

FLOODPLAIN RECONNECTION ON BUTANO CREEK - DESIGN, IMPLEMENTATION AND RESULTS FROM THE FIRST SEASON

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PROJECT AREA

Landowner: Peninsula Open Space Trust,
Butano Farms Property

Funders:

- Urban Streams Restoration Grant Program, CA DWR
- USDA – Natural Resource Conservation Service
- Integrated Watershed Restoration Program, CA Coastal Conservancy
- US Fish and Wildlife Service
- Peninsula Open Space Trust

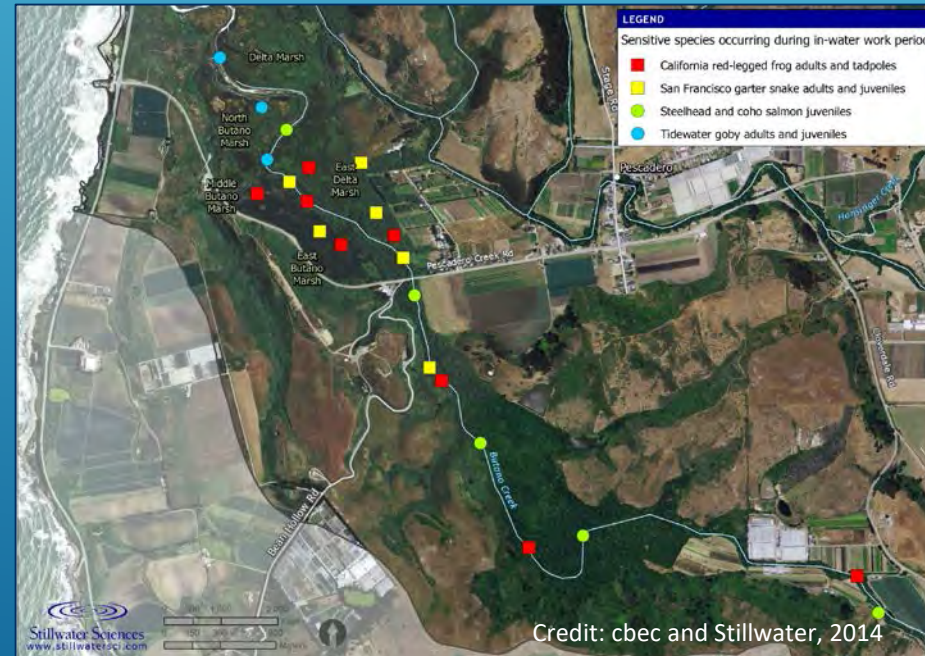
Other Key Partners: NOAA, RWQCB, CDFW



PESCADERO, CA - SPECIAL PLACE



Credit: California Coastal Records Project



PESCADERO, CA – COMPLEX ISSUES



Credit: Half Moon Bay Review

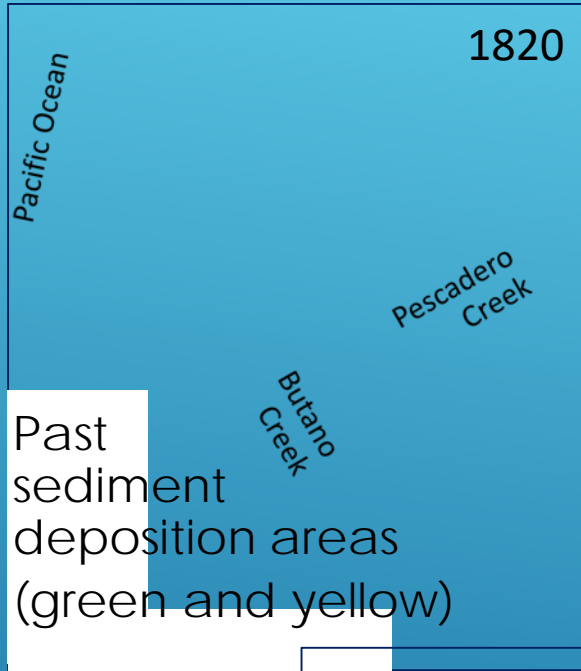


Credit: San Jose Mercury News



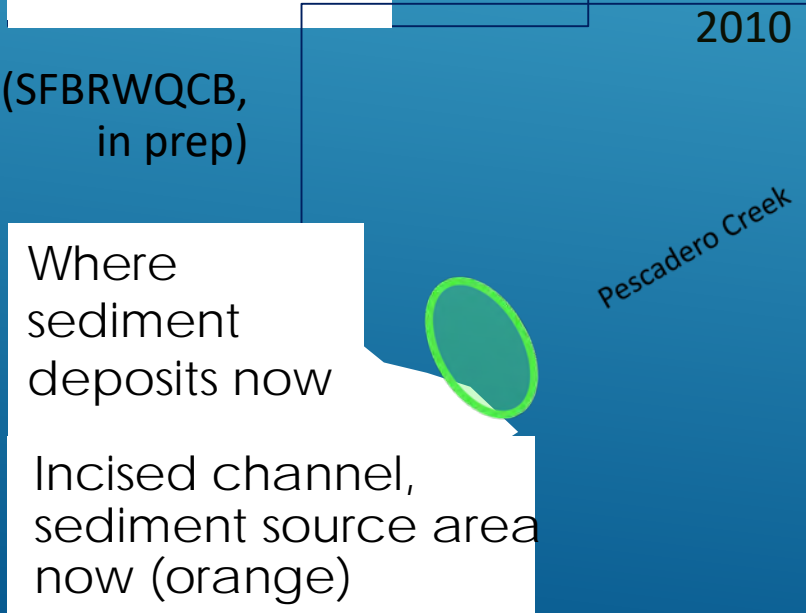
- ▶ Frequent road flooding
- ▶ Fish kills in the marsh
- ▶ Fish passage barrier between Butano creek and marsh
- ▶ Impaired for Sediment under Clean Water Act

BUTANO CREEK INCISION, FLOODPLAIN DISCONNECTION



- ▶ Over the last **200 years** changes in land use and channel management altered amount of sediment delivered to and moving through creeks and marsh
- ▶ Sediment delivery to Butano Creek **increased by 2.5 times**
- ▶ Historical **floodplains are disconnected** from the creek and no longer store sediment, instead they are a source
- ▶ **Channel incision** is the largest source of increased sediment load
- ▶ Elevated sediment loads are expected to continue

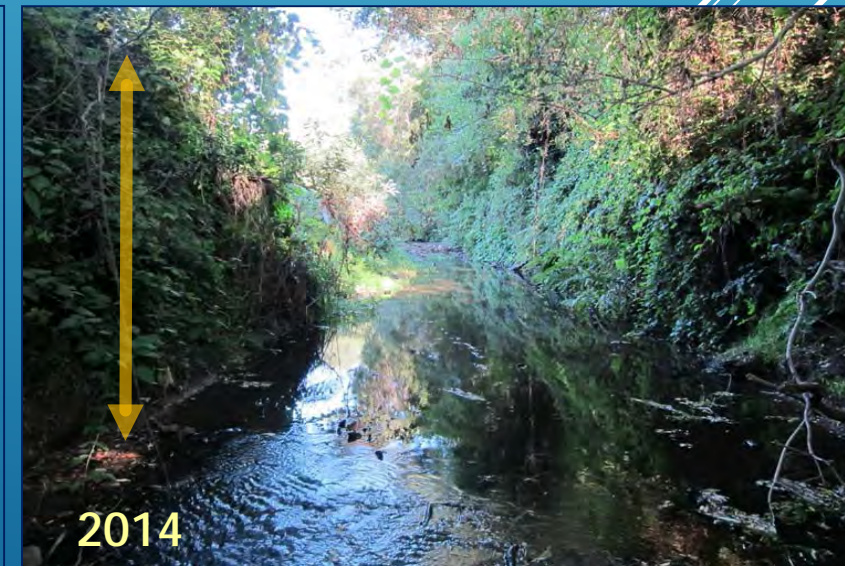
(credit: SFBRWQCB, in prep - Frucht and Trso)



DOWNSTREAM OF PROJECT AREA



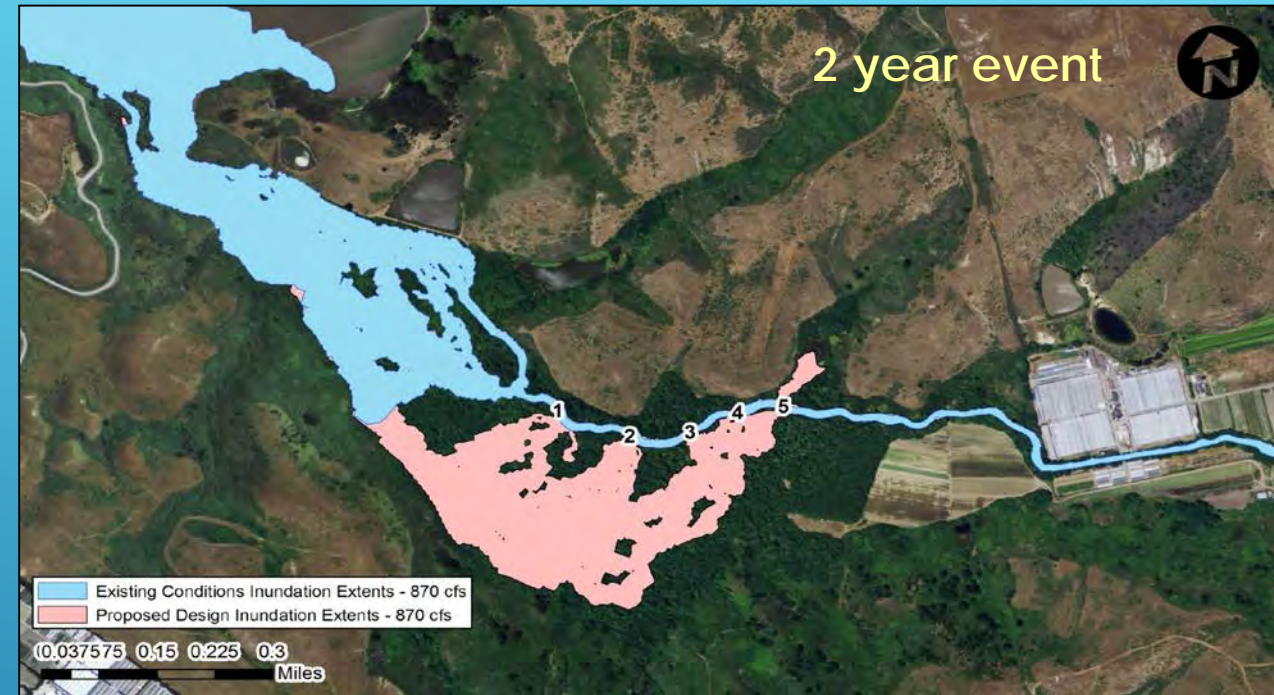
UPSTREAM OF PROJECT AREA



FLOODPLAIN RECONNECTION

Raising the channel to reconnect ~100 acre floodplain via roughening ½ mile channel segment

- More frequent floodplain inundation
- Provide sediment storage capacity
- Floodplain/wetland/off-channel habitat restoration



FLOODPLAIN RECONNECTION

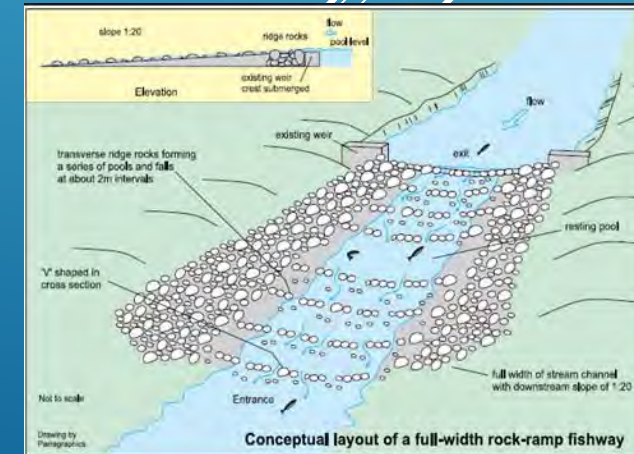
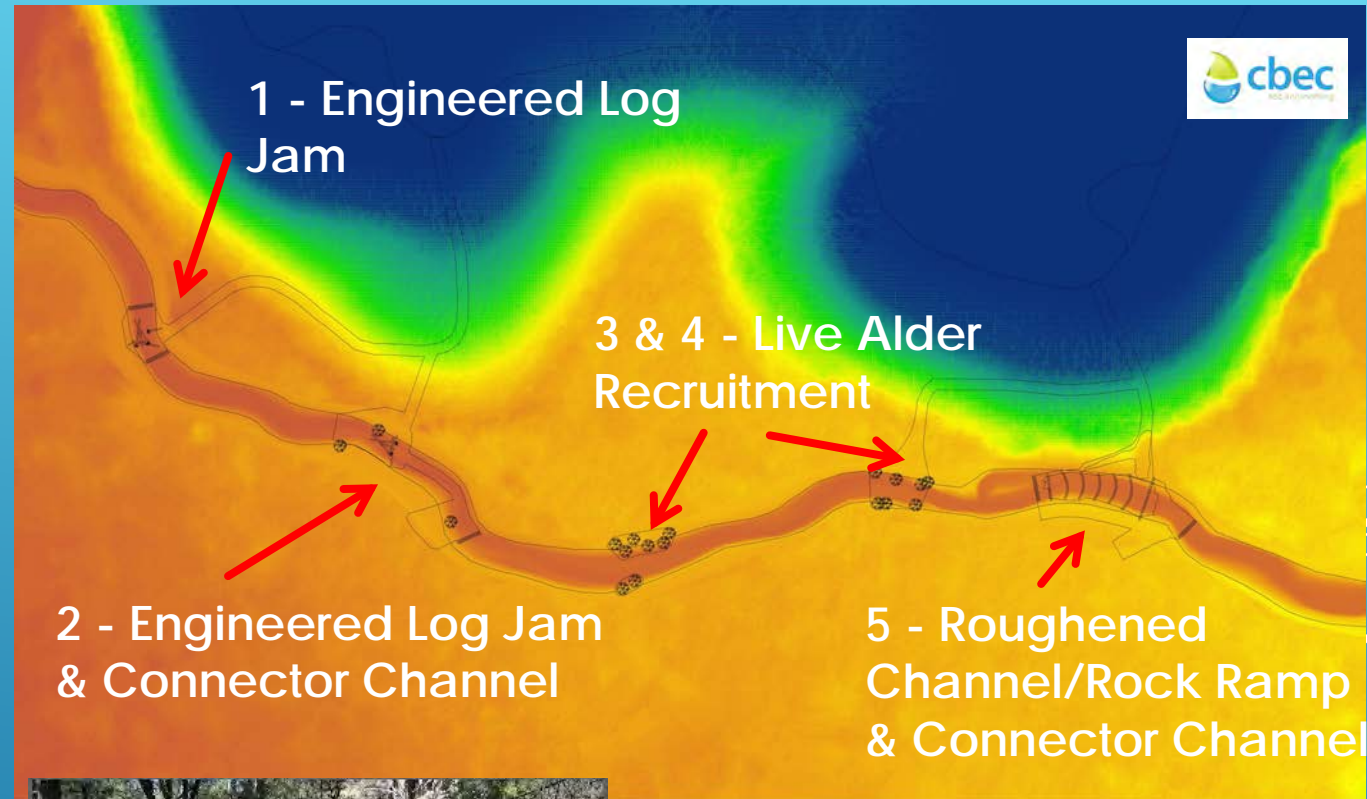
Method

Add roughness to channel:

- Engineered Log Jams
- Connections to relict side channels
- Roughened rock ramp upstream

Hypothesis

Jams/roughness will force sediment deposition, aggrade channel, and reactivate floodplain/force channel evolution



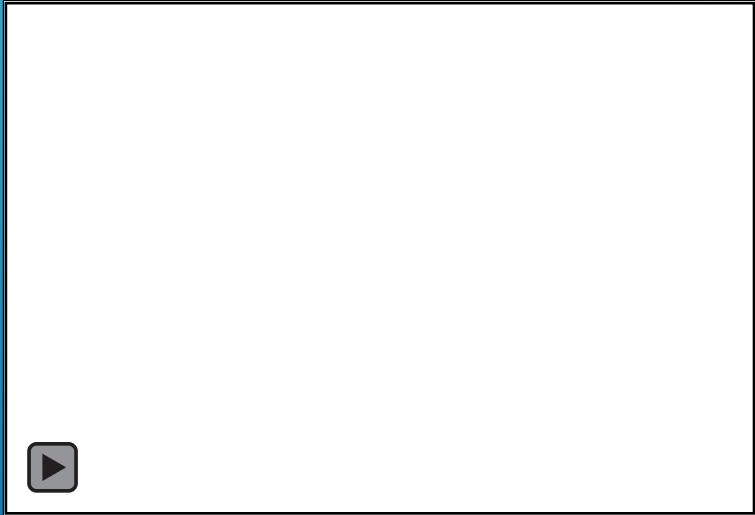
CONSTRUCTION – *LIVE ALDER RECRUITMENT*



CONSTRUCTION – ENGINEERED LOG JAM INSTALLATION



CONSTRUCTION – ROCK RAMP & CONNECTOR CHANNELS



POST-CONSTRUCTION MONITORING: *IT'S WORKING!!*



- Floodplain/wetland/off-channel habitat inundated
- Sediment accumulation
- Additional streamwood recruitment
- Additional channel complexity
- Structures are intact

POST-CONSTRUCTION MONITORING: *IT'S WORKING!!*



Feb 6-7, 2017

Riparian Summit 2017



POST-CONSTRUCTION MONITORING: *IT'S WORKING!!*



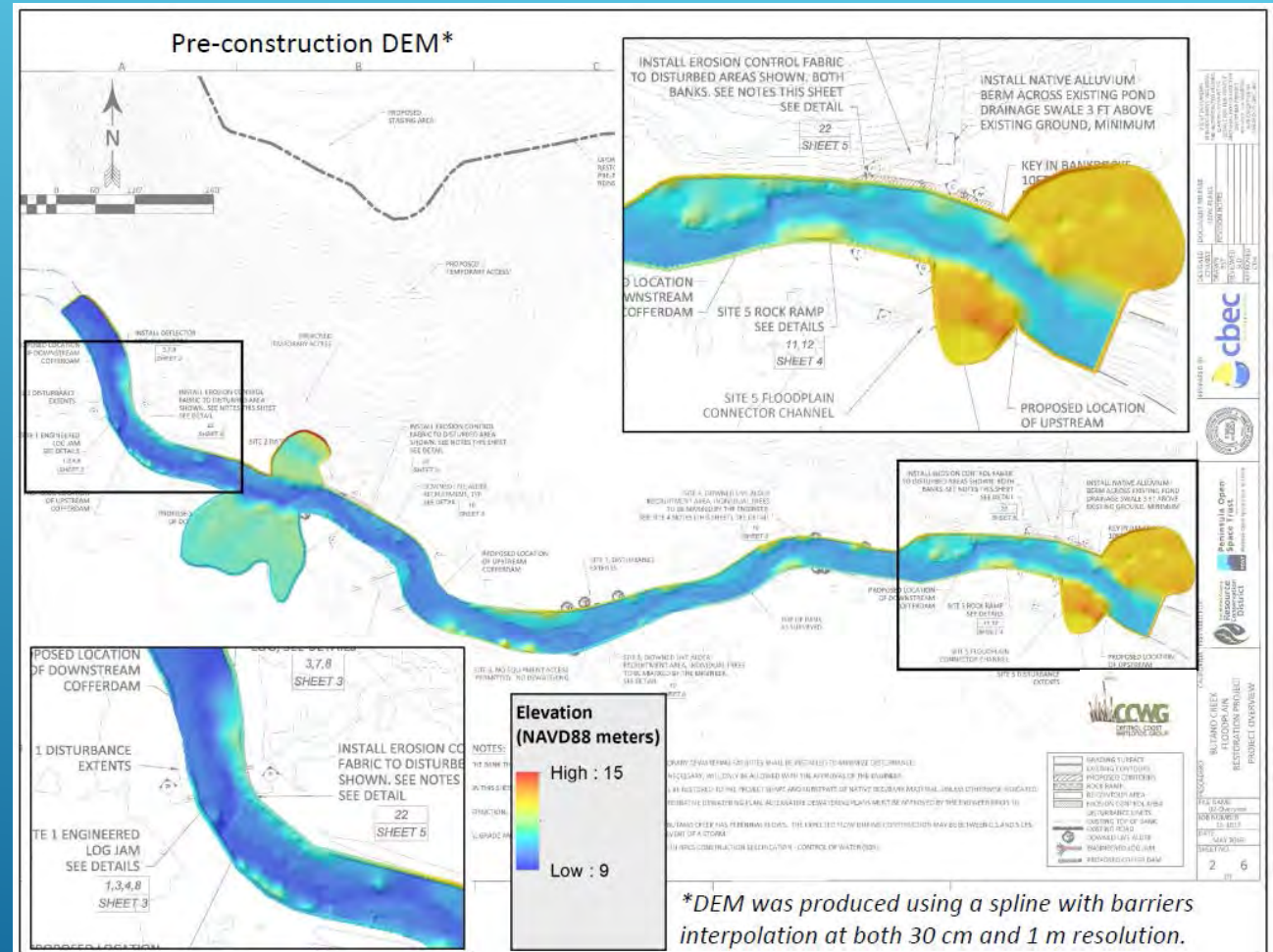
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POST-CONSTRUCTION MONITORING

- ▶ Detailed topographic mapping with ground based LiDAR before and immediately after construction as well as after this winter wet season
- ▶ Time-lapse video of flood events
- ▶ Sediment tiles to measure accumulation on connector channels and floodplains
- ▶ Stream stage measurements
- ▶ Groundwater level measurements
- ▶ Habitat and sediment mapping
- ▶ Pebble counts





THANK YOU

Riparian Summit 2017

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