Guadalupe River – Tasman Dr. to I880

Conceptual Alternatives

Presented by: Katie Muller, Project Manager

Valley Water

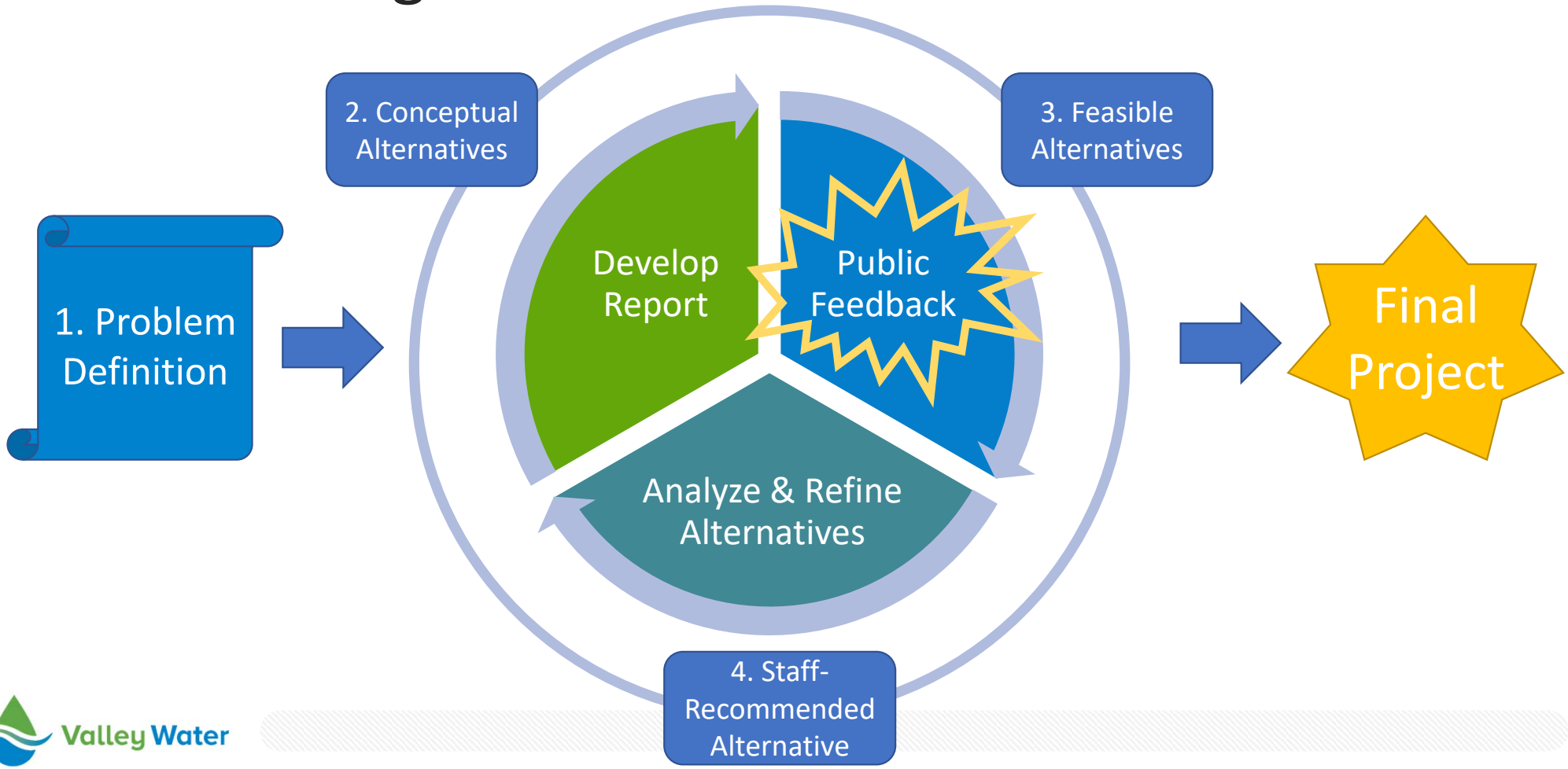
Presentation Agenda

Engineering Planning Process

- Phase 1: Problem Definition
- Phase 2: Conceptual Alternatives Analysis *(19 Alternatives)*
- Phase 3: Feasible Alternatives Analysis *(8 Alternatives)*

Questions and Public Input

The Planning Process



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Phase 1: Problem Definition

Guadalupe River Background and History

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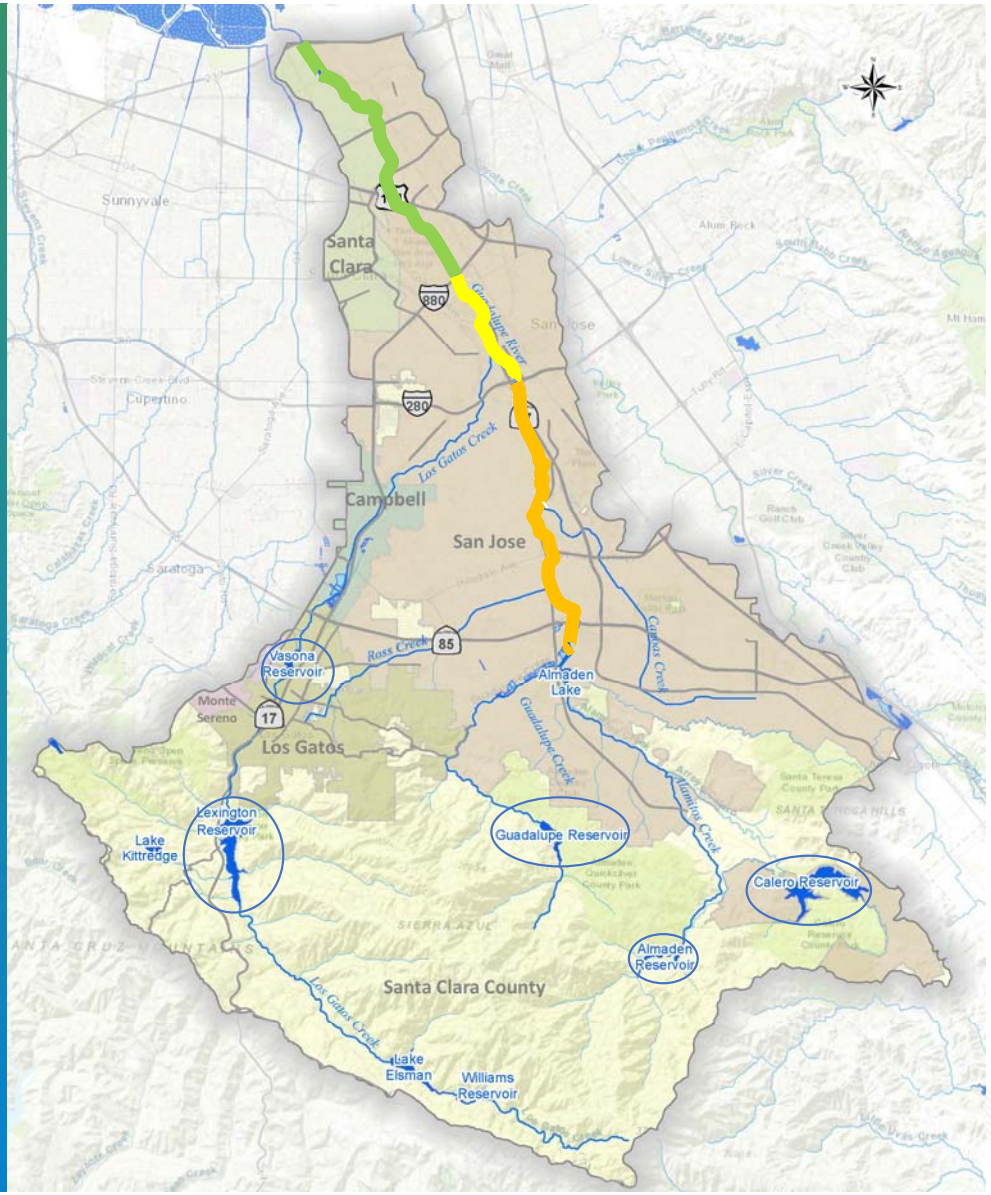
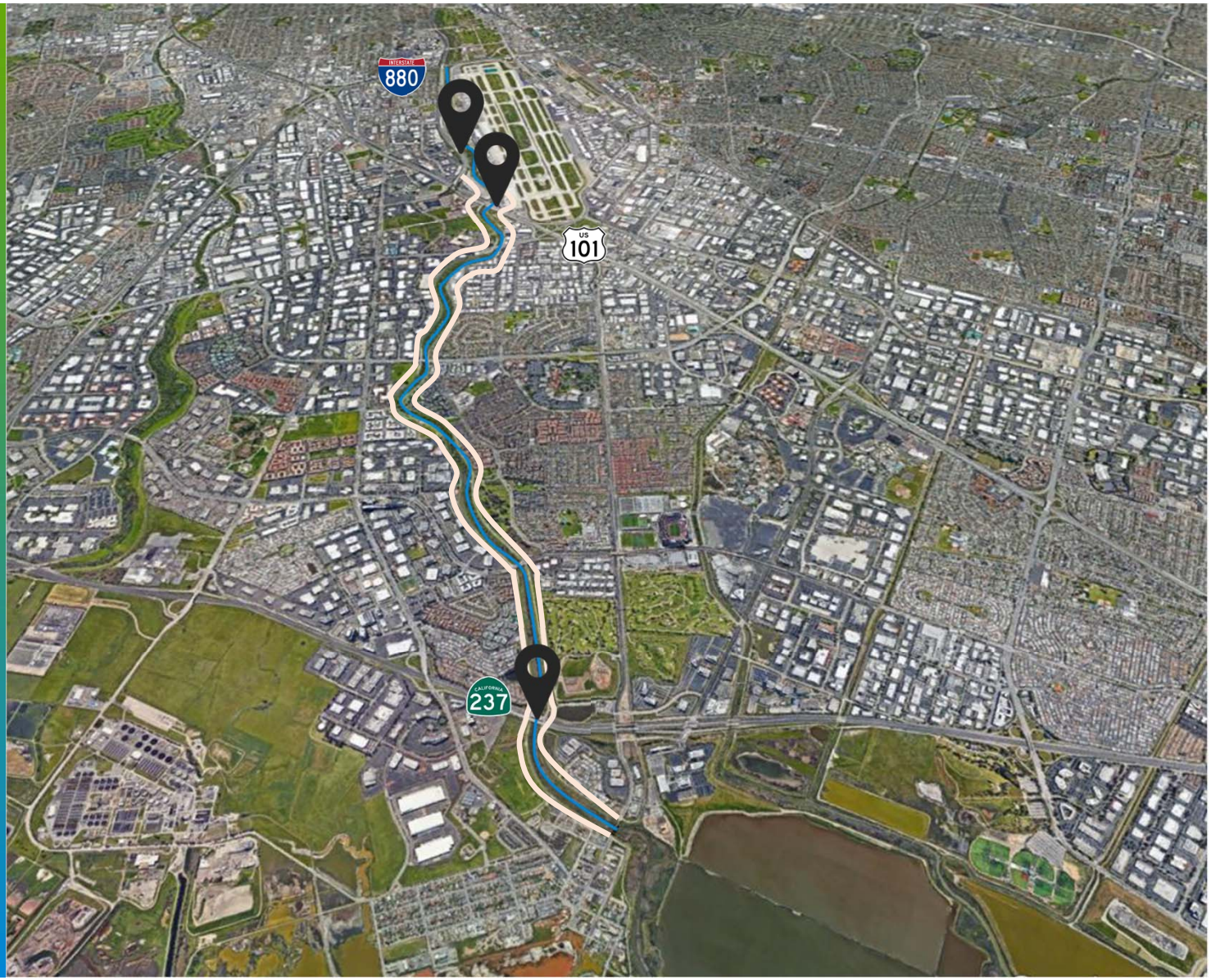
Guadalupe Watershed

- All rain ends up in Guadalupe River
- 7 Reservoirs
- Three “sections” of river:
  - Upper
  - Downtown
  - Lower





Lower Guadalupe River Project

- Completed 2004
- 100-Year flood protection
- Levees and Floodwalls
- Bridge Improvements

Phase 1: Problem Definition

Defining the Problem and the Project's Objectives

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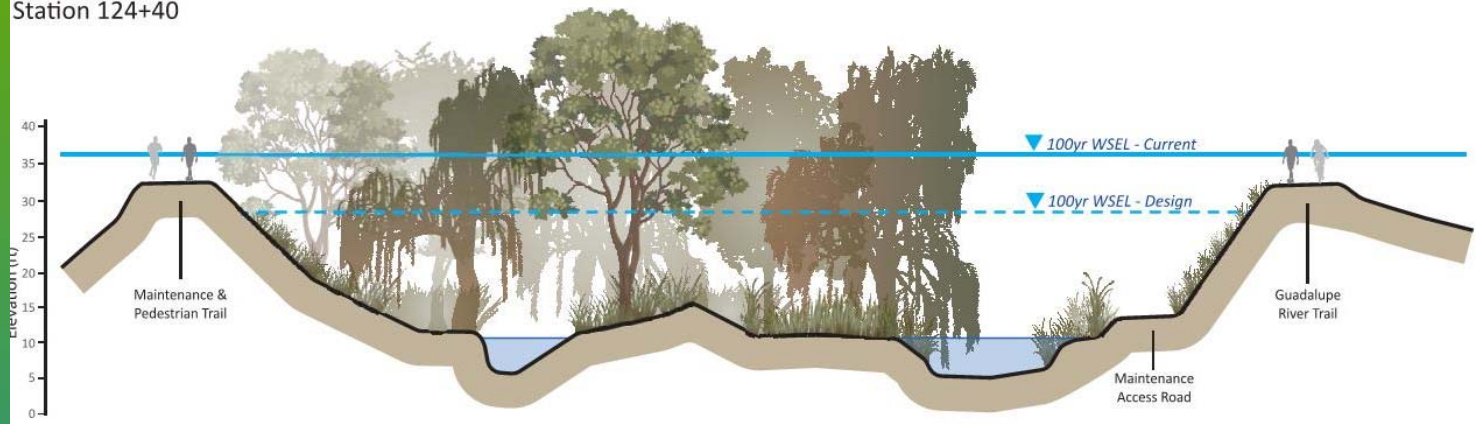
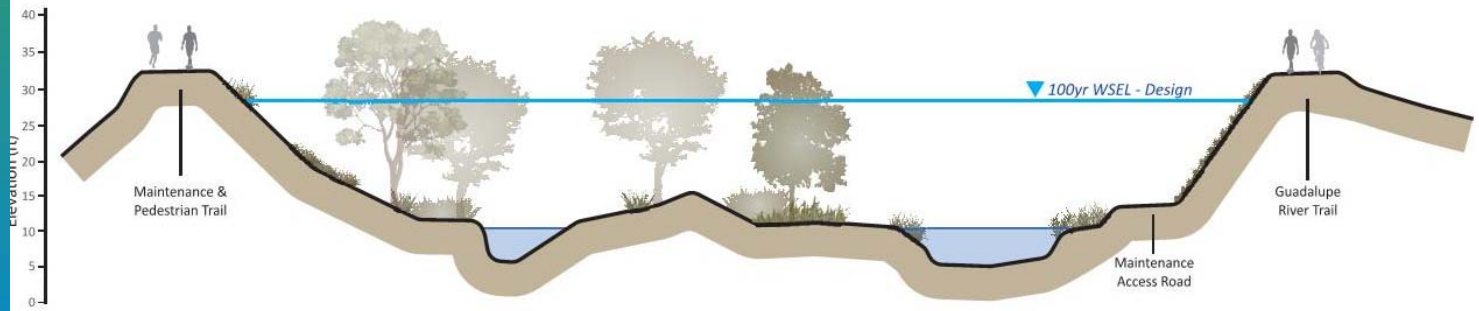
Typical Section: Trimble Road to Montague Expressway
Facing Downstream to Montague Expressway
Station 124+40



Current Condition



Design Condition

Approximate Scale

Problem

- Channel is under design capacity

Causes

- Vegetation overgrowth
- Levee encroachment in to channel

Project Objectives

- **Restore 1-percent flood capacity**

Other Criteria

- Minimize future O&M activities
- Maintain/enhance public recreation and access
- Obtain community support for the Project

What is 100-Year?

1% probability of occurrence in a given year

- 1 in 100 chance
- 26% chance over life of 30-year mortgage

Why 100-Year?

- FEMA National Flood Insurance Program Maps

Note: Does not eliminate all flood risk!

Preparations for This Winter

Vegetation Removal

Trees cleared from levees and 15 feet from levee toe

Sediment Removal

Sediment removed from side channels to add flow capacity

Lexington Operations

Operate Reservoir for Flood Risk Reduction

Storm Preparedness

Valley Water Field Information Teams (FIT), City Coordination, and Emergency Action Plans

Phase 2: Conceptual Alternatives Analysis

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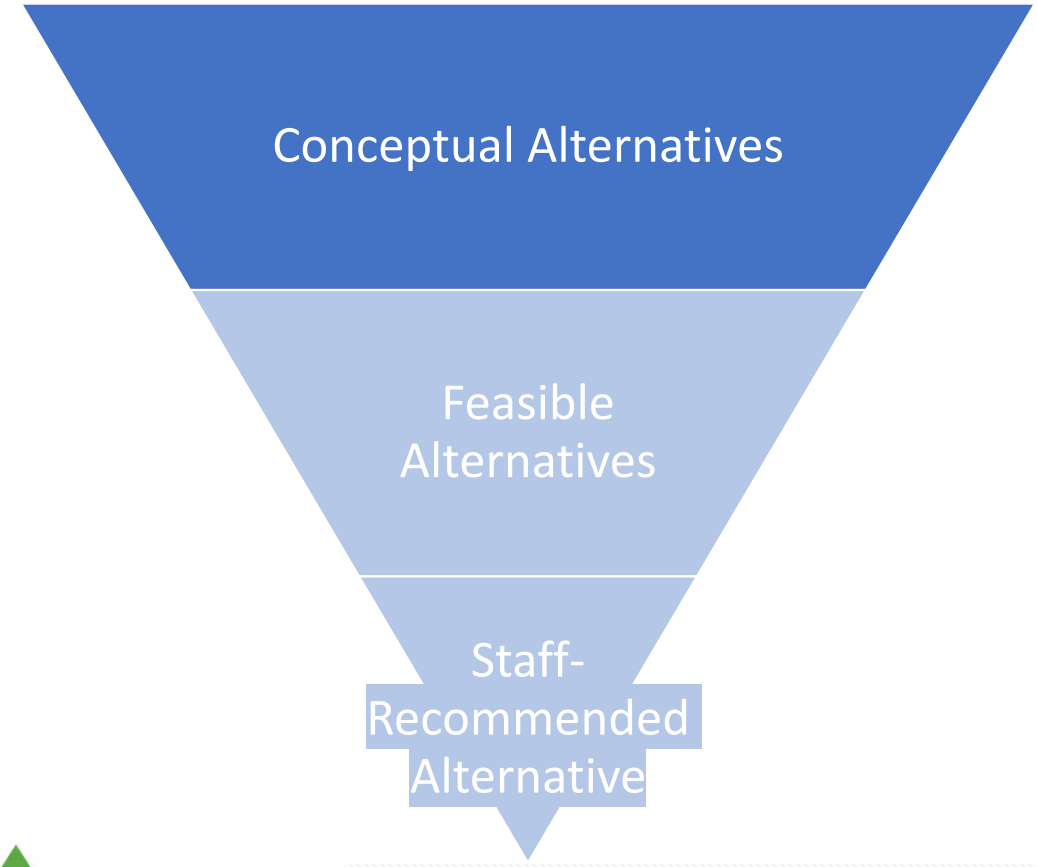
Alternatives Hierarchy



Conceptual Alternatives

- High-level
- Anything within realm of possibility

- 19 Alternatives identified

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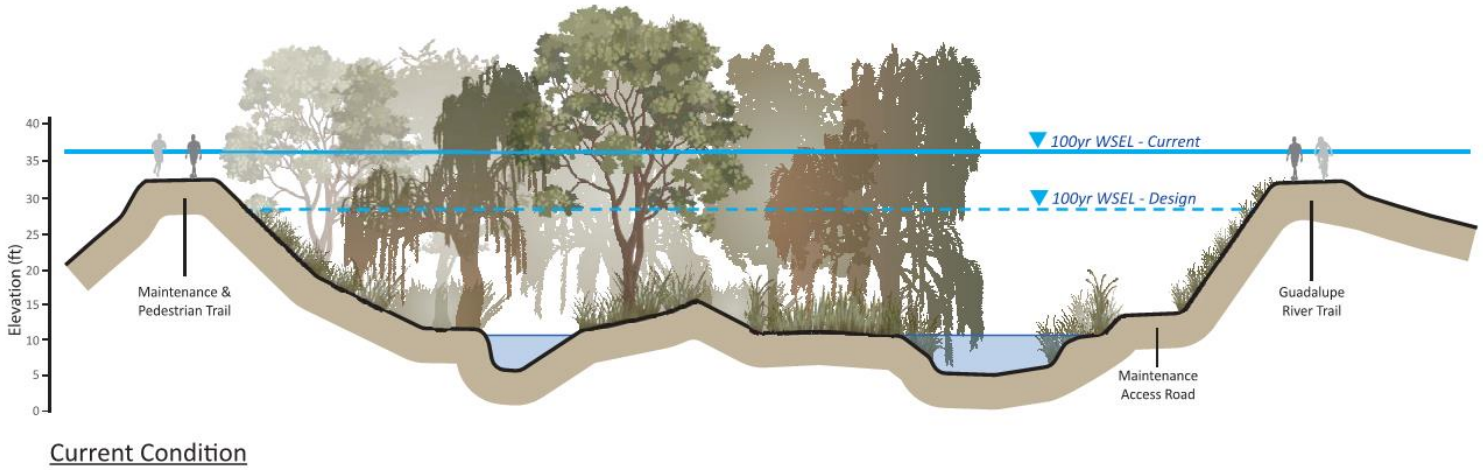
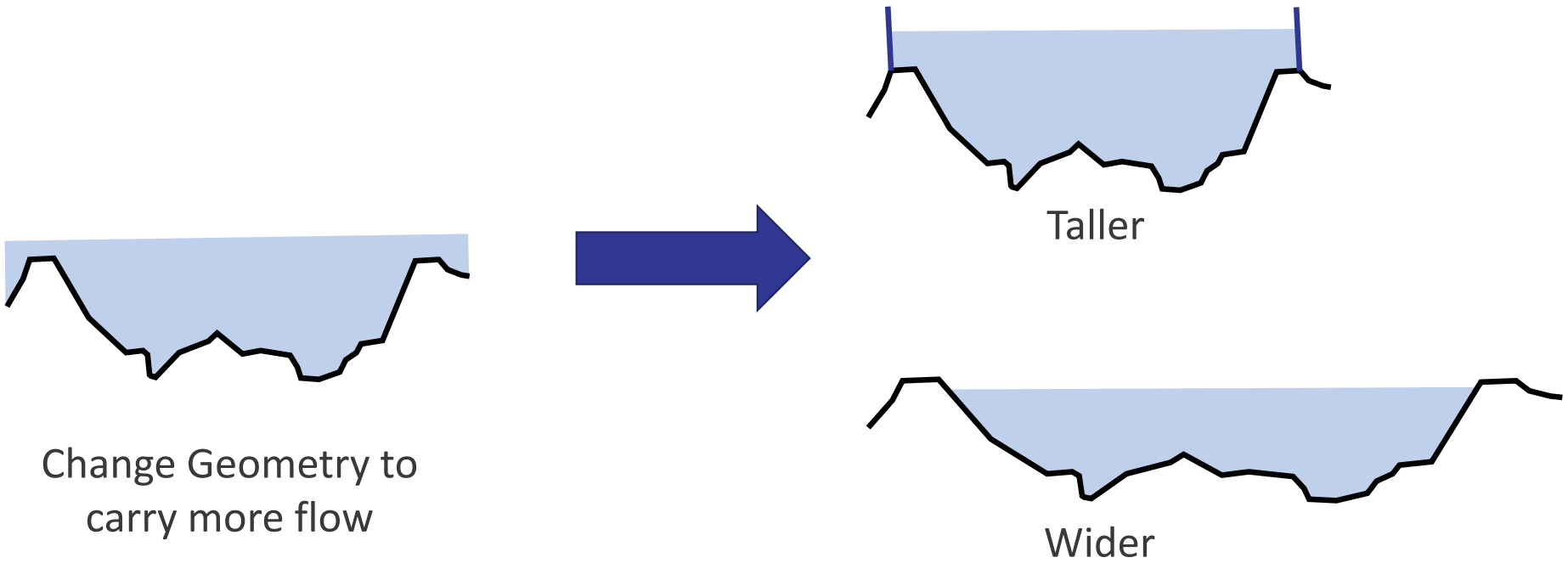
Alternative A – No Project



Current Condition

Types of Flood Risk Reduction

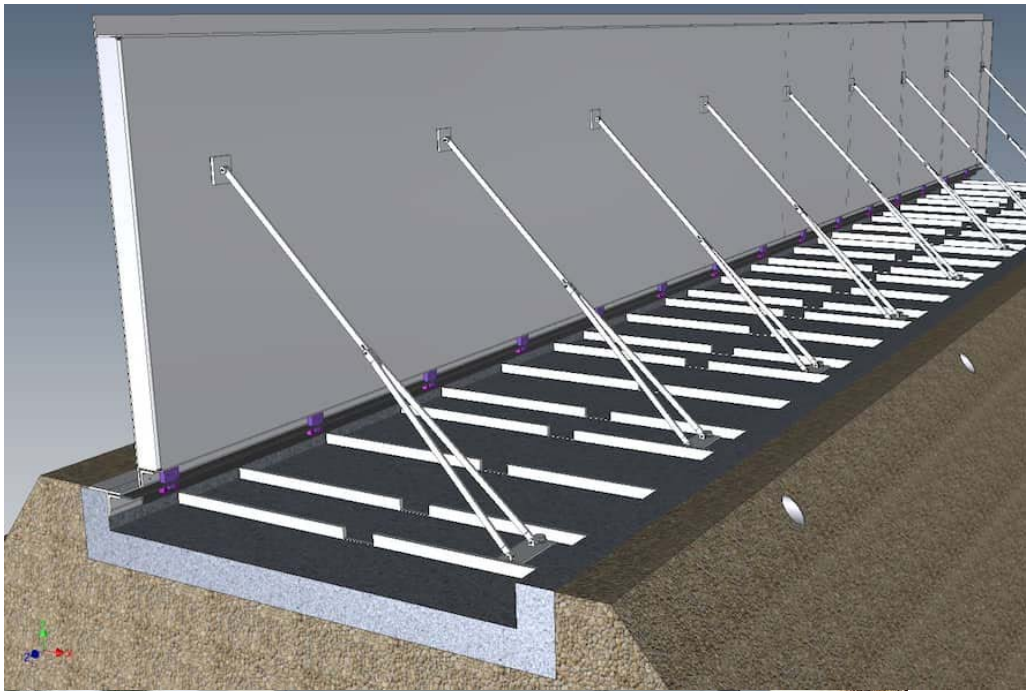


Common Flood Risk Reduction Elements

Floodwall
Concrete or sheet pile barrier

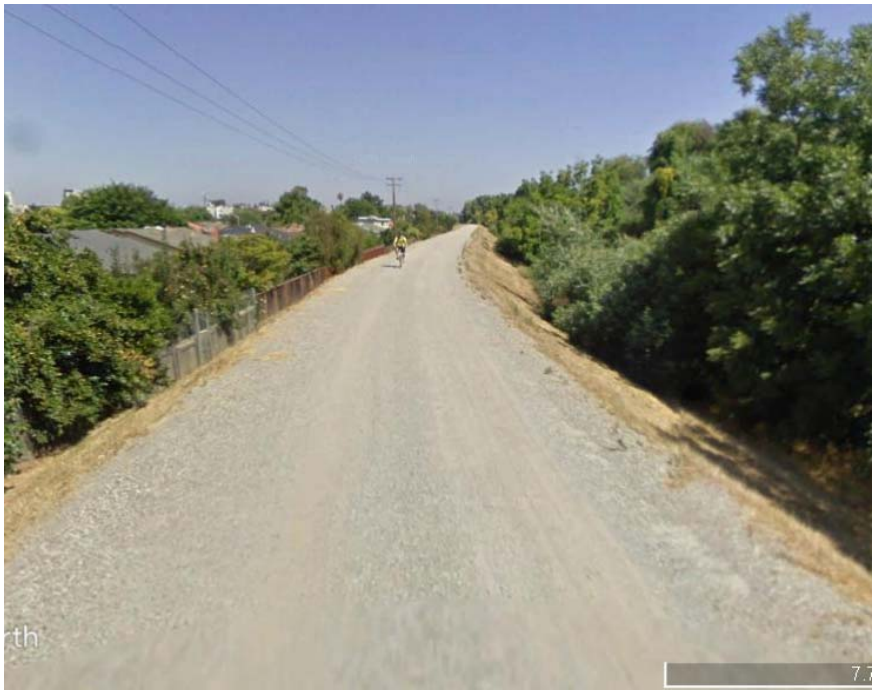
Headwall
Floodwall on a bridge

Common Flood Risk Reduction Elements



Passive Barrier

Self-raising barrier activated by water pressure

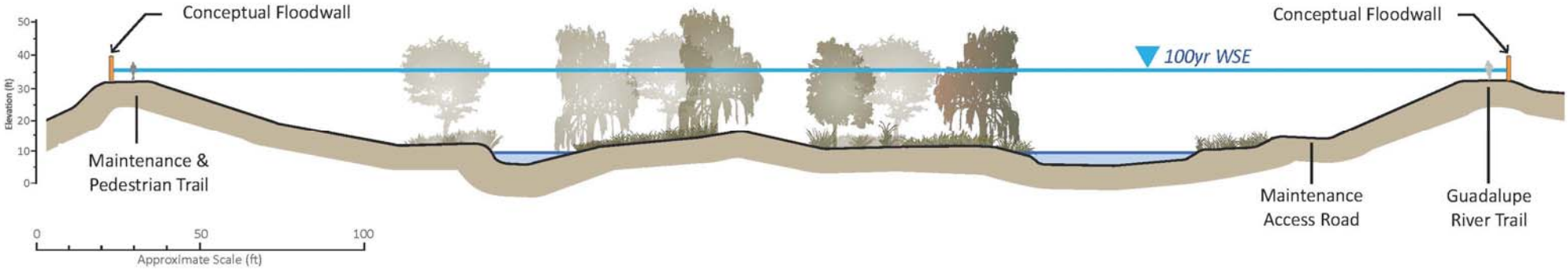


Levee

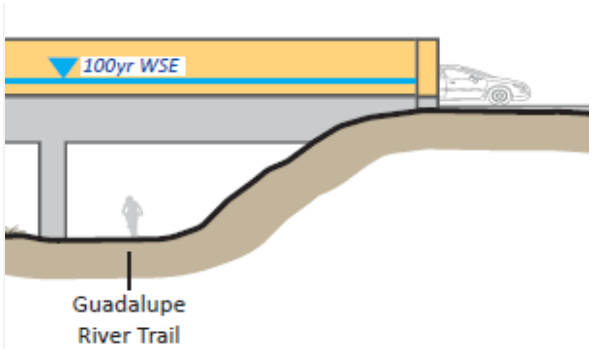
Earthen barrier

Alternative B – Floodwalls

Cost: $65 - 180 million



Bridge Headwalls

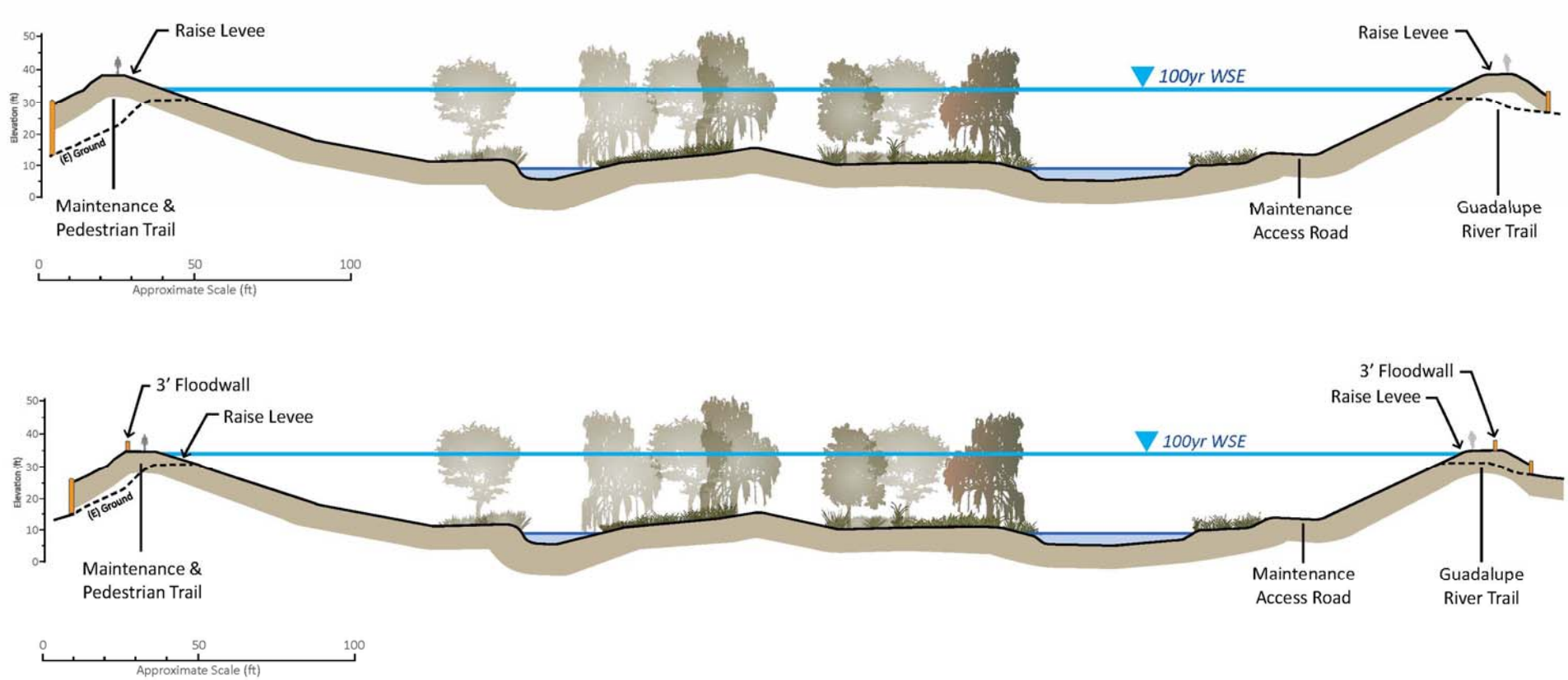


OR

Passive Barriers

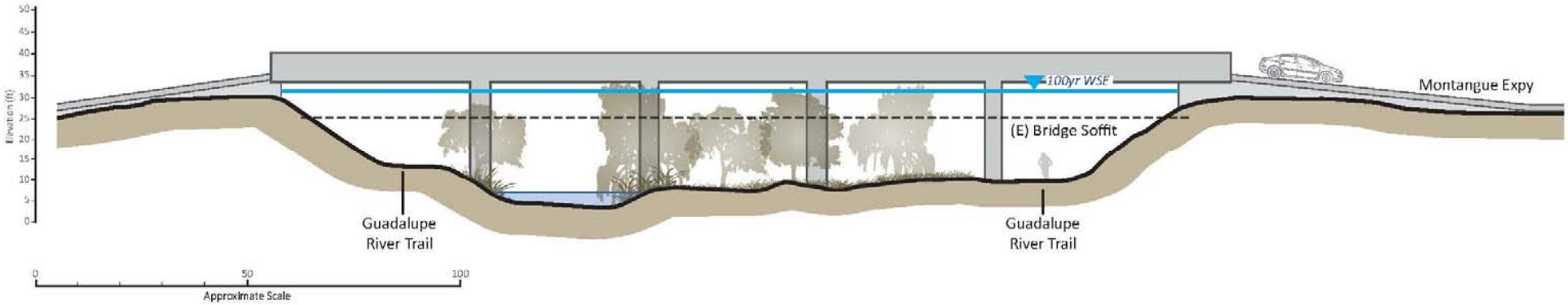
Alternative C – Raise Levees

Cost: $70 – 80 million



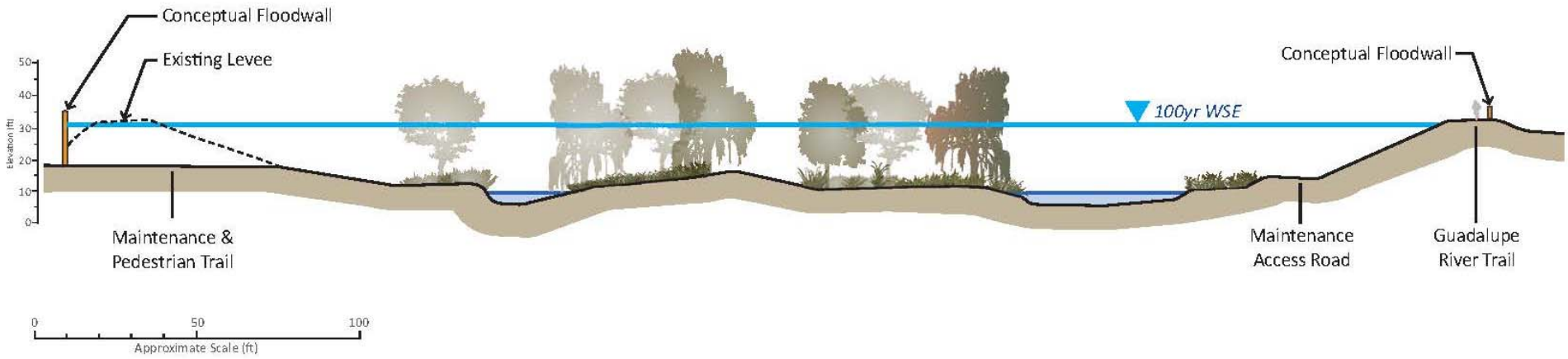
Alternative E – Raise Bridges

Cost: $190 million



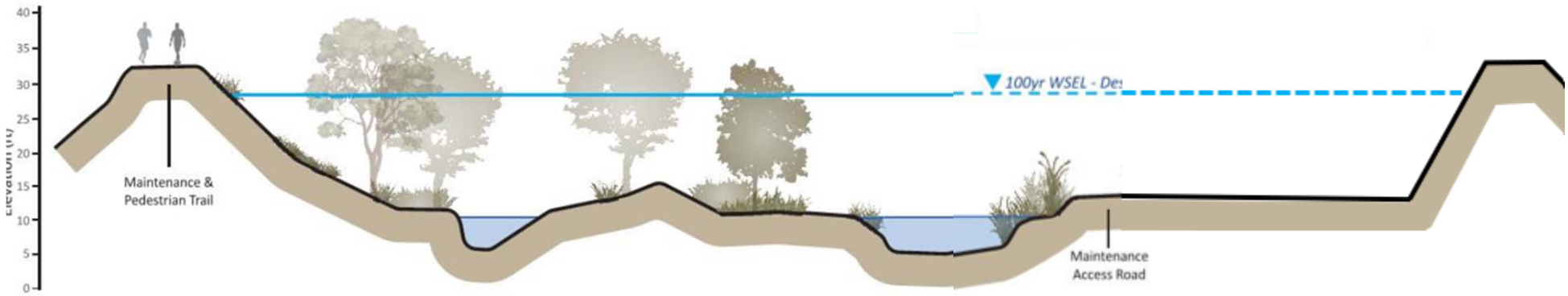
Alternative G – Replace Levee with High Floodwall

Cost: $190 million

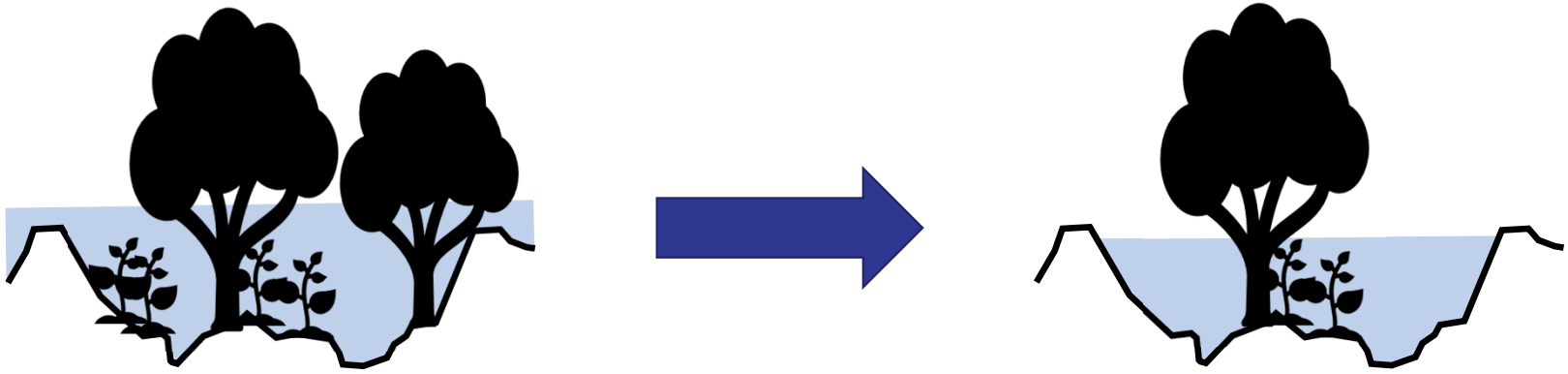


Alternative K – Channel Widening

Cost: $650 million



Types of Flood Risk Reduction

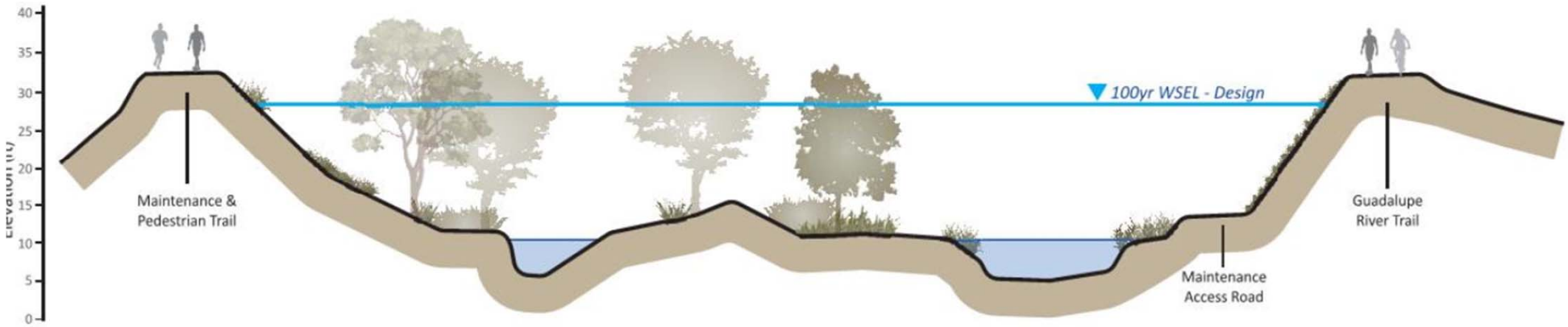


Reduce “Roughness”

Water moves faster,
has more space

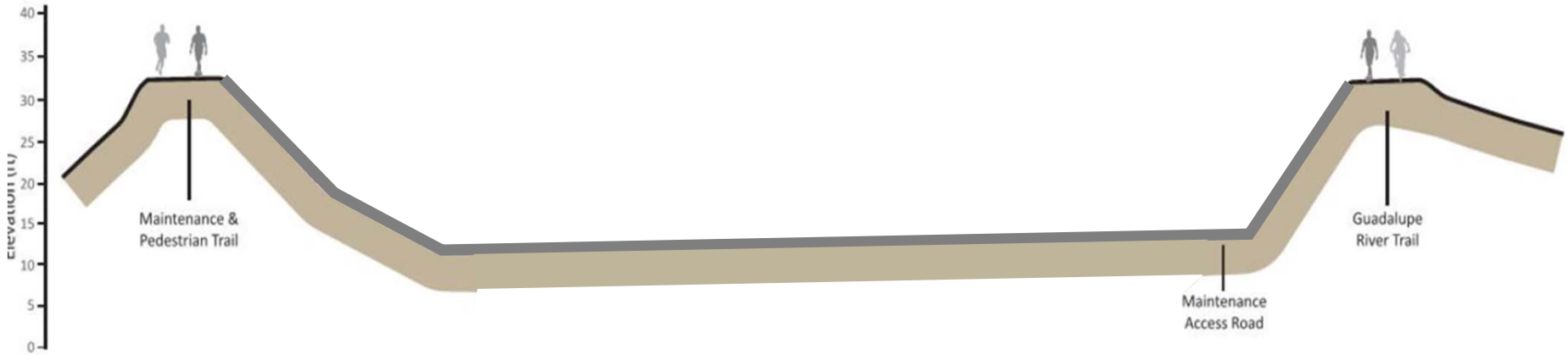
Alternative L – Vegetation Removal

Cost: $100 to $840 million

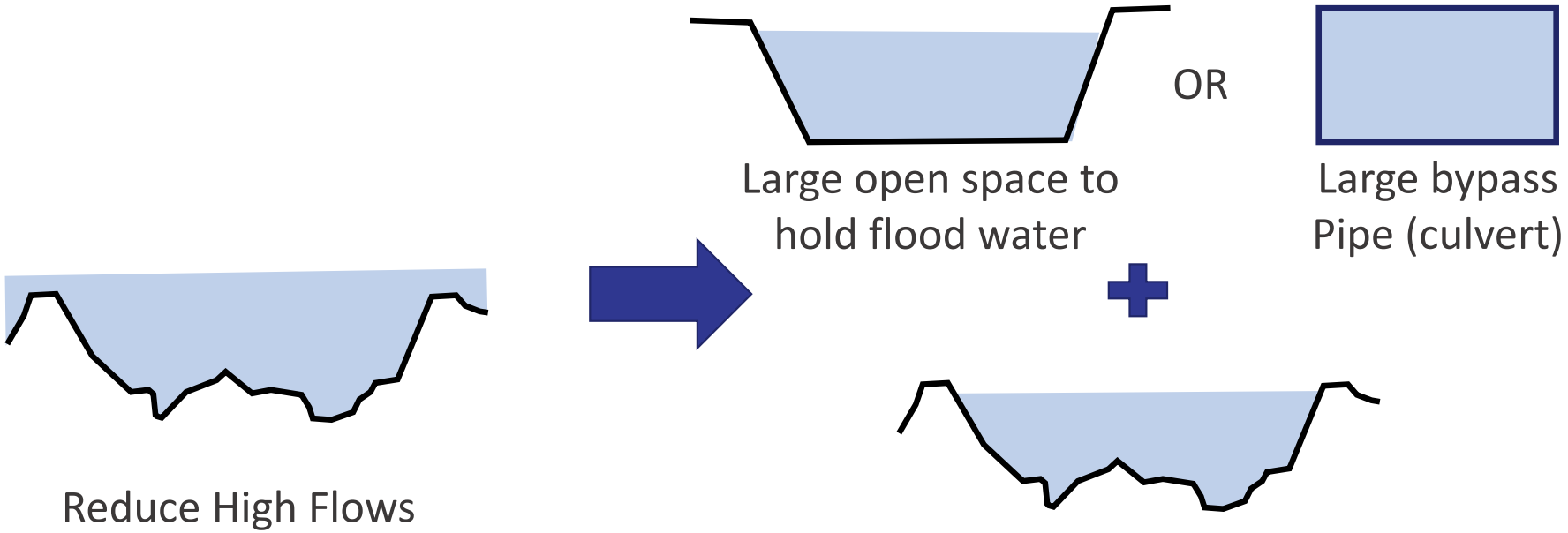


Alternative M – Channel Paving

Cost: $170 million



Types of Flood Risk Reduction



Common Flood Risk Reduction Elements

Bypass Culvert

Concrete pipe that diverts water

Detention Basin

Open space area that holds floodwaters

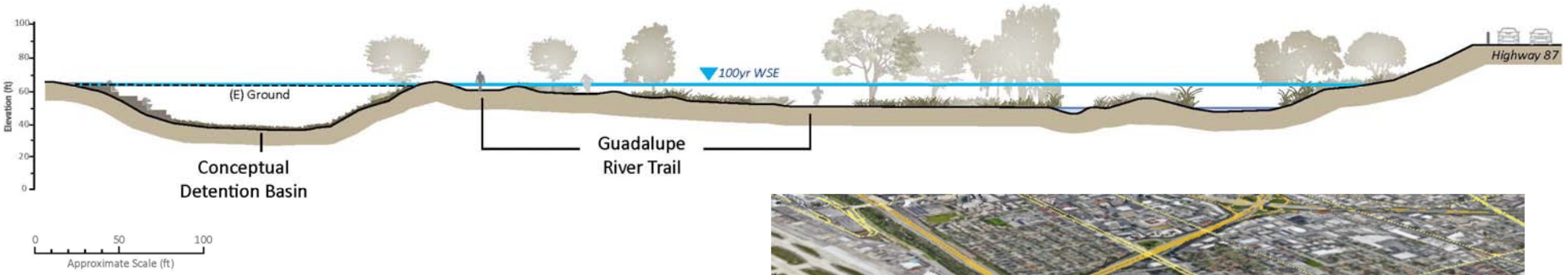
Common Flood Risk Reduction Elements

Operate Reservoirs for Flood Storage

Use reservoir to store flood water

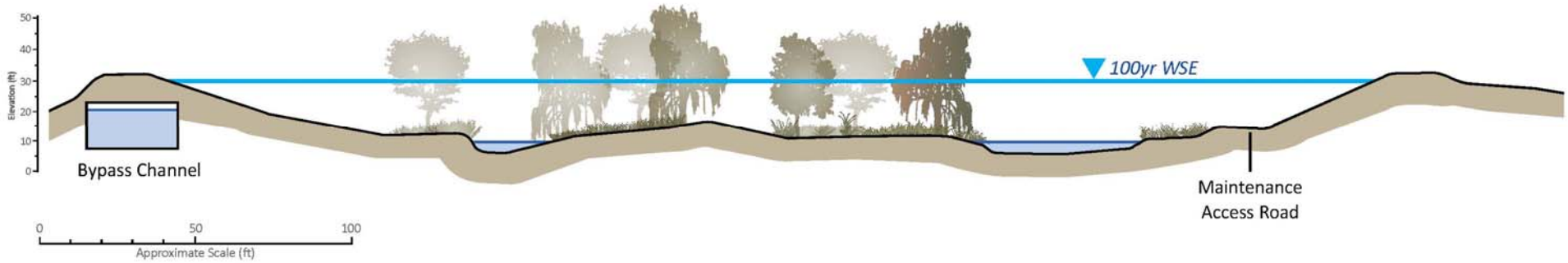
Alternative D – Off-stream Detention

Cost: $85 - 200 million



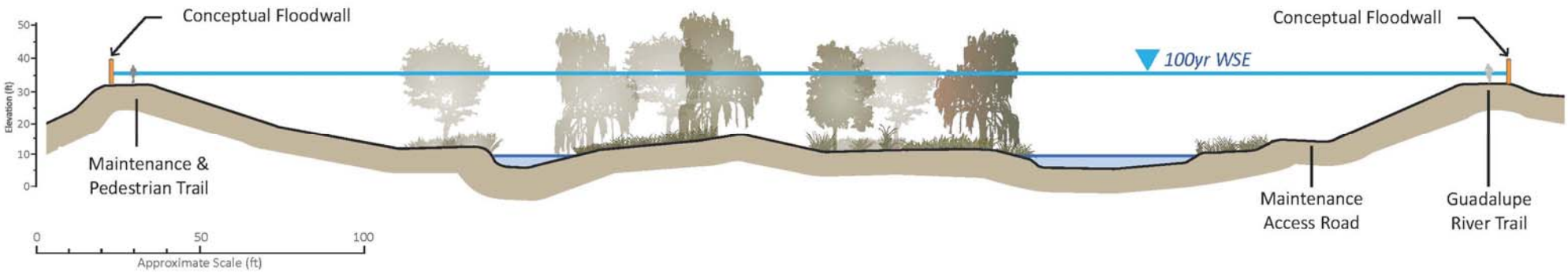
Alternative F – Bypass Culvert

Cost: $300 million



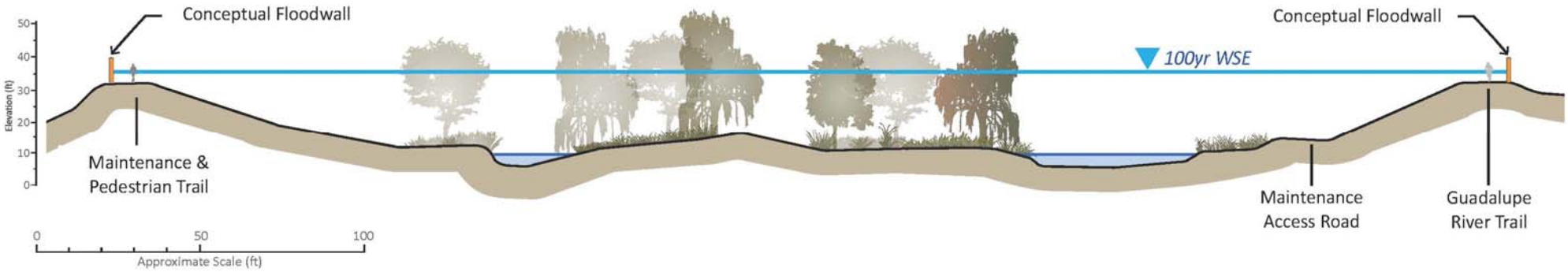
Alternative H – Add Outlet Capacity to Lenihan Dam

Cost: $33 - 110 million



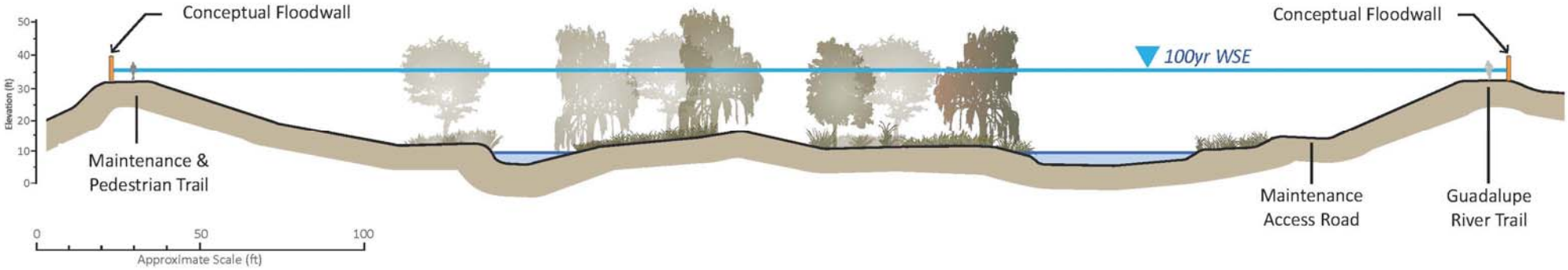
Alternative I – Raise Lenihan Dam

Cost: $110 million

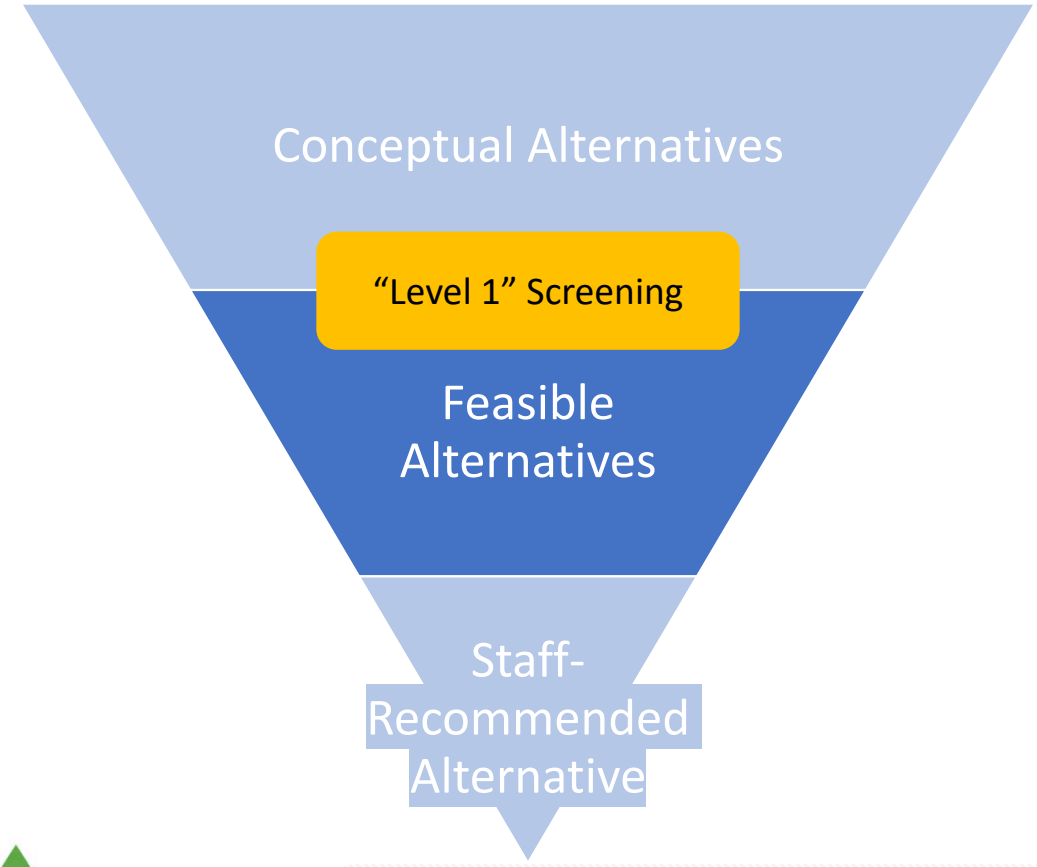


Alternative J – Re-Operate Lenihan Dam

Cost: $11 million



Alternatives Hierarchy



Feasible Alternatives

- More detailed
- Must be practical
- Must pass screening

- 8 Alternatives identified

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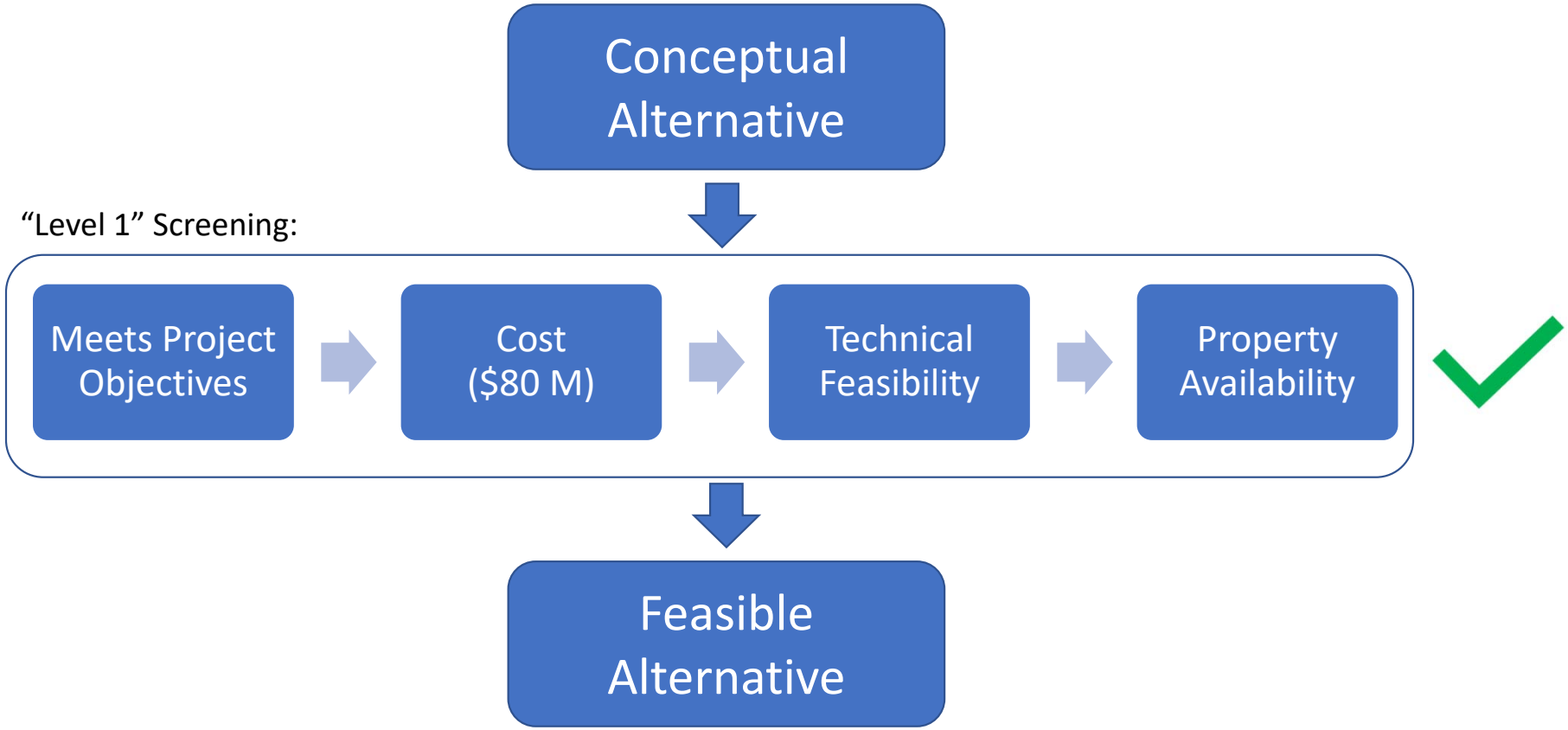
Conceptual Alternatives Screening



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Next Phase: Feasible Alternatives Analysis

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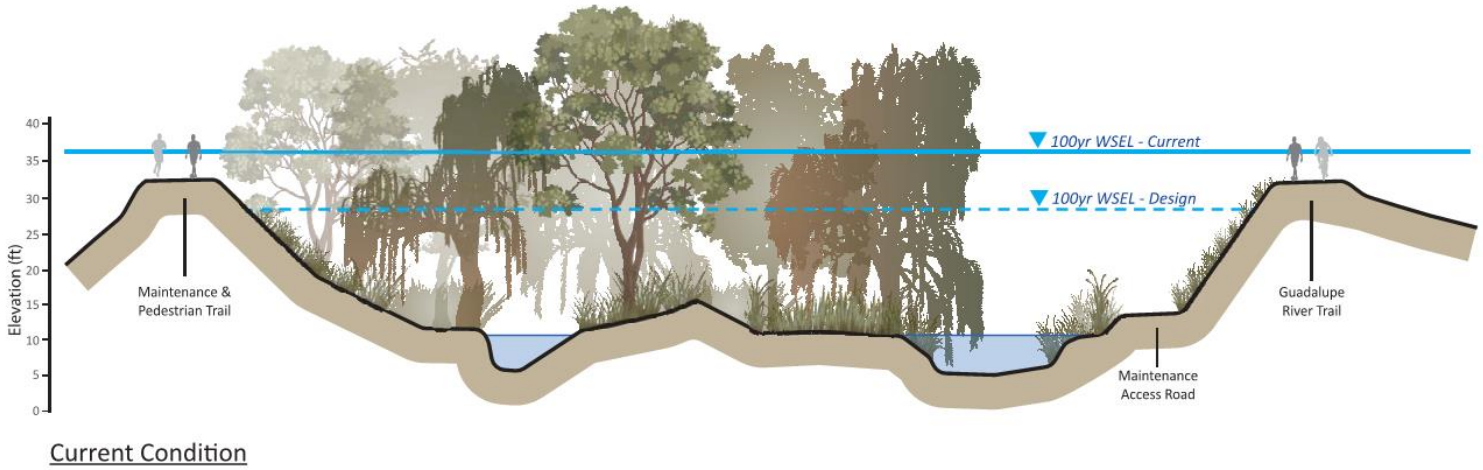
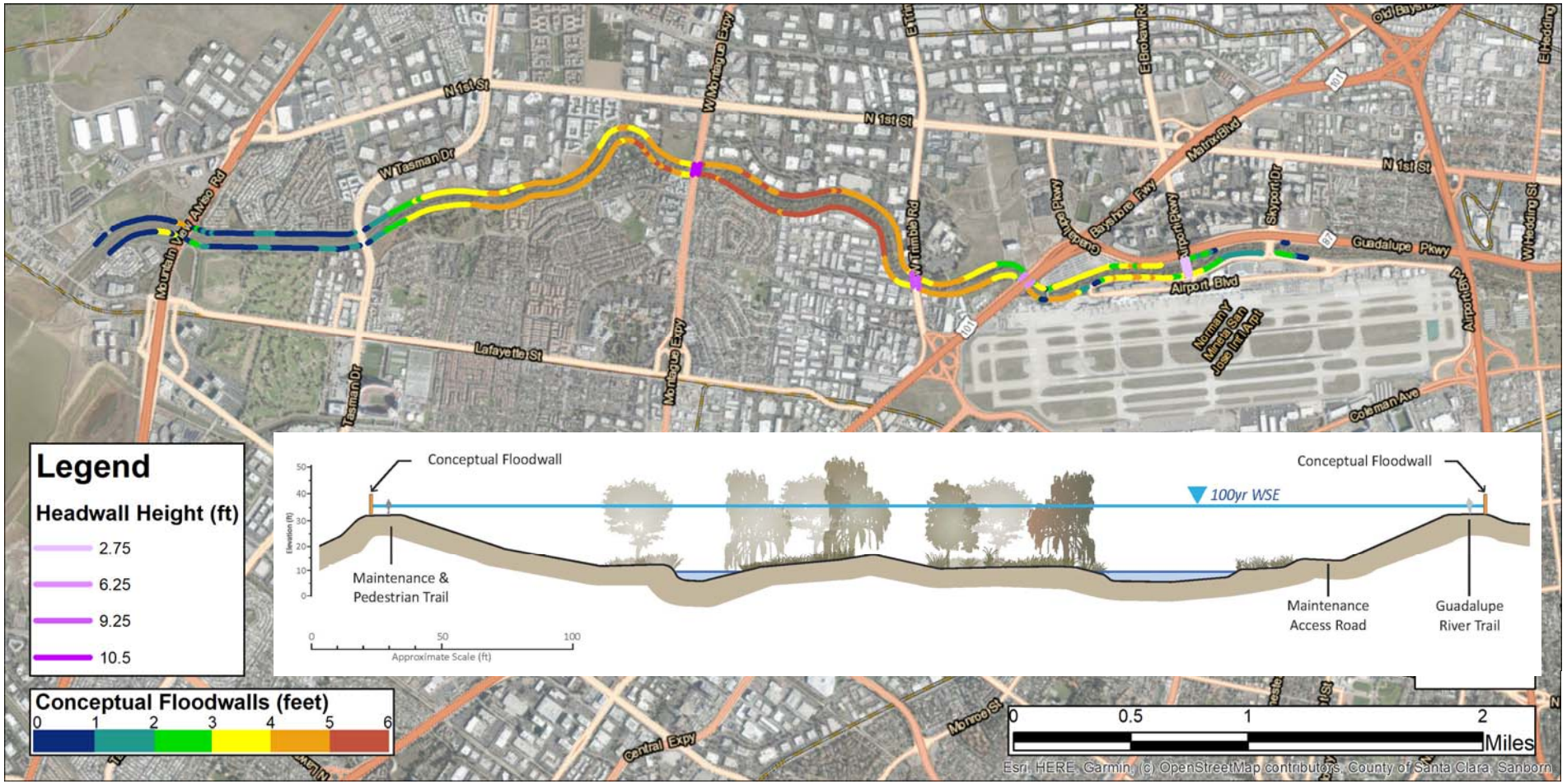
Alternative A – No Project



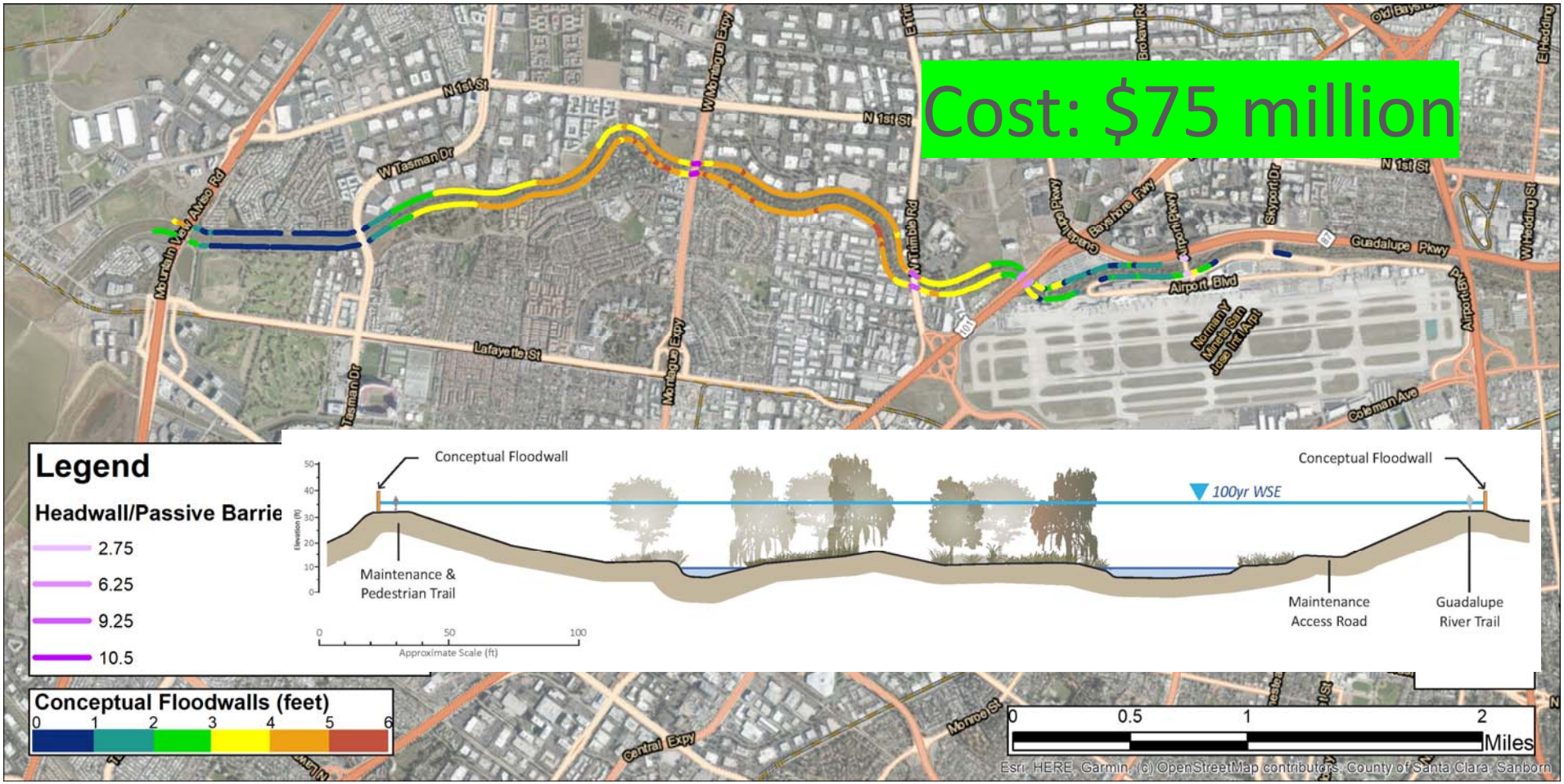
Current Condition

Alternative B – Floodwalls

Cost: $65 million

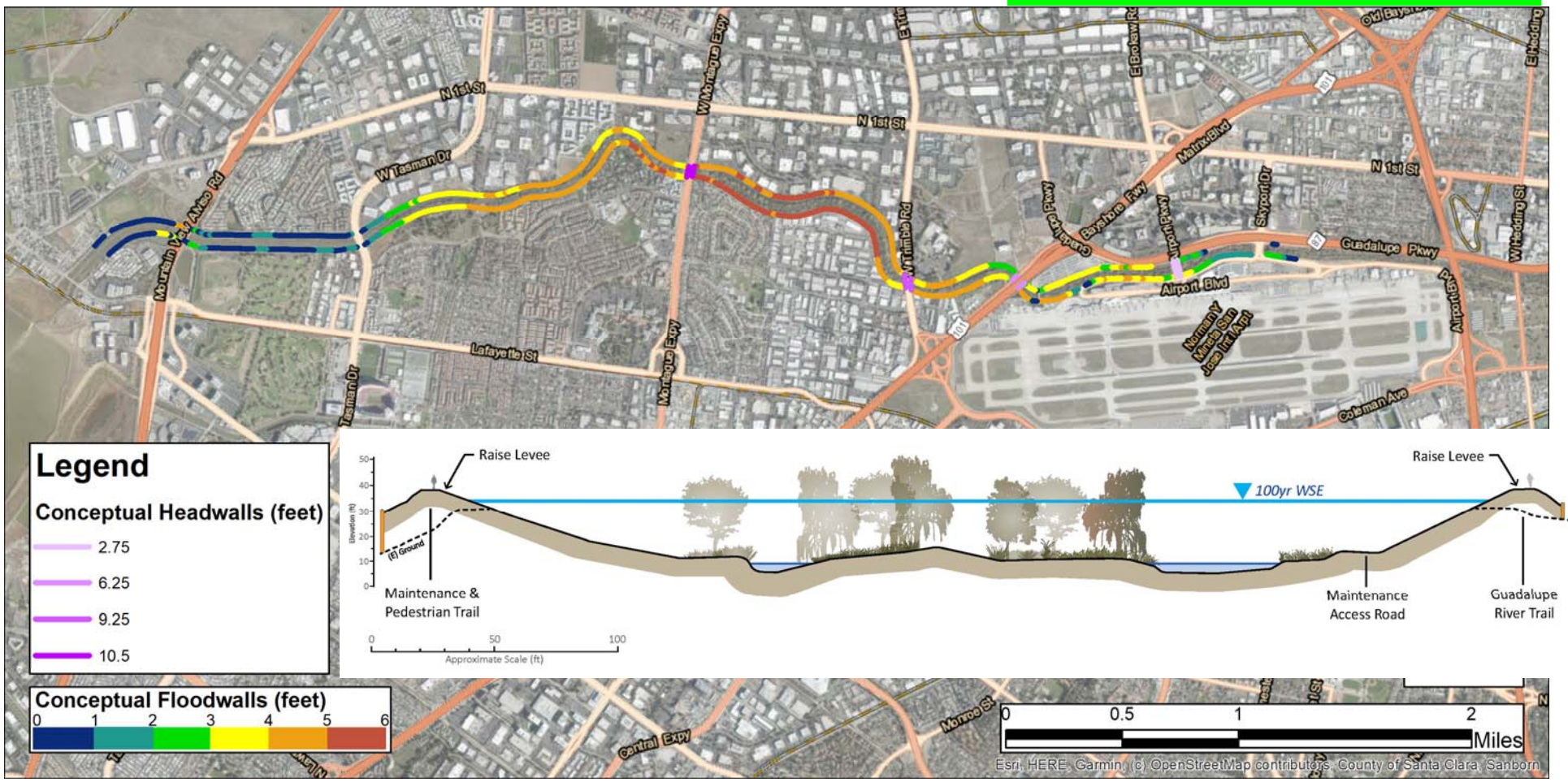


Alternative B.2 – Floodwalls & Closed Roadways

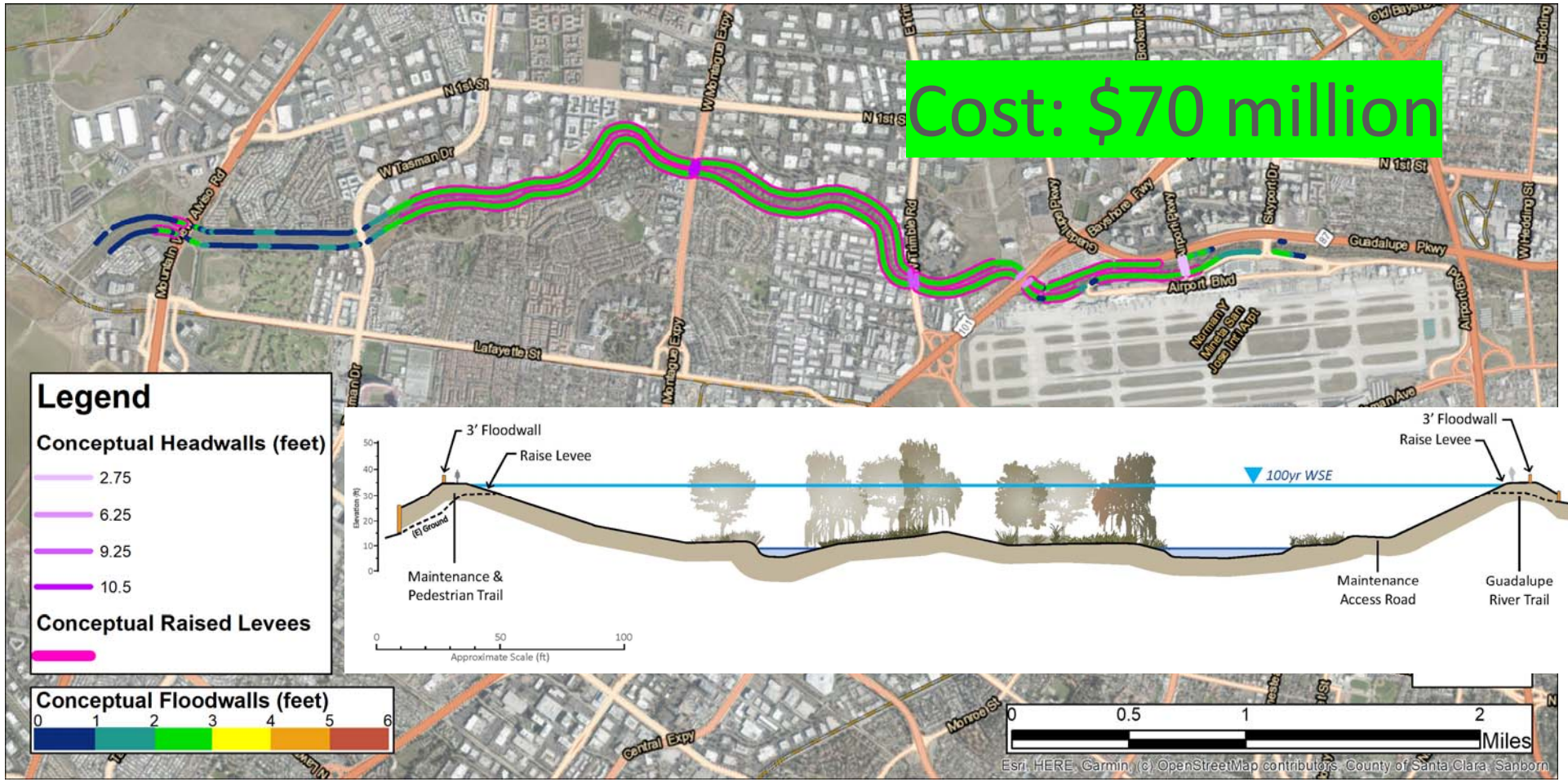


Alternative C – Raise Levees

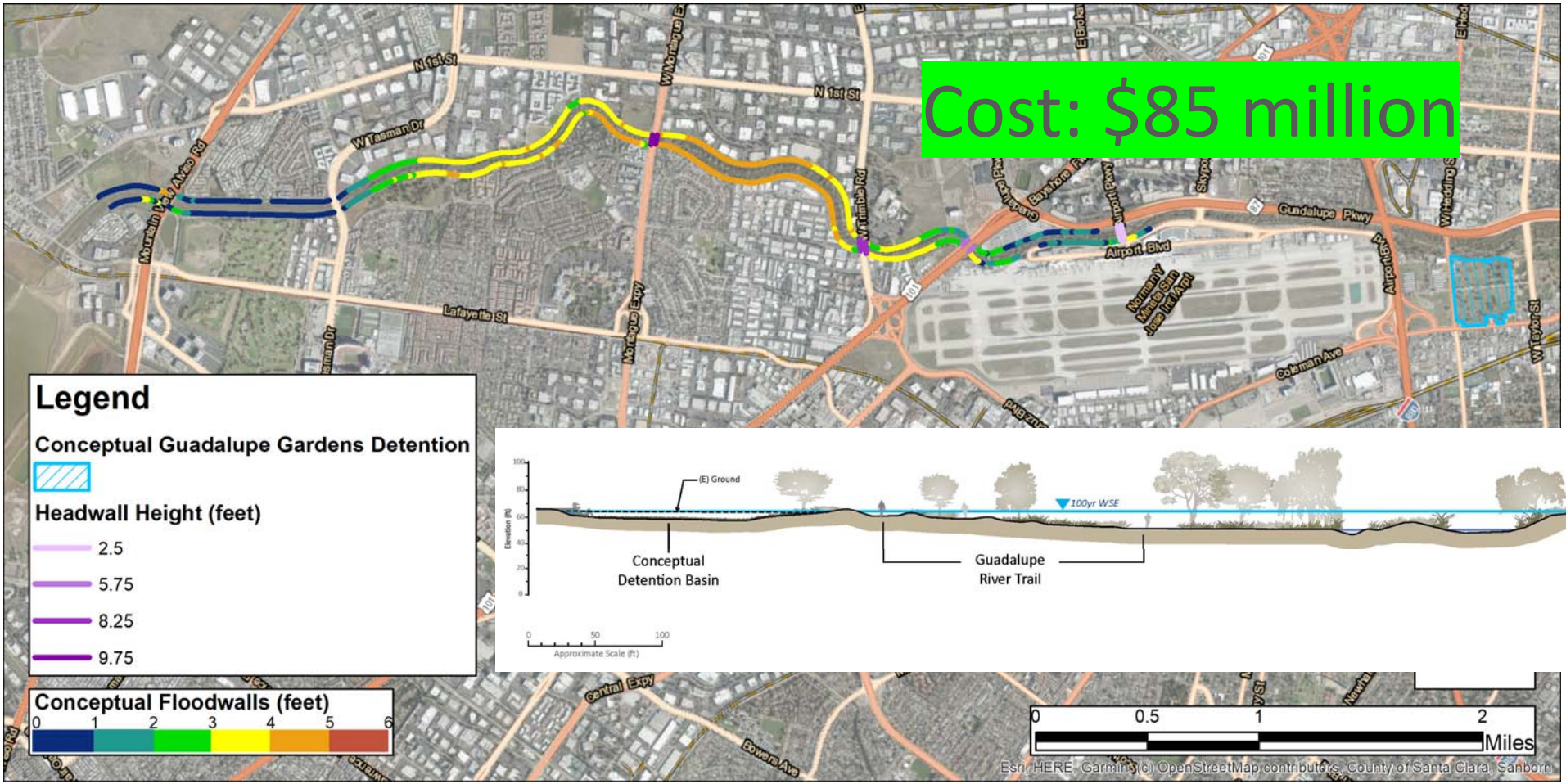
Cost: $80 million



Alternative C.1 – 3 ft Floodwalls & Raised Levees



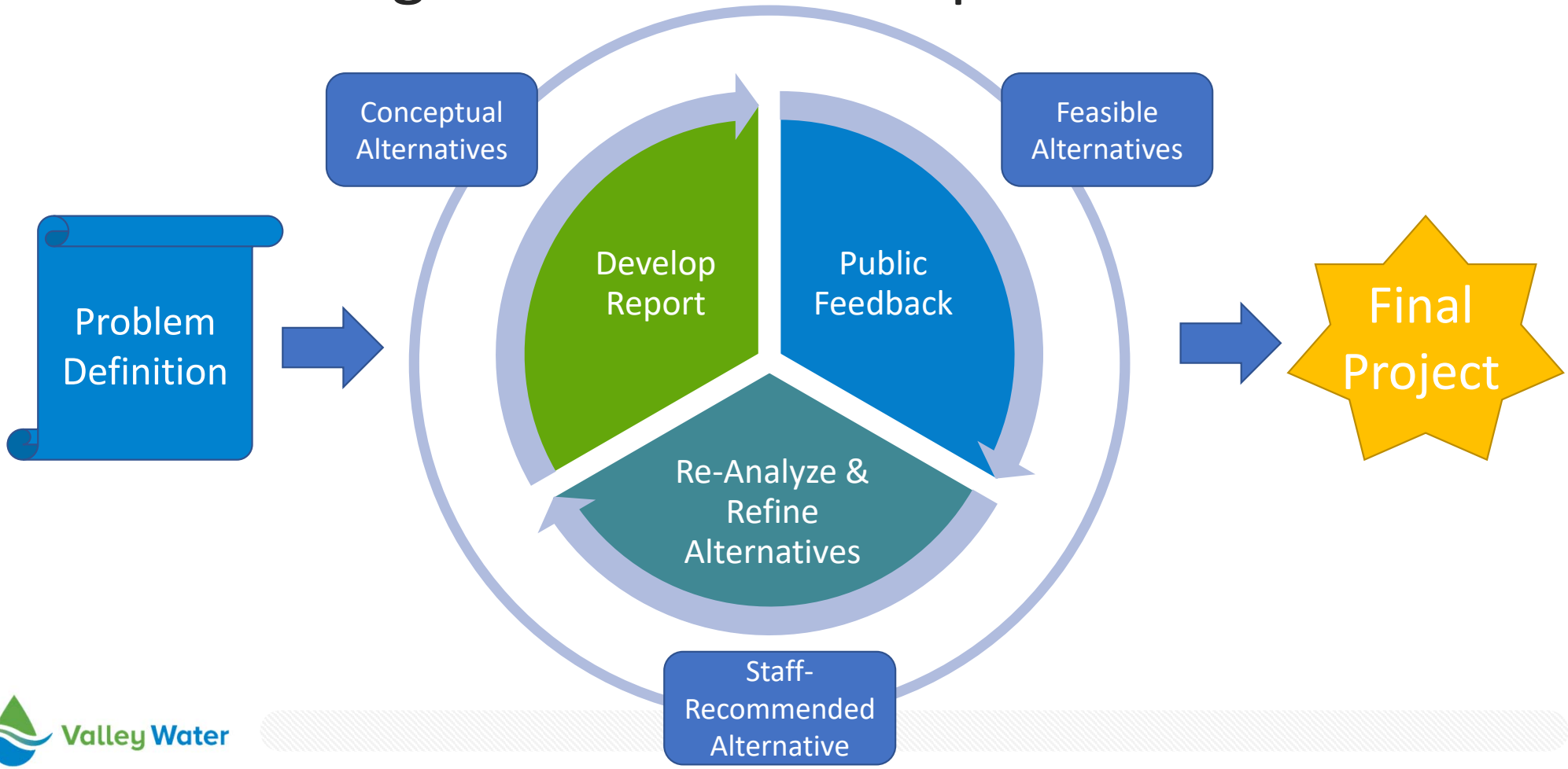
Alternative D.2– Off-stream Detention: 5 ft



Alternative H.1 – Outlet Capacity in Exist Tunnel

Alternative J – Re-Operate Lenihan Dam

The Planning Process: Next Steps



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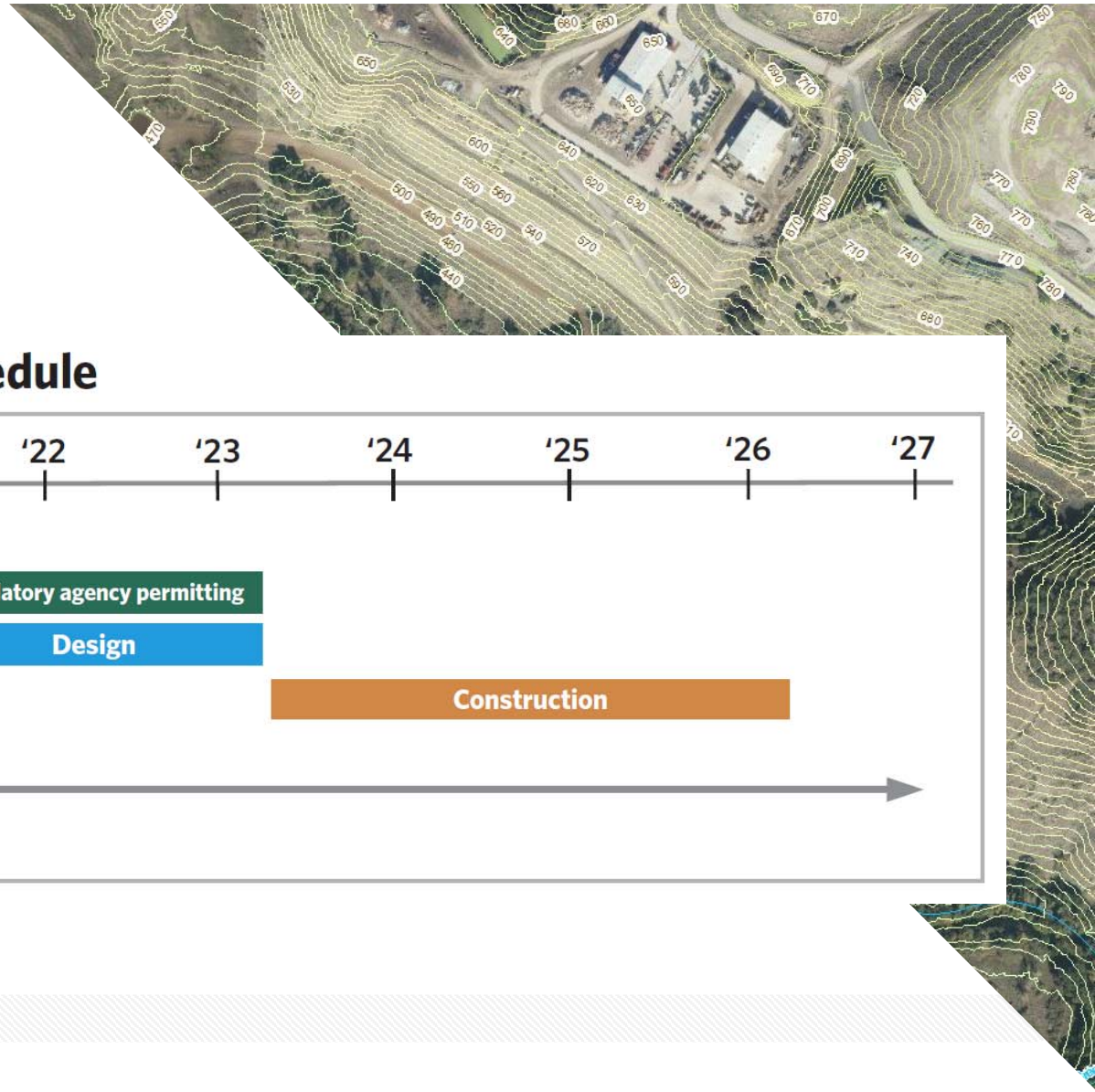
Project Next Steps



Project phases and projected schedule

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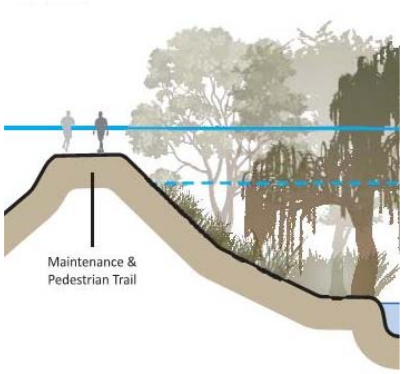
Questions

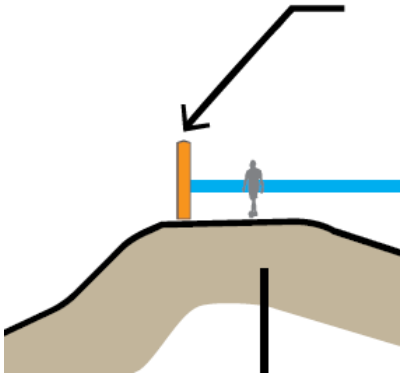
1. What did you like about the Alternatives?

2. What didn't you like about the Alternatives?

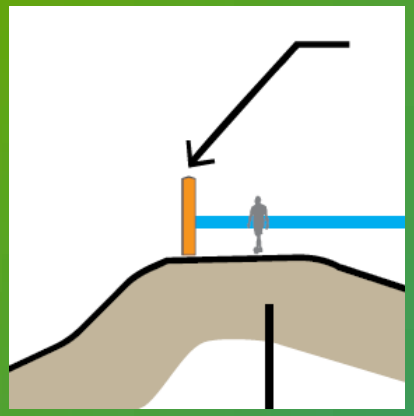
3. Is there anything else we didn't consider?



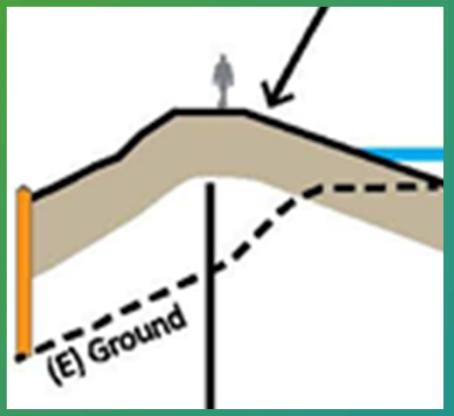
Alternative A:
No Project



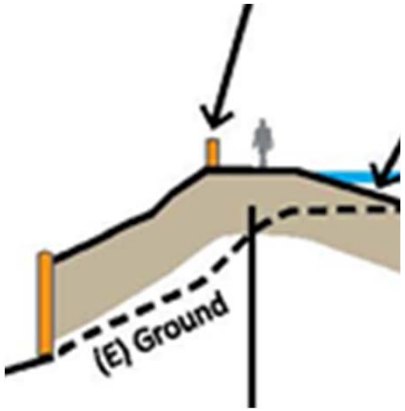
Alternative B:
Floodwalls/Headwalls



Alternative B.2:
Floodwalls/Close Bridges



Alternative C:
Raise Levees

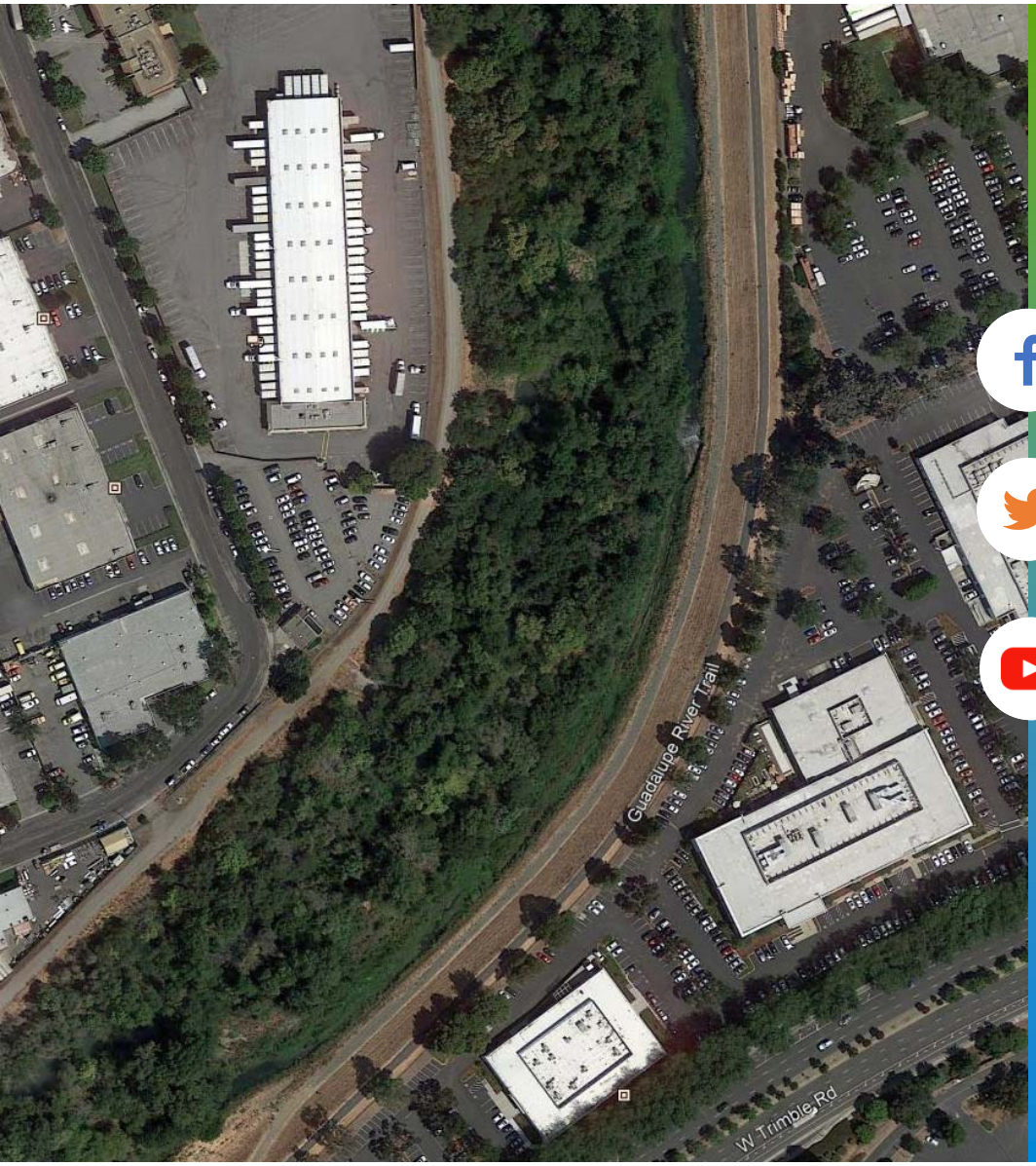


Alternative C.1:
Floodwalls +Levees

Alternative D.2:
Detention Basin

Alternative H.1:
Upsize Lenihan Outlet

Alternative J:
Re-Operate Lenihan



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