Flooding Hearing:
Long and Short Term Strategies

Presentation to
San Francisco Board of Supervisors
Public Safety and Neighborhood Services Subcommittee

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Agenda

1. Background
2. Long Term: Neighborhood Construction
3. Short Term: Programs
4. Next Steps
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BACKGROUND
Flooding Terminology

- **Stormwater:**
  Rainwater that runs overland.

- **Sanitary Sewage:**
  Wastewater from homes and businesses; “dry weather flow”.

- **Combined Flow:**
  Stormwater + sanitary sewage mixed in the same pipes.
  Pipes are sized primarily to manage stormwater.

Design storm flows in Folsom neighborhood

- **630 gal/min**
  100% sanitary

- **160,000 gal/min**
  0.2% sanitary
History of Our Collection System & Level of Service

1840s
Construction begins

1941
5-yr storm defined

1952
New developments must contain 5-yr design storm

SFPUC endorses 5-yr | 3hr storm as Level of Service

PIPE SIZING GUIDELINES EVOLVED

5-YR STORM PIPE SIZING REQUIREMENT

2017
Flood Resilience Study affirms LOS
Areas with Surface Inundation, 5-year Storm

- Areas of General Flood Concern: Areas >0.41 acre
- Historical Hydrology
Areas with Surface Inundation, 100-year Storm

- Areas of General Flood Concern: Areas >0.41 acre
- Historical Hydrology
Watershed Flooding – Folsom Example
Watershed Flooding – Folsom Example, Sewer Profile

17th & Folsom
Watershed Flooding – Cayuga Example

Legend
- Orange: Drainage area flowing through collection system under Foot of Cayuga area (2,800 ac)
- Green: Large sewer mains under Foot of Cayuga area

1. Flow from Glen Park branch
2. Flow from Cayuga branch
3. Flow from Alemany branch
Watershed Flooding – Cayuga Example Sewer Profile

End of Cayuga St
Basement Flooding

- Roof Gutter
- Roof Drain
- Curb
- Sidewalk Vent
- Street Pavement
- Building Sewer
- Side Sewer
- Manhole
- Main Sewer
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LONG TERM: NEIGHBORHOOD CONSTRUCTION
Early Flood Resilience Capital Projects
Foerster/Mangels neighborhood

Description:
• New parallel sewer on Foerster
• Enlarge nearby sewers
• Raise crosswalks on Foerster & Mangels to manage water on surface
• Reconstruct roadway to restore curb height

Project Status:
• Awarded 3/14

Project Cost / Completion Date:
~ $4-5 M / 2017
Urbano neighborhood

Description:
• New inlets to route water into existing pipes

Key Considerations:
• Coordination with paving and sewer replacement projects

Project Status:
• NTP issued

Project Cost / Completion Date:
~ $1.5 M / 2017
Wawona/15th neighborhood

Description:
• Install new inlets & pipes to collect water from surface
• Convert Arden Wood Basin to contain water in large storms

Key Considerations:
• Arden Wood property coordination
• Geotechnical considerations
• Environmental mitigations

Project Status
• Initiated Conceptual Engineering

Project Cost / Completion Date:
~ $23 M / 2020
Description:
• Move flows from Inner Mission to Mission Creek outfall

Key Considerations:
• Utilities, cultural resources, and other underground issues
• Real estate in dense urban area
• Traffic disruption

Project Status
Two alternatives being evaluated in planning phase:
  • 1.5 mile expansion of existing pipes
  • 12-foot diameter tunnel

Project Cost / Earliest Completion:
~ $150-200 M / 2024
Cayuga/Alemany Corridor

Cayuga Description:
- Re-grade / depress Caltrans property at I-280 to detain / drain surface water
- Build wall to support I-280
- Performance: Reduce flood depth at end of Cayuga in 25-year storm
- Status: Planning / Caltrans negotiations
- Cost / Schedule: ~ $12 M / 2019

Alemany Description:
- Move flows to the Bay
- >1 mile new large parallel sewer
- Performance:
  - Manage 5-year storm along Alemany
  - Reduce degree of flooding/backups at end of Cayuga in 25-year storm
- Status: Concept evaluation
- Cost / Schedule: ~ $350 M / TBD
Wawona (downstream) and Sloat neighborhoods

**Wawona sewer**
- Behind homes on Wawona
- Built in 1928
- SFPUC conducted field survey in March
- Currently cleaning and inspecting the pipes
- Investigating the need for action

**Sloat Blvd drainage**
- Caltrans will be constructing bulb outs and repaving Sloat
- The City is working closely with Caltrans on drainage issues
Upper Great Highway

- Placed under SF Recreation & Park Department jurisdiction in 1860’s;
- Public Works maintains
- Drains to sand and percolates
- Not connected to SFPUC’s combined system
- Sand drifts on the road cause ponding
Short Term: Programs

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SHORT TERM: PROGRAMS
Storm Preparation & Response for Collection System

- Sewer inspections
- Catch basin cleaning
  - Goal: clean 5,000 per year (2015 & 2016: nearly 15,000 cleaned)
  - Prior to storms in flood-vulnerable areas
- Staffing
  - Treatment plants
  - StormWatch crews
  - 17th/Folsom barriers
- Sandbag deliveries
  - 1245 delivered in 2017
- 311 response
Partnership with Property Owners:
Available Programs

• Flood Insurance
  • Policies have quadrupled

• Floodwater Grant (up to $30,000 per property)
  • $140,000 paid;
  • $60,000 in review process;
  • More applications coming soon

• Adopt-A-Drain
  • >1,500 drains adopted

• Small Business Disaster Relief Fund
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NEXT STEPS
Long Term: Collection System Plan

Prioritization
Rate Impacts
10 Year CIP

Aging Infrastructure

Seismic Reliability
Flooding

Climate Change
Environmental Stewardship

COLLECTION SYSTEM PLAN
Using an Urban Watershed Assessment Approach
Short Term: Beyond Infrastructure

Continue to explore full suite of options above/beyond our infrastructure

Existing Programs
- Flood Insurance
- Floodwater Grant
- Adopt-A-Drain
- Small Business Disaster Relief Fund

Potential Future City Programs Under Evaluation
- Identify areas vulnerable to flooding:
  - Flood-resistant construction (new developments, major renovations)
  - Disclosure at Point-of-Sale
- Investigate concept: larger grants to floodproof and/or raise structures
- Investigate concept: select voluntary property acquisition
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THANK YOU