

Sewer System Master Plan

January 29, 2009

San Francisco Public Utilities Commission
Wastewater Enterprise

Problems and Challenges

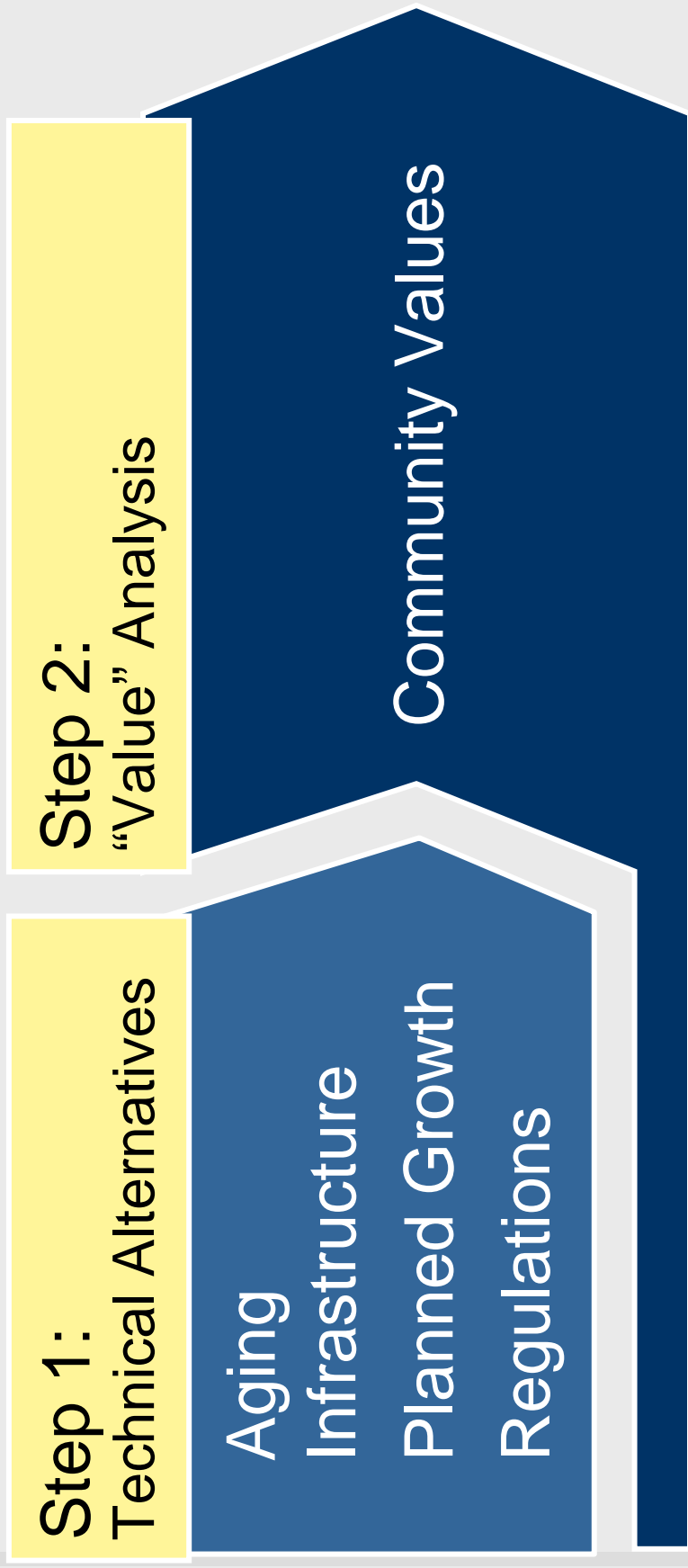


- Aging Infrastructure
- Flooding
- Odors
- Reliability and Redundancy
- Operating Cost
- Regulatory Issues

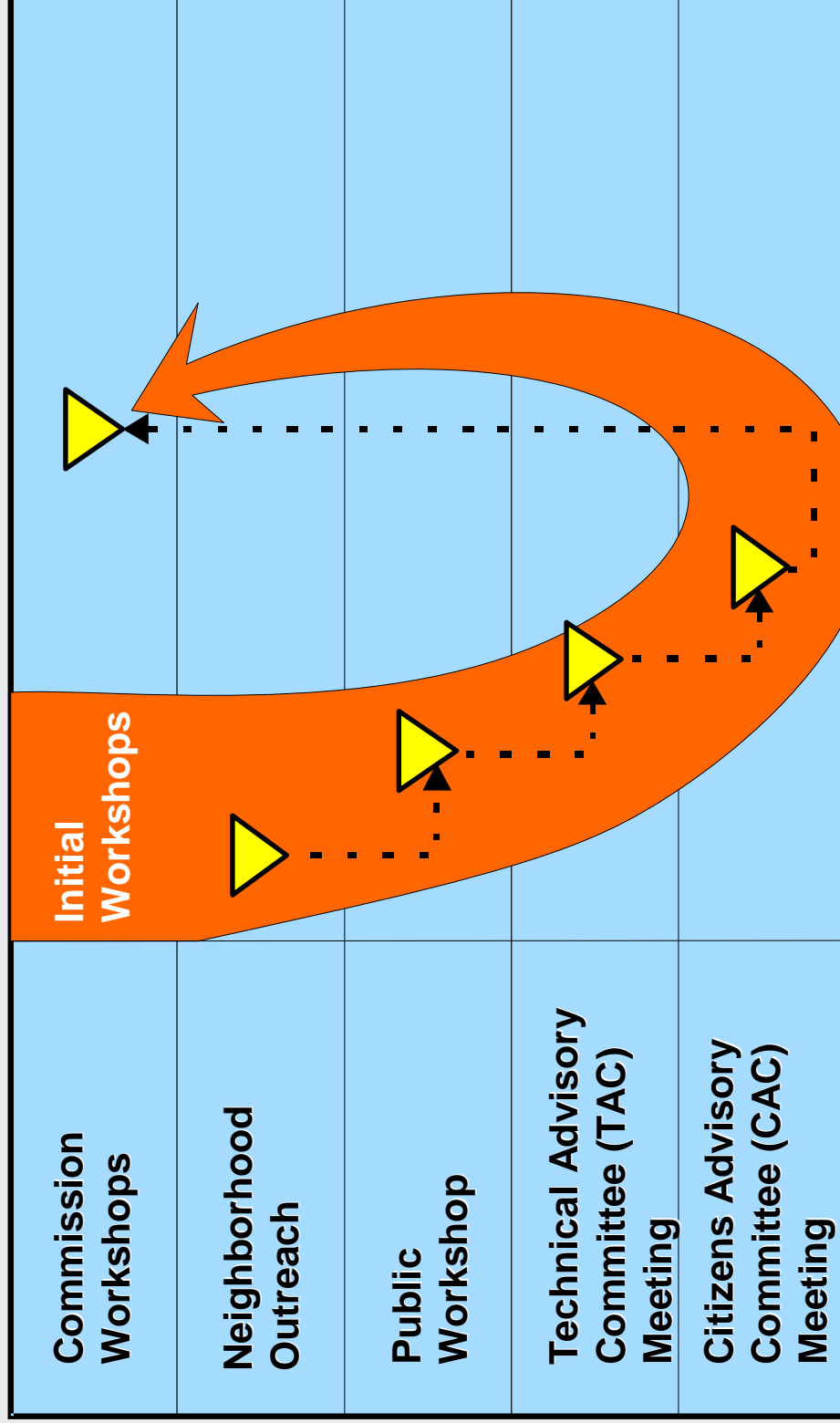
What is the Master Plan

- A look at the City's entire sewer system.
- Is there something that we could do differently? (faster, better, smarter, and more sustainable)
- Accommodate growth, meet regulations and address aging infrastructure.

Two-step planning process to find the “best” alternative



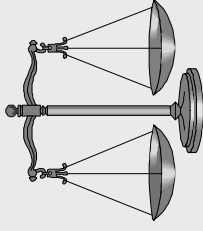
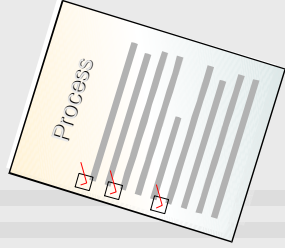
Master Planning Process



Commission Workshop Series 2005-2006



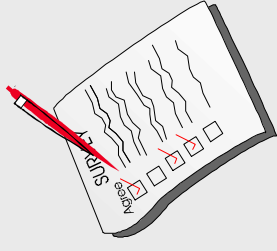
Understand existing wastewater system, problems and issues.



Understand Master Plan process and approach. Present project goals, levels of service, and evaluation criteria.



Review levels of service, and evaluation criteria. Examples of potential concepts and alternatives.



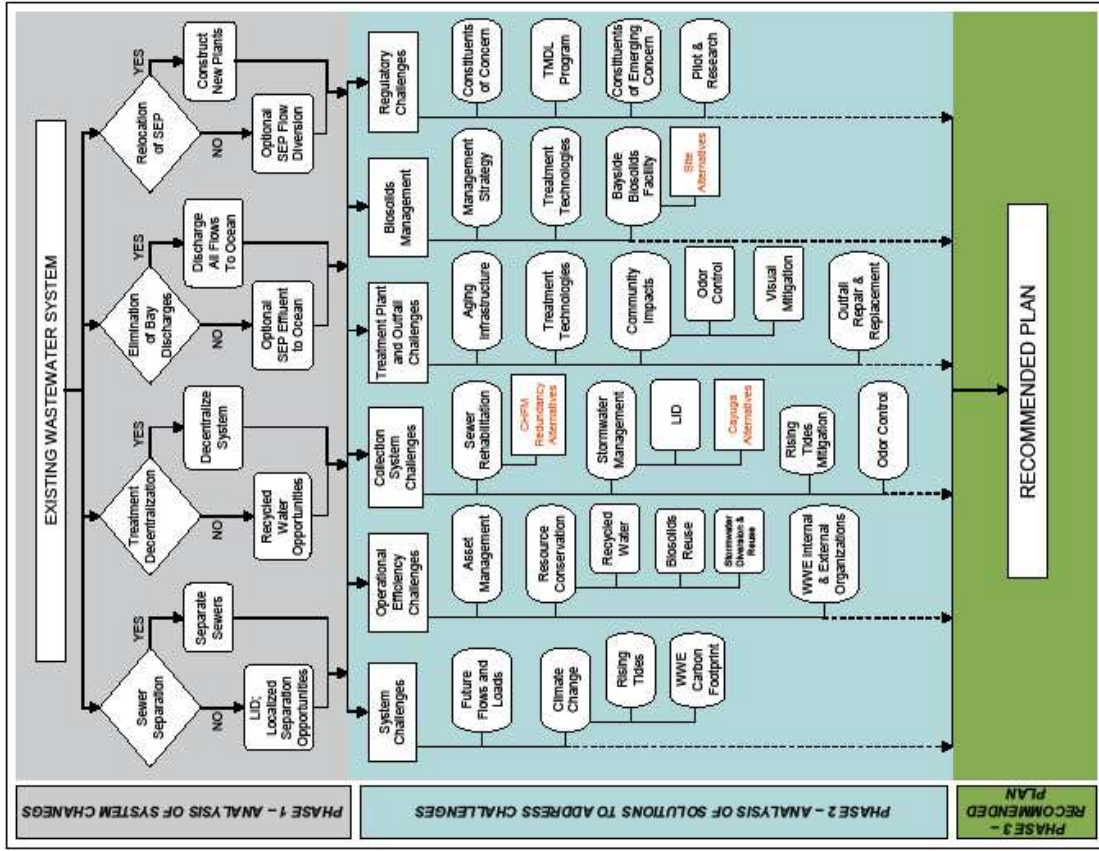
Commission Updates

- November 2006 – presentation of four project alternatives with associated programs and projects to maintain good system repair and address odors
- November 2007 – presentation of recommended program
- May 2008 – presentation of recommended program to the Southeast Community

Sewer System Master Plan

Goals and Objectives

- Improve Seismic Reliability
- Improve System Reliability and Flexibility
- Reduce Community Impacts
- Promote Environmental Stewardship
- Enhance Sustainable Use of Natural Resources
- Protect Public Health and the Environment
- Protect Worker Health and Safety
- Minimize Impacts to Ratepayers



Recommended Plan

- 15-year Capital Improvement Program
- Propose a Recommended Plan that:
 - Groups projects, policies, operations and maintenance activities into unified programs
 - Ensures continued regulatory compliance
 - Preserves future options;
 - Maintains flexibility for future
 - Minimizes costs
 - Addresses critical aging infrastructure needs
 - Exploits existing infrastructure and remaining useful life
 - Incorporates sustainable features



Recommended Plan

- Treatment Facility Projects
 - **Southeast Plant:** Upgrades and odor, visual, noise control improvements; Repair SE outfall
 - **Oceanside Plant:** Minor improvements and equipment replacement
 - **North Point Facility:** Upgrade primary sedimentation tanks; Odor control improvements; Repair outfall
 - **Force Mains/Pump Stations:** Improvements to pump stations and force mains
 - **New Digester Facility:** Replace Southeast Plant Digesters

Recommended Plan

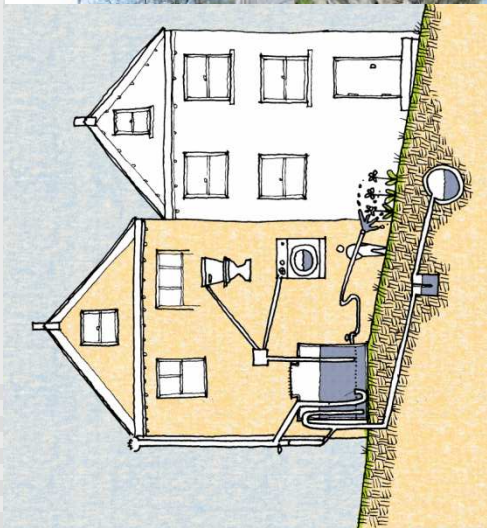
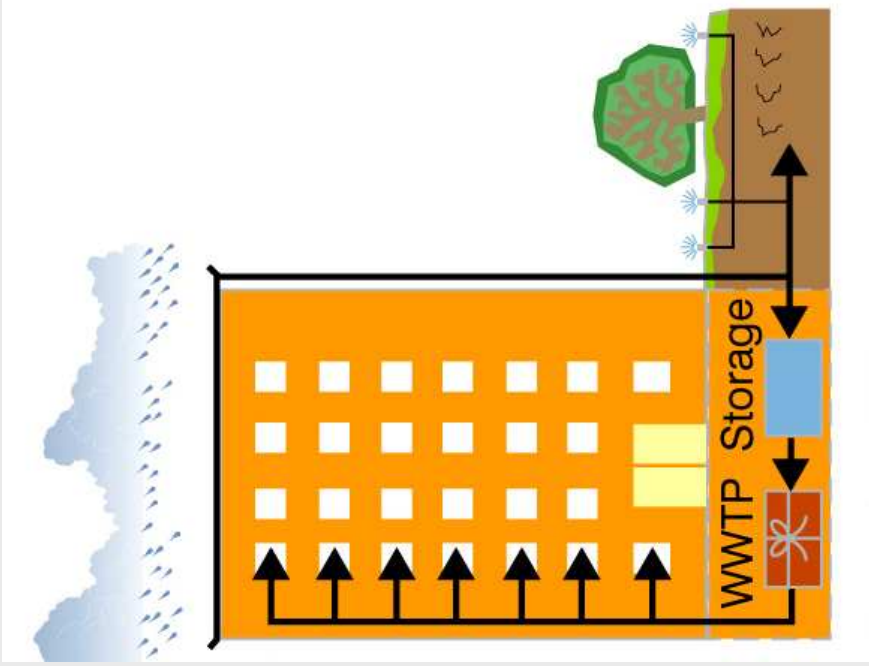
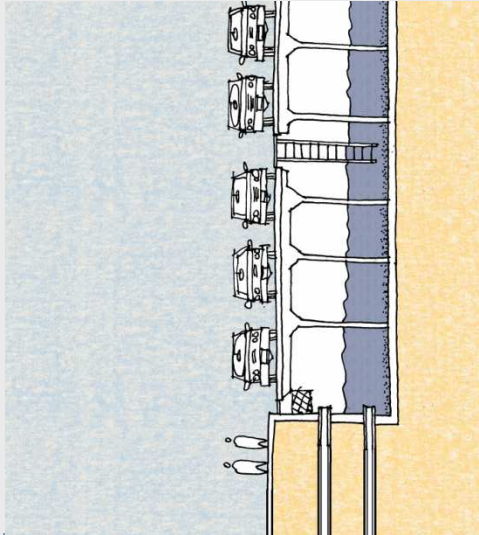
- **Collection System Projects**
 - **Sewer Repair and Replacement including Brick Sewers**
 - **Transport-Storage & Tunnel Structure Repair**
 - **Odor Control Projects**
 - **Flood Control**

Projects will Evaluate Low Impact Development (LID) for Stormwater Reduction

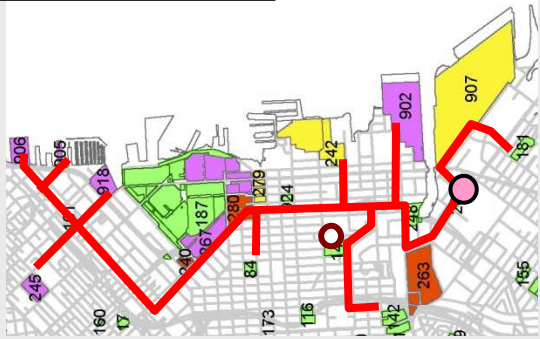
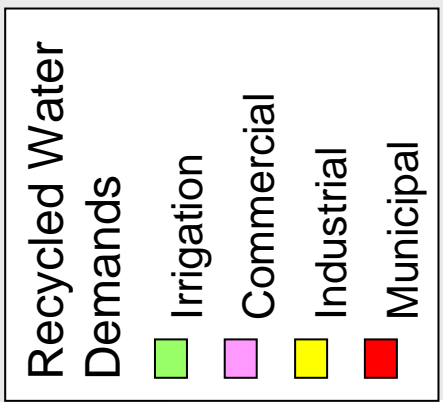
- Evaluate potential LID implementation in all projects at planning phase
- Potential LID Opportunities
 - Rainwater Harvesting
 - Disconnect roof drains
 - Eco-roofs
 - Plant Street Trees
 - Permeable surfaces
 - Daylight streams
 - Swales



Rain Harvesting



Recommended Program Provides for Bayside Recycled Water Facility



Southeast Plant Digesters Project

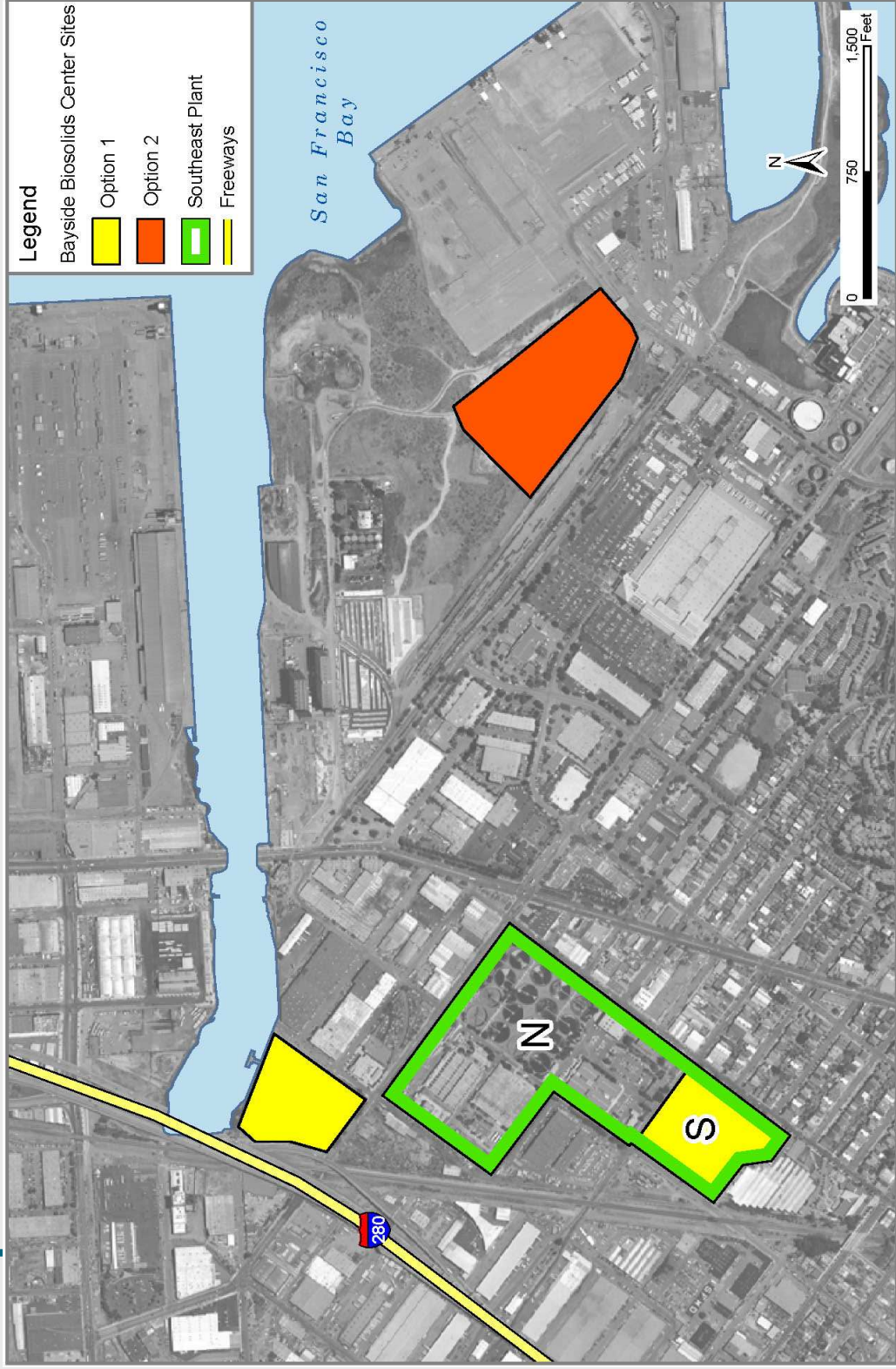


Southeast Plant Digesters Project

- Increased seismic reliability
- Improved biosolids treatment
- Energy recovery
- All odors captured & scrubbed (i.e., no odors past fenceline)



New Digester Facility Site Options for EIR Process



Begin the Southeast Plant Digesters Project Detailed Planning Process

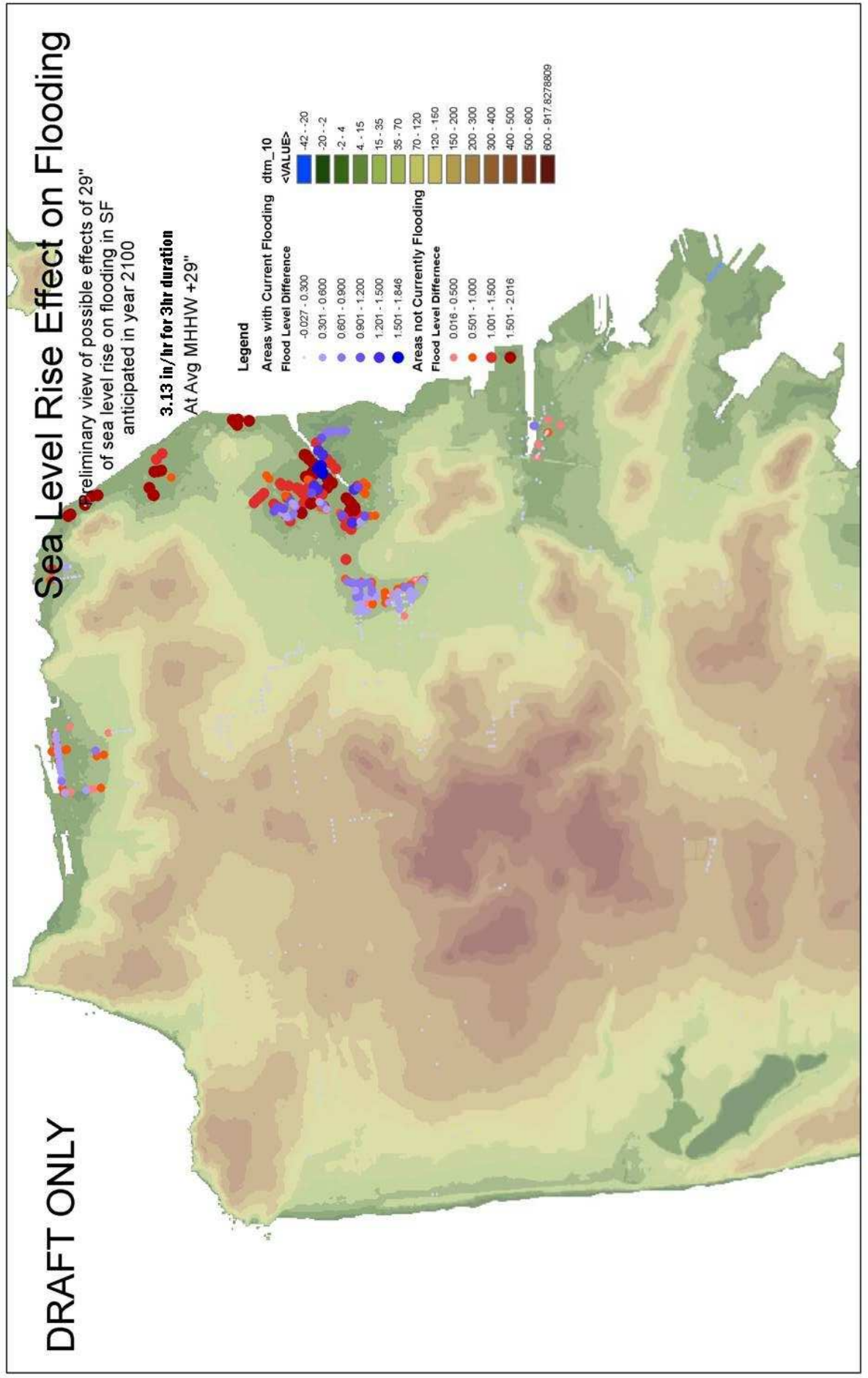
- Advisory group comprised of neighborhood residents.
- Hire the design consultant to assist in advanced planning.

Global Warming; Rising tides



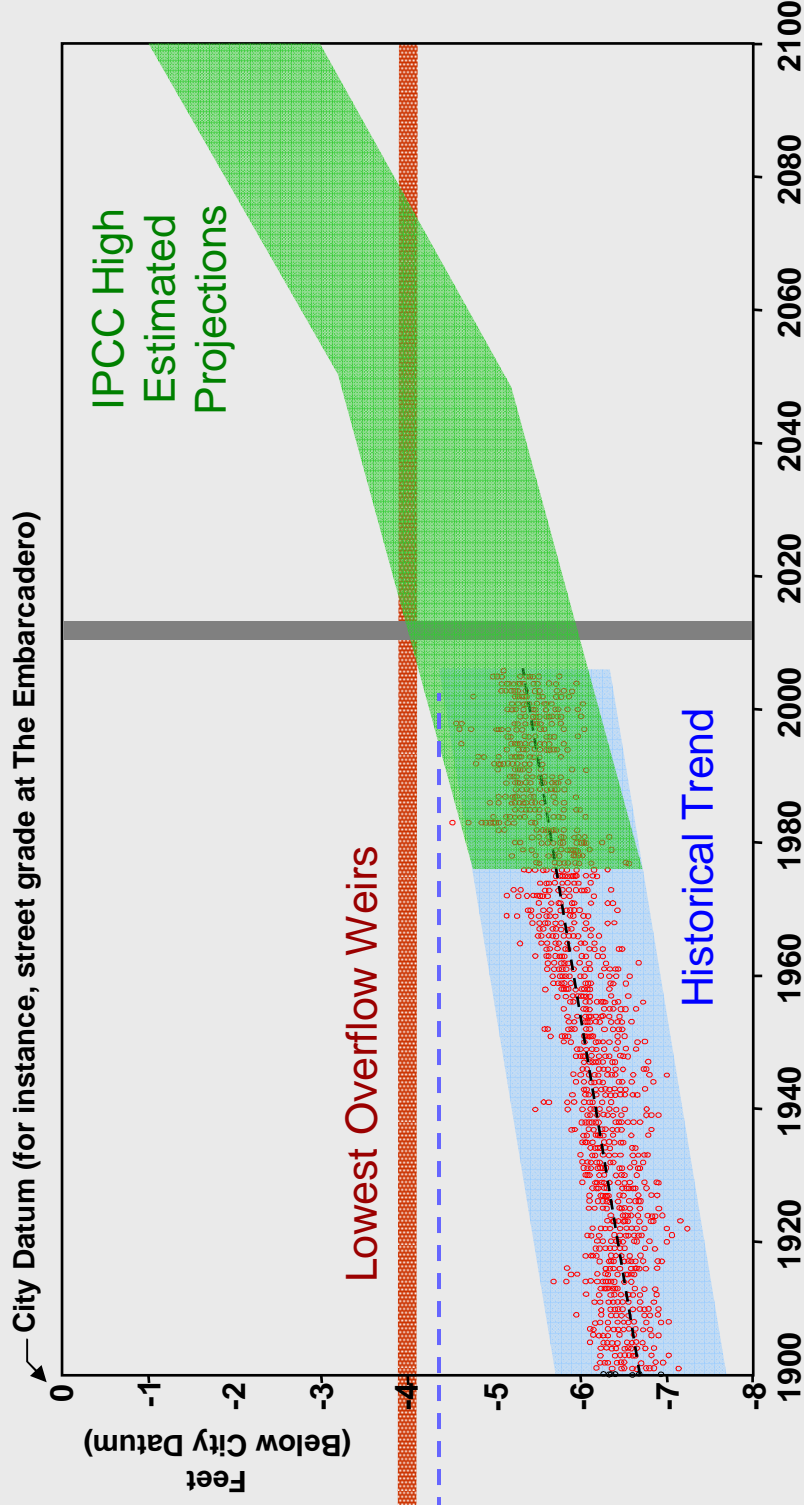
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Areas of Future Flooding



Rising Tides Impact the Sewer System

Historical and Projected High Tides* Relative to San Francisco City Datum



* Monthly Mean Higher-High Water (MHHW)

Rising Tides & SF Sewer System

- Rate of sea level rise (SLR) at San Francisco over last 150 years - 2.13 mm (0.08 in) per year
- Over the last 20 years:
 - Rate of SLR has increased to 3.2 mm (0.13 in) per year
 - mean tide level is up by 0.06 m (2.5 in)
 - high tide level is up by 0.15 m (6 in)



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NOAA-National Water Level Program (NWLP) and National Water Level Observation Network (NWLON).
www.tidesandcurrents.noaa.gov/nwlon

Rising Tides & SF Sewer System

- By 2100, the IPCC* projects global mean sea level to rise between 0.3 and 0.88 m (12 to 35 in)



Short Term Solution

- Tideflex® Duckbill Valves (DBVs)
 - Prevents backflow
 - Eliminates hinges, springs, levers, and counterweights
 - No moving parts to lubricate or replace
 - Rubber construction of its check sleeve allows it to seal around entrapped debris
 - Cost Estimate: ~\$18,000,000

Short Term Solution



Backflow Prevention Sunnydale Outfall



Long Term Solution

- **Install Pump Stations**
 - Maintain existing backflow prevention to prevent sea water from entering collection system and treatment facilities
 - Low lift pump “decanted” combined sewage to near shore discharge point (bayside only): cost \$400,000,000
 - Pump combined sewage to nearest wastewater treatment facility and deep water outfall: cost \$2,000,000,000

Next Steps

- Complete draft Master Plan report
- Begin monthly meetings with Digester Community Task Force
- Continue environmental review process
- Provide detailed project update/ workshop at March 10 meeting

Schedule

- **Draft Master Plan Report**
 - Available February 2009
- **Environmental Review Process**
 - July 2008 – December 2011
- **Southeast Digester Task Force**
 - Monthly meetings through 2009
- **Commission meeting and Public Workshops beginning in March 2009**

End

