Laguna Creek Restoration and Flood Protection Project

Public Works Director: Shawn Knapp, PE
Associate Engineer: Mark Summers, PE

Town Council Meeting - July 8, 2020

Location

- Hacienda de las Flores Property
- Laguna Creek is west of the Pavilion Building

Laguna Creek Restoration Project

- Reduce Flood Risk for the Pavilion
- Daylighting Creek
- Retrofit/Replace Existing 8-ft Diameter Culvert

Flood Risk

- Flooding occurring during 2005/2006 Winter Storms
- Represents a 12.5 Year Flood Event

2005/2006 Flood Damage

- Fences damaged
- Flood water 2-ft to 3-ft high (entered Pavilion Building)

2005/2006 Flood Damage

- Retaining structures and embankments failed
- Trees and other debris entered Laguna Creek

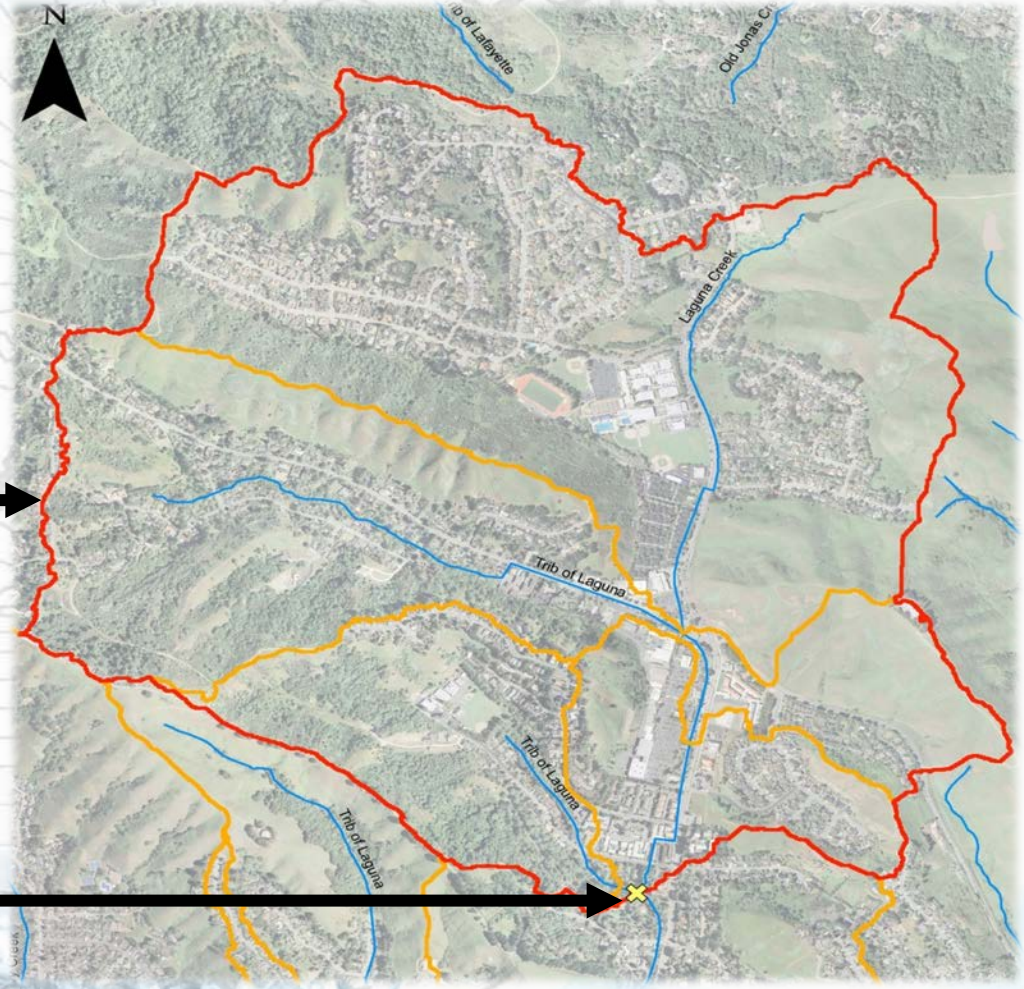
Prior Repairs

- 2007 Completed Pavilion repairs: $37K (present value: $53K)
- 2013 Completed the Laguna Creek Wall Repair and Bank Stabilization Project: $1.04M (present value: $1.24M)

Drainage Area

- Laguna Creek and Tributaries
- Watershed 1.94 square miles

Extents of Watershed (red line)

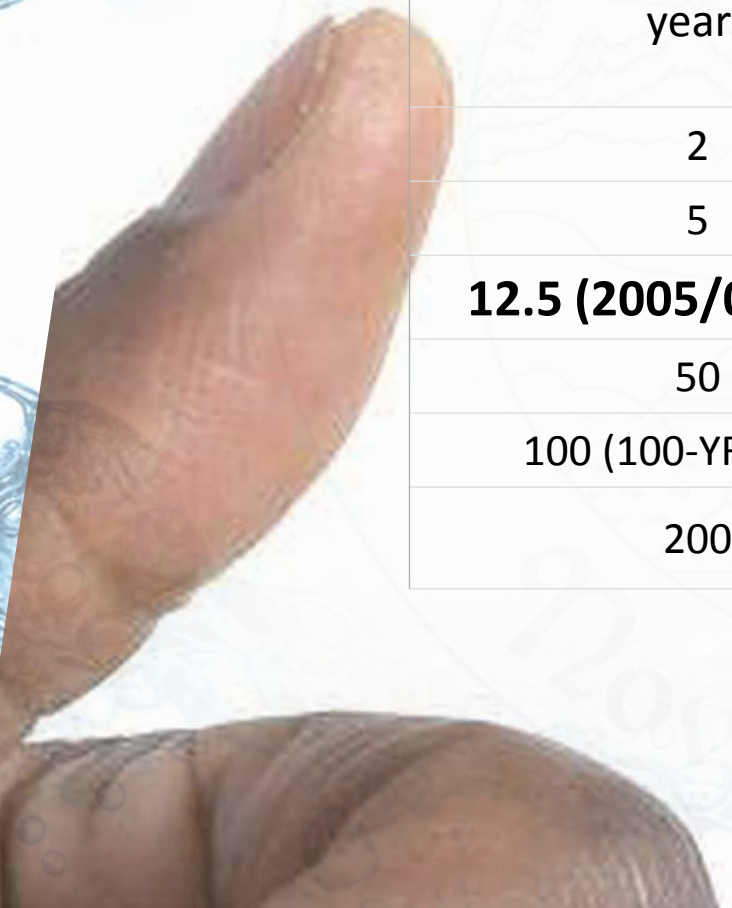


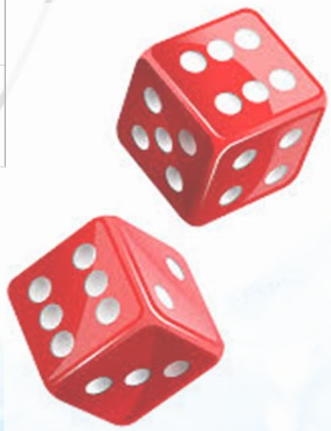
Pavilion Building and Laguna Creek at end of Watershed

What is 100 Year Flood?*

Recurrence intervals and probabilities of occurrences

Flood Recurrence interval, years	Flood Annual exceedance probability, percent (%)
2	50
5	20
12.5 (2005/06 Flood)	**8**
50	2
100 (100-YR Flood)	1
200	0.5





FEMA and CCCFD 100-Year Peak Flow Rates

- FEMA peak flow rates based on regression equations from gauges in other watersheds last revised in 2017
- Contra Costa County Flood Control District rates are from 1992 and assume “full Town buildout”

	FEMA (2017)*	CCCFD (1992)*
10-year Peak Flow	660	1,110
50-year Peak Flow	1,100	1,560
100-Year Peak Flow	1,300	1,720

* Units in cubic feet per second

2014 Hydraulic Study and Alternative Report (10 Alternatives Analyzed)

Alt.	Description	Protection Level @ Pavilion	2020 Estimates
1	No Build	15-Year	$0
2	Smooth Line Existing Culvert Pipe	+15-Year	$0
3	Install Parallel 9-Ft RCP Culvert	50-Year	TBD
4	Install Parallel 9-Ft RCP Culvert	50-Year	$888,888
5	Replace 9-FT Culvert with Larger 14 by 12-Ft Culvert	100-Year	$2,820,000
6	Install Upstream Detention Basin	N/A	TBD
7	Raise Pavilion Structure 4-Ft	100-Year	$686,209
8	Relocate Pavilion Structure	100-Year	TBD
9	Construct Flood Wall around Pavilion	100-Year	$603,203
10	**Daylight Laguna Creek to Natural Channel**	**100-Year**	**$1,580,000**

2014 Town Council Direction

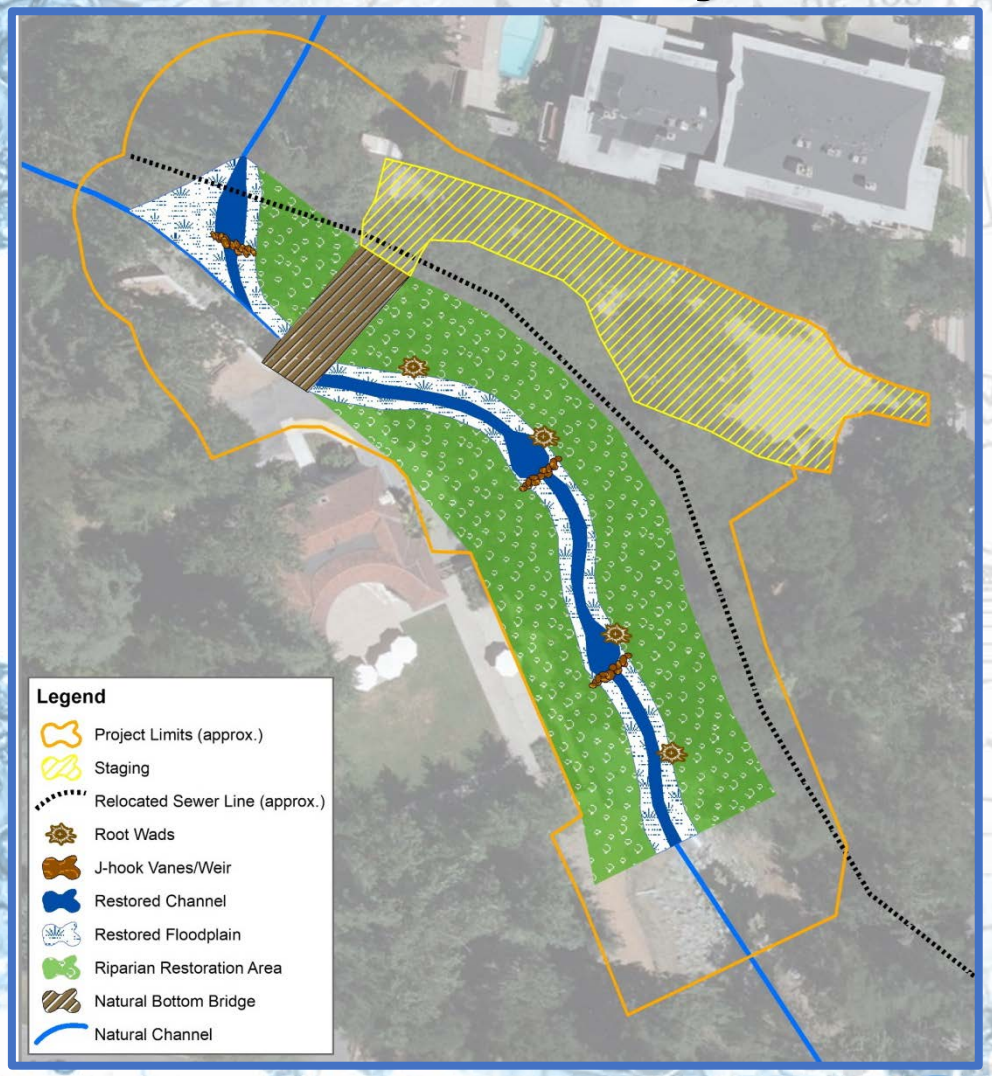
Two alternatives explored in Hydraulic Study and Alternatives Study would reduce flood water surface elevations:

- Alternative 5 - Replace the existing culvert with a larger RCB culvert
- Alternative 10 - Daylight and restore Laguna Creek channel

Preferred alternative was Alternative 10

- Reduces flood water surface elevations
- Reduces flood risk to Pavilion
- External grant funding available due to habitat improvements
- Selected by Town Council Resolution No. 34-2014 on April 23,2014

Laguna Creek Restoration Project Overview



- Remove existing 8-Ft diameter culvert adjacent to the Pavilion building
- Construct natural channel with habitat for endangered species
- Relocate CCCSD sewer line
- Construct a vehicular bridge over the creek
- Improve public accessibility and protections

Site Constraints and Benefits

- All Grants are based on “Daylighting” creek and providing environmental benefits
- Daylighted Design Challenges:
  - East side is along steep hill;
  - West side is near the Pavilion building.
  - Stabilization of the creek bank at key locations
  - Relocation of CCCSD Sewer Main
  - Protecting the Public along creek course
  - Replacement of Tree losses
- Project Benefits
  - Establishment of natural creek channel
  - Establishment Red-Legged Frog Habitat
  - Establishment of native plants and trees

Funding Sources

- **California Natural Resources Agency (CNRA)**
  Proposition 13 River Parkways Grand Program
  - Award amount: $399,980
  - CNRA Not Capable with FEMA Grant

- **Federal Emergency Management Agency (FEMA)**
  Hazard Mitigation Grant Program
  - Award amount: $803,331 (66% allowable costs for up $970K)

- **East Bay Regional Parks District (EBRPD)**
  Measure WW Urban Creeks Grant Program
  - Maximum possible award amount: $599,743

➢ **FEMA and EBRPD grants combined $1.57 Million**

FEMA Phase 1

Phase 1, 65% Design and Environmental ($192K approx.)

- Field and Geotechnical investigations and survey
- Hydraulic study and FEMA coordination
- Biological resources study
- CEQA and environmental studies
- Design (up to 65%)

- With the 65% design, FEMA will complete NEPA evaluation prior to authorizing Phase 2

Request for Proposals
Phase 1 – Scope of Services

- Prepare 15% design with options
- Present at Community Workshop and seek feedback
- Update Council and seek feedback at 15%, 30%, and 65%
- Adopt CEQA Clearance Documents
- Support FEMA's NEPA Clearance processes
- Complete of Phase 1 for FEMA

FEMA Phases 2 and 3

Phase 2, Final Design and Permitting ($67K approx.)

- 95% Design
- 100% Design
- Bid Documents
- Bid Phase Support
- Resource Agency Permits

Phase 3, Construction ($1.14M to $1.34M approx.)

- Construction
- Construction Management
- Construction Support

Recommendation

Provide Direction to Staff to:

- Continue with the RFP/Q Process to Select to Engineering Firm for Phase 1 - Preliminary Engineering
- Confer with Granting Agencies to coordinate full project funding
- Return to Council in Fall 2020 to Consider Award of a Design Contract