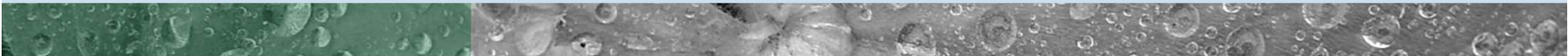




***Inflow and Infiltration/  
Sewer Overflow Reduction Program  
Part 4***

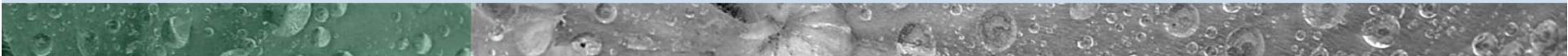
December 8, 2011





## ***Our Agenda for this Meeting***

- Introduction
- Evaluation of Options
- Decision Support Matrix
- Questions/Discussion





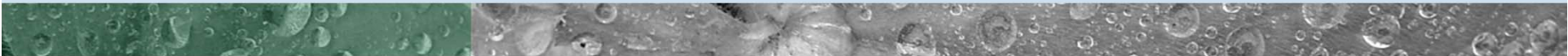
# *Introduction*





# *Current Situation*

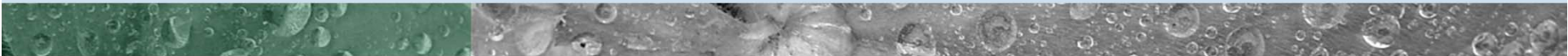
- TP Capacity and Configuration
  - Primary = 21 MGD
  - Secondary = 8 MGD
  - Blended primary and secondary effluent meeting NPDES Permit limits are discharged during peak flow events
- Peak Flow
  - Peak flow of record  $\approx$  23 MGD
  - Including 20 MGD of I/I





## *Likely Regulatory Driver and Timeframe for I/I Reduction or TP Capacity is Effluent Blending*

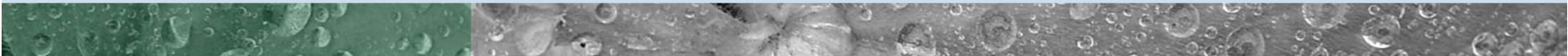
- Likely Driver
  - EPA, RWQCB Staff, and NGOs have stated opposition to effluent blending during Peak Flow Events
- Likely Timeframe for Implementing Permit Requirements
  - LGVSD must renew NPDES Permit in 3 years (2014)
  - 2015 NPDES Permit (2015-2020)
    - Possible new prohibition: Sewer system peak flow must not exceed secondary treatment capacity
    - Compliance would be required by next permit renewal (2021)
  - Minimum timeframe = 8 years





## *Current I/I Reduction Programs*

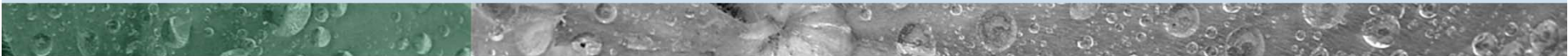
- Smoke Testing
- CCTV Inspection
- Public Education and Outreach
- Sewer Main and Lower Lateral Rehabilitation
- Property owners are offered opportunity to have upper laterals included in sewer rehabilitation projects at a reduced cost – but paid by the property owner
- Realtor Disclosure Form: “Buyers are advised to obtain a video inspection of the sewer lateral”





# *Options Available to Eliminate Effluent Blending*

- Reduce I/I entering Sewer System
  - Public sewer system
  - Private sewer laterals
- Provide Storage for Flows Exceeding TP Capacity
  - Sewer system storage
  - Treatment plant storage
- Increase Secondary Treatment Capacity
- Combination of Above Options





# ***Evaluation of Options***

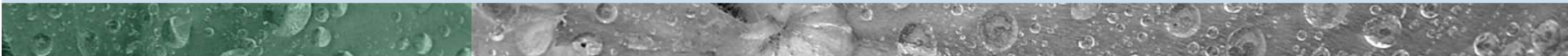




# *Options to Eliminate Effluent Blending*

## *1. Reduce I/I*

- Current Programs
  - Cost effective
  - Associated I/I reduction over next 8 years will not eliminate blending
- Additional Programs
  - Cost Effective
    - Voluntary lateral rehabilitation can be increased:
      - Loan Program (being developed)
      - Reduce the cost to the property owner (e.g. public bids)
    - Identify and disconnect swimming pool drains to sewer system
    - Increase sewer rehabilitation from 0.5 miles to 5 miles per year miles per year at a cost of \$60 million over 5 year in order to eliminate effluent blending
  - Not Cost Effective
    - Full scale lateral testing program
    - Public ownership/maintenance of laterals

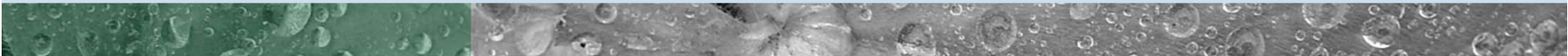




# *Options to Eliminate Effluent Blending*

## *2. Store Excess Flows for Later Treatment*

- Current Programs
  - Flow equalization/storage basin at TP included in current budget
  - Size based on available space
  - Anticipated to reduce peak flows to secondary treatment to 17 MGD
- Additional Programs
  - Data not available to identify optimum size and location for storage in the sewer system

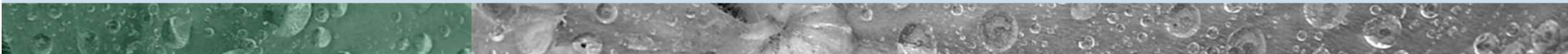




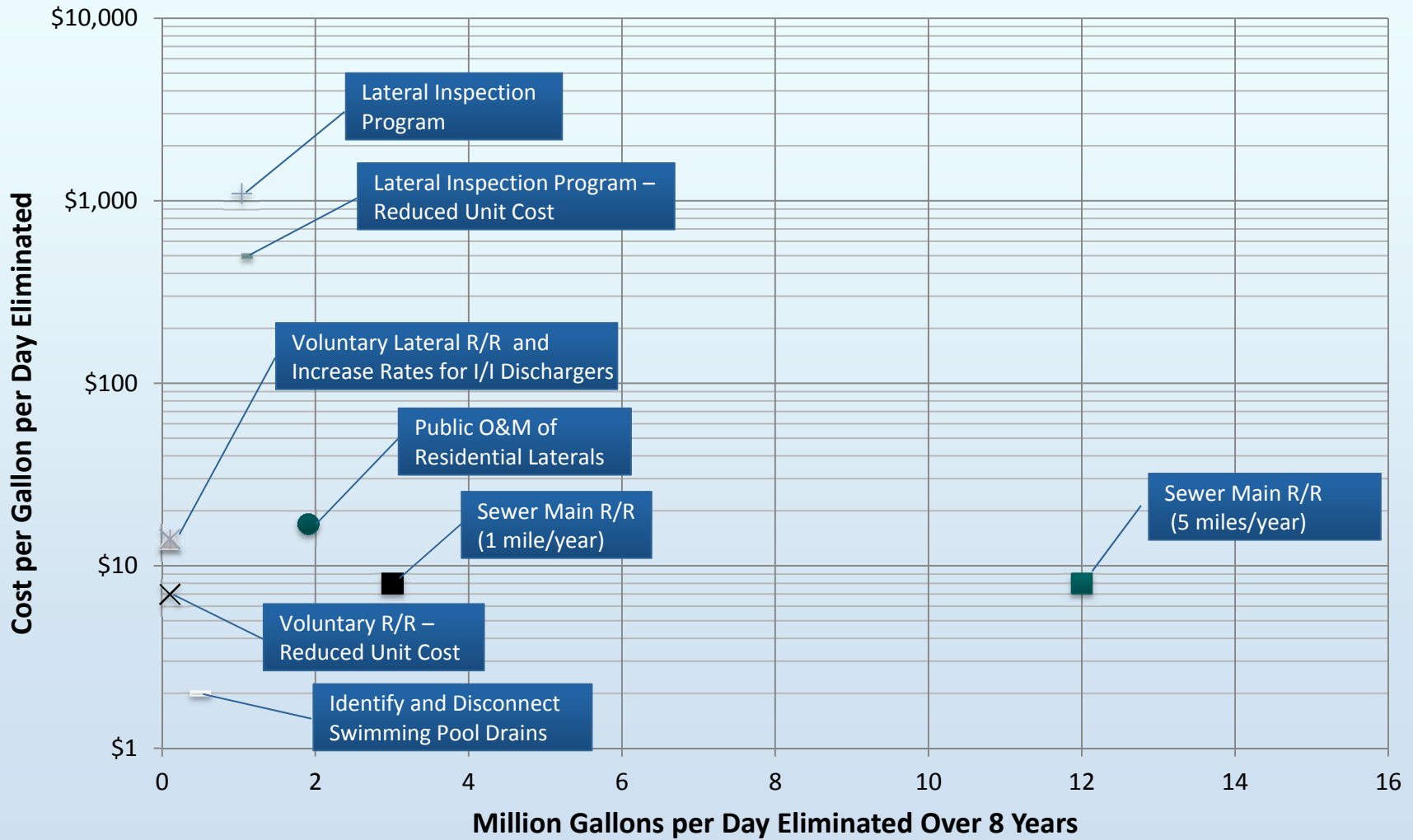
## *Options to Eliminate Effluent Blending*

### *3. Increase Secondary Treatment Capacity*

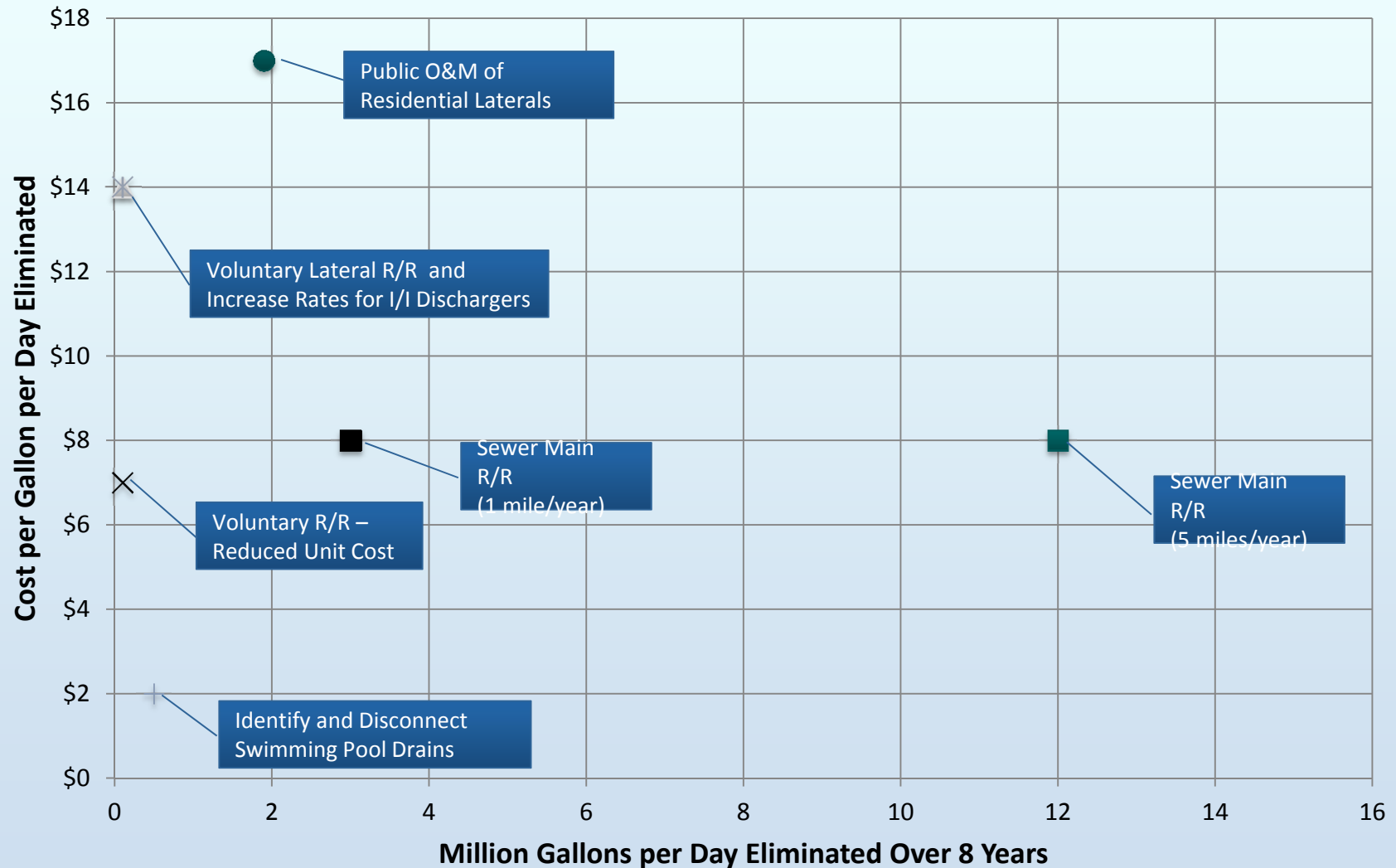
- Current Programs
  - Increase capacity to 17 MGD in current plan at a cost of \$5 million
  - Appears to be feasible
- Additional Programs
  - Increase capacity to 25 MGD at an additional cost of \$10 million
  - Further evaluation needed to determine feasibility



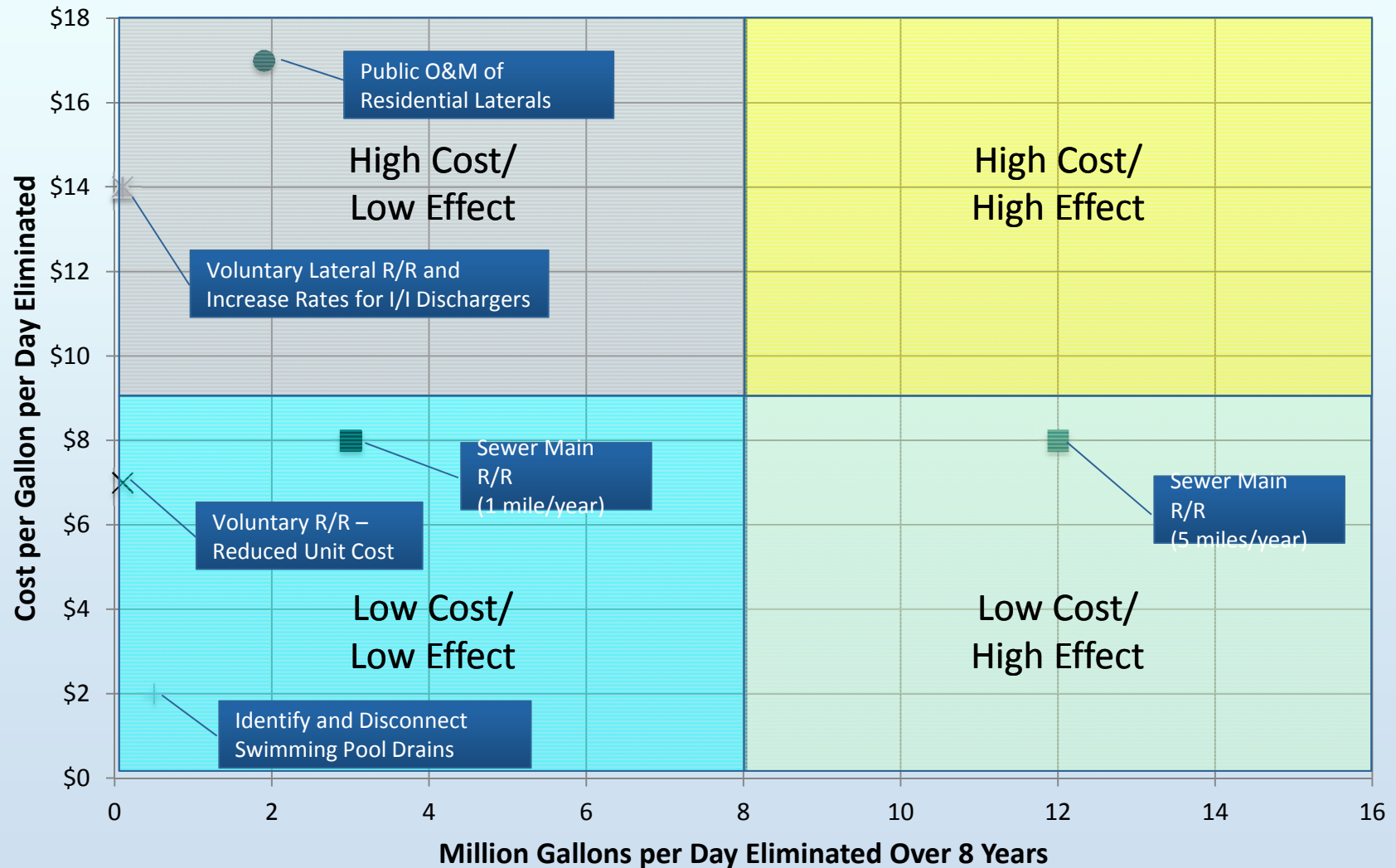
# Total Cost vs. I/I Reduction Potential



# Total Cost vs. I/I Reduction Potential



# Total Cost vs. I/I Reduction Potential

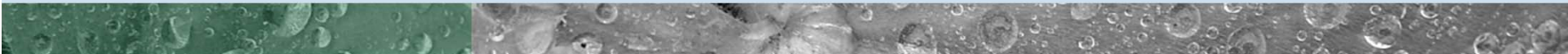


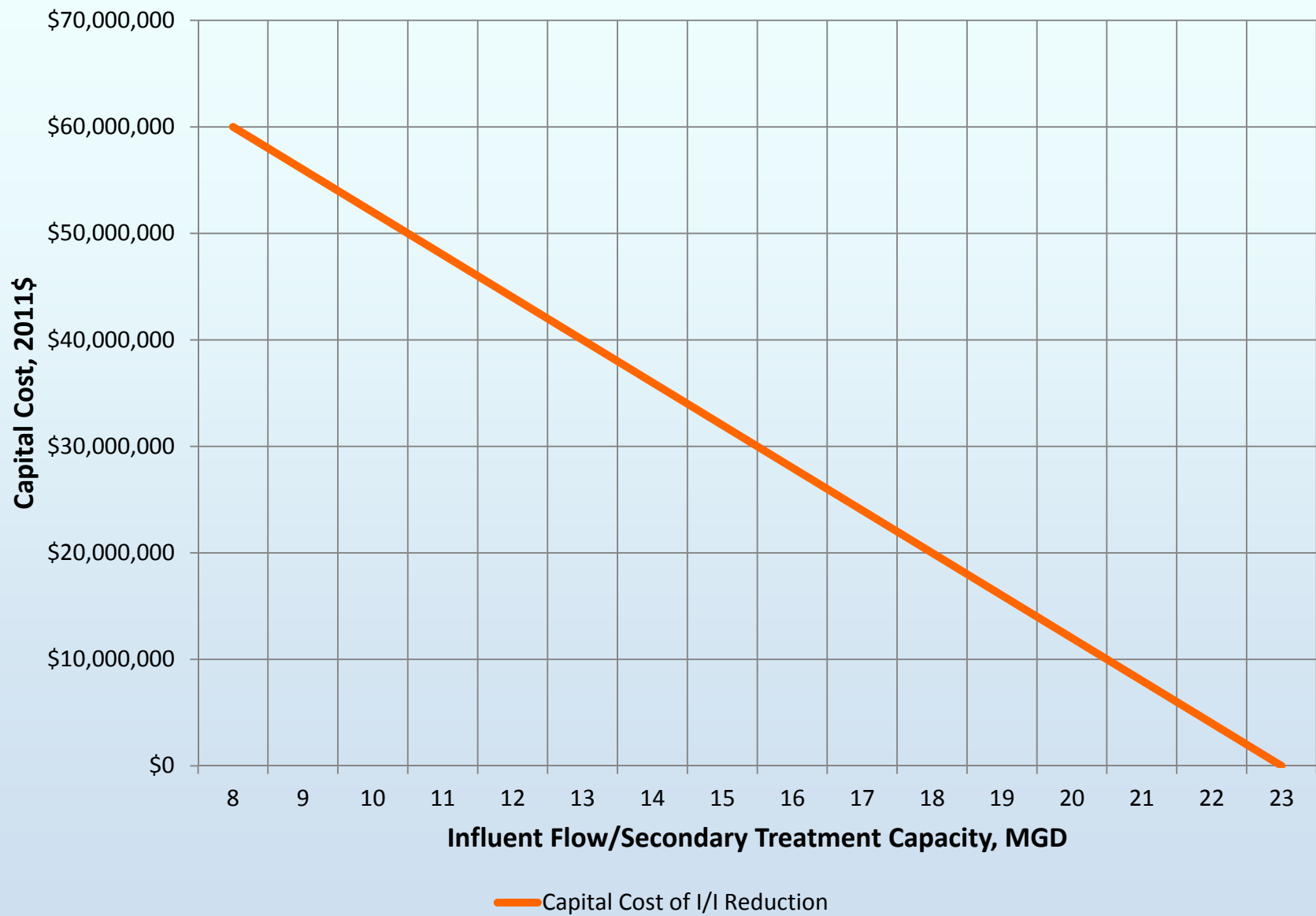


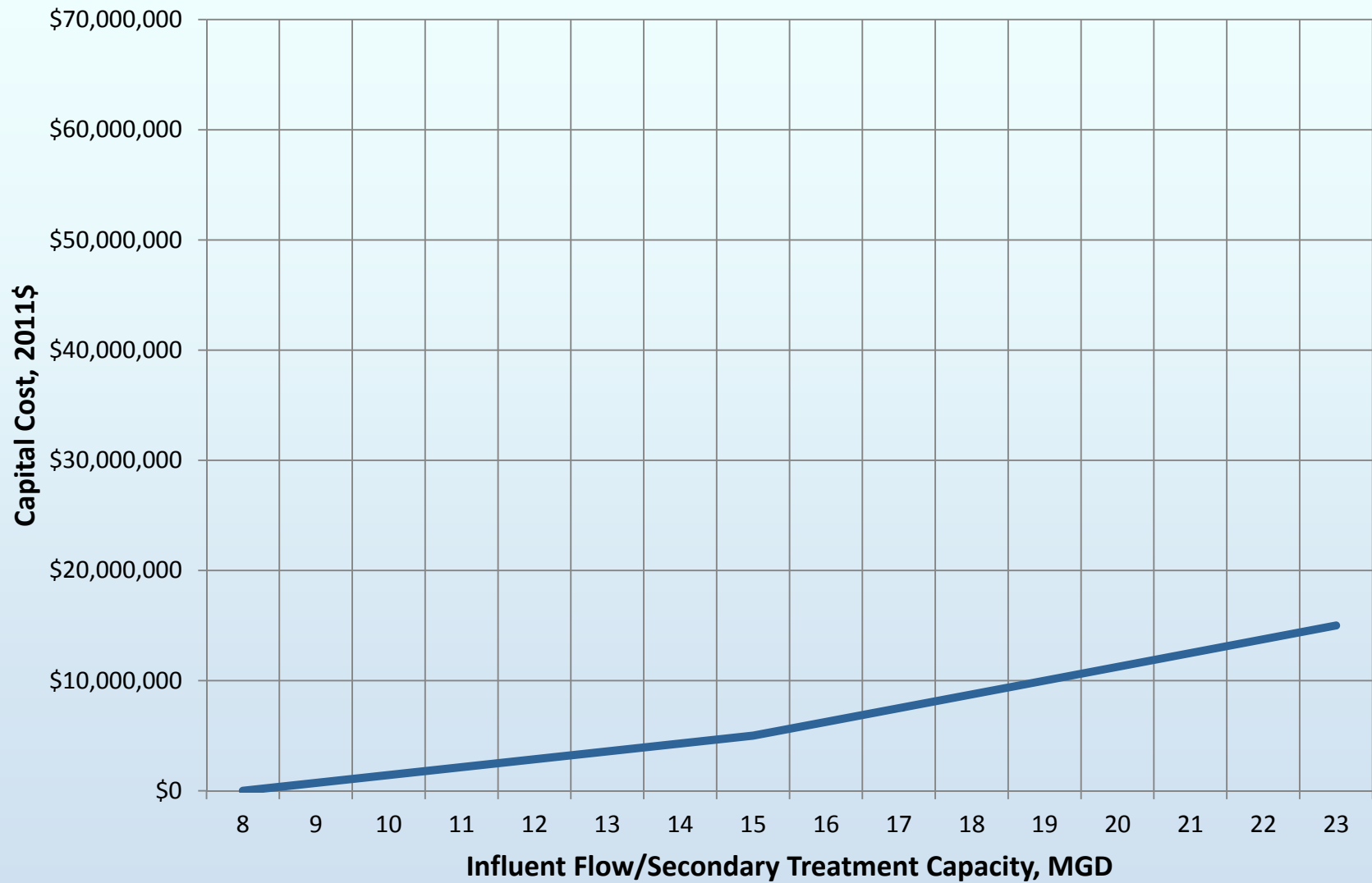
# *Options to Eliminate Effluent Blending*

## *4. Combination of Options*

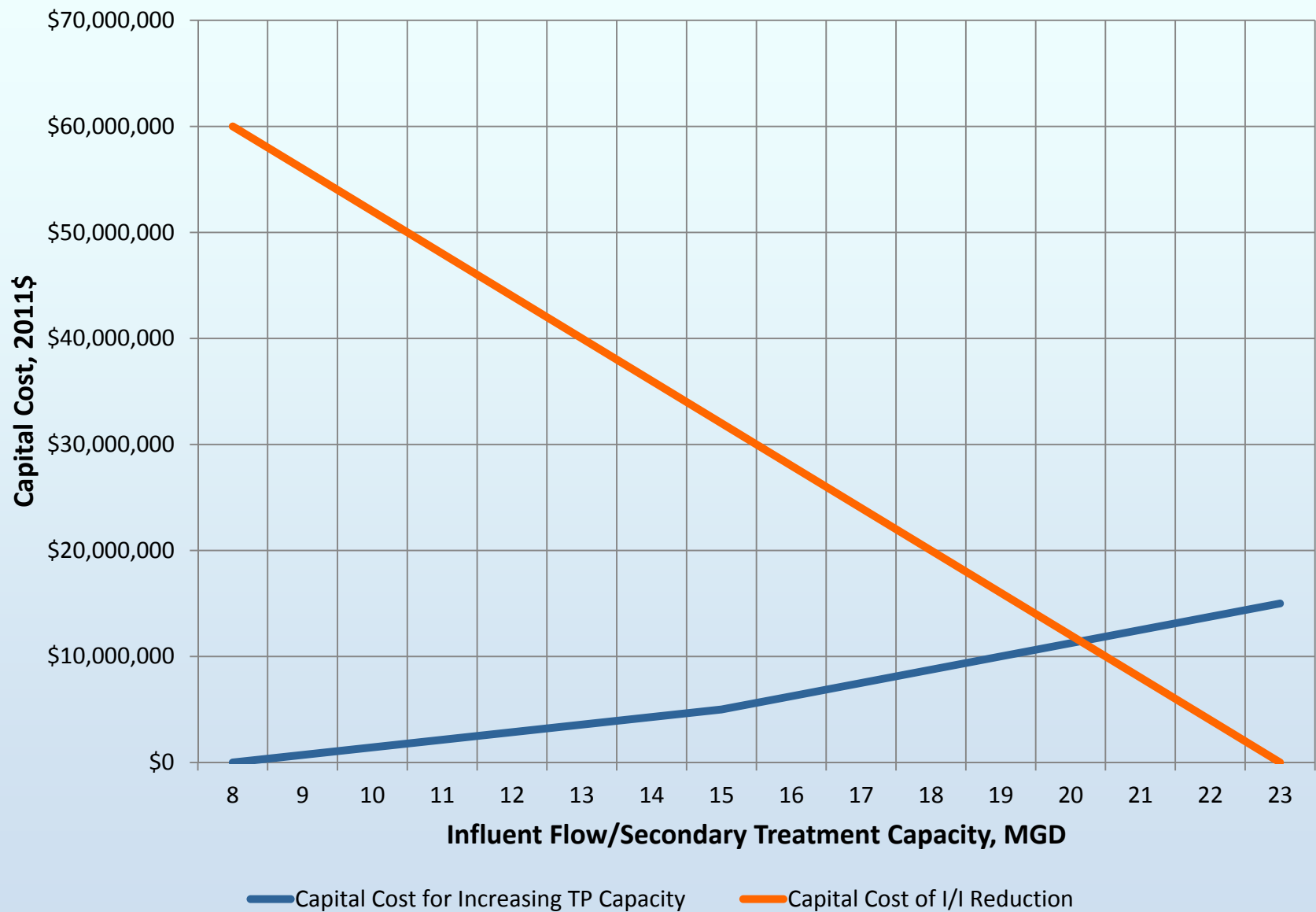
- Simplified Analysis
  - Continue current I/I reduction efforts at current scale
  - Increase secondary treatment capacity to 25 MGD through:
    - Additional storage
    - New/modified facilities
- Need for Additional Analysis
  - Storage vs. capacity increase
  - Feasibility of secondary treatment options that fit within existing TP footprint

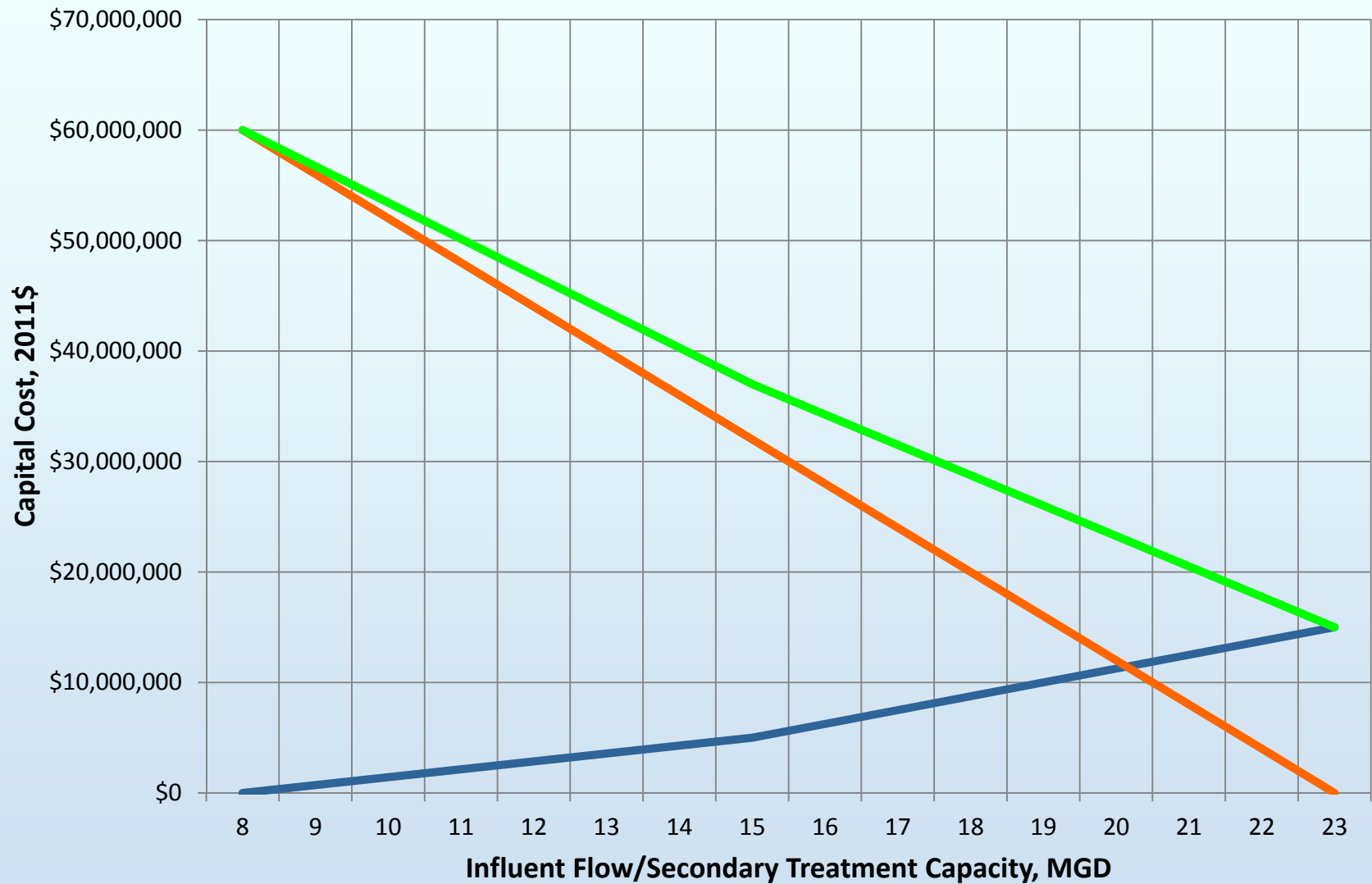






— Capital Cost for Increasing TP Capacity





— Capital Cost for Increasing TP Capacity    — Capital Cost of I/I Reduction    — Total Capital Cost




# *Recommendations*





# *Recommendations Based on Evaluation*

## SHOULD DO

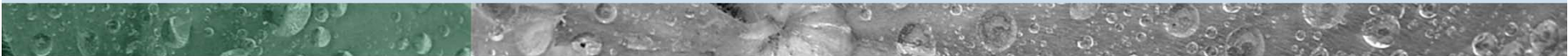
- Continue current I/I reduction programs at the current scope.
  - Identify and disconnect swimming pool drains to sewer.
  - Conduct annual flow monitoring program over the next 5 years to develop detailed flow data and use the results to:
    - Focus smoke testing and sewer R/R programs, and
    - Develop hydraulic model.
  - Identify Optimum Combination of Options
    - Conduct limited-scope engineering studies:
      - Determine the feasibility of increasing the secondary treatment capacity within the current TP footprint, and
      - Support preparation of a sewer system/TP master plan identifying the cost effective near-term and long-term improvements.
- 



## *Recommendations (cont'd)*

### OPTIONAL BUT RECOMMENDED FOR SYSTEM SUSTAINABILITY

- Encourage voluntary lateral R/R through reduced cost using public bidding process
- Consider adding a lateral inspection/testing program with triggers:
  - History of lateral blockages and/or spills
  - Lateral defects or I/I observed by District during CCTV and smoke testing
  - Remodel > \$50,000
  - Change in use
  - Change of customer






# ***Decision Support Matrix***



# Decision Support Matrix

		A	B	C	D	E	F	G	H	I
		Effectiveness at Eliminating Effluent Blending	I/I Reduction Achievable over 8 Years	I/I Reduction Cost Effectiveness	Time Required to Treat Peak Flows	Annual Cost to Individual Rate Payer	Cost to Property Owner with Problematic Lateral	Replacement Timeframe Upper Lateral	Additional Staff Required	Consultants Required?
Line #	RATING CATEGORY	0 - 10	MGD	Cost / Gal per Day Eliminated	Years	Cost / Connection	Cost	Years	FTE	Yes / No
1	<b>Increase TP Capacity to Provide Secondary Treatment</b>									
2	• In-Plant Flow Equalization (Storage Basin included in Current Budget)	5	0	N/A	N/A	\$8	\$0	N/A	0	Yes
3	• Increase Secondary Capacity (Upgrade to 17 MGD included in Current Planning)	8	0	N/A	N/A	\$40	\$0	N/A	0	Yes
4	• Increase Secondary Capacity (Upgrade to ≈ 25 MGD)	10	0	N/A	8	\$110	\$0	N/A	0	Yes
5	<b>Reduce Quantity of I/I Entering Sewer System from Mains</b>									
6	• Increase Current Rate of Sewer R/R Program by 100% (0.5 miles/year to 1 mile/year)	2	3	\$8	40	\$110	\$0	N/A	0	Yes
7	• Increase Current Rate of Sewer R/R Program to Reduce Peak Flows by 12 MGD in 8 years (5 miles/year)	10	12	\$8	8	\$300	\$0	N/A	2	Yes
8	<b>Reduce Quantity of I/I Entering Sewer System from Laterals</b>									
9	• Identify and Disconnect Swimming Pool Drains	2	0.5	\$2	N/A	\$5	\$1,000	N/A	0	Yes
10	• Encourage Voluntary R/R of Upper Laterals through Lateral Loan Program	1	0.1	\$14	> 100	\$0	\$5,000	> 100	0	Yes
11	• Encourage Voluntary R/R of Upper Lateral through Reduced Cost using Public Bid	1	0.1	\$7	> 100	\$2	\$2,500	> 100	0	No
12	• Increase Sewer Service Rates for Properties that are known to Discharge I/I	1	0.1	\$14	> 100	\$0	\$90/yr	> 100	0	Yes
13	• District assumes Ownership and Maintenance of Residential Laterals	4	1.9	\$17	20	\$500	\$0	20	5	No
14	• Require Inspection of Lateral and R/R (if Needed) using the Triggers and Program Parameters:	2	1	>> \$100	> 100	\$0	\$5,000	25	1	No
15	• Triggers:									
16	▪ History of Lateral Blockages and/or Spills									
17	▪ Remodel >\$50,000									
18	▪ Lateral Defect or I/I Observed during Mainline Smoke Testing and Video Inspection									
19	▪ Change in Use									
20	▪ Change in Customer									
21	• Timing: Inspection and Lateral Repair/Replacement Complete within 180 Days of Trigger Event									
22	• Method: CCTV Inspection of Lateral Reviewed by District Staff									
23	• Duration: Certificate of Compliance Valid for 20 Years									
24	<b>Notes</b>	<b>Symbols</b>								
25	All costs in 2012 dollars.	< Less than								
26	0-10 Scale: 0 = not effective, 10 = very effective	> Greater than								
27		>> Much greater than								
	December 8, 2011									



***Any Remaining Questions?***



