75% increase in annual BOD or nutrient loads	25-50% increase in annual BOD or nutrient loads	10-25% increase in annual BOD or nutrient loads	Potential 0-10% increase in annual BOD or nutrient loads (CSO + runoff)	No impact on BOD or nutrient loads (CSO + runoff)	0-10% reduction in annual BOD or nutrient loads (CSO + runoff)	10-25% reduction in annual BOD or nutrient loads (CSO + runoff)	25-50% reduction in annual BOD or nutrient loads (CSO + runoff)	50-75% reduction in annual BOD or nutrient loads (CSO + runoff)	75%+ reduction in annual BOD or nutrient loads (CSO + runoff)	
Stream Flow Impacts (Peak Flows)	25%+ decrease in peak flows	10%-25% decrease in peak flows	Up to 10% increase in peak flows	Frequent increase in flow during critical conditions	Possible increase in average flow or base stream flow	No impact on peak flows	Minor reduction in peak flows - no significant peak reduction	Minor reduction in peak flows under some conditions	Up to 10% increase in peak flows	10%-25% increase in peak flows	25%+ increase in peak flows	
Stream Flow Impacts (DWF only)	25%+ decrease in flow during critical conditions	10%-25% decrease in flow during critical conditions	0-10% permanent decrease in flow during critical conditions	Frequent decrease in flow during critical conditions	Possible decrease in average flow	No impact on average or base stream flow	Intermittent increase in stream flow not limited to critical conditions	Intermittent increase in stream flow under some conditions	0-10% permanent increase in stream flow during critical conditions	10%-25% permanent increase in stream flow during critical conditions	25%+ permanent increase in stream flow during critical conditions	

24

Regulatory Compliance Strategy Briefing

Wet Weather Team

Stakeholder Group Meeting No. 15

January 15, 2008

Presentation Overview

- Consent Decree requirements
- Bacteria criteria used for compliance assessment
- Tools to forecast whether the Wet Weather Plan complies with water quality standards
 - Beargrass Creek Water Quality Tool
 - Ohio River Water Quality Model
- Conceptual water quality modeling results
 - Even high levels of CSO/SSO control will not comply with current bacteria criteria all of the time
- Regulatory compliance options

Discussion items

- Project selection analysis will need to consider incremental benefits of CSO and SSO control
- The community will need to decide on the appropriate level of investment in CSO and SSO control
- A regulatory compliance strategy needs to be part of the Wet Weather Plan

Consent Decree Requirements

- Comply with NPDES permit requirements
- Provide "improvement of water quality in the receiving waters"
- Develop a Sanitary Sewer Discharge Plan (SSDP)
 - Eliminate unauthorized discharges (SSOs) by 2024
- Develop a CSO long-term control plan (LTCP)
 - Comply with the federal CSO Policy by 2020
 - Meet water quality standards

Consent Decree: SSO and CSO Compliance will be Assessed Differently

- SSOs
 - SSOs are illegal and must be “eliminated”
 - EPA has not established a standard for “elimination”
 - The design standard to size controls should be part of the Wet Weather Plan
 - MSD can then work with regulatory agencies to establish this standard and associated permit conditions
- CSOs
 - CSOs can be permitted but must comply with the federal CSO Policy
 - If remaining CSOs “cause or contribute to” exceedances of water quality standards, EPA Region 4 and KDOW cannot approve the LTCP
 - The CSO Policy provides for the “review and revision” of water quality standards

Consent Decree: The “Floor” for Defining SSO Elimination has not been Set

- Michigan:
 - Remedial design standard of the 25-year/24-hour storm (~3.9 inches)
 - One overflow every 2 – 10 years
 - Acknowledges that “total elimination or secondary treatment of all SSOs is not practical or economically feasible”
 - Report SSOs to State’s online database
- Other states use less restrictive design criteria
- California: Statewide General Waste Discharge Requirements (WDRs)
 - No design event
 - Implement sewer system management plans
 - Report SSOs to State’s online database
 - Enforcement discretion

Consent Decree: The “Floor” for CSO Control is Meet Water Quality Standards

- Even with a presumptive approach (e.g., 85% capture), MSD must convince EPA and KDOW that the LTCP will comply with water quality standards.
- If other sources (like storm water) do not meet standards, any CSO discharge will “cause or contribute to” compliance problems.
 - Urban storm water and nonpoint source discharges typically do not comply with current bacteria criteria.

Bacteria Criteria for Determining if the Wet Weather Plan will Meet Water Quality Standards

- Two ways to assess compliance:
 - Geometric mean: the “average” of all the data for a 30-day period (or month) should not exceed this criterion
 - Instantaneous maximum: a certain percent (e.g., 0 – 20 percent) of data are allowed to exceed this criterion
- Two periods to assess compliance- different criteria
 - Recreation season: May 1 to October 31 (more stringent)
 - Non-recreation season: November 1 to April 30 (less stringent)

Current Criteria are not Well Suited for Decisions about Wet Weather Discharges

- Two indicator bacteria
 - Fecal coliform
 - *E. coli*
- New research suggests better indicators are needed
- EPA must develop new criteria in the next 5 to 10 years
 - New tools will be available for assessing risk of illness
 - Tools may include ways to assess risk from wet weather sources

Current Tools to Forecast if the Wet Weather Plan Complies with Current Criteria

- Tools
 - Collection system model (provides CSO/SSO loads to the water quality tools)
 - Beargrass Creek Water Quality Tool (for Beargrass Creek water quality and Ohio River loads)
 - Ohio River Water Quality Model (for Ohio River water quality)
- Forecast what levels of fecal coliform exist in Beargrass Creek and the Ohio River
 - Calculate concentrations (per 100 ml) every ½ to 1 hours
 - Compare concentrations to current criteria

Water Quality Model Results

- For both models:
 - Animation of May 6-9, 2001 rain event (1.43 inches)
 - Current Conditions (All Sources)
 - No CSO/SSO
 - Percent compliance at key locations and all locations for 2001 (“typical” year)
 - Recreation Season (May-October)
 - Non-Recreation Season (Other Months)

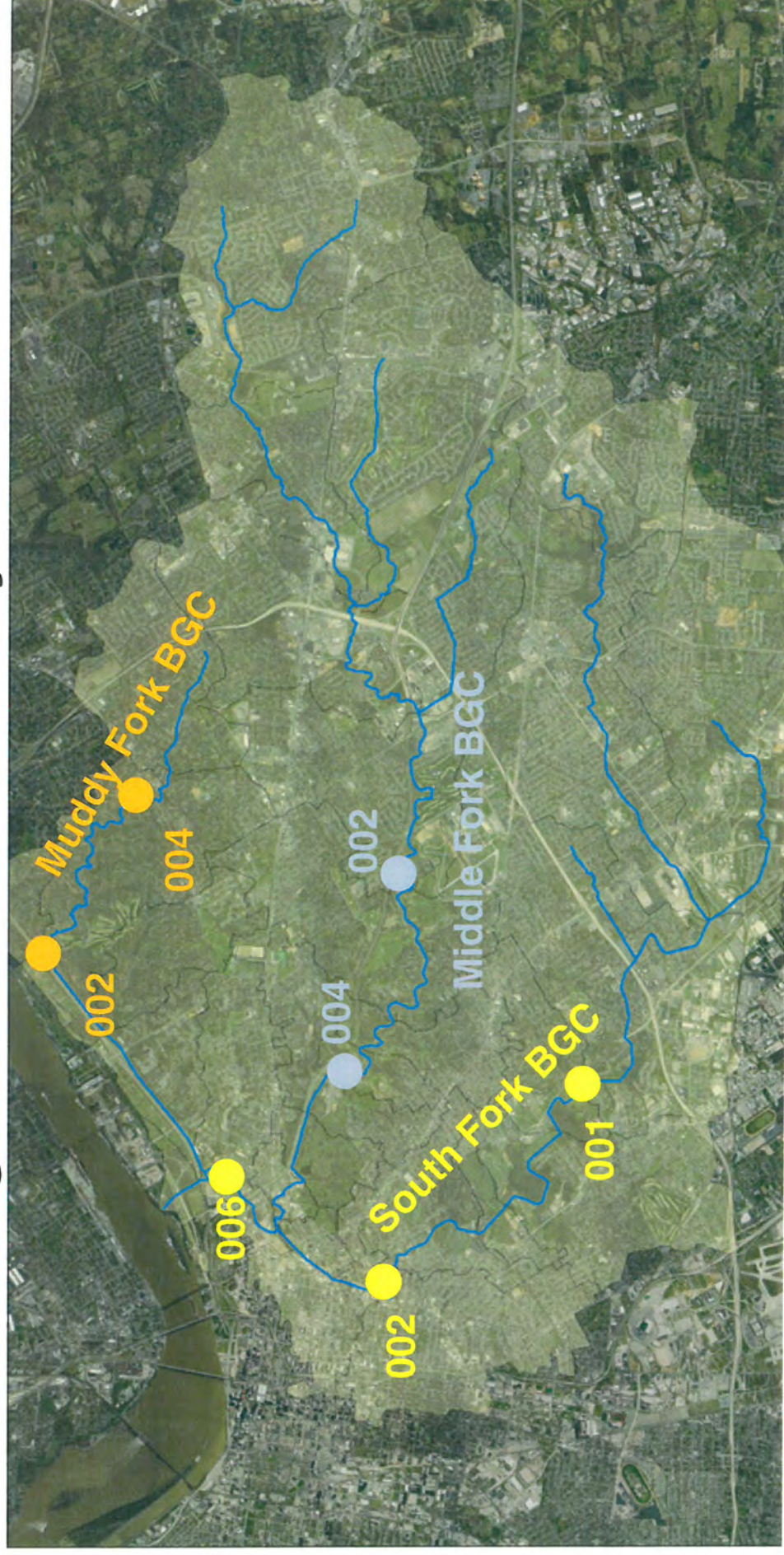
Animations of Beargrass Creek Fecal Coliform Concentrations for May 6-9, 2001

**Current
Conditions**

**No
CSO/SSO**

- Shows concentrations in space and time as storm event proceeds
- Groundwater sources in South Fork elevate concentrations
- Immediate response of CSOs/SSOs to rainfall
- Sustained response from storm water runoff

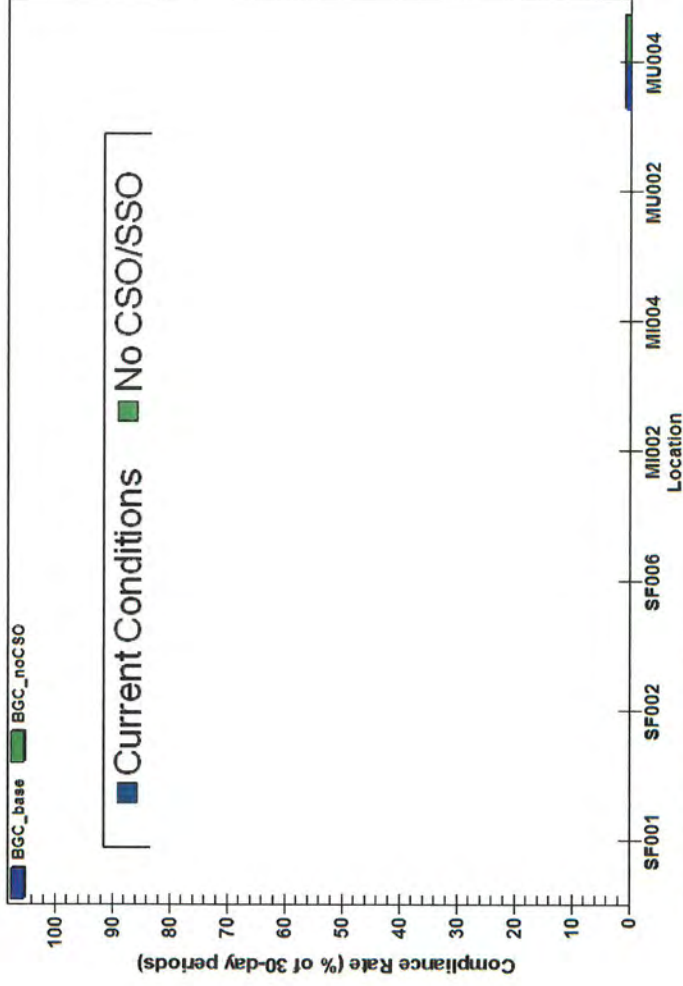
Beargrass Creek Key Locations



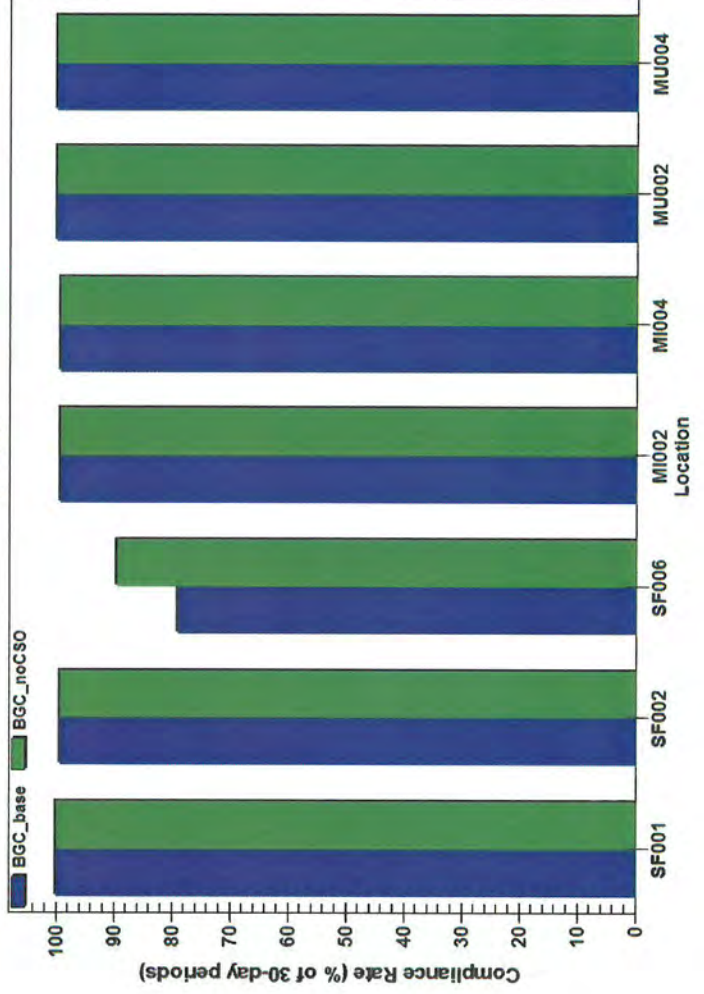
Beargrass Creek- Geometric Mean

Recreation Season
 (May – Oct. 2001)

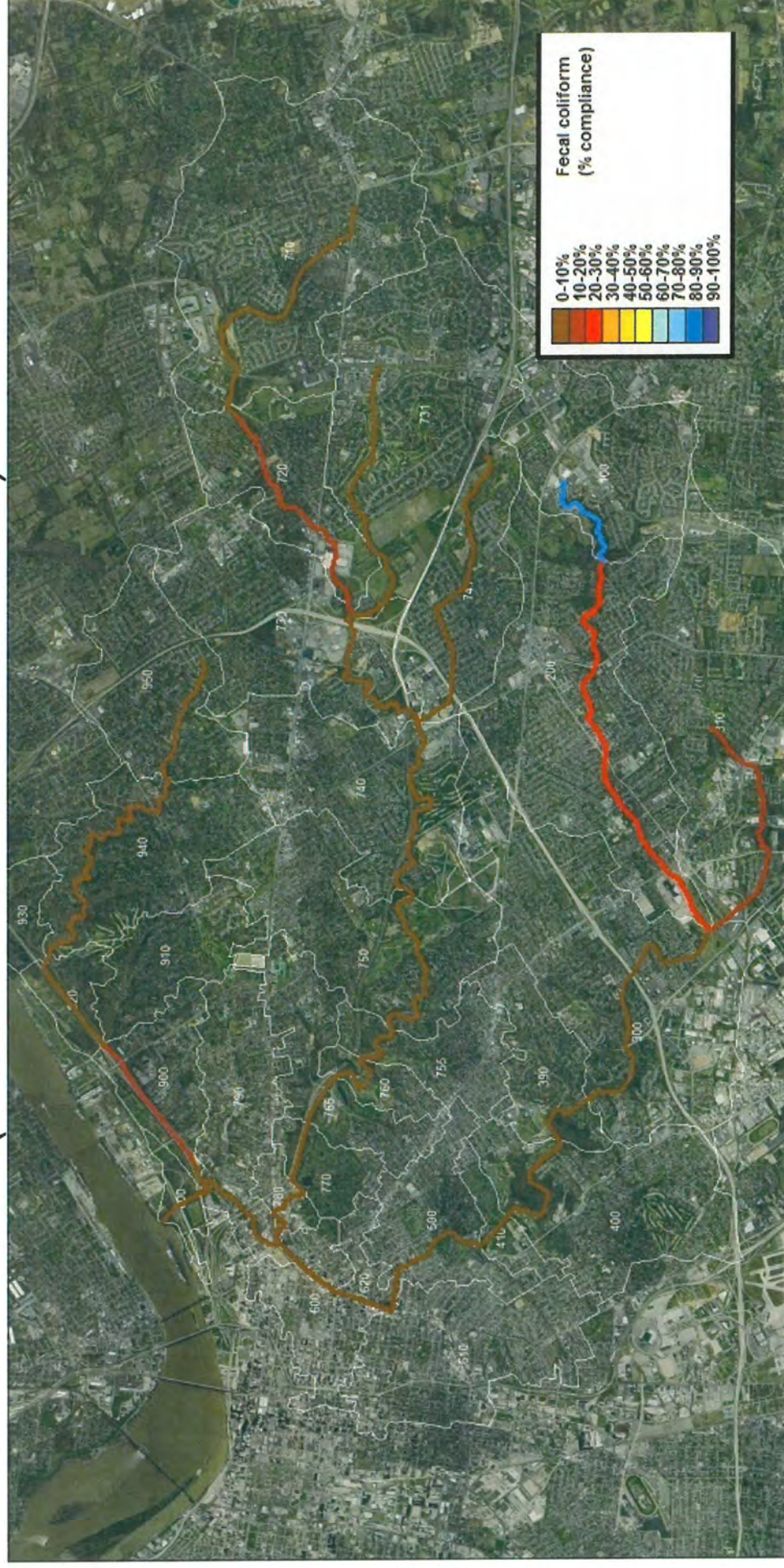
CSO/SSO Elimination Does
 Little to Improve Compliance
 with the Geometric Mean
 Fecal Coliform Criterion



Non-Recreation Season,
 (Other Months)

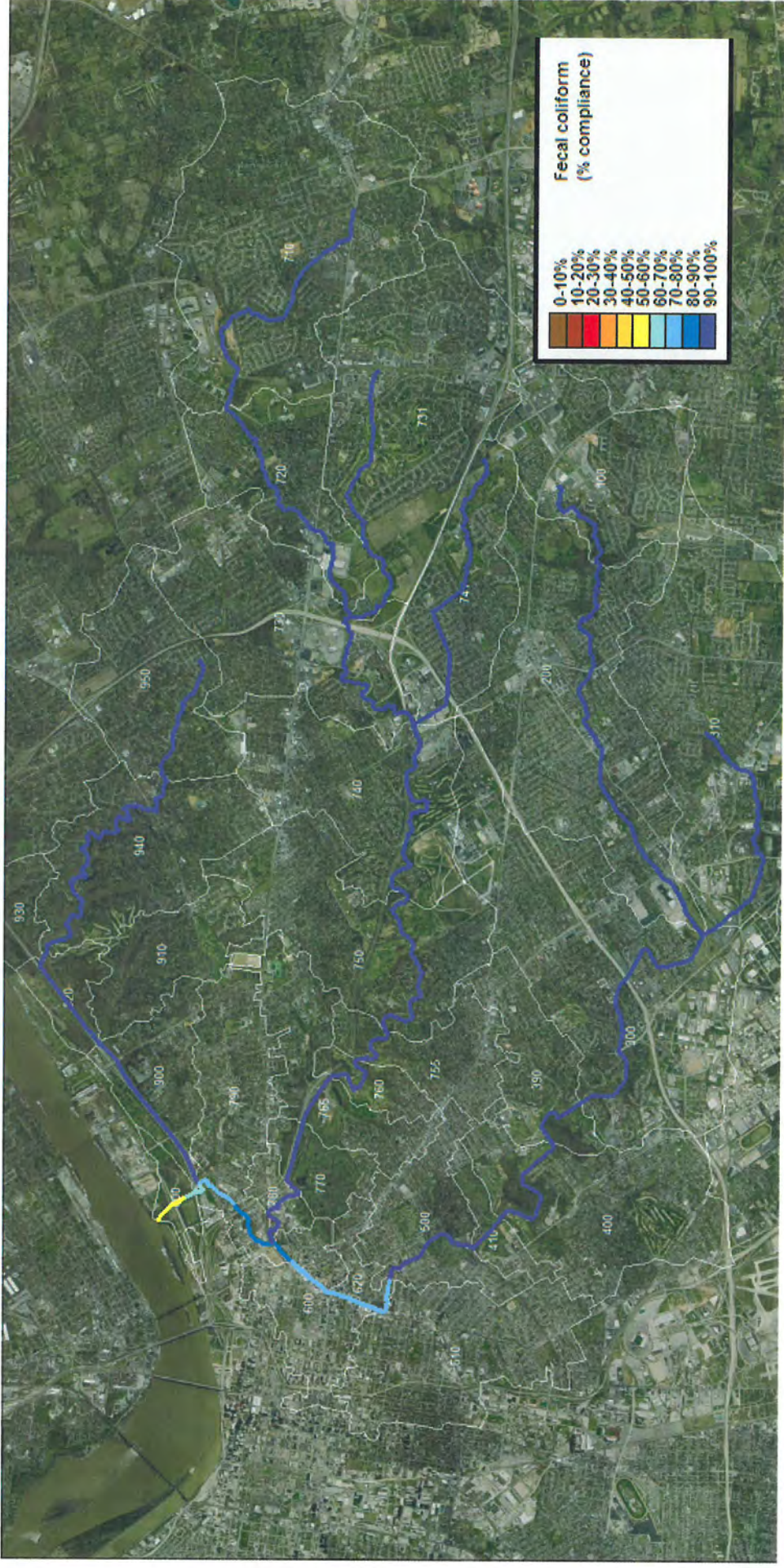


Beargrass Creek- Recreation Season – No CSO/SSO Compliance with the Geometric Mean Fecal Coliform Criterion (same as Current Conditions)

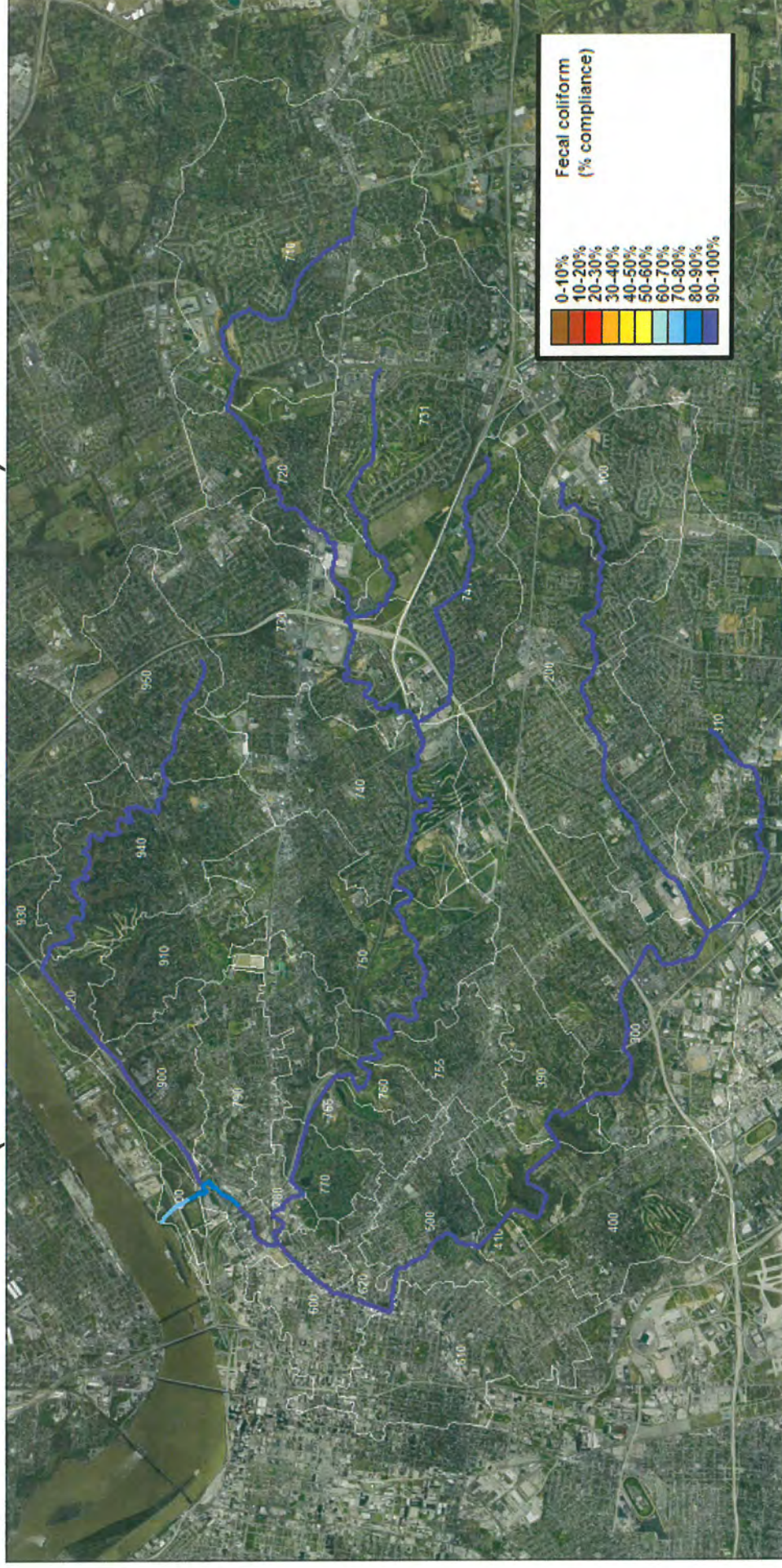


Beargrass Creek- Non-Recreation Season - Current Condition

Compliance with the Geometric Mean Fecal Coliform Criterion



Beargrass Creek- Non-Recreation Season - No CSO/SSO Compliance with the Geometric Mean Fecal Coliform Criterion (Similar to Current Conditions)

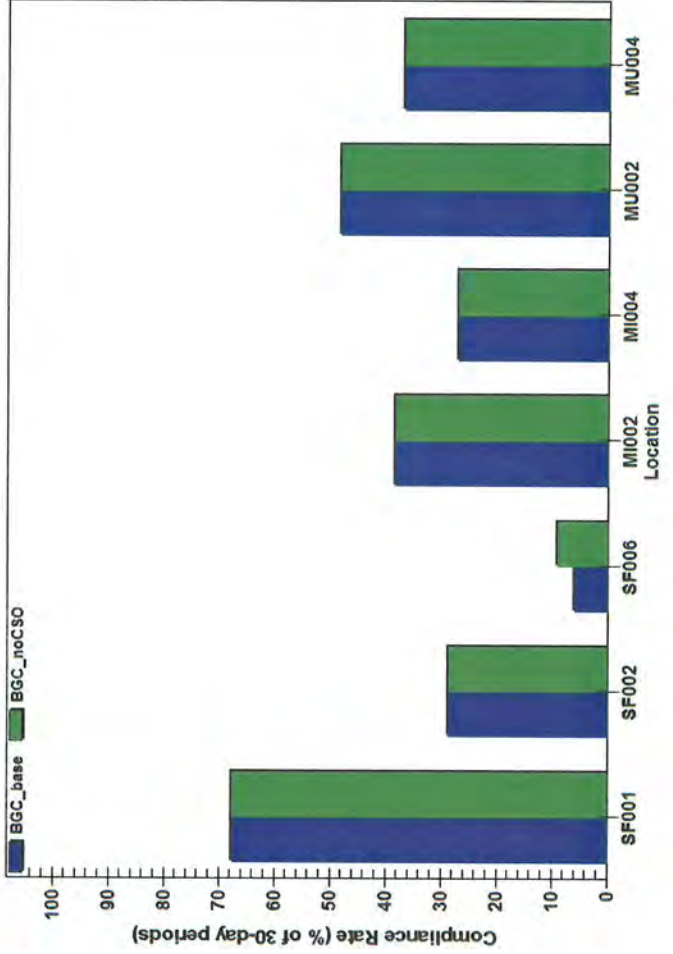
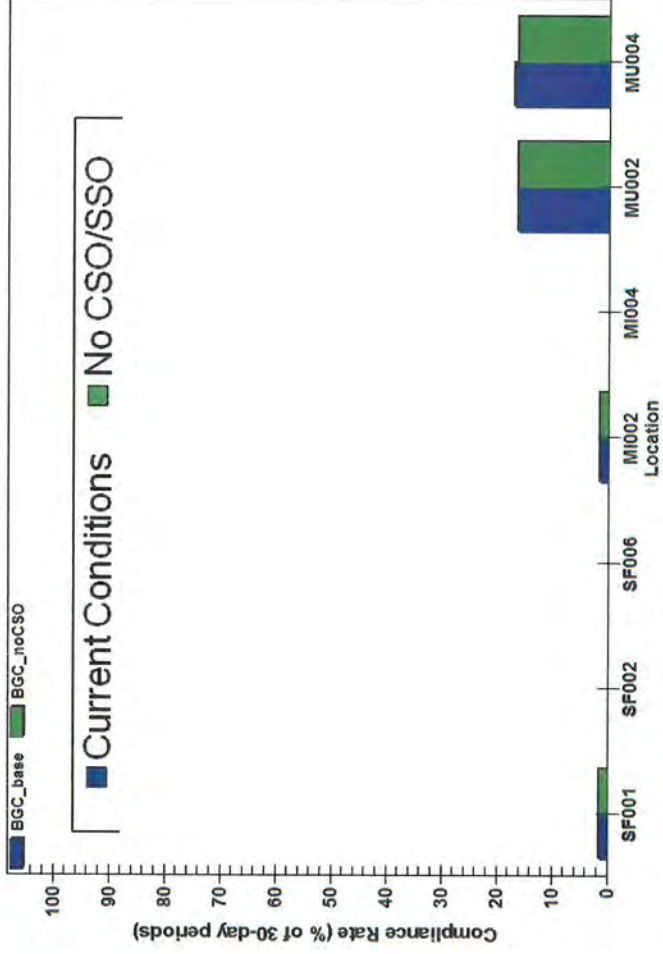


Beargrass Creek- Instantaneous Maximum

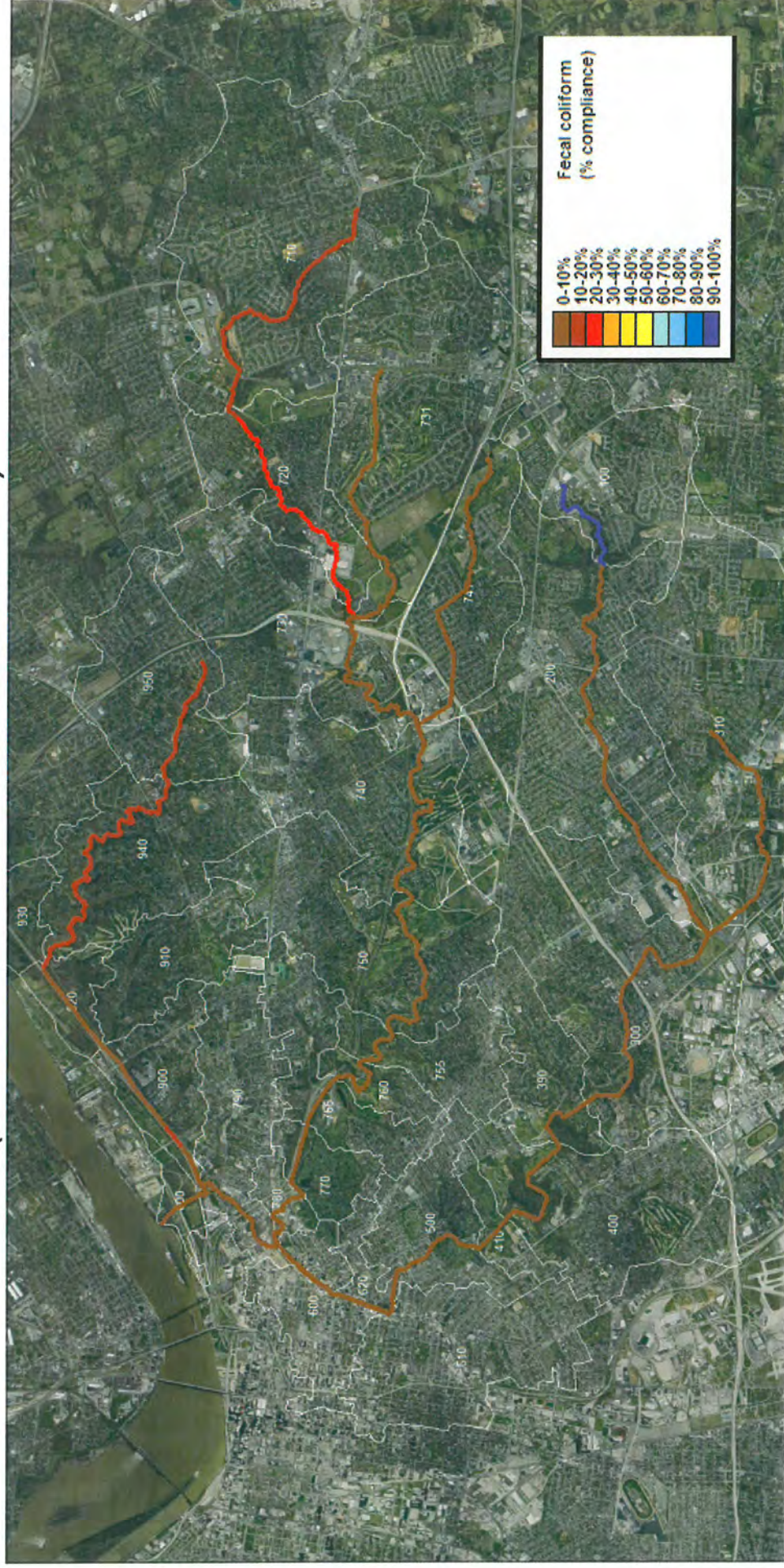
**Recreation Season,
May – Oct. 2001**

CSO/SSO Elimination Does Little to Improve Compliance with the Instantaneous Maximum Fecal Coliform Criterion

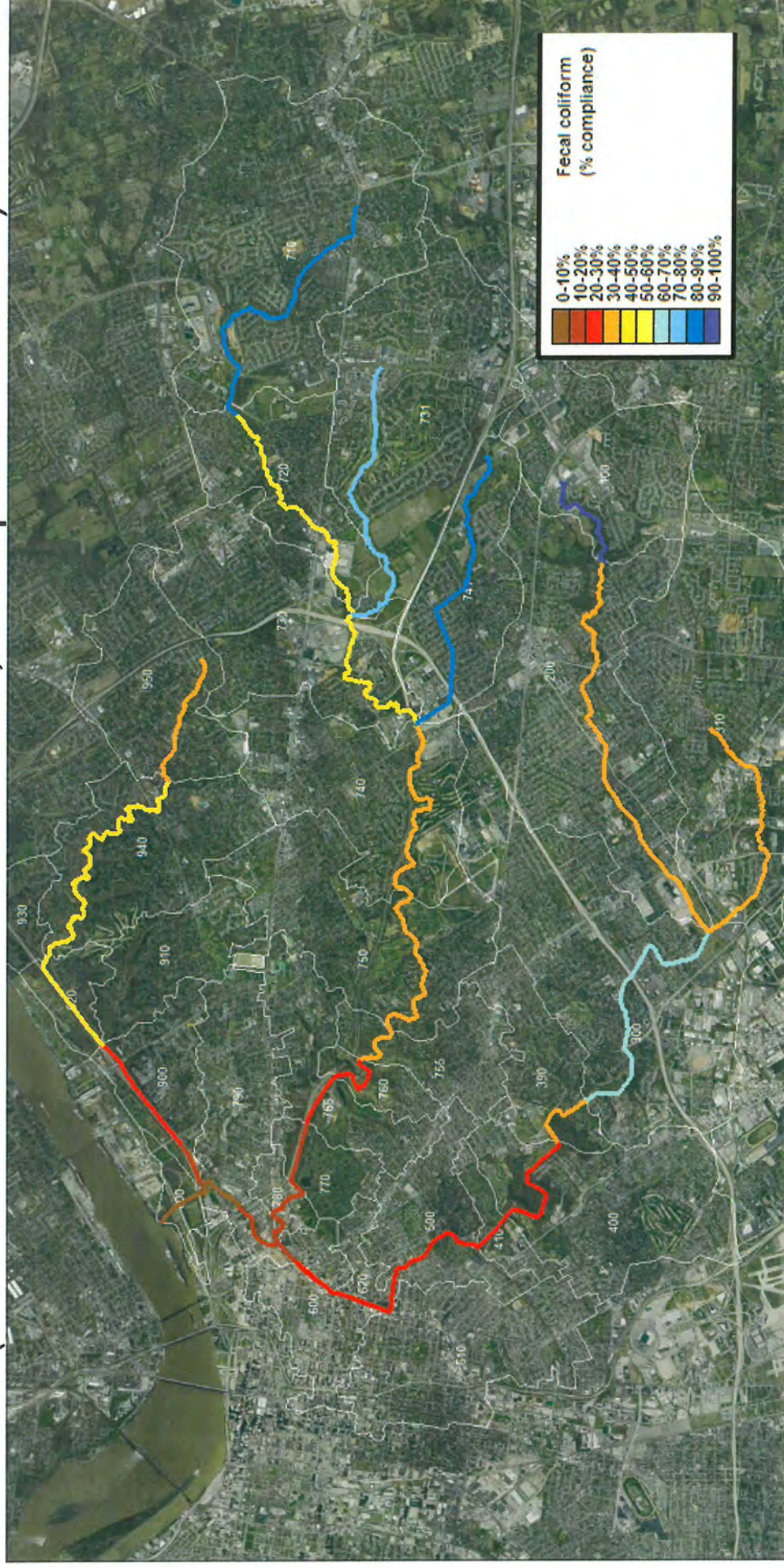
**Non-recreation Season,
(Other months)**



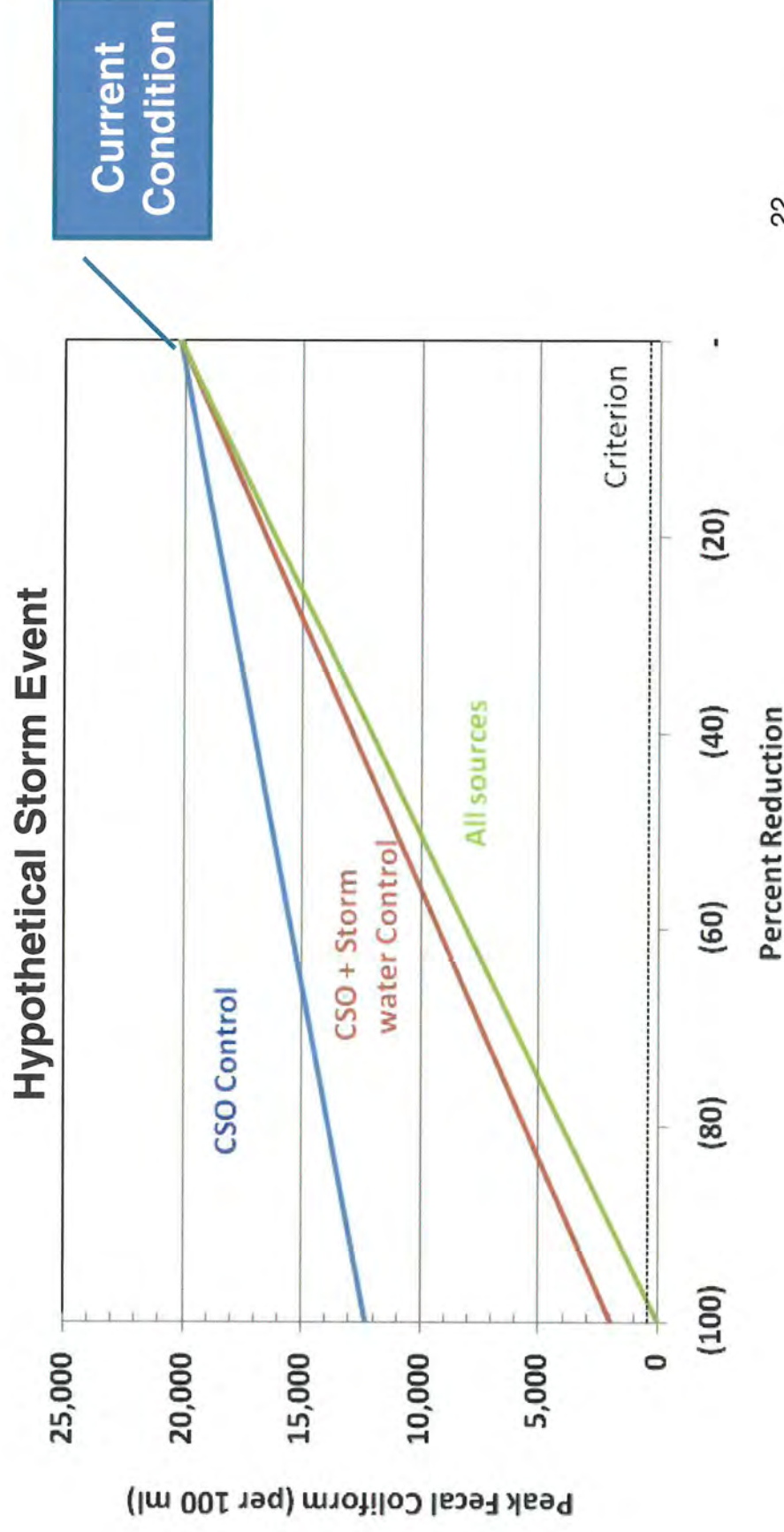
Beargrass Creek- Recreation Season - No CSO/SSO Compliance with the Instantaneous Maximum Criterion (Same as Current Conditions)



Beargrass Creek- Non-Recreation Season - No CSO/SSO Compliance with the Instantaneous Maximum Criterion (Similar to Current Conditions, Except Reach 755)



Source Controls Reduce Peak Fecal Coliform Concentrations in Beargrass Creek, but will not Comply with Current Criteria



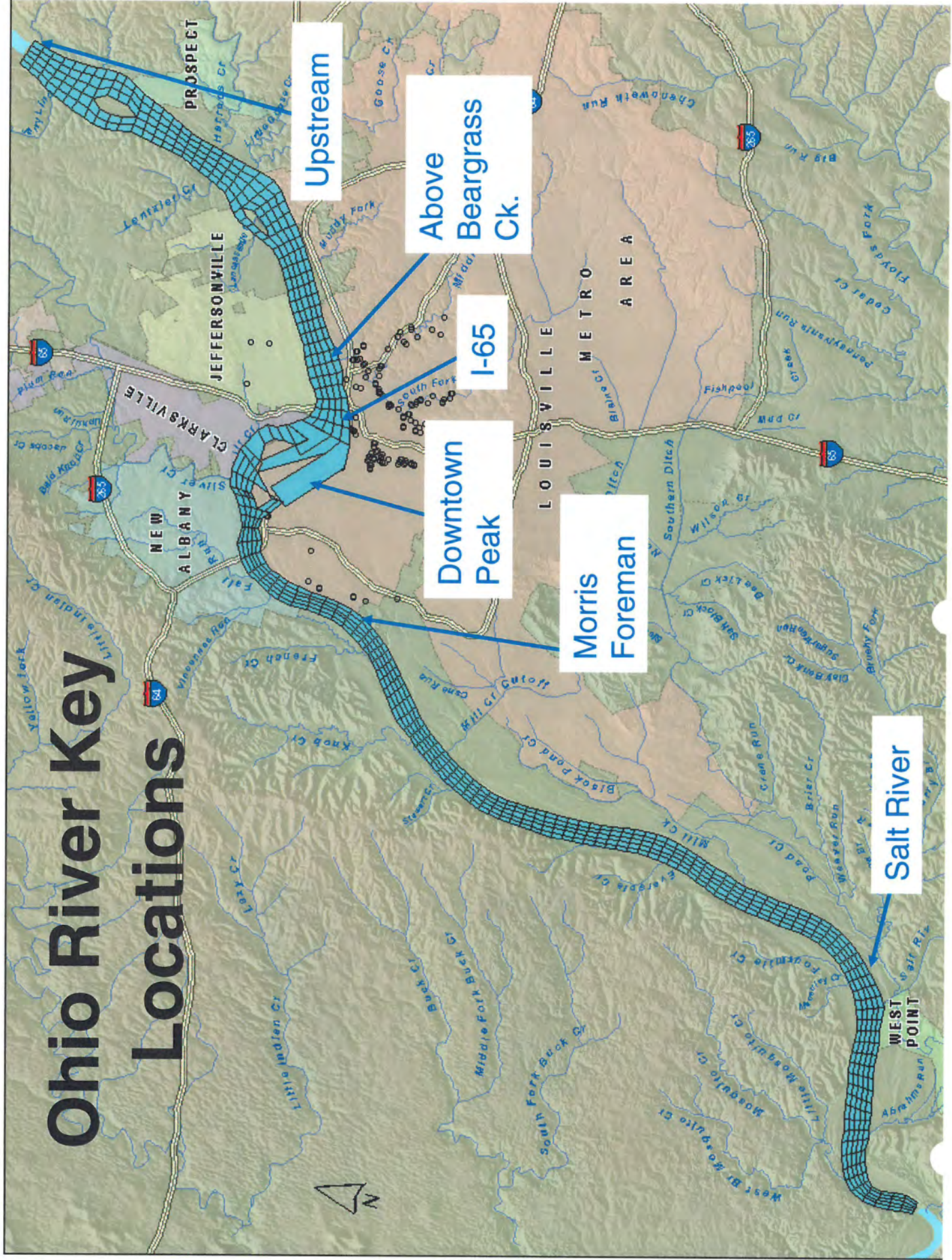
Animations of Ohio River Fecal Coliform Concentrations for May 6-9, 2001

**Current
Conditions**

**No
CSO/SSO**

- Shows concentrations in space and time as storm event proceeds
- Immediate response of CSOs/SSOs to rainfall
- Tributary loads (not related to CSO) cause sustained, downstream exceedances

Ohio River Key Locations

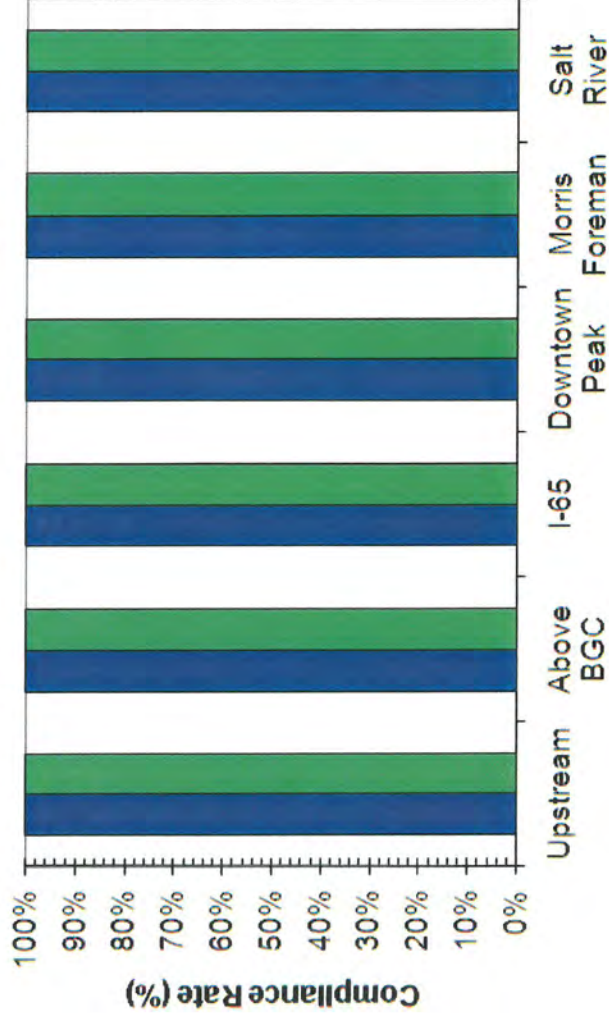
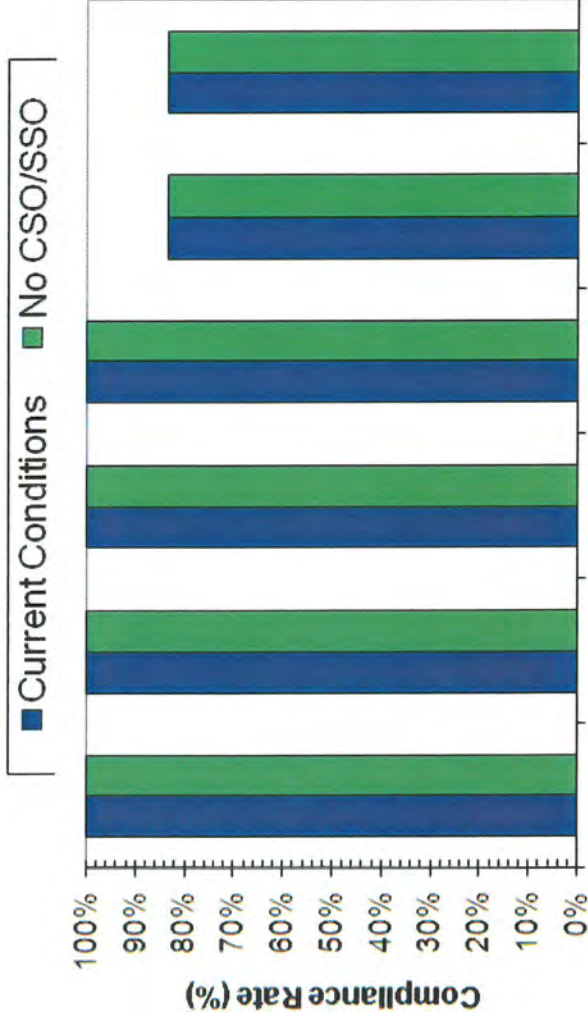


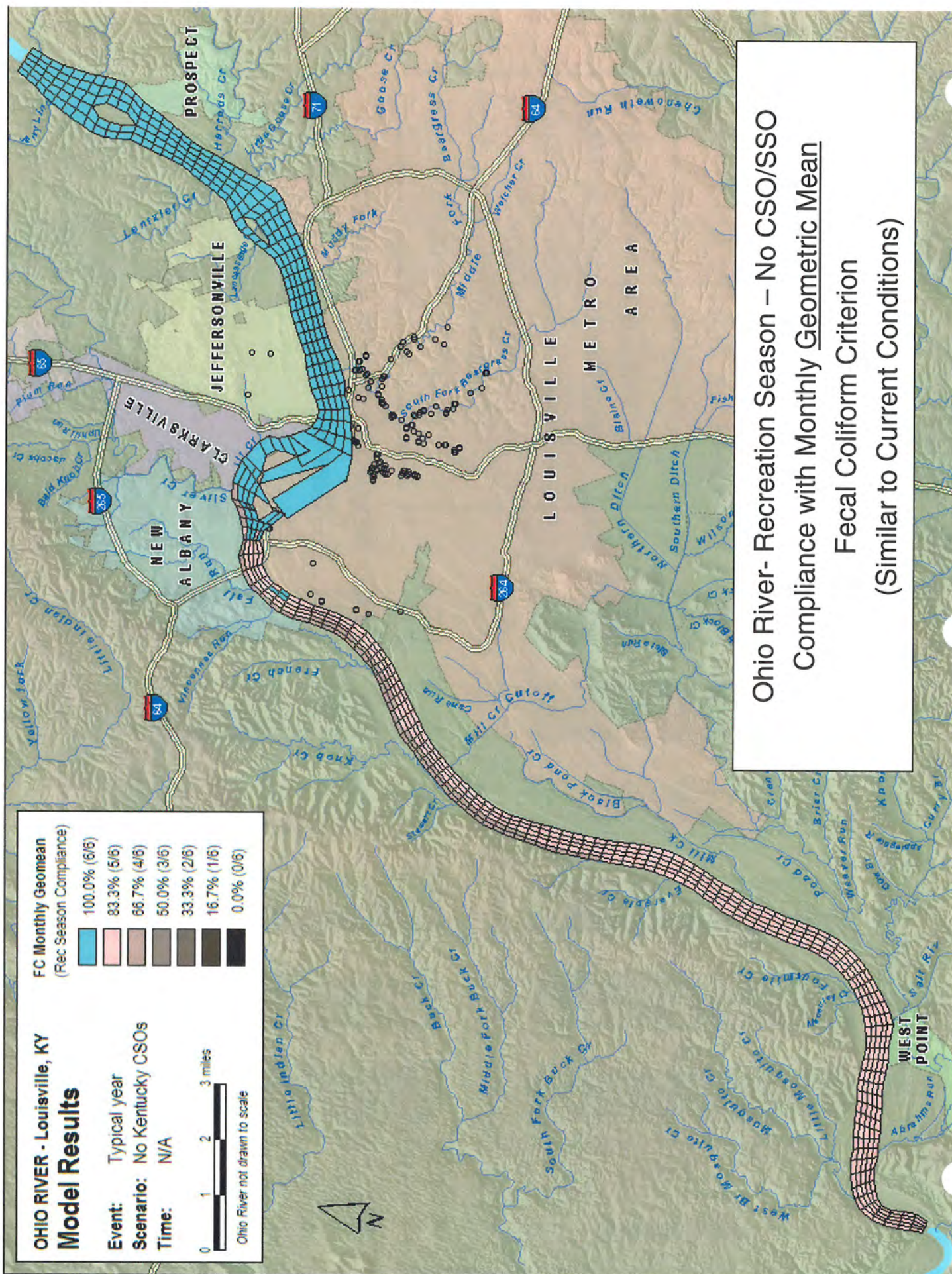
Ohio River Monthly Geometric Mean

Recreation Season (May – Oct. 2001)

Current Conditions Comply with the Geometric Mean Fecal Coliform Criterion except downstream. CSO/SSO elimination does not improve compliance.

Non-Recreation Season, (Other Months)



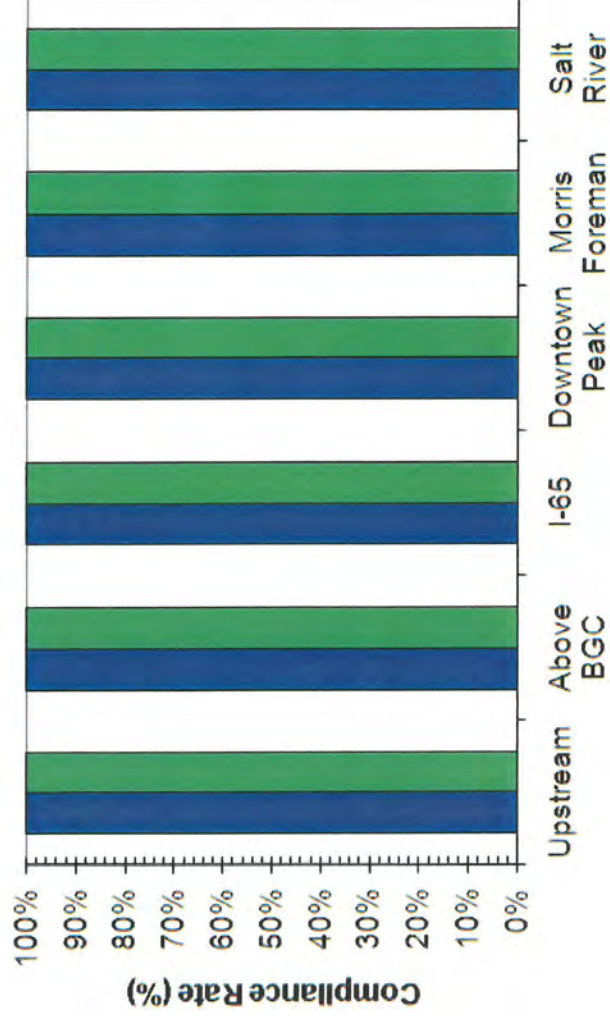
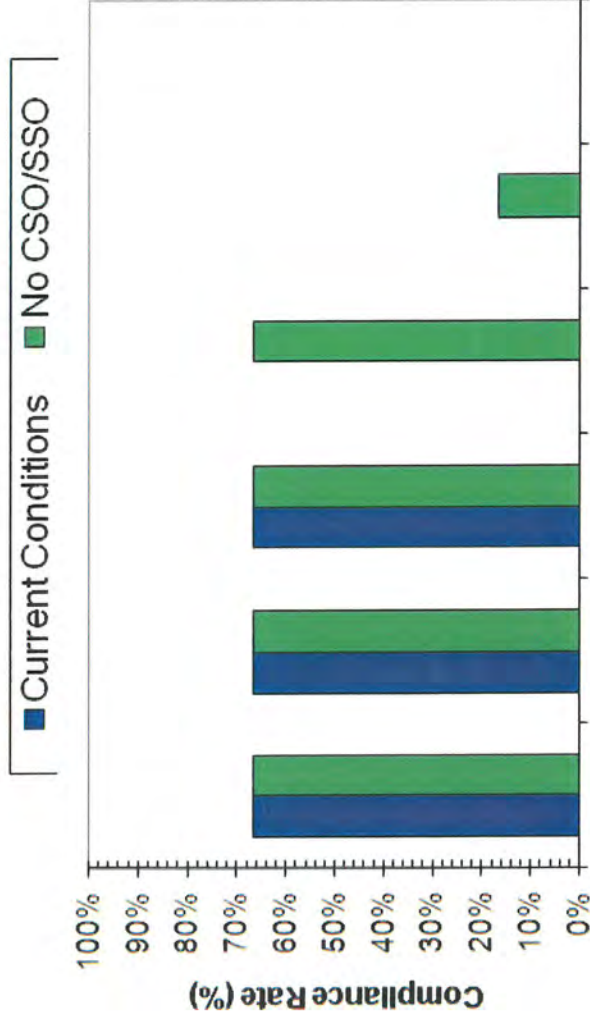


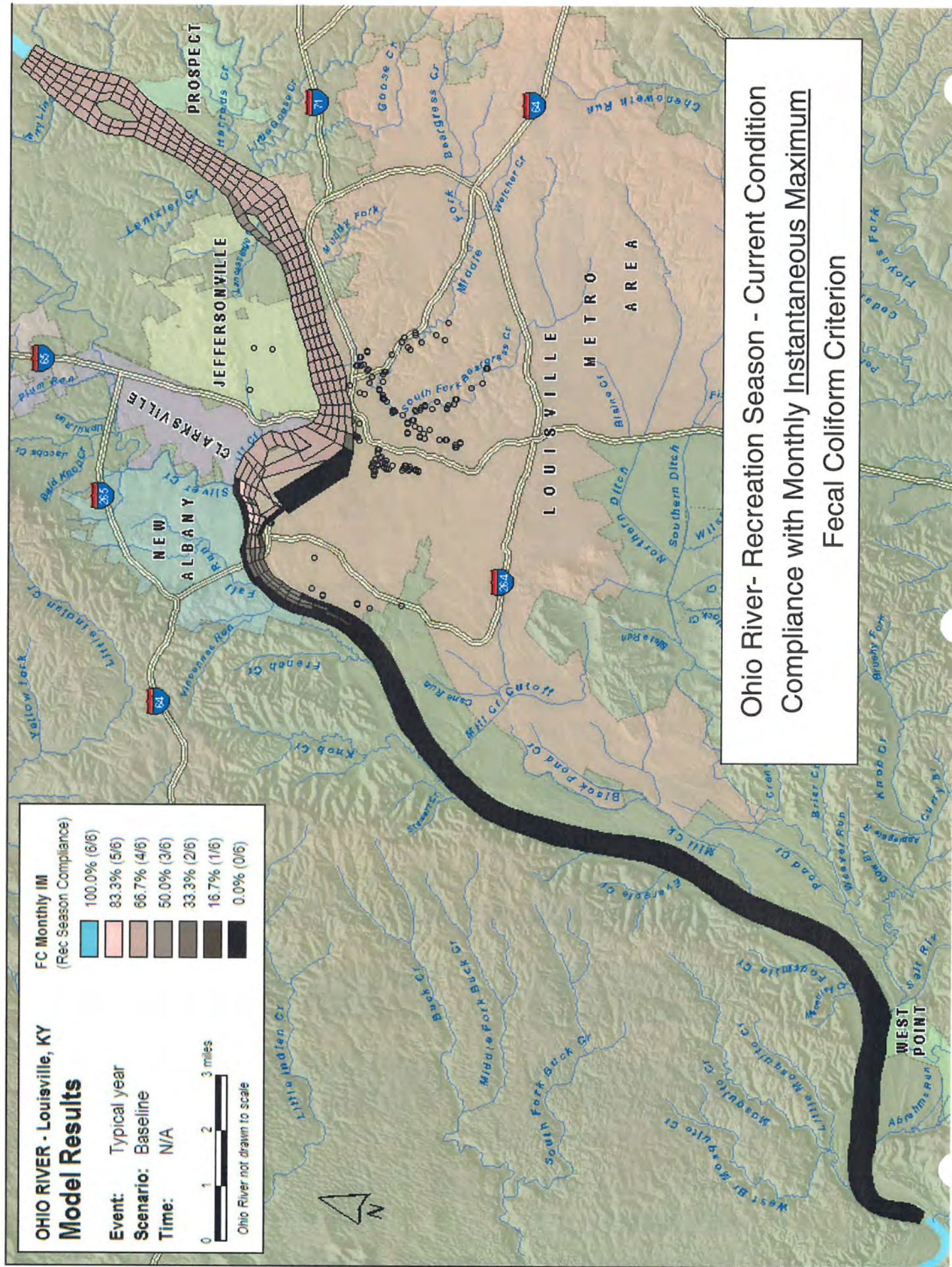
Ohio River Monthly Instantaneous Maximum

Recreation Season (May – Oct. 2001)

CSO/SSO Elimination Improves
Compliance with the
Instantaneous Maximum
Fecal Coliform Criterion near
Louisville in the Recreation
Season

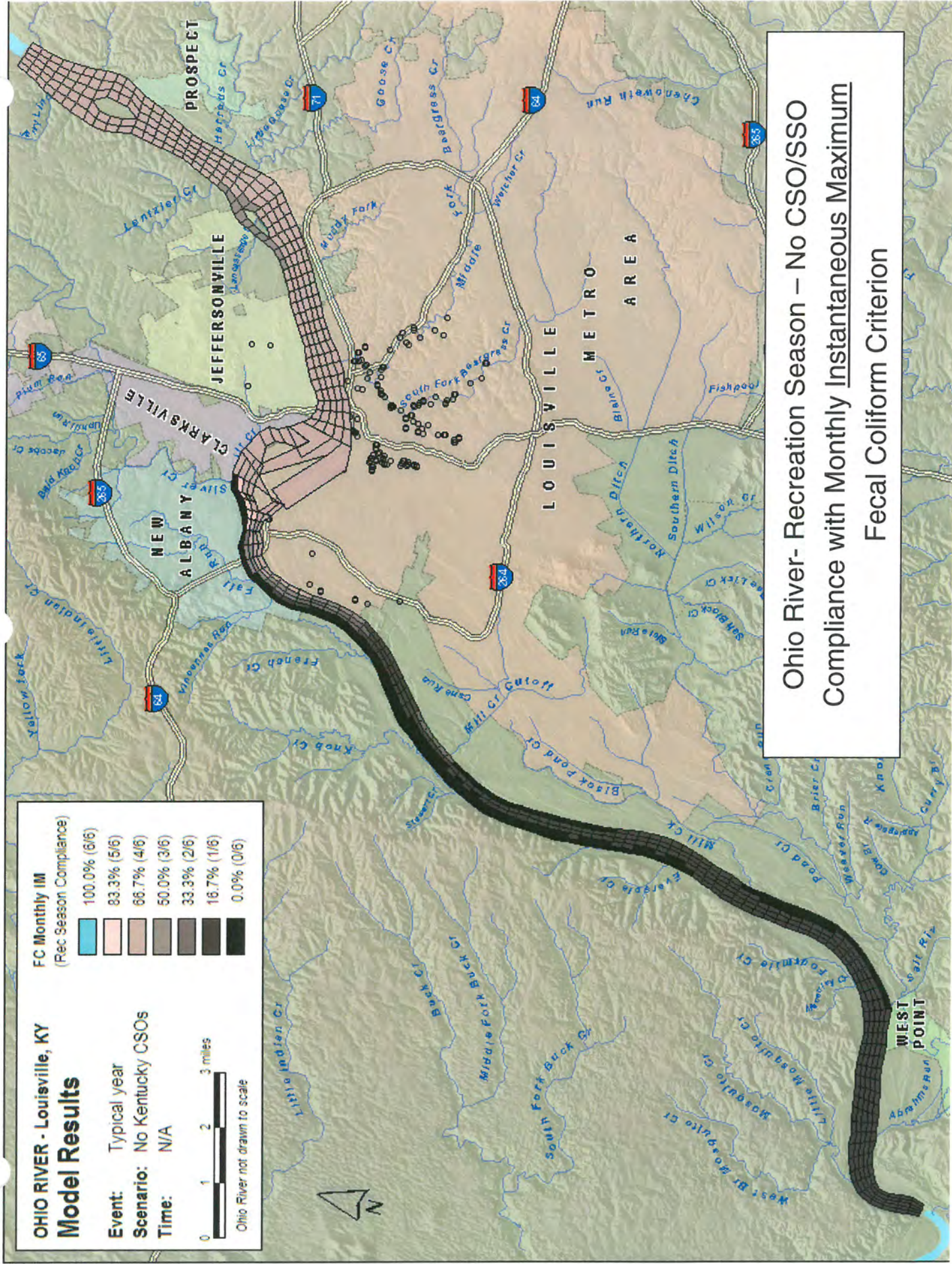
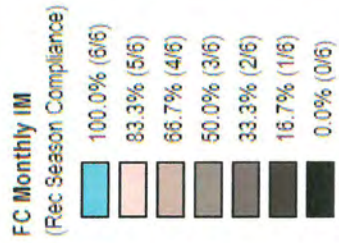
Non-Recreation Season, (Other Months)





OHIO RIVER - Louisville, KY Model Results

Event: Typical year
Scenario: No Kentucky CSOs
Time: N/A



Ohio River- Recreation Season – No CSO/SSO
Compliance with Monthly Instantaneous Maximum
Fecal Coliform Criterion

Source Controls Reduce Peak Fecal Coliform Concentrations in Ohio River, but will not Fully Comply with the Current Instantaneous Maximum Criteria

Hypothetical Storm Event



Discussion Items

- Project selection analysis will need to consider incremental benefits of CSO and SSO control
- The community will need to decide on the appropriate level of investment in CSO and SSO control
- A regulatory compliance strategy needs to be part of the Wet Weather Plan

Options for SSO Control

- Develop a criteria for “elimination” of SSO that:
 - Meets established values
 - Leaves maximum resources for control of other sources
- Pursue a phased approach and update SSDP
 - Focus inflow/infiltration (I/I) reduction in basins with severe problems
 - Monitor inflow/infiltration reductions
 - Provide for additional storage if reductions are not effective

Options for CSO Control

- Establish scalable projects (including option that virtually eliminates CSO) and commit to reopening LTCP every 5 years
 - Implement controls in phases
 - Assess effectiveness of CSO control, green infrastructure, and other watershed controls
 - Incorporate new technologies as they become available
- Conduct a water quality standards review and revision
 - Temporary suspension of use
 - Variance
- Rely on the TMDL
 - Assume that all other sources will be controlled
 - Demonstrate that remaining CSO discharges will not “cause or contribute to” exceedances of water quality standards

33

Temporary Suspension of Use

- Similar to Indiana or Maine approaches
 - LTCP identifies level of control
 - Water quality standards are suspended for events that will not be controlled by the LTCP
 - Period of time (X days after event)
 - Geographic region (X miles)

Variance

- After approved LTCP, MSD allowed to not meet water quality standards under certain conditions (e.g., implementation of LTCP)

Open Discussion on Options for Regulatory Compliance