

STAFF UPDATES FLOOD ZONE 9 ADVISORY BOARD MEETING



Photo: From Lagunitas Rd. Bridge (downstream)



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MAY 16, 2017

DRAFT - Ross Valley Watershed Flood Risk Reduction Program - Project Milestone Timeline

Last modified 5/16/17

All milestone dates are tentative and subject to change

- Milestone Complete
- Milestone In-Progress

| | Public Engagement Incorporated throughout all Milestones | | | | | | | |
|---|--|---------------------------|--------------------|--------------------------|---------------|---------------|--------------|---------------------|
| | Feasibility | | | Environmental Assessment | | | Design | Construction |
| | Stakeholder Engagement | Conceptual Design & Study | Community Planning | NOP Public Scoping | Draft EIR/EIS | Final EIR/EIS | Final Design | Project Constructed |
| Lower Corte Madera Creek Improvement Project | Nov-16 | Apr-19 | Oct-17 | Jun-18 | Mar-19 | May-19 | Jan-20 | Dec-20 |
| San Anselmo Flood Risk Reduction Project | Dec-16 | Jan-17 | Feb-17 | Feb-17 | Oct-17 | Mar-18 | Apr-18 | Dec-20 |
| Phoenix Lake IRWM Project - DWR Grant Migration | May-17 | Jul-17 | Aug-17 | Sep-17 | Feb-18 | Jun-18 | Dec-18 | Jun-20 |
| Azalea Bridge | Jun-17 | Jul-17 | Aug-17 | Oct-17 | N/A* | Nov-18 | Aug-19 | Dec-20 |
| Winship Bridge | May-17 | Jul-17 | Aug-17 | Oct-17 | N/A* | May-18 | Oct-20 | Dec-20 |
| Nokomis & Madrone Bridges | May-17 | Jul-17 | Aug-17 | Oct-17 | N/A* | May-18 | Oct-20 | Dec-20 |
| Sycamore/Center Ave Bridge | Jun-17 | Jun-18 | Feb-17 | TBD | N/A* | Dec-18 | May-20 | Jul-20 |
| USACE Units 2,3, & 4 Project | Aug-17 | May-19 | Jun-17 | Feb-16 | Dec-17 | Feb-18 | Apr-20 | Jul-21 |

*N/A - Bridge projects may be selected for a Mitigated Negative Declaration

PHOENIX LAKE IRWM PROJECT UPDATE FLOOD ZONE 9 ADVISORY BOARD MEETING



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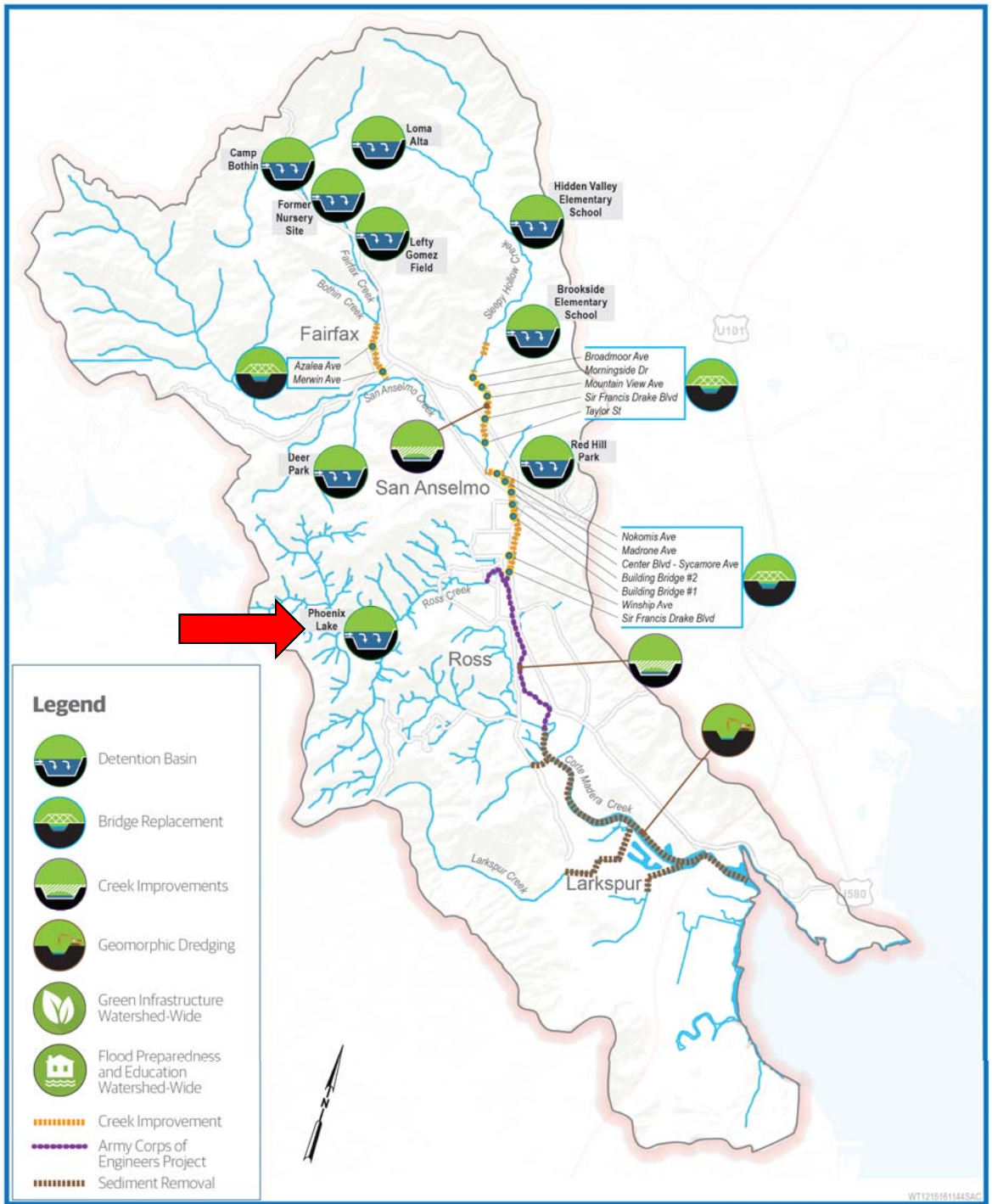
PRESENTATION AGENDA

PHOENIX LAKE IRWM PROJECT

1. Project Background
2. Project Evolution Through Today
 - Draft Feasibility Assessment Outcomes
3. Where We Go From Here
 - Constraints Around Selecting Replacement Project
 - Potential Alternatives for Replacement Project
 - DWR Prop 1E Grant Migration Schedule



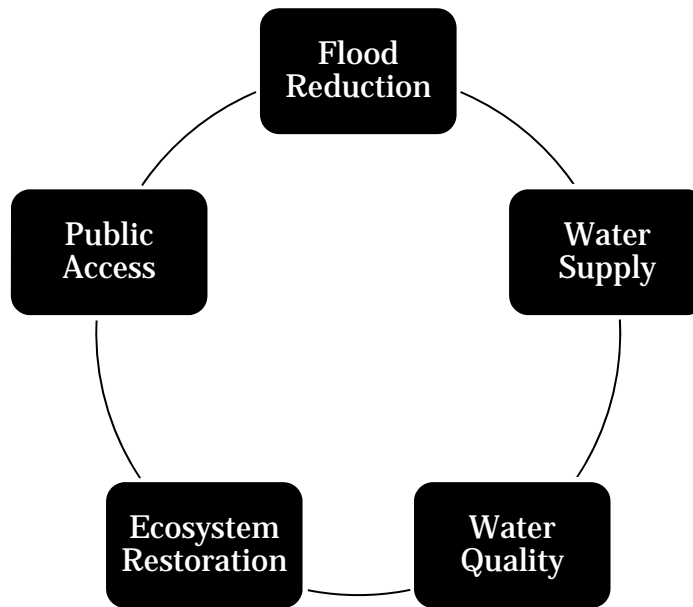
Phoenix Lake IRWM Project
May 16, 2017



PROJECT BACKGROUND

DWR PROP. 1E GRANT CRITERIA

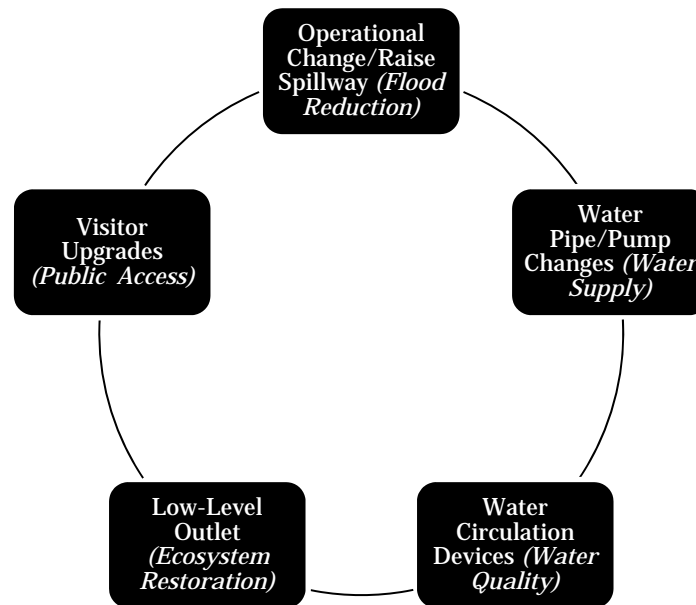
- 2011 Capital Improvement Program
- 2013 DWR Grant: \$7,661,000 (for a project total of \$19,691,150)



PROJECT BACKGROUND

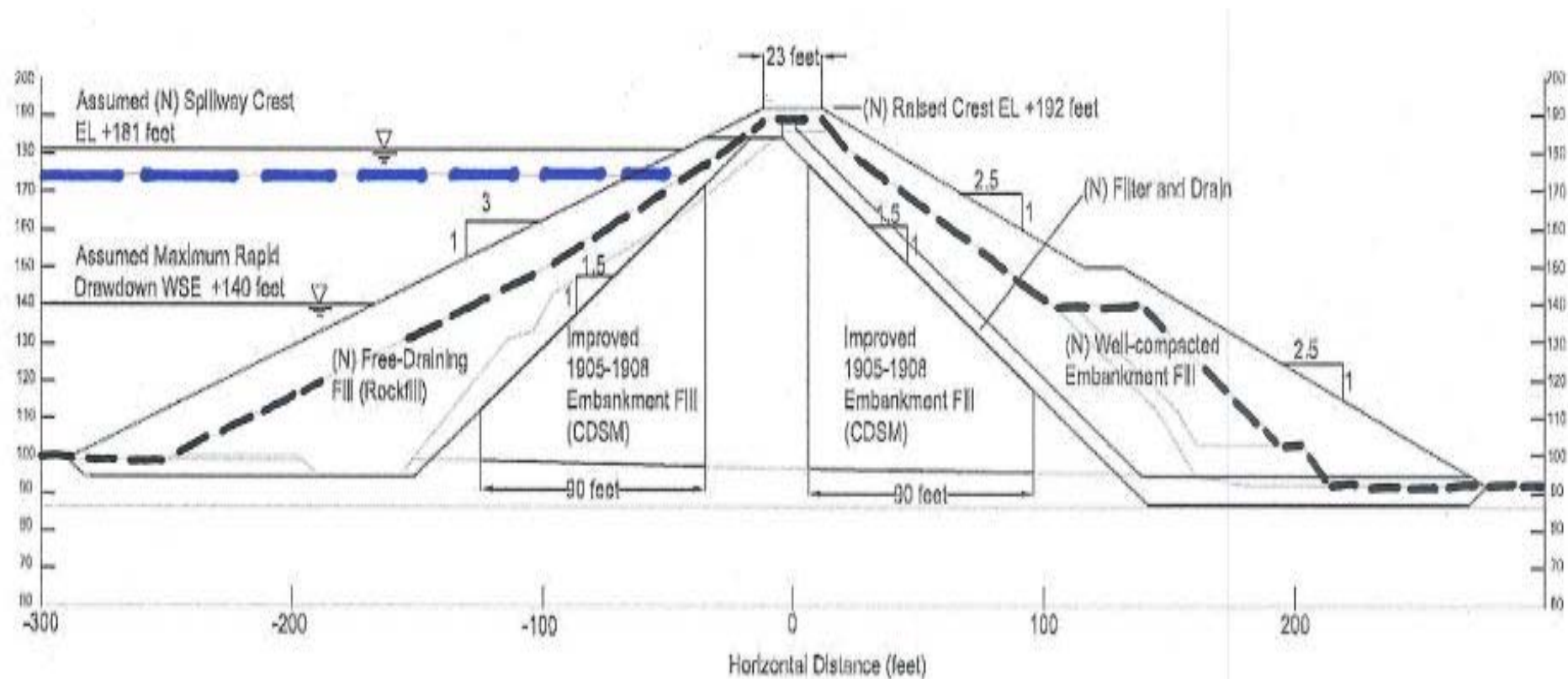
PHOENIX LAKE IRWM PROJECT

- 2013 MOU with MMWD
- Draft Feasibility Assessment



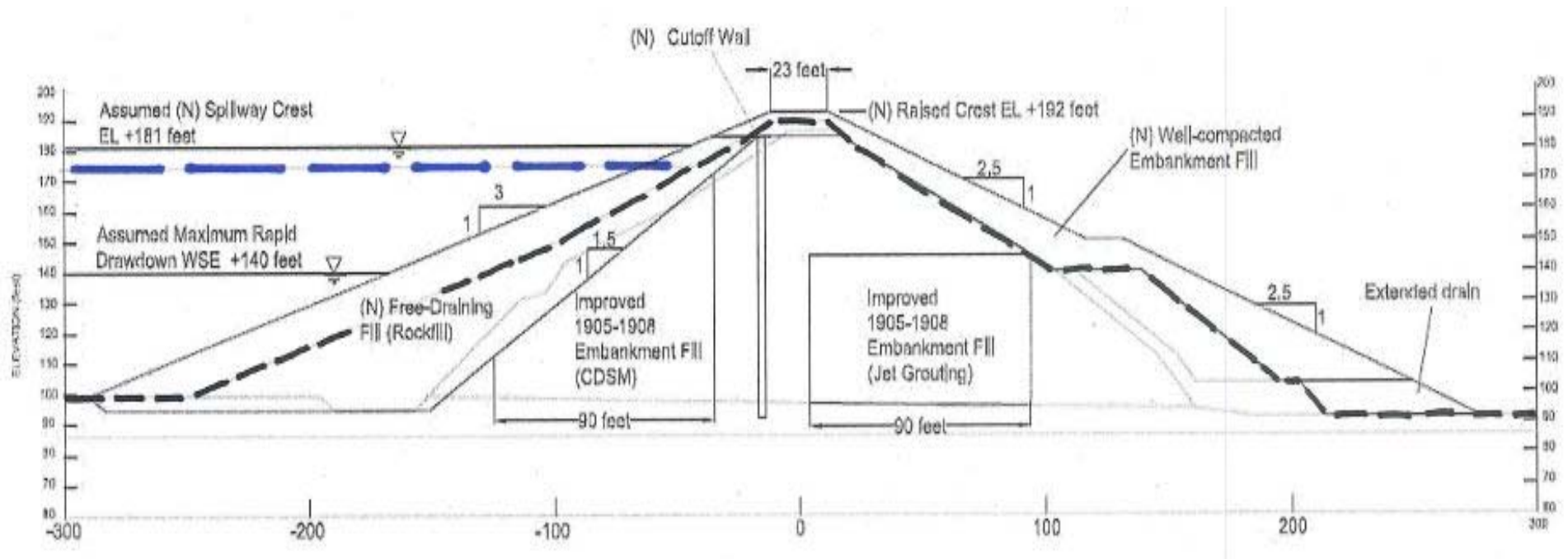
RESULTS OF DRAFT FEASIBILITY STUDY

DAM RETROFIT ALTERNATIVE RC-1



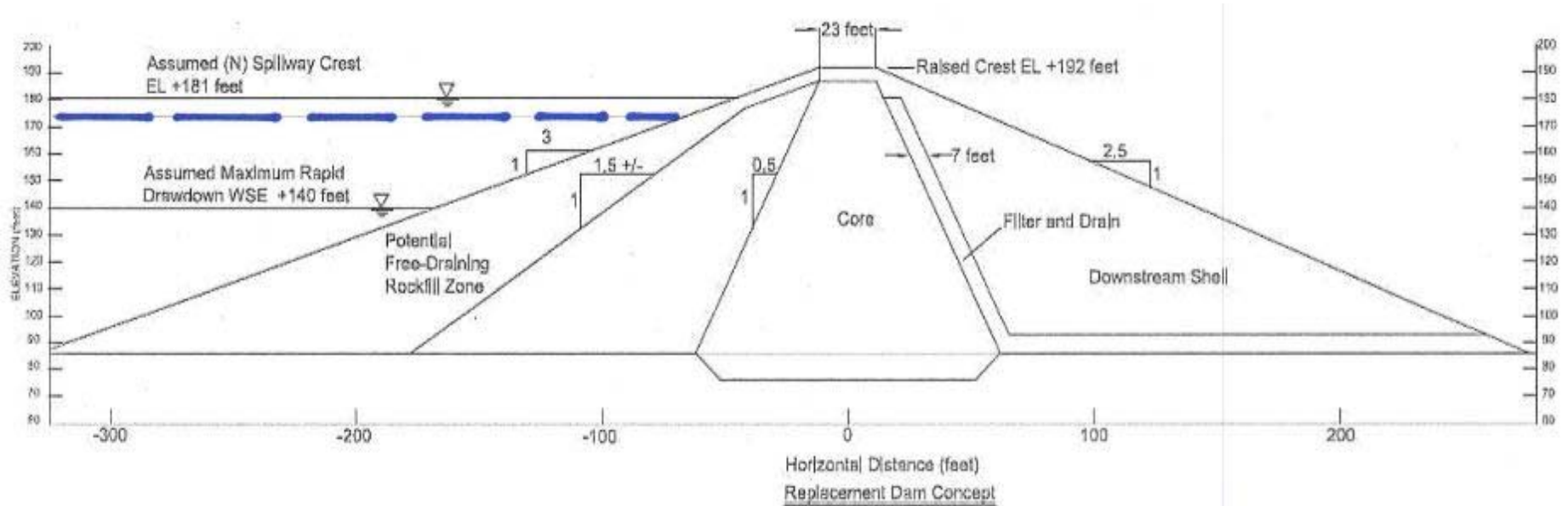
RESULTS OF DRAFT FEASIBILITY STUDY

DAM RETROFIT ALTERNATIVE RC-2



RESULTS OF DRAFT FEASIBILITY STUDY

DAM REMOVAL & RECONSTRUCTION ALTERNATIVE RC-3



DAM MODIFICATION ASSESSMENT

ESTIMATED COSTS OF OPTIONS

| PHOENIX LAKE IRWM RETROFIT PROJECT | | |
|--|--|--------------------------|
| CONCEPTUAL ALTERNATIVES COST ESTIMATES | | |
| | | Total Project |
| Alternative ID | Alternative Description | Range of Estimate |
| RC-1 | Dam Buttressing & Ground Improvement, Modify Existing Spillway, and New 66" Tunneled Outlet | \$17.8M-\$29M |
| RC-2 | Dam Buttressing, Ground Improvement & Seepage Cutoff Wall; Modify Existing Spillway; & New 66" Tunneled Outlet | \$15.4M-\$25.1M |
| RC-3 | Dam Replacement, Spillway Replacement, & 66" Outlet Replacement | \$13.1M-\$21.2M |
| Assumptions: | | |
| 1. Existing spillway is structurally sound and can be modified for RC-1 and RC-2. | | |
| 2. The grant application budget for the dam, spillway, & outlet improvements is approximately \$16.6M. | | |



DAM MODIFICATION ASSESSMENT

EVALUATION CRITERIA

1. Construction Risks: potential for increased cost or duration
2. Construction Complexity: is it a conventional method?
3. Environmental Impacts: including public impacts
4. Comparative Cost



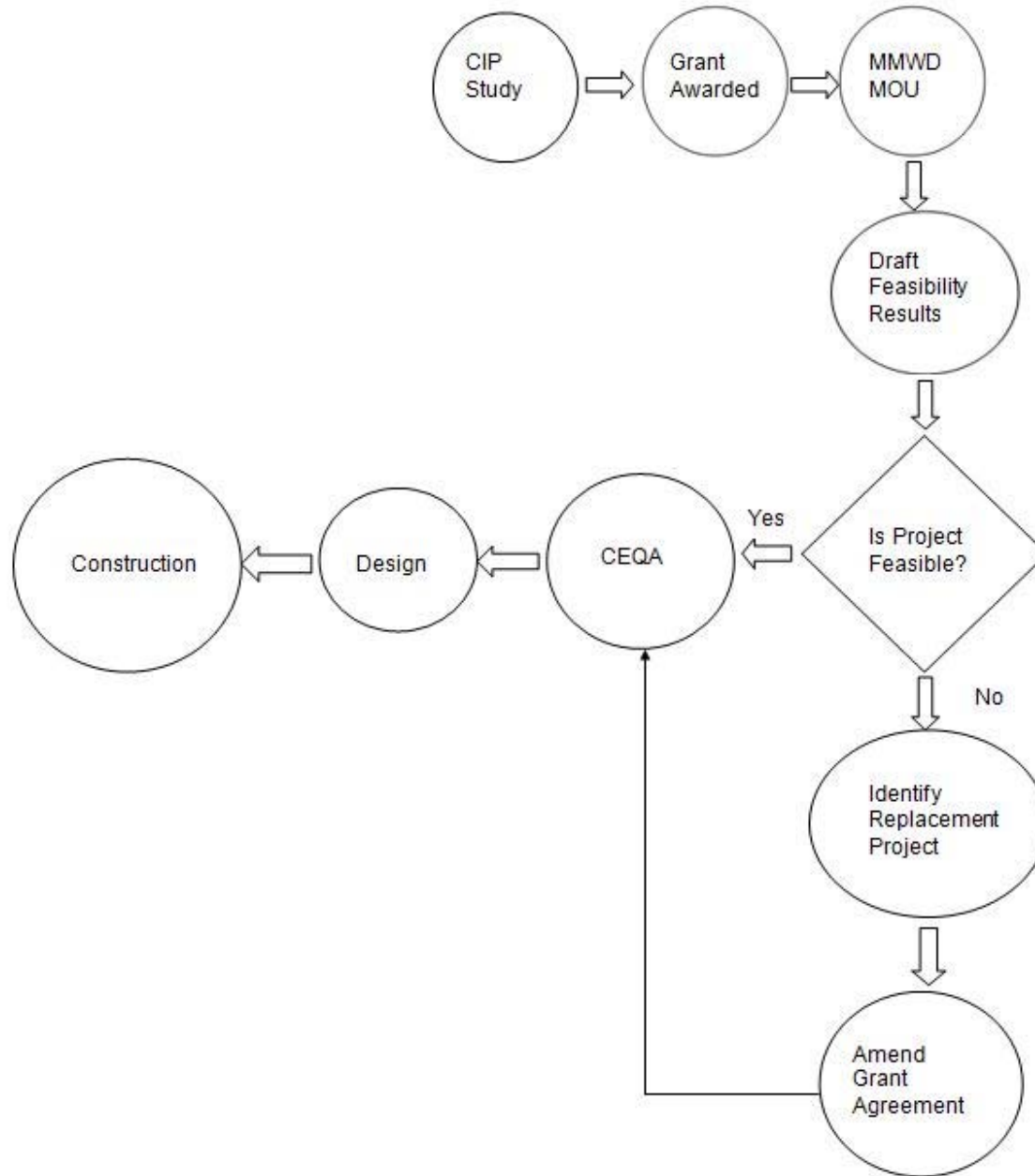
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PROJECT EVOLUTION



OUTCOME OF FEASIBILITY ASSESSMENT

IS DAM REMOVAL & RECONSTRUCTION FEASIBLE?

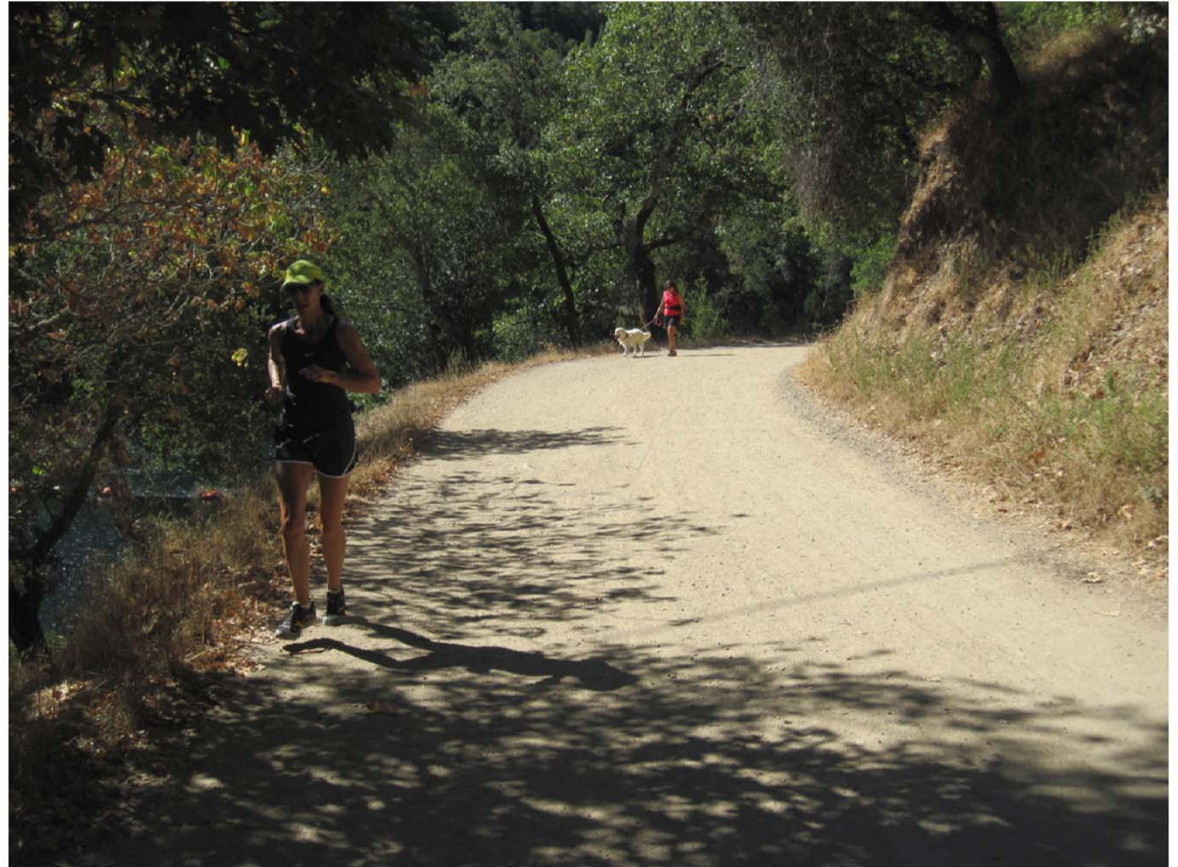
- Will Exceed Budget
- Will Extend Beyond Grant Deadline
- Deemed Infeasible for Current Grant Funding



REPLACEMENT PROJECT FOR GRANT

DEPT. OF WATER RESOURCE PROP. 1 E GRANT MIGRATION

- DWR will allow Replacement Project with comparable benefits
- FZ9 staff evaluating alternatives

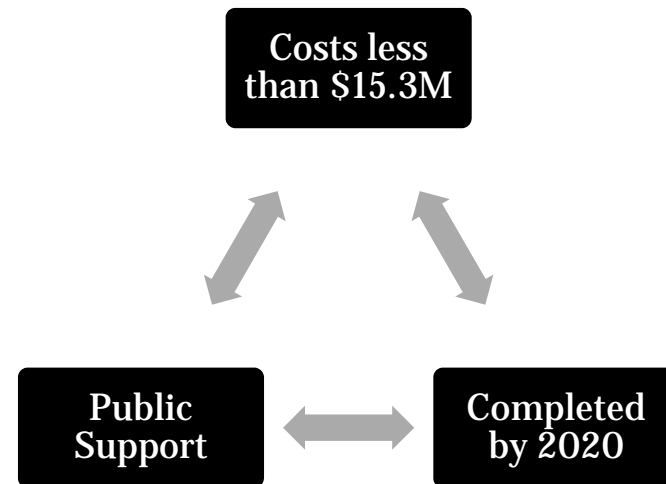
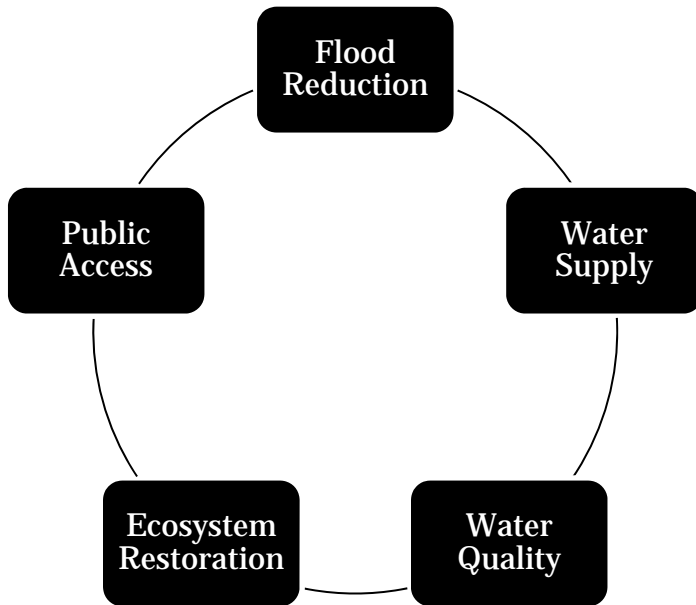


Phoenix Lake IRWM Project
May 16, 2017

WHERE WE ARE TODAY

PHOENIX LAKE IRWM PROJECT

- Criteria for Selecting the Replacement Project



WATERSHED DYNAMICS

BALANCING FLOW IMPACTS

- For any upstream creek project:

Creek project
which causes
downstream
flooding
impacts

Upstream diversion
basin which
decreases flow
and/or
downstream
channel capacity
enhancements
which contain flow



SAN ANSELMO FLOOD REDUCTION PROJECT

ANOTHER LOCAL DWR GRANT MIGRATION PROJECT

- The Nursery Site Diversion Basin and Removal of 634-636 S.A. Ave. is being evaluated by the San Anselmo Flood Reduction Project

| | | |
|--|---|--|
|  <p><u>Alternative</u> Morningside/lower sleepy hollow creek improvements + Nursery Basin</p> |  <p><u>Proposed Project</u> Removal of Building Bridge @ 634-636 San Anselmo Avenue+Nursery Basin</p> |  <p><u>Alternative</u> No Detention Basin (Light Restoration-downtown San Anselmo Creek)</p> |
|--|---|--|

San Anselmo Flood Risk Reduction Project EIR Alternatives



Phoenix Lake IRWM Project
May 16, 2017



Slide 19

POTENTIAL ALTERNATIVES

- Alternative A: Downtown San Anselmo
- Alternative B: Sleepy Hollow/Morningside
- Alternative C: Downtown Ross & College of Marin
- Alternative D: No Project



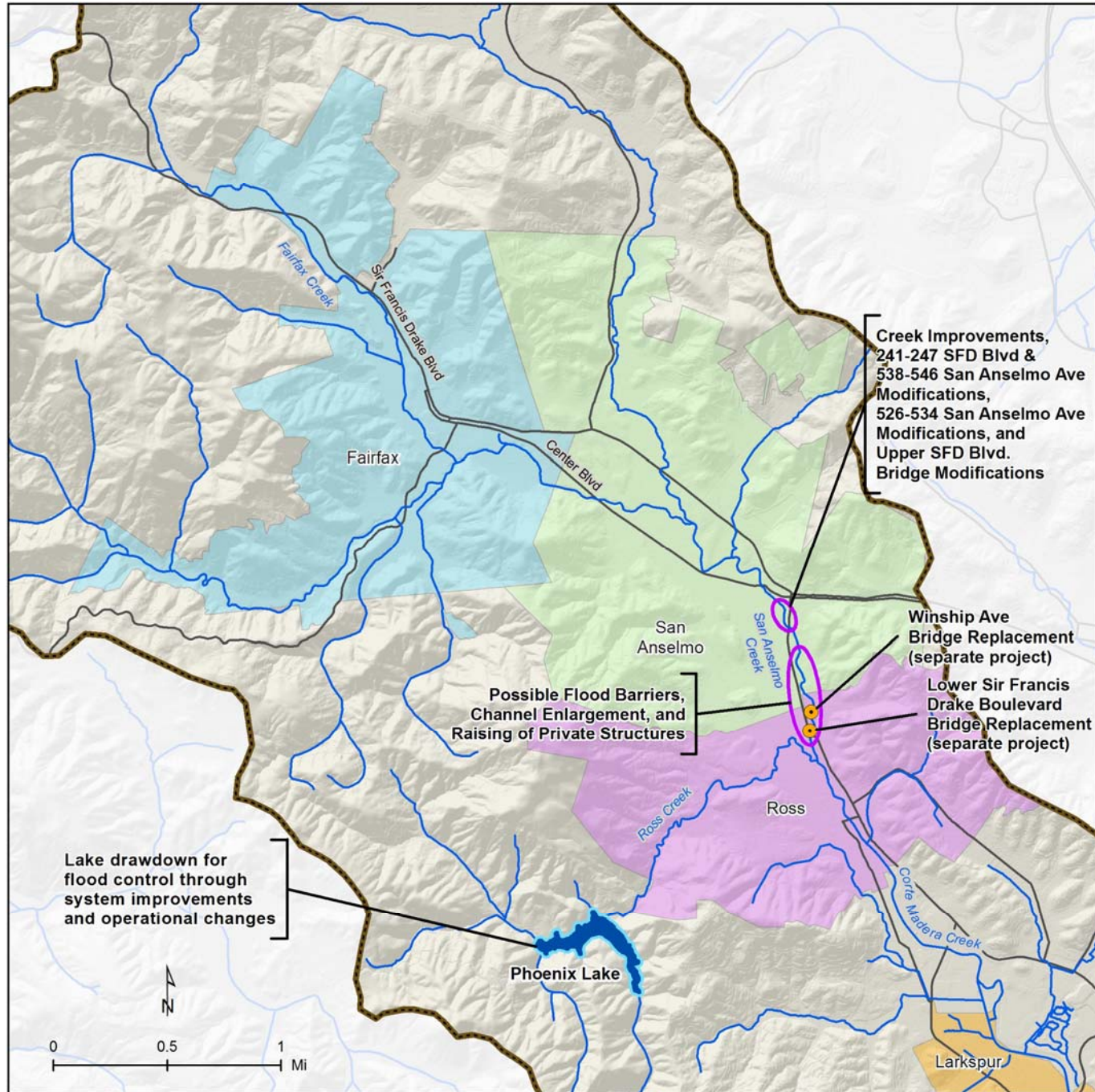
POTENTIAL ALTERNATIVES

ALTERNATIVE A

- Downtown Structure Modifications (excluding 634-636 San Anselmo Ave.)
- Downstream Channel Widening & Floodwalls
- Phoenix Lake Improvements (excluding dam modifications)



ALTERNATIVE A



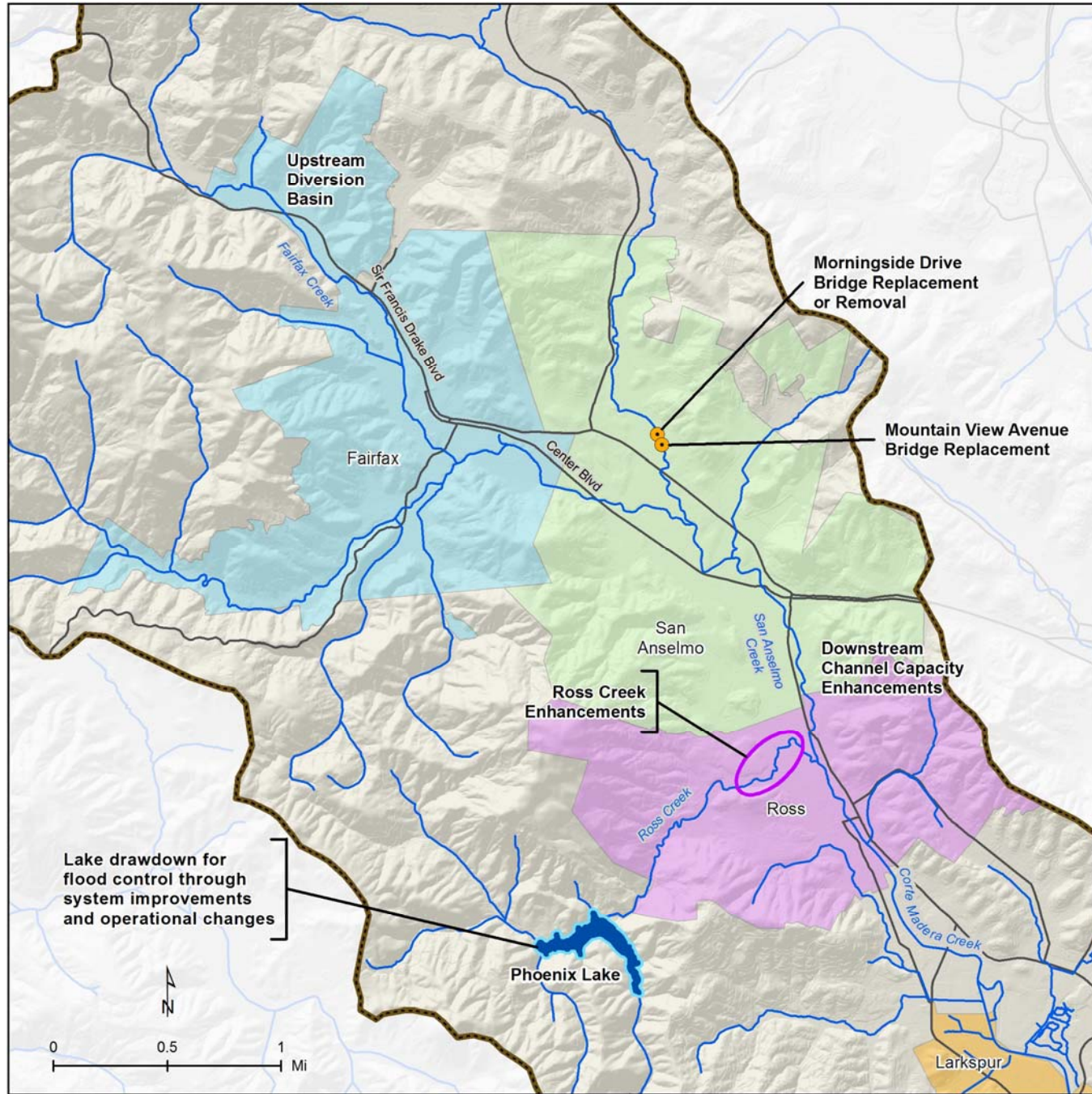
POTENTIAL ALTERNATIVES

ALTERNATIVE B

- Mountain View Bridge Replacement
- Morningside Bridge Replacement or Removal
- Upstream Diversion Basin or Downstream Channel Capacity Enhancements
- Phoenix Lake (excluding dam) & Ross Creek Improvements



ALTERNATIVE B



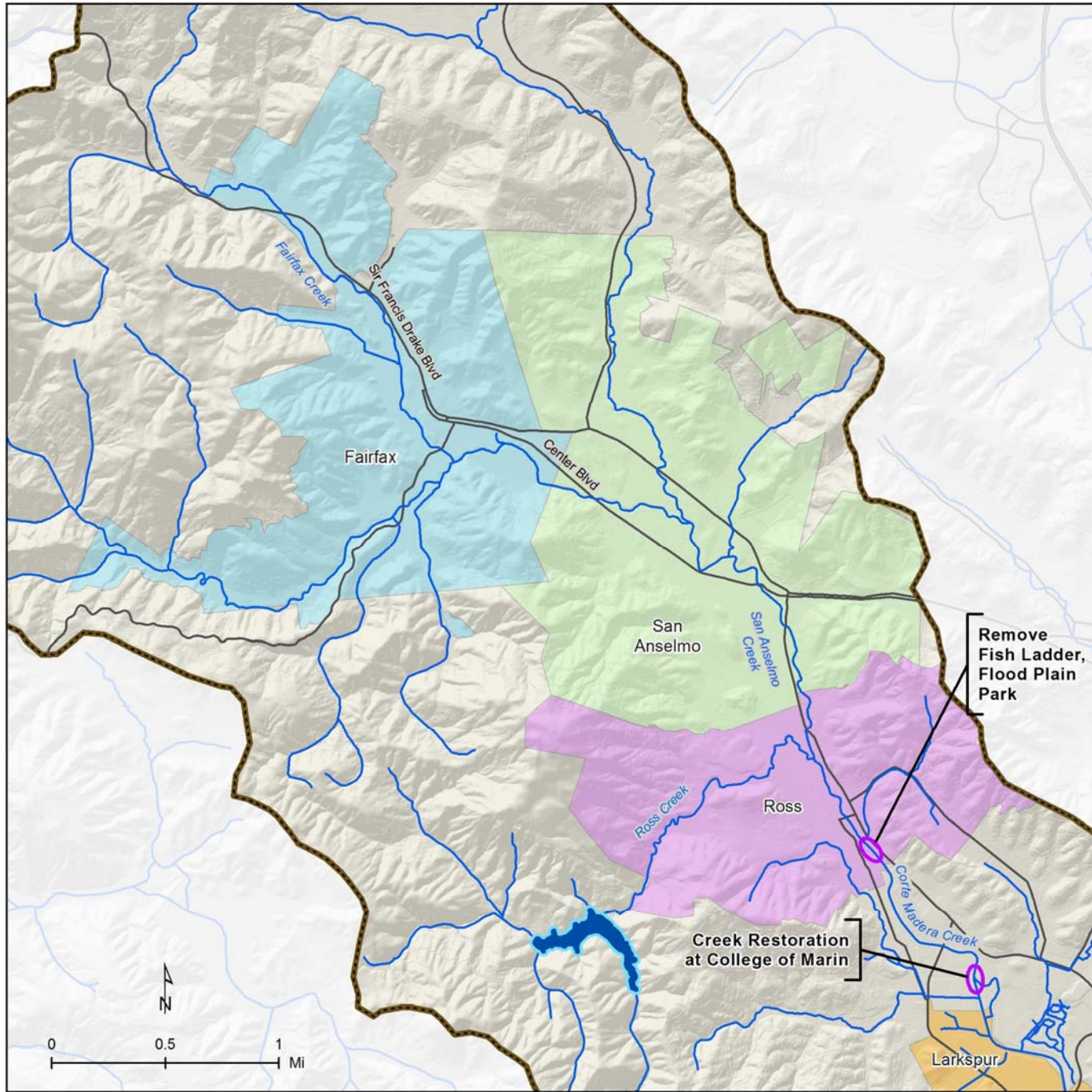
POTENTIAL ALTERNATIVES

ALTERNATIVE C

- Remove Ross Fish Ladder
- Ross Floodplain Park
- College of Marin Creek Restoration, Phase 1



ALTERNATIVE C



POTENTIAL ALTERNATIVES

ALTERNATIVE D

- No Project
- Return approximately \$509,000 in grant funds
- Forfeit the remaining grant total amount of \$7,152,000



SCHEDULE TO AMEND GRANT

BEFORE SEPTEMBER 1, 2017

| Task | Start | Complete |
|----------------------------------|----------------------|------------------------|
| Present Alternatives to AB | May 16, 2017 | May 16, 2017 |
| Present to Ross Town Council | June 8, 2017 | June 8, 2017 |
| Public Workshop/AB Meeting | June 2017 | June 2017 |
| Prepare Amendment Application | June 2017 | June 15, 2017 |
| DWR Review of Application | June 16, 2017 | August 25, 2017 |
| Execution of Amendment | August 28, 2017 | August 28, 2017 |
| Termination of Current Agreement | September 1, 2017 | September 1, 2017 |



Questions

PHOENIX LAKE IRWM PROJECT



Phoenix Lake IRWM Project
May 16, 2017

College of Marin, Kentfield Campus Corte Madera Creek Restoration Project FACT SHEET

FLOOD RISK-REDUCTION

- Existing level of flood protection at the College: 3,800-4,000 cfs capacity (+/- 4-5-year)
- Army Corps design alternatives with channel wall extensions or setback walls/berms to confine 3-foot-deep overbank flows: 5,400 cfs capacity (+/- 20-25-year)
- Creek Restoration Project: 5,400-cfs flood water surface elevation about 3 feet lower and maintained within restored channel—no overbank flows, no wall extensions, no setback walls or berms at 5,400 cfs
- Lowered water surface elevations extend upstream: flood risk in Granton Park reduced; channel wall extensions or setback walls bordering the concrete channel upstream from the College reduced in height

Note: If the RVSD Sanitary Sewer (SS) line running along the left channel wall can be moved to allow wall removal, the project would lower the 5,400-cfs water surface elevation an additional foot, increasing the flood protection level to 6,000 cfs capacity (+/- 35-40-year) without wall extensions or setback walls/berms.

PHASE 1

- Removes the channel floor and right bank (west) channel wall from the Stadium Way Footbridge to the downstream end of the channel (395 lineal feet)
- Construction Cost about \$1.3 M
- Produces about 20% of the total flood protection benefit
- Borders the planned new M & O, PD, and Repro facilities
- Provides major visual screening of quasi-industrial facilities

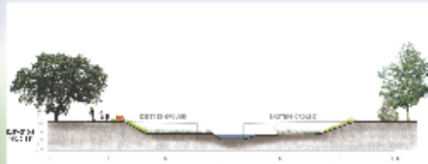
PHASE 3

- Removes the channel floor and right bank (south) channel wall from College Avenue Bridge to the upstream end of Lot 9 (~1,100 lineal feet)
- Construction Cost about \$3.4 M
- Produces about 35% of the total flood protection benefit
- Visual enhancement to core of campus

Note: Phase 2 includes replacement of the Stadium Way Bridge, modifications to the College Avenue Bridge, and partial removal of the concrete channel near Kent Middle School. It does not involve College property or funds. The Army Corps of Engineers and Flood Control District will design, obtain permits, and pursue Phase 2 concurrently with Phase 3.



PHASE 1 - PROPOSED CONDITIONS



PHASE 1 - PROPOSED CONDITIONS AT XS 319+70



PHASE 3 - PROPOSED CONDITIONS

SUSTAINABILITY

- Reduced cleanup costs by reducing out-of-bank flows into College facilities (geothermal field, parking lots, athletic facilities)
- Increased carbon sequestration in restored wetland habitat
- Unique opportunity to remove part of 50-year-old concrete channel while it is under review for integrity and function
- Creek Restoration lowers floodwater surface elevations by 3-4 feet to better accommodate projected sea-level rise compared to design alternatives retaining the existing channel
- Benefits extend off the campus, reducing conflict with neighbors

IMPROVED CAMPUS EXPERIENCE AND TRAILS

- Significant aesthetic benefits of trading a concrete box for a natural environment
- Improved pedestrian footbridge with visual connection to restored creek corridor
- Improved sight lines into campus plaza
- A more attractive and welcoming entrance to the campus
- Improved pedestrian and bicycle connections to and through the campus

CREEK HABITAT

- Restored tidal wetland and channel habitat: benefit plants, fish, and wildlife, including steelhead trout and Ridgway's rail, endangered species using the creek and its wetland habitats
- 2-3 acres of improved upland habitat, with native trees and shrubs replacing weedy species
- 4-5 acres of new restored aquatic and riparian habitat
- Mitigation value for impacts to habitat caused by other construction

EDUCATIONAL OPPORTUNITIES

- A more natural creek using modern methods of flood management, enhancing educational opportunities
- Students in biology, geology, and horticulture classes could have hands-on experience with restoration.
- The campus, instead of being a textbook example of failed flood control from the 1960s, would be the site of cutting-edge flood management.

PARKING AND ADA IMPACTS

- Approximately 20-25 existing parking spaces lost in Phase 3 could be recouped by reconfiguration of parking areas south of the creek.
- ADA and parking impacts less than for setback wall/berm design alternatives.



RESERVOIR & DAM STATUS

PHOENIX LAKE IRWM PROJECT

MMWWD Video

Go to [MMWWD website](#)

(<http://marinwater.org/463/Dam-Safety-Program>) to view the MMWWD Dam Safety

Program video and for additional dam safety information.

