Floodplain Management Association - June 14, 2018 luncheon

Innovative Regional Approaches to Funding and Implementing Flood Protection in Silicon Valley

Len Materman
Executive Director
San Francisquito Creek Joint Powers Authority
len@sfcjpa.org  650-324-1972

San Francisquito Creek 1998 flood
Palo Alto

2017 flood

East Palo Alto, 2016
Current and increasing risk to shoreline areas in the San Francisquito floodplain

A government agency creating and implementing a common vision among multiple jurisdictions, where public and private entities share the many costs and benefits of a regional approach.

Water is a shared resource, and its quality, supply and flood safety are connected.
San Francisco Bay Creek floodplain only (3,500 parcels)
Bay floodplain only, 3' Sea Level Rise (over 2,700 parcels)
Approximate number of parcels in the 100-year floodplains
Overlap of creek and Bay floodplains (2,200 parcels)
SF Bay-Hwy 101: constructing bridge, levees, and floodwalls
Upstream of Hwy. 101: EIR of bridge, bank, basin, floodwall
Shoreline: planning & design

SFCJPA Governance and Funding

A five member Board of Directors composed of one member (and one alternate) who are elected officials appointed by the governing body of each of the five founding agencies.

Annual operating budget is approximately $1 million. 90-95% from founding agencies, 5-10% from grant overhead.

Capital projects funding: since 2010, $97 million committed in cash or in-kind to plan, design, construct, and maintain SFCJPA projects.

- 52.6% from 5 founding agencies (mostly SCVWD ballot measure) plus local sewer district
- 35.2% from State – Caltrans, Dept. of Water Resources, Coastal Conservancy
- 10.6% from PG&E, local sewer district, Facebook
- 1.6% from federal government

Potential funding sources being explored
- New finance district bond
- Aggregated private flood insurance
- Bay Restoration Authority regional tax to enhance shoreline
- Companies/utilities/developers
- Cap & trade carbon market
- Upstream of Hwy. 101: EIR of bridge, bank, basin, floodwall
San Francisquito Creek  S.F. Bay-Highway 101 Project
Two miles of bank/shoreline under construction through 2018

- Protect against any creek flow in this tidal area when sea level is up to 10 feet above today’s high tide
- Create/restore 22 acres of habitat for multiple endangered species within the widened creek and adjacent marsh
- Enhance access to recreational/commuter trails
- Upgrade major gas, electric and sewer lines
- Provide recycled water to East Palo Alto from Palo Alto

Build horizontal levee in marsh

San Francisquito Creek  S.F. Bay-Highway 101 Project
Two miles of bank/shoreline under construction through 2018

- Protect against any creek flow in this tidal area when sea level is up to 10 feet above today’s high tide
- Create/restore 22 acres of habitat for multiple endangered species within the widened creek and adjacent marsh
- Enhance access to recreational/commuter trails
- Upgrade major gas, electric and sewer lines
- Provide recycled water to East Palo Alto from Palo Alto

Build horizontal levee in marsh

Feb. 7, 2017 (18-year flow event)

Dec. 5, 2017
(King Tide, no creek flow)
S.F. Bay–Hwy. 101 Project: before and after construction
Thus, we asked the US Fish & Wildlife Service to amend our Biological Opinion to allow variances to the buffer zone for specific construction activities late in the breeding season (after July 1).

Upstream of Highway 101 Project

Modeled floodplain of 1998 sized event

Before project is constructed

After project is constructed – street surface flooding only
After Bay-Hwy. 101 project is complete in 2018, the location with the least capacity is the Pope-Chaucer Bridge. Replacing that bridge would send more water downstream than the channel could handle, causing flooding to new areas.

The preferred JPA project – because it is meaningful and achievable – is to widen only the sections downstream of the Pope-Chaucer Bridge to accommodate that additional flow under the bridge.

**Pope-Chaucer Bridge – Hwy. 101 alternatives**

- **Widen creek at Hwy. 101 and Replace or modify Pope-Chaucer** and modify specific areas downstream to accommodate increased flow:
  - **Replace railing at Woodland & University** and either:
    - **Widen creek bottlenecks** or
    - **Construct floodwalls**

Project of the City of Palo Alto to replace Newell Bridge
The most effective detention basins are west of Hwy. 280

When projects from Pope-Chaucer to S.F. Bay are complete, these basin(s) would begin filling during flows larger than what Pope-Chaucer could pass. A basin at Webb or Searsville could bring a 100-year event to below the flow capacity of a new Pope-Chaucer Bridge.
A. Provide context and cohesion for a broad program of projects
   • S.F. Bay to Highway 101
   • Highway 101 to Pope-Chaucer Bridge
   • Pope-Chaucer Bridge to Searsville Reservoir

B. Discuss the 16 alternatives resulting from the 2017 Scoping Period, and screen out most of them

C. Evaluate the alternatives/elements to provide 70-year flow protection:
   • widen the creek upstream of West Bayshore Road
   • replace the railing at Woodland & University, and raise capacity by widening creek bottlenecks or constructing floodwalls
   • replace or modify Pope-Chaucer Bridge
   • construct one or more upstream detention basin(s)

D. Recommend a meaningful, achievable project for the SFCJPA Board to move forward with now, and a project for additional protection later

---

**S.F. Bay to Pope-Chaucer Bridge Projects**

<table>
<thead>
<tr>
<th>Description</th>
<th>May 2018 Est. Amt.</th>
</tr>
</thead>
<tbody>
<tr>
<td>S.F. Bay – Highway 101 *</td>
<td>$75,250,000</td>
</tr>
<tr>
<td>Replace Pope-Chaucer, match channel capacity to Hwy. 101</td>
<td>$24,500,000</td>
</tr>
<tr>
<td>Total Estimated Costs</td>
<td>$99,750,000</td>
</tr>
<tr>
<td>Total funds available as of May 2018 *</td>
<td>$85,450,000</td>
</tr>
<tr>
<td>Estimated funding needed</td>
<td>$14,300,000</td>
</tr>
</tbody>
</table>
Comprehensive Agreement to fund construction of Creek projects

Costs above Funding Agreement for Bay-Hwy. 101 project levees, floodwalls, and restoration

+ Costs to monitor, report and maintain Bay-101 restoration for 10 years

+ Costs to implement the Upstream of Hwy. 101 project selected for construction in EIR

Comprehensive Agreement costs
Potentially funded by: external grants, new finance district, Corps of Engineers, Member Agencies, private interests, aggregated private flood insurance

The Big Picture:
San Francisquito Creek area Floodplains and Projects

SF Bay-Hwy 101: constructing bridge, levees, and floodwalls
Upstream of Hwy. 101: EIR of bridge, bank, basin, floodwall
Shoreline: planning & design

Approximate number of parcels in the 100-year floodplains
- Creek floodplain only (3,500 parcels)
- Bay floodplain only, 3' Sea Level Rise (over 2,700 parcels)
- Overlap of creek and Bay floodplains (2,200 parcels)
Project objectives along 11 miles of shoreline in two counties and three cities:

• Protect 5,000 properties & major infrastructure from flooding during a sea level up to 9 feet above today's high tide
• Create and utilize shoreline marshes for protection in a way that sustains them
• Expand opportunities for recreation and connectivity
• Meet objectives regardless of neighboring action/inaction
• Utilize innovative financing strategies that reflect the diversity of beneficiaries

Non-housing assets at risk from – and challenges to protecting against – Sea Level Rise

Business
Electricity & gas
Transportation
Water supply & treatment

Over 1,700 acres of existing or potential green infrastructure. Marshes can provide, and be sustained by, flood protection.
Current concerns in one area:

- Inadequate tidal / SLR protection for homes, roads, businesses, and utilities
- Substantial development planned, underway or completed
- Transportation gridlock on critical State roadways
- Existing salt ponds and marshes in need of restoration or enhancement
- Bay Trail gap

Can one regional effort address several of these issues?
A key segment of the SAFER project

Current hardened shoreline
No 100-year tide, freeboard, or SLR protection

Four alternatives for a new hardened shoreline

General area that could become tidal
SAFER Bay along East Palo Alto’s shoreline

Coordination with long-term improvements to Bay Road and development of nearby parcels for a new downtown.

Existing EPA homes

New EPA development

Existing trail
Opportunities for innovations in flood protection

A horizontal levee:
• creates habitat zones to sustain levee and marsh
• captures and stores carbon
• may cost less
Challenges: finding right soil, regulatory approval

A hydrostatic floodwall is a flat road or trail until floodwaters raise a wall.
Challenge: approval for State of CA roads

Regional considerations:
Opening marshes here would affect sea level in other areas of S.F. Bay
February 7, 2017 01:31:06 pm  The information on this website updates every 15 minutes — for current conditions, periodically refresh or relaunch this website.

** FLOOD WARNING: UNTIL ABOUT 2:30 PM ON FEB 7, SF CREEK MAY FLOOD AT WEST BAYSHORE ROAD, AS INDICATED BY THE RED CIRCLE ON THE MAP BELOW. WE ARE MONITORING OTHER LOCATIONS, BUT DO NOT ANTICIPATE FLOODING AT THOSE LOCATIONS AT THIS TIME. **

PLEASE NOTE: For specific and timely information regarding emergency response in your community, click on the link under Local Agencies Emergency Websites below. Please do NOT call 9-1-1 unless there is an imminent threat to life or property.