



REDUCING CSOs – POSSIBLE LEVELS OF CONTROL

To reduce CSOs, MSD must establish waterway priorities and identify the option or “Level of Control (LOC)” that best carries out these priorities. MSD is considering 5 LOCs:

- Complete Elimination
- Uniform Minimum Level of Control
- “Knee-of-Curve” Everywhere
- “Knee-of-Curve” on Urban Streams + Green on Mississippi River
- Graduated Control on Urban Streams + Green on Mississippi River



COMMONALITIES AMONG LOCs

All LOCs will promote wider implementation of source controls:

- Street sweeping
- Litter control
- Proper waste disposal

All LOCs will use green practices / infrastructure to reduce stormwater runoff and encourage more natural ground infiltration. Common types of green infrastructure include:

- Rain gardens
- Green roofs
- Stormwater detention
- Rain barrels
- Pervious pavement

The two LOCs that emphasize green infrastructure along the Mississippi River might also include partnerships with municipalities, businesses, and residents to:

- Buy-out depressed low areas that suffer from regular flooding and turn them into green space
- Install pervious pavement and green roofs more widely, and monitor their performance
- Develop green streetscape standards for St. Louis City's central business district
- Pilot projects in combined sewer area that implement best stormwater management practices, including disconnection of downspouts



COMPLETE ELIMINATION

- ***Percent of Sewage Captured And Treated Annually***
 - Currently: 65% of combined sewage and stormwater
 - This option: 100% of sewage only
- ***Associated Costs***
 - Total Construction: \$9.6 billion
 - Average Homeowner Monthly Sewer Rate: \$200
- ***Additional Considerations***
 - Advantages:
 - Eliminates pollution from CSOs to local streams
 - Disadvantages:
 - Additional separation costs for property owners
 - Stormwater pollution not addressed since stormwater would no longer be treated
 - Significant community disruption during construction. Every street would have to be torn up and all plumbing reconfigured
 - Much more infrastructure (sewers) to maintain in future

CSO Reduction By Waterway

Impacted Waterways	Average # of Yearly Overflows Currently	Average # of Yearly Overflows – This Option
RDP – Lower & Middle	50/yr	0/yr
RDP – Upper	50/yr	0/yr
RDP – Tributaries	50/yr	0/yr
Maline Creek	30/yr	0/yr
Gingras Creek	30/yr	0/yr
Mississippi River	50/yr	0/yr



UNIFORM MINIMUM LEVEL OF CONTROL EVERYWHERE

- ***Percent of Combined Sewage & Stormwater Captured And Treated Annually***

- Currently: 65%
- This option: 81%

- ***Associated Costs***

- Total Construction: \$2.2 billion
- Average Homeowner Monthly Sewer Rate: \$80 – \$85

- ***Additional Considerations***

- Advantages:
 - Some level of CSO reduction is accomplished at all 199 CSO outfalls
- Disadvantages:
 - Significantly less benefit to smaller, urban streams vs. other feasible options
 - Comparable or less benefit to Mississippi River vs. other feasible options
 - More difficult to expand controls if necessary in future

CSO Reduction By Waterway

Impacted Waterways	Average # of Yearly Overflows Currently	Average # of Yearly Overflows – This Option
RDP – Lower & Middle	50/yr	18/yr
RDP – Upper	50/yr	18/yr
RDP – Tributaries	50/yr	18/yr
Maline Creek	30/yr	18/yr
Gingras Creek	30/yr	0/yr
Mississippi River	50/yr	18/yr



KNEE-OF-CURVE EVERYWHERE

- ***Percent of Combined Sewage & Stormwater Captured And Treated Annually***
 - Currently: 65%
 - This option: 92%
- ***Associated Costs***
 - Total Construction: \$3.2 billion
 - Average Homeowner Monthly Sewer Rate: \$100 – \$105
- ***Additional Considerations***
 - Advantages:
 - Highest benefit to Mississippi River vs. other feasible alternatives
 - High benefit to smaller, urban streams
 - Disadvantages:
 - Greatest monthly sewer bill cost compared to other feasible alternatives

CSO Reduction By Waterway

Impacted Waterways	Average # of Yearly Overflows Currently	Average # of Yearly Overflows – This Option
RDP – Lower & Middle	50/yr	4/yr
RDP – Upper	50/yr	4/yr
RDP – Tributaries	50/yr	4/yr
Maline Creek	30/yr	4/yr
Gingras Creek	30/yr	0/yr
Mississippi River	50/yr	6/yr



KNEE-OF-CURVE ON STREAMS & GREEN ON MS

- ***Percent of Combined Sewage & Stormwater Captured And Treated Annually***

- Currently: 65%
- This option: 82%

- ***Associated Costs***

- Total Construction: \$1.9 billion
- Average Homeowner Monthly Sewer Rate: \$80 – \$85

- ***Additional Considerations***

- Advantages:
 - Lower costs allow some funds to be dedicated to “green” infrastructure / controls
 - Green controls help preserve and restore natural landscapes and aid in stormwater management
- Disadvantages:
 - Mississippi River CSOs continue to discharge with current frequency
 - Long-term performance / benefit of green controls is unknown

CSO Reduction By Waterway

Impacted Waterways	Average # of Yearly Overflows Currently	Average # of Yearly Overflows – This Option
RDP – Lower & Middle	50/yr	4/yr
RDP – Upper	50/yr	4/yr
RDP – Tributaries	50/yr	4/yr
Maline Creek	30/yr	4/yr
Gingras Creek	30/yr	0/yr
Mississippi River	50/yr	50/yr



GRADUATED CONTROL ON STREAMS & GREEN ON MS

- ***Percent of Combined Sewage & Stormwater Captured And Treated Annually***
 - Currently: 65%
 - This option: 81%
- ***Associated Costs***
 - Total Construction: \$1.8 billion
 - Average Homeowner Monthly Sewer Rate: \$80 – \$85
- ***Additional Considerations***
 - Advantages:
 - Less strict controls on lower and middle River Des Peres net a \$100 million savings
 - Savings allow additional funds to be dedicated to “green” infrastructure / controls
 - Green controls help preserve and restore natural landscapes and aid in stormwater management
 - Disadvantages:
 - Mississippi River CSOs continue to discharge with current frequency
 - Long-term performance / benefit of green controls is unknown

CSO Reduction By Waterway

Impacted Waterways	Average # of Yearly Overflows Currently	Average # of Yearly Overflows – This Option
RDP – Lower & Middle	50/yr	8/yr
RDP – Upper	50/yr	4/yr
RDP – Tributaries	50/yr	4/yr
Maline Creek	30/yr	4/yr
Gingras Creek	30/yr	0/yr
Mississippi River	50/yr	50/yr



COMPARING LOCs

LEVELS OF CONTROL	REDUCING OVERFLOWS							MANAGING COSTS	
	AVERAGE % OF FLOW CAPTURED AND TREATED ANNUALLY	AVERAGE # OF UNTREATED OVERFLOWS PER YEAR BY WATERWAY						TOTAL CONSTRUCTION COST	AVERAGE HOMEOWNER'S MONTHLY SEWER RATES**
		RDP – LOWER & MIDDLE	RDP – UPPER	RDP – TRIBS	MALINE CREEK	GINGRAS CREEK	MISSISSIPPI RIVER		
CURRENT CONDITIONS	65%	50/yr	50/yr	50/yr	30/yr	30/yr	50/yr	\$0	\$29
<i>Complete Elimination</i>	100%	0/yr	0/yr	0/yr	0/yr	0/yr	0/yr	\$9.6 billion*	\$200
<i>Uniform Minimum Level of Control Everywhere</i>	81%	18/yr	18/yr	18/yr	18/yr	0/yr	18/yr	\$2.2 billion	\$80 – \$85
<i>“Knee-of-Curve” Everywhere</i>	92%	4/yr	4/yr	4/yr	4/yr	0/yr	6/yr	\$3.2 billion	\$100 – \$105
<i>“Knee-of-Curve” on Urban Streams + Green on Mississippi</i>	82%	4/yr	4/yr	4/yr	4/yr	0/yr	50/yr	\$1.9 billion	\$80 – \$85
<i>Graduated Control on Urban Streams + Green on Mississippi</i>	81%	8/yr	4/yr	4/yr	4/yr	0/yr	50/yr	\$1.8 billion	\$80 – \$85

* Figure does not include expenses incurred by private property owners for separation of internal building plumbing and home laterals. This expense estimated to be in the billions of dollars.

** Rates adjusted to current dollars and include expenses for CSO controls, SSO controls, plant upgrades and system renewal activities. Rate changes would be experienced during next several decades.