# Wet Weather Team Project Meeting Materials

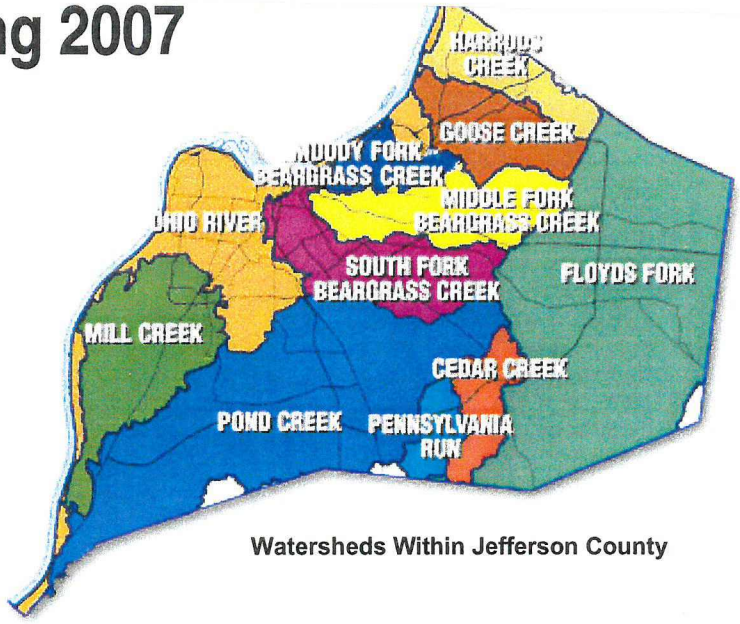
## Summer 2006–Spring 2007

01.05.0203.06

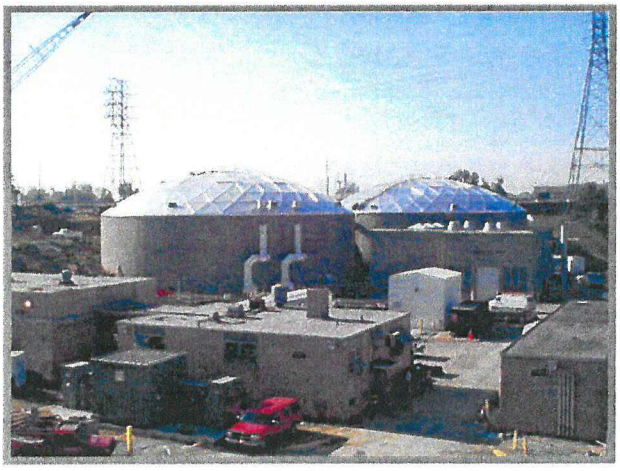
WWT Stakeholders Meeting # 3 9/12/2006

MSD

Louisville and Jefferson County
Metropolitan Sewer District




Watersheds Within Jefferson County



# Agenda

**Final Agenda**
**Louisville and Jefferson County Metropolitan Sewer District (MSD)**
**Wet Weather Team Meeting #3**
*Tuesday, September 12, 2006, 4:30–9:00 PM*
*MSD Central Maintenance Facility, Training Room*
*A Commerce Center, 3401 Cane Run Road, Louisville*

**Meeting Objectives:**

- Gain a greater understanding of the overall design and structure of the values-based risk management planning process Wet Weather Team (WWT) stakeholders will use to advise MSD on the design and implementation of MSD's Wet Weather Program.
- Review and discuss examples of how input from WWT stakeholders and supporting analytic tools will be used in the WWT process to systematically build qualitative considerations about community values into decisions about potential investments.
- Review the proposed flow of meeting discussions in the WWT process from the identification of community values through the analysis of threats to those values.
- Identify community values and components of values that the WWT stakeholders will seek to protect and/or enhance in MSD's Wet Weather Program.
- Identify next steps and expectations for the next meeting of the Wet Weather Team.

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

- Review meeting objectives and ground rules.

**4:40 PM** **Wet Weather Project Updates (15 minutes)**

- Updates on MSD wet weather activities and follow-up items from the last Wet Weather Team meeting.

**4:55 PM** **Overview of the Values-Based Risk Management Planning Process (20 minutes)**

- Presentation and discussion of the objectives and structure of the values-based risk management planning process through which Wet Weather Team stakeholders will provide input on the design and implementation of MSD's Wet Weather Program.

**5:15 PM** **Preview of the Analytic Tool to Support Cost-Benefit Analysis and Discussion of Process Examples (1 hour)**

- Explanation of the purpose of the "Project Select" analytic tool, the inputs it requires, and the types of outputs it produces. (Project Select provides a structured way to build qualitative value considerations into project investment decisions.)
- Walk through examples of how WWT stakeholders will develop the inputs for the Project Select tool through a structured, step-wise process beginning with identifying community values.
- Demonstrate with examples how Project Select will later be used to understand the potential risk-reduction benefits and costs of alternative investment choices.

6:15 PM **Dinner Break (30 minutes)**

*Dinner will be provided for Wet Weather Team members.*

6:45 PM **Sequence of Upcoming Wet Weather Team Discussion Topics (15 minutes)**

- Review the sequence and flow of Wet Weather Team meeting discussion topics from the identification of community values (this meeting) through the characterization of risks (roughly September 2006–May 2007).

7:00 PM **Community Values Identification Exercise (1 hour, 30 minutes)**

- Review MSD's mission and areas of responsibility. (10 minutes)
- Explain the concepts of community values and threats to them. (10 minutes)
- Brainstorm community values and components of values. (40 minutes)
- Group exercise to organize and group the community values. (30 minutes)

8:30 PM **Opportunity for Observer Comments (15 minutes)**

8:45 PM **Wrap Up and Next Steps (15 minutes)**

- Reminder about the Beargrass Creek tour on September 23.
- Review plans and expectations for the October 19 Wet Weather Team meeting.

9:00 PM **Adjourn**

# Draft Meeting Summary
# Wet Weather Team Meeting #3
# Tuesday, September 12, 2006
# MSD Central Maintenance Facility, Louisville

The Wet Weather Team (WWT), chartered by the Louisville and Jefferson County Metropolitan Sewer District (MSD), met on September 12, 2006 at MSD's Central Maintenance Facility. The objectives of the meeting were to:

- Gain a greater understanding of the design and structure of the values-based risk management planning process for the WWT project;
- Review and discuss examples of how input from WWT stakeholders and supporting analytic tools will be used in the WWT process to systematically build qualitative considerations about community values into decisions about potential investments;
- Identify community values and components of values that the WWT stakeholders will seek to protect and/or enhance in MSD's Wet Weather Program; and
- Identify next steps and expectations for the next meeting of the Wet Weather Team.

## Wet Weather Project Updates

Brian Bingham, MSD Regulatory Management Services Director, provided several updates about MSD's wet weather management activities, as follows.

- Consent Decree Compliance: In August, MSD received notice from the U.S. Environmental Protection Agency (EPA) that MSD was in violation of its Consent Decree because of issues with some of MSD's most recent submittals. Many of these issues amounted to interpretation differences regarding compliance requirements. As a result of this notification, MSD has been working very hard to respond to EPA's issues promptly. Activities have included installing solids and floatables control devices at 72 combined sewer overflows (CSOs) in the system, revising the draft Long Term Control Plan for CSOs; and increased public notification, including a forthcoming letter to 220,000 MSD customers, CSO warning signs, and website improvements.
- Website: MSD's website will include a color-coded warning system regarding potential hazards associated with CSOs based on weather conditions—green will indicate that there is little risk of CSOs; yellow will represent a 50 percent chance of CSOs; and red will mean that there are some CSOs and that people should avoid contact with surface waters. This feature and information about MSD's Consent Decree will be added to the website in September; the restricted-access webpage for WWT members will be posted in October.

## Values-Based Risk Management Planning Process Overview

Jennifer Tice of Ross & Associates gave a presentation on the overall structure of the values-based risk management planning process the WWT is participating in. This is the mechanism through which WWT stakeholders will advise MSD on the design and implementation of MSD's Wet Weather Program. There are six main steps in the process. Steps 1-3 relate to understanding the problem and setting the vision; steps 4-6 focus on identifying, analyzing, and selecting alternatives. The initial components of this process that lead up to the cost-benefit analysis of project alternatives include the following:

a. Identify values (community principles to uphold);

b. Set objectives (general goals for values);
c. Select weights for values (quantitative measures of relative importance of values);
d. Identify threats to values (actions that could harm values);
e. Develop framework for evaluating risks (based on probability and severity of harm to value);
f. Select approaches to address threats (general strategies to reduce probability and/or severity);
g. Identify project alternatives to address specific threats (site-specific options); and
h. Evaluate risk reduction benefits of projects (quantitatively assess changes in risk; see process example description below).

In response to questions, the facilitation team described how the WWT process would be iterative, allowing multiple opportunities for WWT stakeholders to discuss a topic, while also recognizing the need to move forward with steps in the process to meet the overall deadlines for this effort. Stakeholders will be involved through all stages of the process; however, the technical support team will provide significant technical input to the process (e.g., in identifying site-specific project alternatives) and also do analytic work under the guidance of the Wet Weather Team.

Rob Greenwood of Ross & Associates also described several advantages of using a logical, structured process to systematically consider qualitative and quantitative factors together, including transparency, the ability to document decisions made during the process, flexibility, and ease of understanding.

## Cost/Benefit Analytic Tool Presentation

Gary Swanson of CH2M HILL gave a presentation on one of the analytic tools that will be used to support the decision-making process of MSD and the Wet Weather Team. He described the need for a decision and prioritization process that allows multiple objectives to be considered systematically, the objectives and features of the cost-benefit analytic model, inputs for the model that WWT stakeholders and the technical team will provide, and examples of the types of outputs the model generates. Summary points from this presentation included the following:

- WWT stakeholders will identify inputs for the model related to values, the relative importance (weights) of values, value objectives, and strategies and approaches to manage threats to values.
- Based on the guidance of the WWT, the technical team will take the lead on determining inputs related to numeric performance scales for objectives, engineering alternatives based on strategies and approaches, and construction and operating costs for alternatives.
- The benefits for the cost-benefit analysis are based on an evaluation of risk reduction for each of the values identified by the WWT.
- The model gives a transparent and well-documented process to systematically and logically consider both qualitative and quantitative values critical to the decision process.
- Outputs of the model include measures of performance in protecting values, summarized financial information, cost-benefit analysis, and an opportunity for sensitivity analysis.

A handout was distributed that listed the projects MSD has already committed to implementing through MSD's Updated Sanitary Sewer Overflow Program (SSOP) draft of 2/10/06 and Interim CSO Long Term Control Plan (LTCP) draft of 6/3/06 (which MSD is currently revising). These projects constitute a small portion of the total investments MSD will need to make to address wet-weather wastewater and stormwater management challenges and to achieve compliance with the Clean Water Act.

Mr. Swanson's presentation included a review of four examples of the types of investment choices that MSD will need to make, and that WWT stakeholders will provide input on through the values-based risk management planning process. These examples (along with possible control options) included:

- Southwestern Pump Station, the largest CSO in MSD's system;
- "Big 4" sanitary sewer overflow (SSO) elimination options;
- Real Time Control Phases 3+; and
- SSO controls to address illegal sump pump connections from private properties.

In closing, Rob Greenwood of Ross & Associates noted that the WWT will use a two-step process in helping MSD to select and prioritize investment choices: first, the WWT will examine the benefits and costs of site-specific projects; and second, the WWT will look at broader, watershed solutions for addressing wet-weather wastewater and stormwater management issues.

## Process Example—Determining Risk Reduction Benefits

Following Mr. Swanson's presentation, Jennifer Tice walked through an example of the components in the process—including values, objectives, threats, approaches, and projects—and explained how the risk reduction benefits of projects would be derived and quantified for use in the cost-benefit tool. This analytic process to quantify risk-reduction benefits involved the following steps.

- Probability and Severity Indices to Characterize Risk: For each value (the non-financial criteria in the model), the technical team, with guidance from the WWT, will develop numeric scales (e.g., 1-to-5 scales) for characterizing the probability that something will harm a value and the severity of the impact on a value. These probability and severity indices will be used to evaluate how potential projects could change the risk (probability and/or severity) from existing threats to values.
- Risk Scores and Risk Reduction Units: The probability score for a threat or project alternative multiplied by the severity score for that threat/alternative will give a "risk score" (e.g., a threat with a high probability of 5 and a medium severity of 3 would have a risk score of 15). Subtracting the risk score of a project alternative from the risk score of a threat will give a numeric measure of the risk reduction benefit (in "risk reduction units" or RRUs) from the alternative (e.g., alternative A might reduce the risk score of the threat from 15 to 10, which would be 5 risk reduction units).
- Aggregation of Risk Reduction Units: Later in the process, the WWT will identify numerical weights for values (e.g., on a 0-100% scale) to quantify the relative importance of qualitative considerations. (All values could have equal weighting.) These weights will be used to determine the total benefits of project alternatives. After the risk reduction benefit of an alternative is determined for each value, these benefit values will be multiplied by the corresponding value weights and then added together.

All of the process steps and analytic methods discussed during the meeting will be revisited again during the WWT process in a step-wise fashion. In the interest of time, the facilitation team decided not to give a presentation on the sequence of upcoming WWT meeting discussion topics, but rather distributed handouts of the presentation slides to WWT members and asked them to review the slides on their own.

## WWT Community Values Discussion

Rob Greenwood led a brainstorming session with WWT members around the topic of community values. He first called attention to a handout describing MSD's mission and responsibilities, to serve as a guide in identifying values that could be affected by MSD's Wet Weather Program. Participants identified a broad range of ideas for community values, and then organized the ideas into several categories. The categories

coming out of this discussion were as follows. (Comments from WWT members who missed the meeting have been incorporated into the notes and summary for this session.)

- Asset Protections: Property protection/improvement and improving drainage.
- Compliance (Requirement): Compliance with the Clean Water Act and Clean Air Act.
- Eco-Friendly, Site-Specific Solutions: Solutions that involve working with nature, landscapes with many trees, environmentally friendly alternatives (e.g., a real pond or wetland), and a natural state of cause and effect, with appropriate assignment of costs and ownership of impacts.
- Education and Outreach: Educating the public as a way to change behavior; fostering a sense of stewardship and responsibility for problem solving and making improvements; and transparency about costs and rate impacts.
- Environmental Enhancement: Protection and improvement of the environment, including threatened waterways, water quality and quantity in Beargrass Creek, trees in the landscape, water quality for areas downstream from Louisville, odors, and air emissions.
- Equity: Equitable distribution of resources/benefits and costs; consideration of affordability, ways to reduce costs (e.g., by using volunteers), equal value of neighborhoods, and the burden on specific populations such as the elderly and low-income households. (It was noted that age may not be a good indicator for income equity.)
- Fiscal Prudence: Using financial common sense, reasonableness, getting the "biggest bang for the buck" from rate-payer dollars (consider cost-benefit ratio), and seeking cost-effective in-stream results.
- Incentives: Incentives to encourage "preferred behavior" as well as a comprehensive set of legal regulations and a cost structure that reflects actual impacts.
- Long-Term View: Consideration of the very long term, including sustainability, climate change, future development, practices to avoid future problems, and a willingness and responsibility to make changes and difficult decisions.
- Public Health: Protection and improvement of health, safety, and quality of life, including help for challenged areas (addressing environmental justice concerns).
- Quality Development/Infrastructure: Providing proper infrastructure for development to support "smart growth," revitalizing the urban core, and improving drainage.
- Recreation: Improving recreational opportunities such as fishing, boating, and wading.

A full list of the ideas generated during the meeting is attached at the end of this meeting summary. All of the ideas WWT members mentioned will be carried forward in the process—through the set of values that will become inputs to the cost-benefit analytic model and/or through other steps in the WWT processes (e.g., objectives, strategies and approaches for addressing threats to values, etc.). The facilitation team will develop refined descriptions of community values based on this brainstorm session as well as follow-up conversations with WWT members who missed the meeting, and will distribute these value descriptions to WWT members for discussion at the next WWT meeting.

## Observer Comments

Meeting observers offered three suggestions related to the "incentives" and "education" categories for values; these suggestions were: (1) take advantage of markets; (2) consider using private/corporate

sponsorship (e.g., a company's interest in improving its image); and (3) include funding public service announcements in education efforts.

### Next Steps

- The facilitation team will develop refined descriptions of community values based on WWT member input and will distribute these descriptions to the WWT before the next WWT meeting.
- A canoe tour of the Beargrass Creek watershed will be held on Saturday, September 23, 2006. The facilitation team will also distribute information about other dates when Beargrass Creek tours are offered to the public, for WWT members unable to participate in the 9/23/06 tour.
- The next WWT meeting will be on Thursday, October 19, 2006 (at MSD's Central Maintenance Facility), from 4:30 to 9:00 PM. Meeting topics will likely include:
    - Review and discussion of a refined set of community values;
    - Presentation on baseline conditions for the values, root causes of those conditions, and sensitive locations; and
    - Brainstorm discussion of objectives for community values.

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### Meeting Participants

*Wet Weather Team Stakeholders*

Susan Barto, Mayor of Lyndon
Charles Cash, City of Louisville, Planning and Design Services Department
Stuart Benson, Metro Council, District 20
Allan Dittmer, University of Louisville
Faye Ellerkamp, City of Windy Hills, City Council
Jeff Frank, Vanguard Sales
Arnita Gadson, West Jefferson County Community Task Force
Rick Johnstone, Deputy Mayor, Mayor's Office
Kurt Mason, Jefferson County Soil and Water Conservation District
Suzy Post, Neighborhood representative
Lisa Santos, Irish Hill Neighborhood Association
David Tollerud, University of Louisville, School of Public Health and Information Sciences
Tina Ward-Pugh, Metro Council, District 9
David Wicks, Jefferson County Public Schools

*MSD Personnel*

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

*Facilitation and Technical Support*

Rob Greenwood, Ross & Associates Environmental Consulting

Gary Swanson, CH2M HILL
Jennifer Tice, Ross & Associates Environmental Consulting

## Meeting Observers

Teri Pifine, MSD
Diane Secor, MSD
Greg Sprawl, U.S. Environmental Protection Agency

## Meeting Materials

- Agenda
- WWT Membership List (9/12/06 Update)
- WWT Meeting Schedule for 2006-07 (as of 9/12/06)
- Acronym List (September 2006 Update)
- Final Draft Summary of WWT Meeting #2 (August 15, 2006)
- Values-Based Risk Management Planning Process Overview Presentation
- Preview of Cost/Benefit Analytical Tool Presentation
- Capital Improvement Projects Identified in the MSD's Updated Sanitary Sewer Overflow Program (SSOP) of 2/10/06 and Interim CSO Long Term Control Plan (LTCP) of 6/3/06
- Sequence of Upcoming Wet Weather Team Discussion Topics Presentation
- MSD Mission and Responsibilities Handout

## Attachment #1: Values Brainstorm Notes From the Wet Weather Team Meeting on 9/12/06

*The following represents a verbatim transcription of the notes recorded during the brainstorming discussion about community values at the 9/12/06 Wet Weather Team (WWT) meeting. Comments from some WWT members who were unable to attend the 9/12/06 meeting were available during the development of the meeting summary, so these comments have been added to the list below. These additions, as well as comments made by observers during the meeting, are noted in brackets below.*

**Asset Protections**
- Protect/improve property
- Improve drainage

**Compliance (Requirement)**
- Compliance – Clean Water Act
- Compliance – Clean Air Act *[added following the 9/12/06 meeting]*

**Eco-Friendly, Site-Specific Solutions**
- Natural landscape with many trees
- Working with nature/what is in place
- Natural state of cause and effect: ownership of impacts, assigns costs
- Solutions are environmentally friendly (real pond, wetland)

**Education and Outreach**
- Equitable responsibility for problem solving
- Funding public service announcements *[observer comment]*
- Self improvement (start in own backyard, responsibility)
- Stewardship
- Improve recreational opportunities (fish, boat, wade)
- Let public know about sump pump program
- Educated populace – learning can change behavior
- Empowering people
- Fiscal transparency – communicate costs and impacts on rates *[added following the 9/12/06 meeting]*

**Environmental Enhancement**
- Improved threatened waterways – beneficial side effects
- Improve Beargrass Creek water quality/quantity
- Protect/improve environment
- Natural landscape with many trees
- Reduce downstream water-quality impacts on other communities/areas (e.g., Gulf of Mexico) *[added following the 9/12/06 meeting]*
- Reduce/improve odors and air emissions *[added following the 9/12/06 meeting]*

**Equity**
- Elderly/low income burden/engagement
- Consider cost – achieve through volunteers
- Equitable assignment of costs
- Equitable distribution of resources/benefits

- Affordability – housing
- All neighborhoods have the same value *[added following the 9/12/06 meeting]*

Key Consideration: Age may not be best indicator for "equitable"

**Fiscal Prudence**
- Financial common sense
- Maximize rate $ ["biggest bang for the buck"]
- Cost effective in-stream results
- Consider cost – achieve through volunteers
- Reasonableness: be cost conscious, reasonable in using streams *[added following the 9/12/06 meeting]*
- Consider the cost-benefit ratio: make certain that benefits are worth the money invested *[added following the 9/12/06 meeting]*

**Incentives**
- Comprehensive set of legal regulations
- Incentives for "preferred behavior"
- Impact-weighted cost structure
- Take advantage of corporate sponsorship *[observer comment]*
- Market incentives *[observer comment]*

**Long Term View**
- Consider long, long term
- Sustainability: development, how manage development
- Incorporates climate change considerations
- BMPs [best management practices] to avoid future problems
- Equitable responsibility for problem solving
- Change: do we fear it, willingness to accept change
- Willingness to make difficult decisions/responsibility

**Public Health**
- Equitable quality of life improvement (help challenged areas) – environmental justice
- Protect/improve health
- Safety of neighbors

**Quality Development/Infrastructure**
- Revitalize urban core
- Proper infrastructure leads development
- Improve drainage
- Adequacy for development – supports smart growth

**Recreation**
- Improve recreational opportunities: fish, boat, wade

**Other – Not Categorized**
- Don't interfere with quality of life *[added following the 9/12/06 meeting]*

# Handouts

# SECTION 9: SYSTEM IMPROVEMENTS

## 9.1 INTRODUCTION

This section includes a list of improvements which are proposed to be accomplished by December 31, 2008, as specified in Paragraph 24(a)(1) of the Consent Decree. These improvements include completion dates and cost estimates. These projects include: pump station rehabilitations, pump station eliminations, wastewater treatment plant elimination, interceptor condition assessment and repair or rehabilitation of the most significant defects, and relief sewer construction.

*Table 1 - Proposed Capital Improvement Projects*

| Project | Treatment Plant | Estimated Cost | Abatement Date |
|---|---|---|---|
| Old Cannons Lane Sanitary Relief Sewer | Morris Forman | $260,000 | June 30, 2006 |
| Interceptor Condition Assessment Phase 1 Inspection & Rehabilitation(Middle Fork) | Morris Forman | $387,000 | December 31, 2008 |
| Middle Fork System Improvements Phase 1 | Morris Forman | $500,000 | December 31, 2008 |
| Beechwood Village SSO Abatement Phase 2 | Morris Forman | $800,000 | December 31, 2008 |
| Interceptor Condition Assessment Phase 1 Inspection & Rehabilitation (Sinking Fork) | Morris Forman | $92,000 | December 31, 2008 |
| Murray Hills Pump Station Upgrade | Morris Forman | $150,000 | September 30, 2008 |
| Interceptor Condition Assessment Phase 1 Inspection & Rehabilitation (Hikes Point) | Morris Forman | $460,000 | December 31, 2008 |
| Interceptor Condition Assessment Phase 1 Inspection & Rehabilitation (Goldsmith) | Morris Forman | $234,000 | December 31, 2008 |
| Interceptor Condition Assessment Phase 1 Inspection & Rehabilitation (Buechel Branch) | Morris Forman | $178,000 | December 31, 2008 |
| Interceptor Condition Assessment Phase 1 Inspection & Rehabilitation (Northern Ditch) | Morris Forman | $345,000 | December 31, 2008 |
| Northern Ditch Pump Replacement | Morris Forman | $1,300,000 | November 30, 2006 |

| Project | Treatment Plant | Estimated Cost | Abatement Date |
|---|---|---|---|
| Sonne Pump Station Pump Replacement | Morris Forman | $49,000 | March 30, 2007 |
| Fern Hill Subdivision Interceptor #8 | Cedar Creek | $837,000 | March 30, 2009 |
| Old Henry Road Pump Station, Force Main & Interceptor | Floyds Fork | $3,268,000 | June 30, 2006 |
| Running Fox Sewer Replacement | West County | $150,000 | August 30, 2006 |
| Zabel Way Pump Station Elimination | West County | $150,000 | September 30, 2008 |
| Watterson Woods WTP Elimination | West County | $320,000 | March 30, 2007 |
| Fern Creek/Nottingham Interceptor #6 | West County | $5,900,000 | June 30, 2006 |
| Broadfern Pump Station Upgrade | West County | $80,000 | December 31, 2007 |
| Rosa Terrace Pump Station Pump Replacement | West County | $36,000 | June 30, 2007 |
| Thurman Drive Pump Station Elimination | West County | $150,000 | September 30, 2008 |

TABLE 11-2

INTERIM CSO LTCP PROJECTS

| | Project Description | Project Cost | Completion Date | Receiving Stream |
|---|---|---|---|---|
| 1 | Snead's Branch Solids and Floatables Improvements | $ 300,000 | August 30, 2006 | South Fork - Beargrass Creek |
| 2 | Northern Ditch PS Pump Replacement * | $ 1,300,000 | November 30, 2006 | Ohio River |
| 3 | CSO 081 - CSO Elimination | $ 50,000 | December 31, 2006 | South Fork - Beargrass Creek |
| 4 | CSO 58 - Solids and Floatables | $ 150,000 | March 31, 2007 | Ohio River |
| 5 | CSO 52 - Solids and Floatables | $ 150,000 | April 30, 2007 | Ohio River |
| 6 | CSO 154 - Solids and Floatables | $ 250,000 | May 31, 2007 | Muddy Fork - Beargrass Creek |
| 7 | CSO 146 - Solids and Floatables | $ 300,000 | June 30, 2007 | South Fork - Beargrass Creek |
| 8 | CSO 140 - Solids and Floatables | $ 300,000 | July 31, 2007 | Middle Fork - Beargrass Creek |
| 9 | CSO 118 - Solids and Floatables | $ 200,000 | August 30, 2007 | South Fork - Beargrass Creek |
| 10 | CSO 117 - Solids and Floatables | $ 200,000 | September 30, 2007 | South Fork - Beargrass Creek |
| 11 | CSO 198 - Solids and Floatables | $ 150,000 | December 31, 2007 | Ohio River |
| 12 | CSO 197 - Solids and Floatables | $ 150,000 | December 31, 2007 | Ohio River |
| 13 | CSO 200 - Solids and Floatables | $ 150,000 | March 31, 2007 | Ohio River |
| 14 | CSO 182 - Solids and Floatables | $ 150,000 | April 30, 2007 | South Fork - Beargrass Creek |
| 15 | CSO 97 - Solids and Floatables | $ 300,000 | May 31, 2008 | South Fork - Beargrass Creek |
| 16 | CSO 104 - Solids and Floatables | $ 300,000 | June 30, 2008 | Ohio River |
| 17 | CSO 153 - Solids and Floatables | $ 150,000 | July 31, 2008 | South Fork - Beargrass Creek |
| 18 | CSO 120 - Solids and Floatables | $ 200,000 | August 31, 2008 | South Fork - Beargrass Creek |
| 19 | CSO 84 - Solids and Floatables | $ 300,000 | September 30, 2008 | South Fork - Beargrass Creek |
| 20 | CSO 111 - Solids and Floatables | $ 170,000 | December 31, 2008 | South Fork - Beargrass Creek |
| 21 | Integration of Wheeler Basin Operations | $ 520,000 | December 31, 2008 | Ohio River |
| 22 | Integration of SWPS/MDS/MFWTP Operations | $ 870,000 | December 31, 2008 | Ohio River |
| 23 | Real Time Control at CSO 108 (BG13) | $ 670,000 | December 31, 2008 | Middle Fork - Beargrass Creek |
| 24 | Real Time Control in the Southwestern Outfall (SWOR2) | $ 5,300,000 | December 31, 2008 | Ohio River |
| 25 | CSO 206 - Sewer Separation | $ 2,200,000 | March 31, 2009 | Middle Fork - Beargrass Creek |

* Project also included in updated SSOP
*CSOs may be closed in lieu of constructing S&F projects as long as the completion date is achieved

# Louisville and Jefferson County Metropolitan Sewer District
# Mission and Responsibilities
Wet Weather Team Meeting, 9/12/06

## MSD Mission

We at MSD will build, maintain, and operate quality wastewater and stormwater facilities for the people of our community.

## MSD Vision

Putting our Customers First:

- Clean Water
- Green Environment
- Growing Community

## MSD's Responsibilities Include Wastewater and Stormwater Management

*Wastewater*

- Wastewater collection, from property boundary
- Conveyance to wastewater treatment plants
- Wastewater treatment
- Operations, maintenance, capital renewal, and service extensions

*Stormwater*

- Drainage operations and maintenance
- Project DRI to improve drainage performance
- Flood protection – aging system from the U.S. Army Corps of Engineers

## Types of Services That MSD Provides

- Operation of a 3,000-mile wastewater collection system and six major wastewater treatment facilities
- Management of a public stormwater drainage network in most of Jefferson County
- Review of all private development projects planned in Jefferson County
- Operation and maintenance of the Ohio River flood protection system
- Digital mapping and geographic information services through the Louisville & Jefferson County Information Consortium (LOJIC), located at MSD
- Reduction of sewer overflows and stream monitoring
- Hazardous materials controls and response

# Values-Based Risk Management Planning Process Overview

Wet Weather Team Meeting

September 12, 2006

## Wet Weather Team Charge

- The Consent Decree requires stakeholder engagement on two items:
  - Funding plan for the Wet Weather Program
  - Public information, education, and involvement plan
- In addition, MSD seeks guidance on its investment choices in the overall design and implementation of the Wet Weather Program

2

## Examples of MSD's Investment Choices

- Infrastructure investments to increase storage and/or treatment capacity for the sanitary and combined sewer systems
- Investment in back-up power sources
- Frequency of cleaning, maintenance, and equipment repair/replacement
- Intensity of compliance inspection and enforcement activities
- Educational programs to prevent pollution
- Nonpoint source controls to limit water pollution

3

## Process Outcomes

- At the end of the WWT process:
  - MSD will have a prioritized list of investment choices
  - Those choices will be the framework for MSD's Draft Wet Weather Plan
  - The Draft Plan will be sent to MSD's Board, and then will be finalized after a public review period
  - Final Plan will be sent to EPA by December 31, 2008
- The Final Wet Weather Plan will:
  - Meet all compliance requirements
  - Attain the community's desired service levels

4

## What Are the Steps in the Process?

- **Step 1:** Define Values
- **Step 2:** Identify Threats
- **Step 3:** Define Risk Evaluation Approach

**Understand the Problem and Set the Vision**

- **Step 4:** Develop Risk Reduction Strategies
- **Step 5:** Prioritize Risk Reduction Approaches
- **Step 6:** Develop Risk Management Plan

**Identify, Analyze, and Select Alternatives**

5

## Risk Evaluation Process (Steps 1-3)

**A.** Identify Values
- Community principles to be considered in implementation

**B.** Set Objectives
- Objectives: general goals for a value

**C.** Select Weights for Values
- Quantitative measure of the relative importance of the values

**D.** Identify Threats to Values
- Actions that could harm values

6

# Risk Evaluation Process (Steps 1-3)

**E.** Develop Framework for Evaluating Risks
- Probability: likelihood that the value could be affected
- Severity: degree of damage to the value

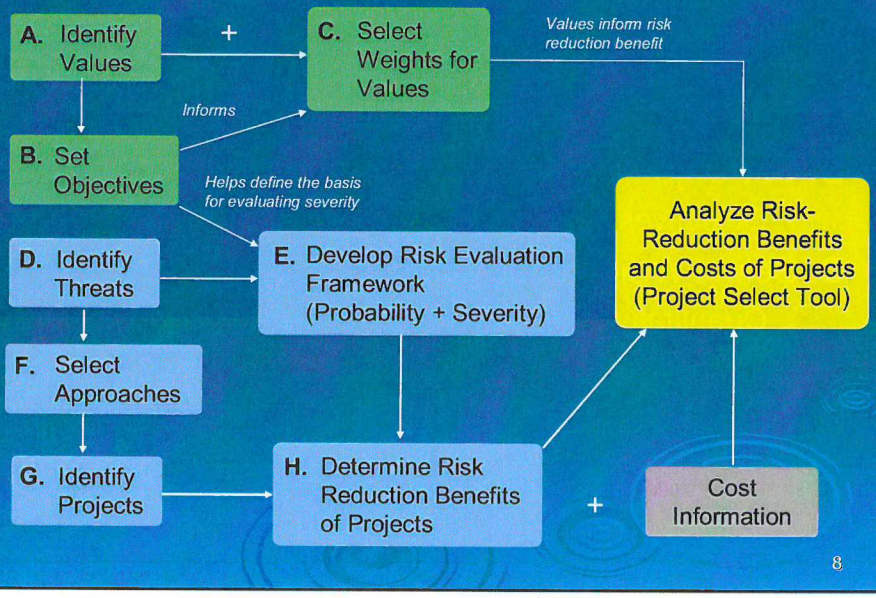
**F.** Select Approaches to Address Threats
- Approaches: general strategies to reduce probability and/or severity of threats to values

**G.** Identify Project Alternatives to Address Specific Threats
- Determine site-specific options to address threats

**H.** Evaluate Risk Reduction Benefits of Projects
- Quantitatively assess changes in risk from project alternatives compared to baseline for threats

7

# Values-Based Risk Management Planning Process




8

# PREVIEW OF COST/BENEFIT ANALYTICAL TOOL

Wet Weather Team
Stakeholder Group Meeting
September 12, 2006

0

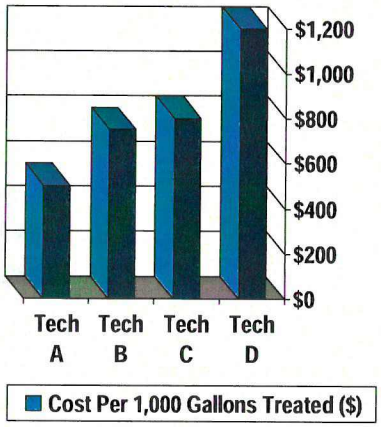
## *Agenda*

- Why do we need a tool to document the decision and prioritization process? Won't the answers be obvious?
- What does "the tool" need from us?
  - Stakeholders
  - Technical team
- What does the tool give us?
- Where would we use this?
- Next steps

1

## *If the world was simpler, and there was only one goal, picking the best option would be easier.*

- For example, if the ONLY goal was to treat an identified number of gallons of wastewater, the best alternative would be the one most efficient at meeting that goal (i.e., the one with the lowest cost per gallon treated)
- In the example, Technology A is the clear winner, because it costs much less per 1,000 gallons treated than the other options




2

## *The world is not that simple. So, MSD needs to make decisions about its wet weather plan while balancing multiple objectives*

**Consent Decree Requirements**

**Examples of values in addition to compliance**

- *Affordability*
- *Public Health impacts*
- *Property protection*
- *Safety*

**Our decisions will impact how MSD spends $$$$$**

3

*Our decision process must systematically and logically consider both qualitative and quantitative factors in cost/benefit analyses*

- Transparent process
- Well documented
- Flexible
- Auditable
- Understandable
- Follows recognized practices

4

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5

# Objectives and Features of the Model

***Objectives***

- Evaluate alternatives across the range of capital and maintenance projects
- Provide justification for whether to undertake a project - is it cost effective and/or "important"
- Institute a systematic, rigorous and transparent system-wide approach

6

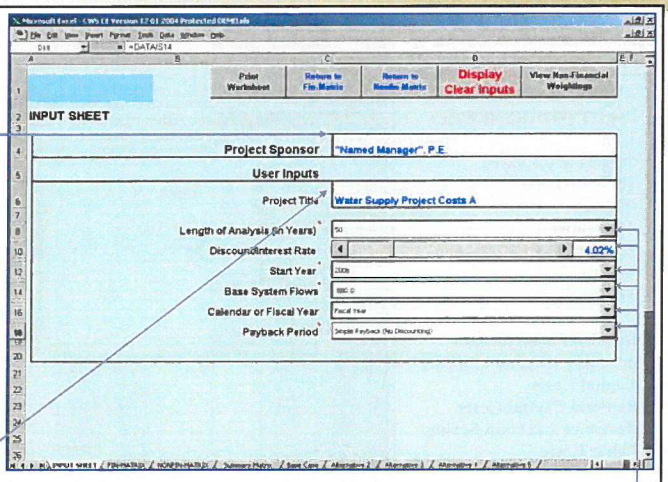
# Objectives and Features of the Model

***The Design***

- Evaluates project alternatives (do nothing, lease vs. buy, rehabilitate vs. build new, etc.)
- Incorporates financial & non-financial (value) parameters
- Performs sensitivity analysis on outcomes
- Includes graphics & print-out capabilities for information sharing and presentations
- Has user-friendly format, with capabilities to meet assorted organizational needs

7

## INPUT SHEET



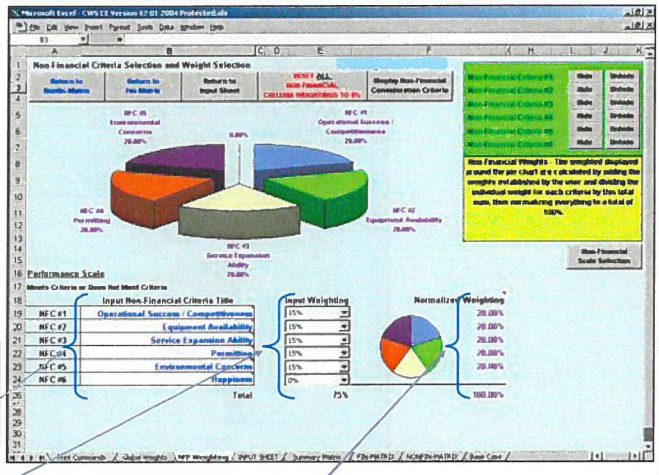

**Project Sponsor -**
This location is where the user can input the staff that is responsible for the analysis and who can be reached for additional details regarding the basis for the project alternative selection process

**Project Title -**
This location is where the user can input the the name of the analysis being conducted

**Length of Analysis** - period of time encompassed by analysis
**Discount Interest Rate** - this is the assumption regarding the time value of money
**Start Year** - this is the initial year, time 0 at which the analysis is initiated
**Base System Flows** - this is an input related to base units (flows) of a system
**Calendar or Fiscal Year** - this is related to how years will be denoted
**Payback Period** - this is related tot he choice of simple or discounted

8

## NFP WEIGHTING




**Values (Non Financial Criteria)**-These cells are where the user inputs the selected values that represent non-financial selection criteria

**Value Relative Weightings -** the user inputs the raw weighting from 0% to 100% to be applied to each of the selected values

**Criteria Normalized Weighting -** the model automatically normalizes user input weightings to a representative percent of 100%.

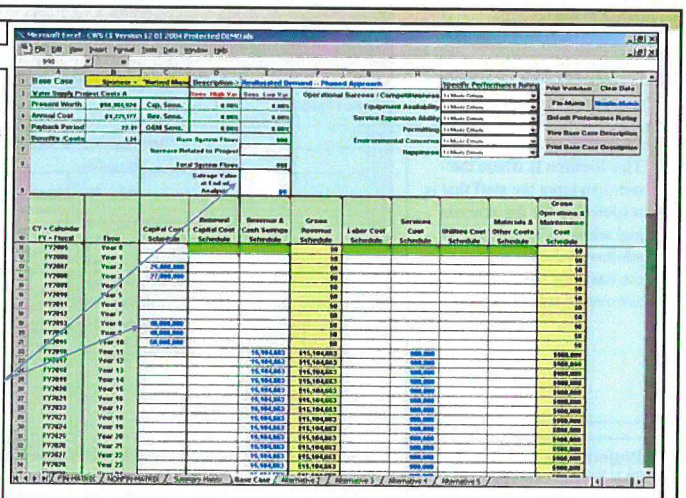
9

## DATA INPUT (Base Case - Alt. 5)

**ALTERNATIVE DATA INPUT WORKSHEETS -**
These are data input worksheets that can be displayed.
They are denoted as:
**Basecase**
**Alternative 2**
**Alternative 3**
**Alternative 4**
**Alternative 5**

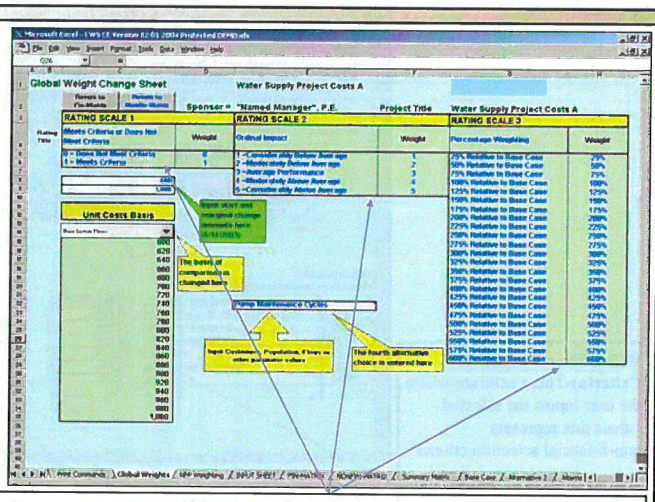
**Detailed Financial data including schedules for the:**
**Capital Costs**
**Renewal Capital Costs**
**Revenues and Cash Savings**
**Labor Costs**
**Utilities Costs**
**Materials & Other Costs**

can be entered on an annual basis. If there is any **Salvage Value** associated with the alternative it is also entered into this worksheet



10

## GLOBAL WEIGHTS




**Value Criteria Performance Scales -**
This worksheet displays the different performance scales available to the user
In general, we will use numeric input based on Risk Reduction Units (more about that later)

11

## Agenda

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12

## Results for the performance in protecting values

ProjectSelect™
Project Sponsor
Louisville & Jefferson County Metro
Project Title
CSO Long Term Control Plan

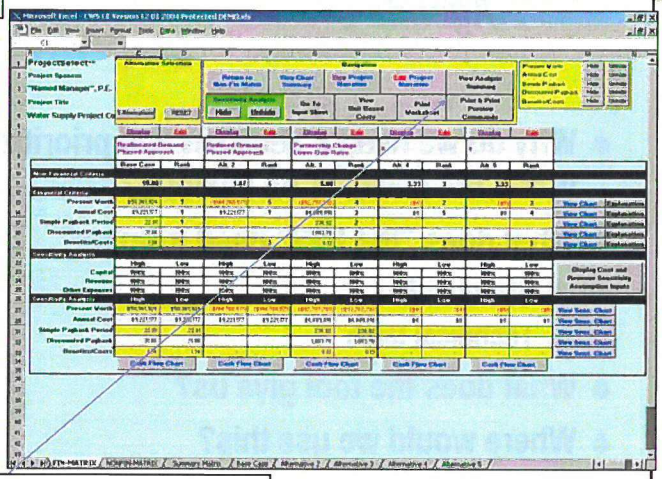
Alternative Selection: 3 Alternatives

Navigation: View Non-Financial Weightings | View Fin-Matrix | View Chart | View Summary | Explanation | Display Cost and Revenue Sensitivity Inputs | GO TO INPUT SHEET | Print Worksheet | Print & Print Preview Commands

| | | Option 1 - Centralized Control of CSOs | | Option 2 - Decentralized Control of CSOs | | Option 3 - Third Option | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Base Case | Score | Alternative 2 | Score | Alternative 3 | Score | | |
| | Non-Financial Criteria | | | | | | | | |
| NFC#1 | Public Health | 5 =Considerably Above Average | 1.3 | 3 =Average Performance | 0.8 | 3 =Average Performance | 0.8 | Weight = | 26% |
| NFC#2 | Environmental Concerns | 5 =Considerably Above Average | 1.3 | 3 =Average Performance | 0.8 | 3 =Average Performance | 0.8 | Weight = | 26% |
| NFC#3 | Affordability | 4 =Moderately Above Average | 0.7 | 3 =Average Performance | 0.6 | 3 =Average Performance | 0.6 | Weight = | 18% |
| NFC#4 | Property Protection | 4 =Moderately Above Average | 0.7 | 3 =Average Performance | 0.6 | 3 =Average Performance | 0.6 | Weight = | 18% |
| NFC#5 | Financial | 1 =Considerably Below Average | 0.1 | 1 =Considerably Below Average | 0.1 | 1 =Considerably Below Average | 0.1 | Weight = | 5% |
| NFC#6 | Safety | 1 =Considerably Below Average | 0.1 | 1 =Considerably Below Average | 0.1 | 1 =Considerably Below Average | 0.1 | Weight = | 5% |
| | Weighted Score | | 4.21 | | 2.79 | | 2.79 | | |
| | Rank | | 1 | | 2 | | 2 | | |

13

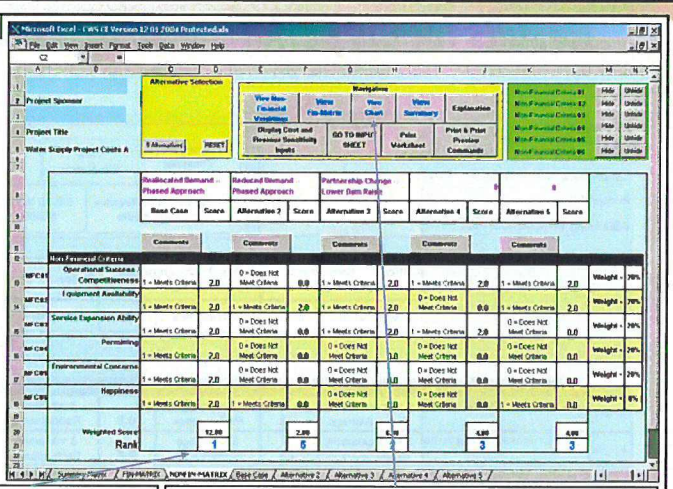
FIN-MATRIX



**VIEW ANALYSIS SUMMARY -**
This button will navigate the user to an output summary worksheet which has the rankings of the financial parameters as well as the non-financial criteria analysis summarized within it along with initial capital cost information related to initial near term capital outlays associated with each selected alternative.

14

NONFIN-MATRIX



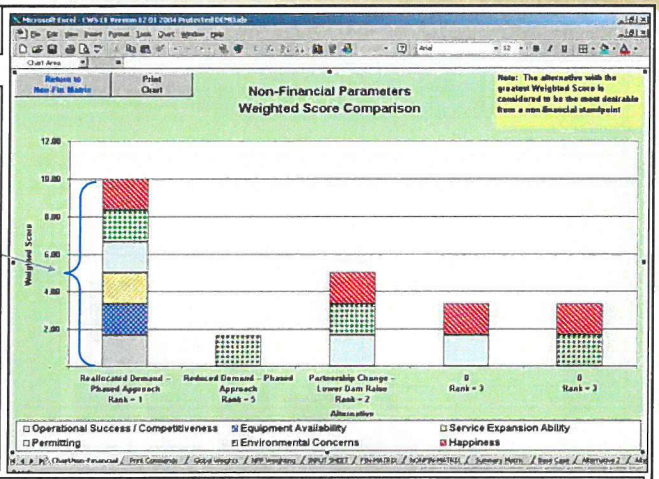
**VALUE PERFORMANCE RANK-**
Weighted Score Rank - This number ranks the sum of the Non-Financial Criteria scores with the highest cumulative score (the sum of the specific non-financial scores) being the most attractive from the non-financial criteria standpoint

**VALUE PARAMETERS WEIGHTED SCORE COMPARISON CHART** - Clicking on this button will navigate the user to the chart which depicts the components of the weighted Value Performance Score for each alternative.

15

**NON-FINANCIAL CHARTS**
**(Weighted Score Comparison)**

**VALUE RANK-**
**(components) -**
Within this stacked bar chart are the **Weighted Criteria Component Scores.** In this example case the user has selected six (6) value criteria which are equally weighted. However, the Base Case project alternative combined scores for all six criteria is greatest and therefore from a non-financial criteria standpoint this project alternative would be considered the most attractive.



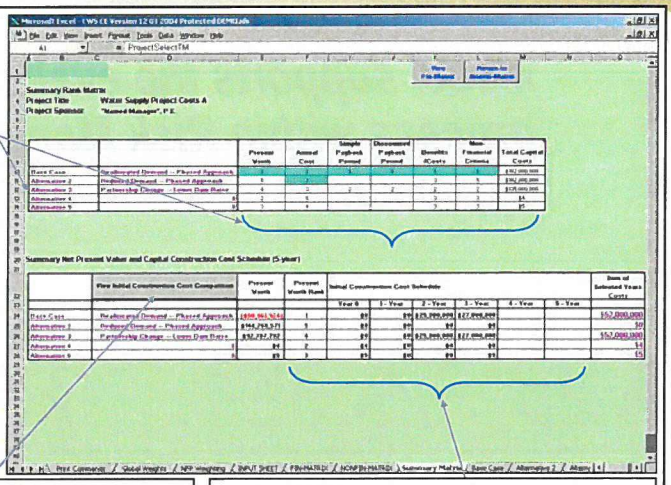

**VALUE PARAMETERS WEIGHTED SCORE COMPARISON CHART** - Explanation
Clicking on this button will navigate the user to the chart which depicts the components of the weighted Value Criteria Score for each alternative.
***Normalized Weight * Specific Criteria Score (Weighting Scales 1-3) = Weighted Criteria Component***

***Summation of Weighted Criteria Components = Total Weighted Score*** **(upon which Rankings are based)**

16

**SUMMARY MATRIX**

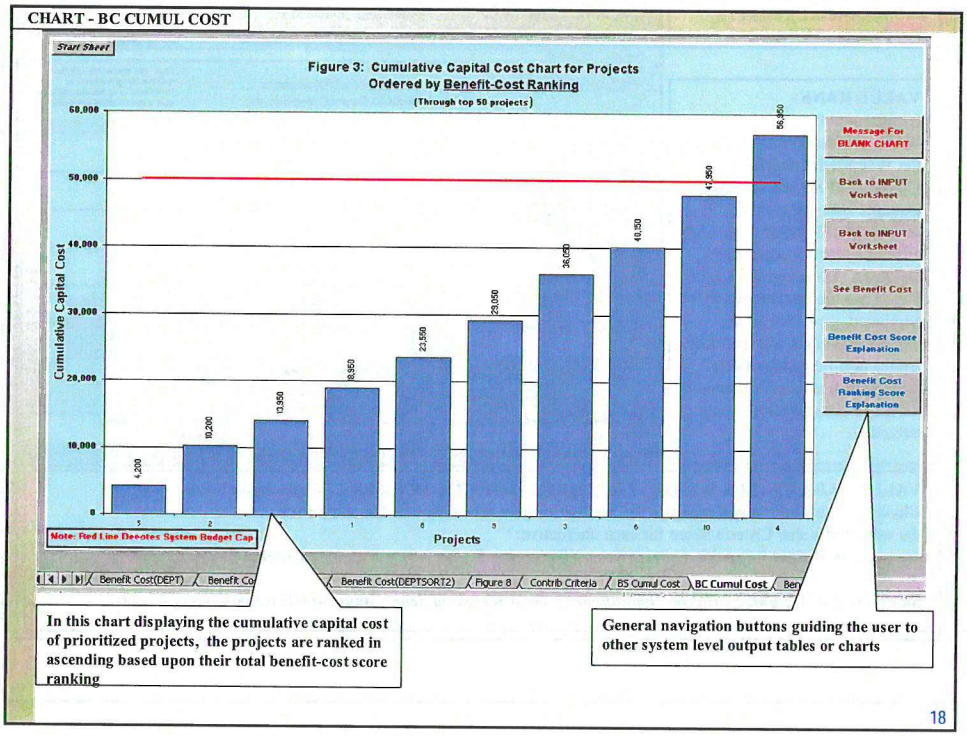
**ANALYSIS SUMMARY -**
For the respective number of selected alternatives this table displays the rankings of the financial parameters as well as the value criteria analysis summarized within it along with initial capital cost information related to initial near term capital outlays associated with each selected alternative.




**View Initial Construction Cost Comparison -**
This button will display a dialog box through which the user can examine the summary of the initial construction costs that will be faced from the inception of a specific project, time = 0, through year = 5

**Construction Cost Comparison Table -**
This table displays in summary the present worth of the selected number of alternatives as well as the summary construction costs based on user input from the inception of each project through year = 5.

17




18

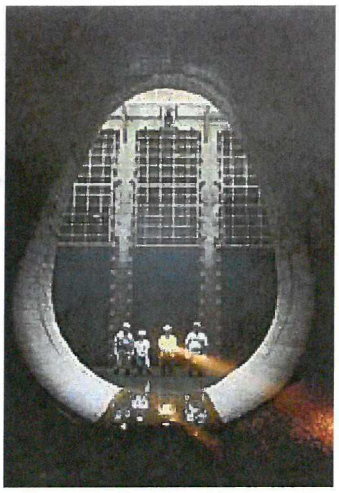
# *Model supports the evaluation process within Risk Management approach*

| Define values | Identify threats and risks | Define risk evaluation approach | Develop risk Reduction strategies | Prioritize risk reduction measures | Document risk manage plan |
|---|---|---|---|---|---|
| | | **Model set-up** | **Model input** | **Use Model** | |

19

## *Where will we use this? Example No. 1 – Southwestern PS*

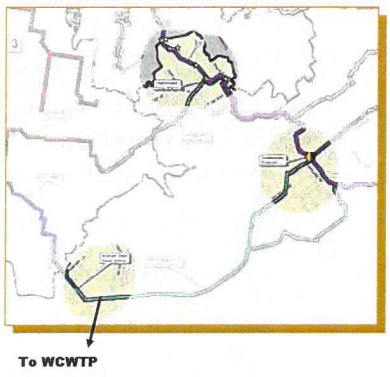
- Largest CSO in system – AAOV = 473 mg, 41 events per year
- Real Time Control Phase 1 and 2 storage eliminates overflows from small storms (1-2 month recurrence)
- More storage and/or remote treatment likely to be needed for larger storms
  - How big?
  - How far?
- Costs vary from $15 – $200+ million, depending on the answer to these questions



20

## *Where will we use this? Example No. 2 – "Big 4" SSO elimination*

- Plan required by Sept 2007
- Diversion to West County WTP appears to be "no-brainer"
  - space available for storage – open earth basin or covered concrete basin? How big? How often is is used?
  - high-rate side stream treatment likely – how big? (interacts with storage size)
  - Cost difference can be $ 20 M to $110 M million depending on answers
- How much flow do we take from Southeast Diversion to WCWTP?
  - storage versus relief sewer, for what design event?




21

## *Where will we use this? Example No. 3 – RTC Phase 3+*

- Phase 1 is complete and in service – has already captured 200 MG of combined sewage since April
- Phase 2 is under design and will be in service in 2008
- Phase 3 involves programming and minor system modifications – currently in capital plan & will probably be done
- Phase 4+ requires construction of storage basins – issues to resolve include:
  - basin location, as the proposed sites were not been procured and many are not available
  - size and configuration of basins – likely to be controversial neighborhood issues
- Continuation of Phase 4+ RTC will be subject to cost/benefit analysis along with all other projects

22

## *Where will we use this? Example No. 4 – SSO controls*

- Pipe lining and rehab have been generally unsuccessful
- Issues appear to be largely private property related – foundation drains, sump pumps roof leaders etc.
- Control Options include:
  - Relief sewers to convey uncontrolled I&I
  - New sewers, reconnected to sanitary only
  - Lowering groundwater table to reduce I&I
  - Strict enforcement of connection regulations,
- CMOM program commits MSD to prepare private property ordinance for consideration by Metro Council

23

## *Summary – what do we feed the tool? What do we get out of it?*

- Stakeholder group takes lead to supply
  - Values
  - Relative Importance (weights)
  - Objectives for value protection
  - Strategies and approaches to manage threats to values
- Technical team takes lead to supply
  - Numeric performance scales to support objectives
  - Engineering alternatives based on strategies and approaches
  - Construction and operating costs for each alternative
- Benefits for Cost/Benefit analysis come from risk reduction evaluation
- The tool gives us a transparent & well documented process to systematically & logically consider both qualitative and quantitative values critical to our decision process
  - Performance in protecting values
  - Summarized financial information
  - Cost/Benefit analysis
  - Opportunity for sensitivity analysis

24

# PREVIEW OF COST/BENEFIT ANALYTICAL TOOL

Wet Weather Team

Stakeholder Group Meeting

**September 12, 2006**

25

# Sequence of Upcoming Wet Weather Team Discussion Topics

Wet Weather Team Meeting
September 12, 2006

## This Meeting (September 12, 2006)

- Explain and discuss WWT analytical process in detail
- Review MSD's mission and responsibilities
- Identify and group community values

2

## Meeting 4: October 19, 2006

- Review organized community values
- Present and discuss:
  - Baseline conditions for the values
  - Root causes of those conditions
  - Sensitive locations related to values
- Identify objectives for the values

3

## Meeting 5: December 5, 2006

- Present and discuss proposed objectives for community values
- Discuss plans for public involvement during and following the WWT process

4

## Meeting 6: Mid-January 2007

- Review proposed public involvement plans
- Brainstorm the basis for evaluating threats to each community value:
  - Probability scales
  - Severity scales
- Brainstorm possible comparative weights for community values

5

## Meeting 7: Mid-February 2007

- Present and discuss proposed weights for community values
- Present and discuss initial draft of probability and severity scales for values
- Brainstorm threats to community values

6

## Meeting 8: Mid-March 2007

- Present and discuss revised draft of probability and severity scales for values
- Present and discuss fleshed out and specific threats to community values
- Exercise to plot a limited number of threats on the community values risk matrices (showing probability and severity)

7

## Meeting 9: Mid-April 2007

- Present and discuss MSD rate and financing options
- Update on specific threat characterizations
- Check-in on public involvement efforts

8

# Meeting 10: Mid-May 2007

- Present and discuss specific threat characterizations
- Discuss general risk reduction strategies
- Preview:
  - Process to identify projects and alternatives based on threats
  - Upcoming use of Project Select tool

9