



Anderson Dam Seismic Retrofit Project Update

Presentation to the Morgan Hill City Council | January 25, 2017

Project Overview

Anderson Dam Existing Configuration



Spillway

Outlet pipe

Dam embarkment

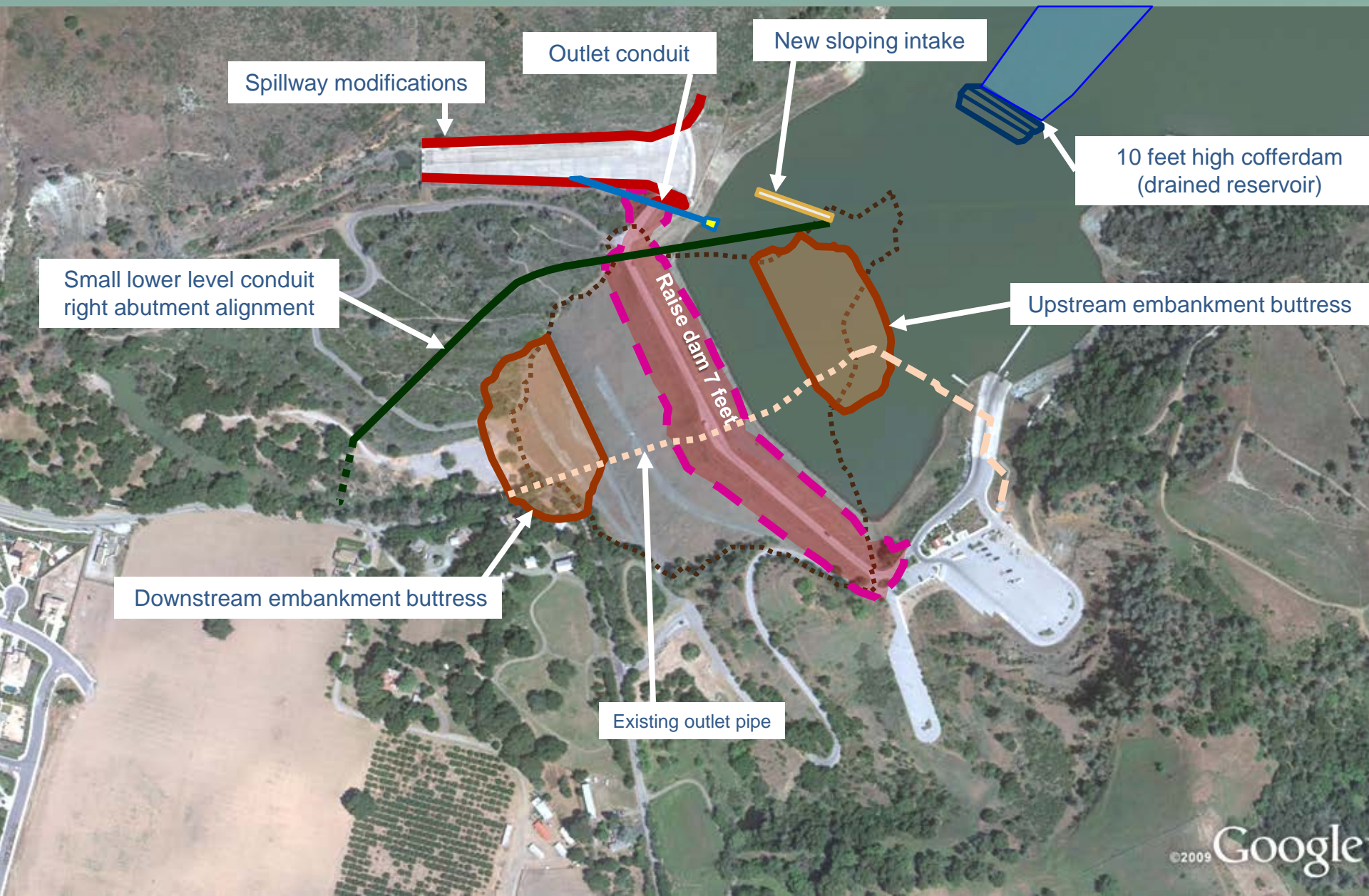
Crest of dam

Project Overview

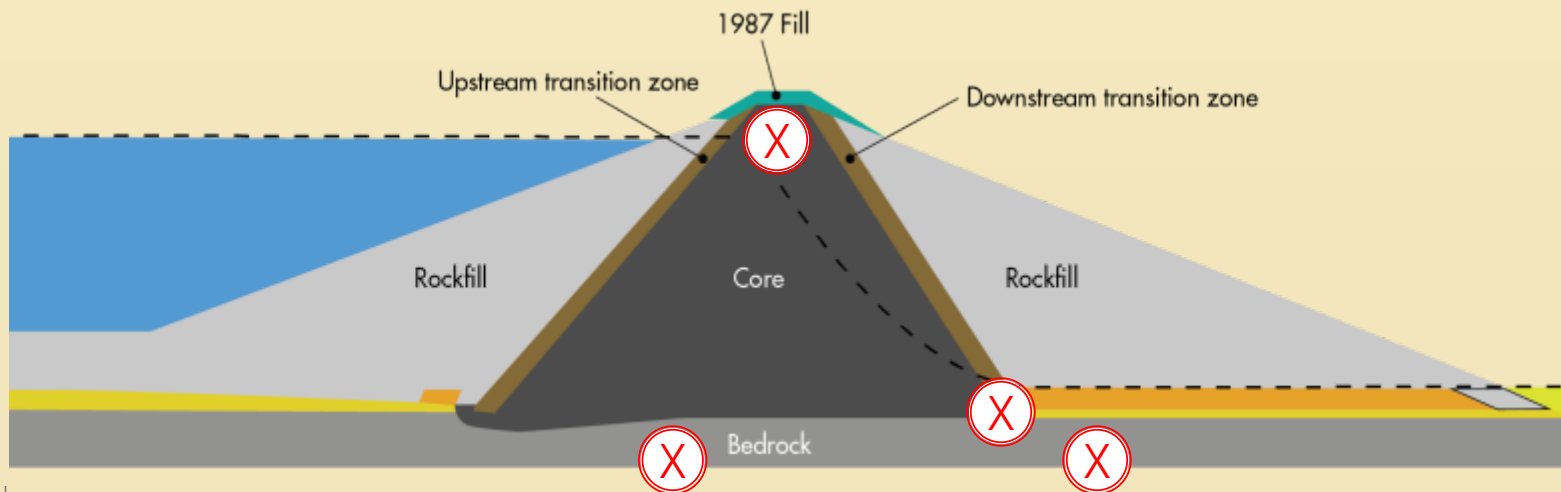
Problem Definition (2012)

- ▶ **Magnitude 7.2 Earthquake on the Calaveras Fault**
 - ▶ Embankment slumps up to 25 feet due to liquefaction of lower fine fill and alluvium
 - ▶ Outlet conduit buckles up to 4 feet due to fault rupture
- ▶ **Changes in Regulatory Requirements (DSOD and FERC)**
 - ▶ Outlet works does not meet current emergency drawdown criteria
 - ▶ Spillway undersized for Probable Maximum Flood

2013 Project: Liquefaction, New Intake and Outlets, Spillway / Crest Modifications

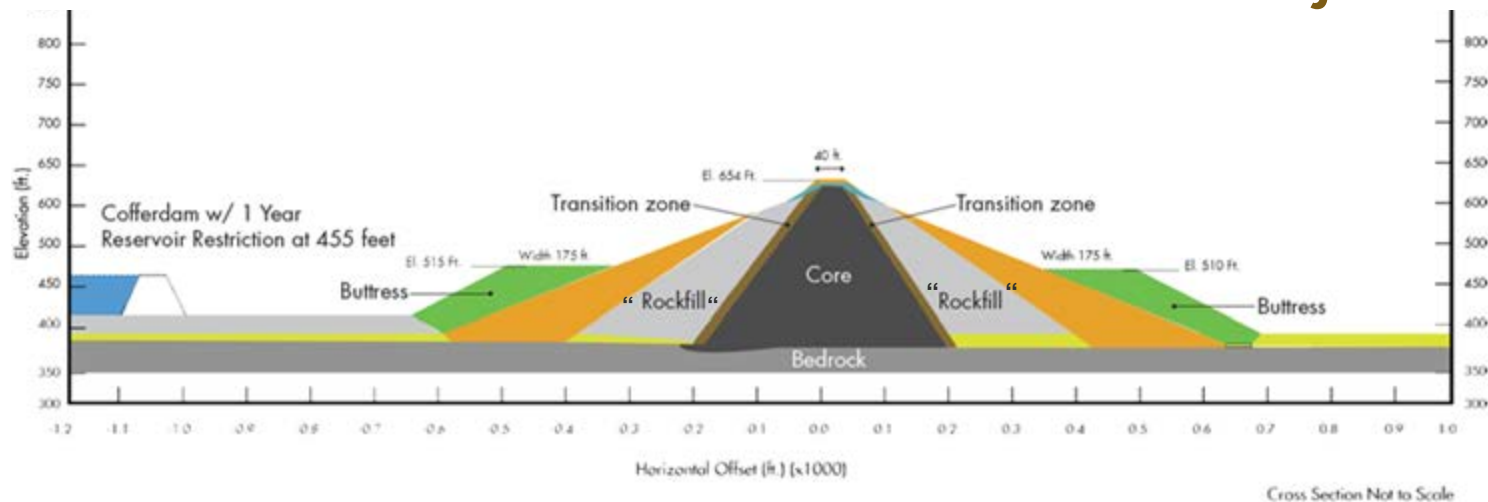


June 2016: Dam Failure by Fault Rupture

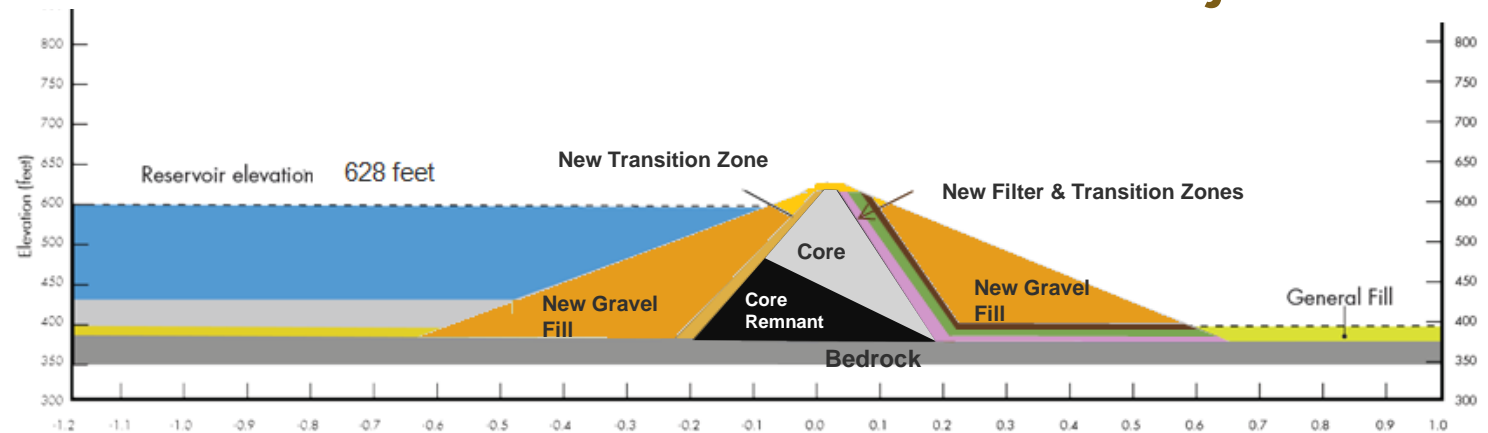


2016 Modified Project

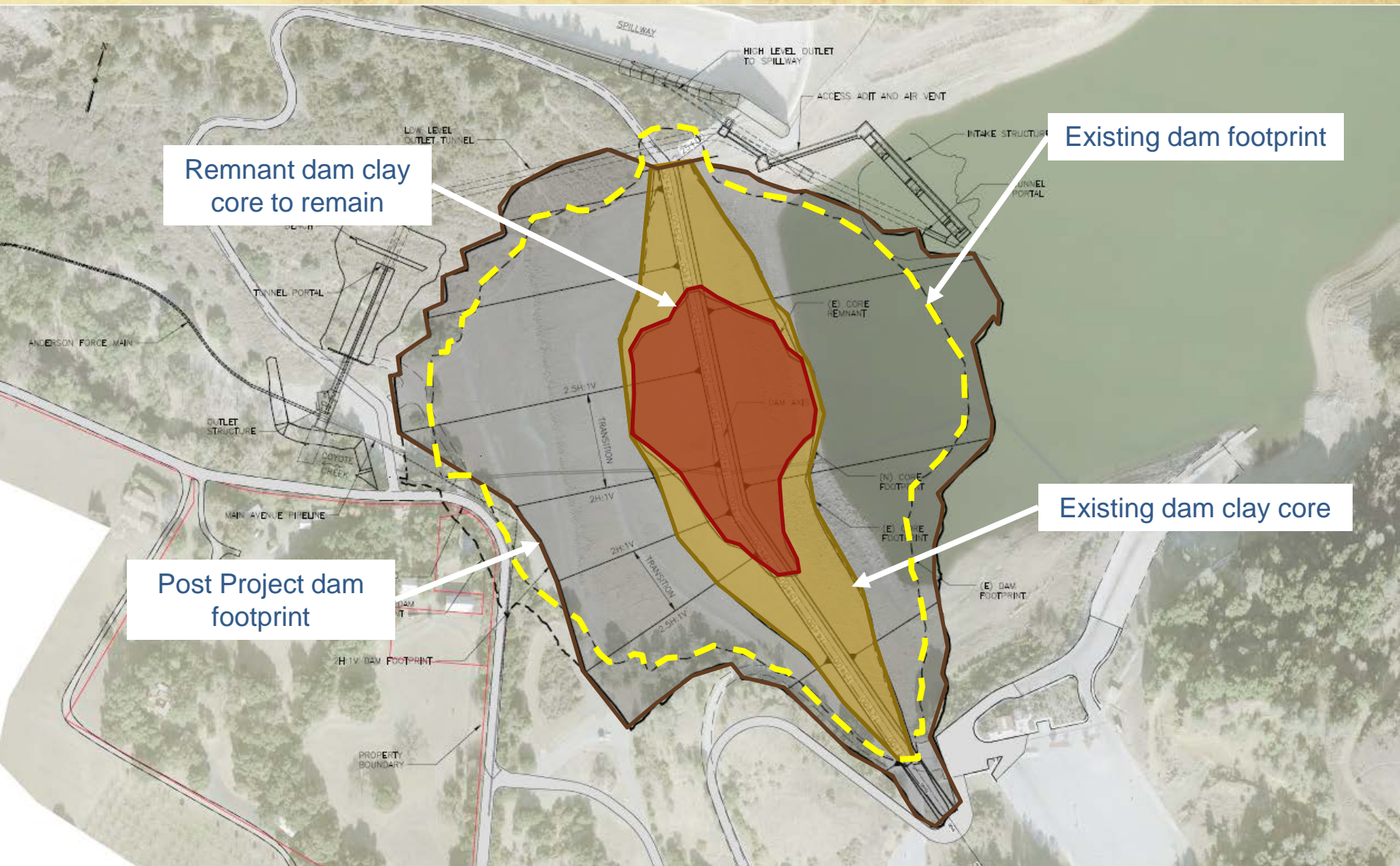
Cross-Section: 2013 Recommended Project



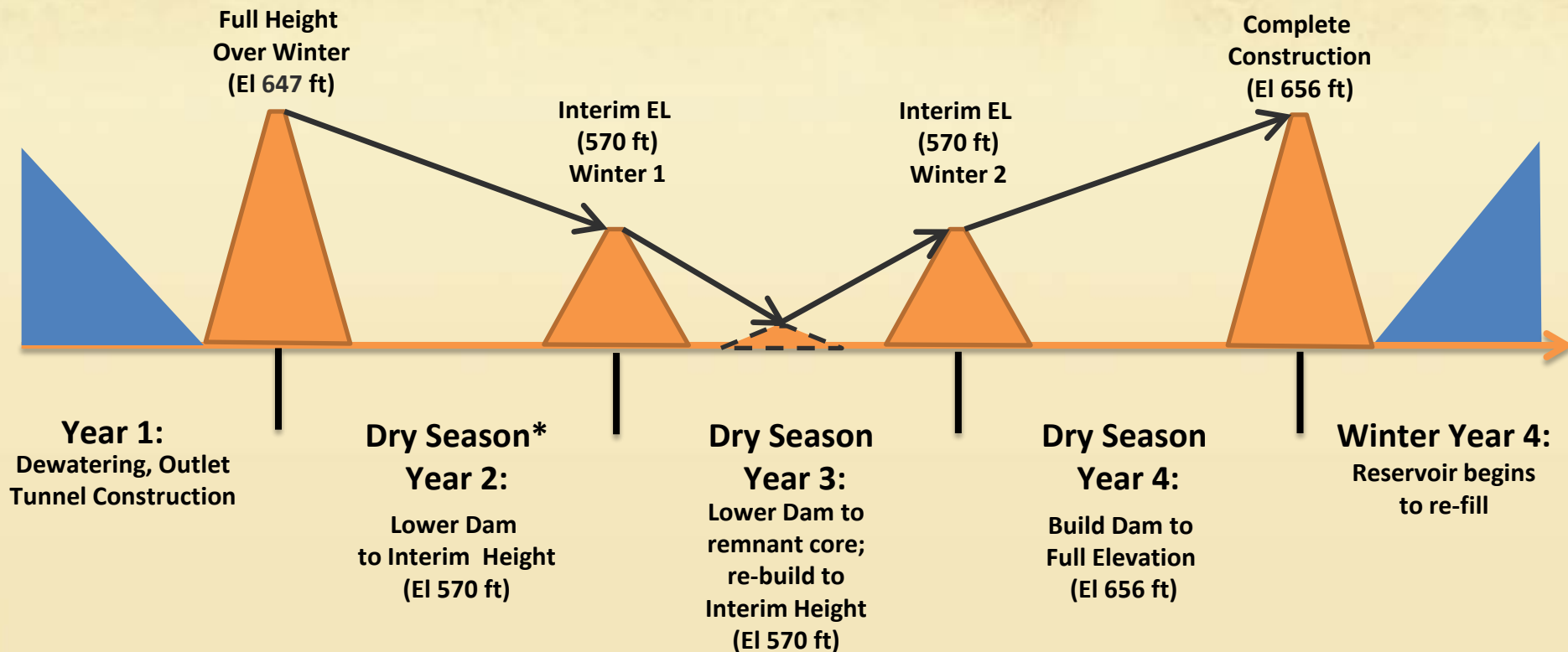
Cross-Section: 2016 Modified Project



2016 Modified Project Footprint



2016 Modified Project Construction Sequence



* Dry Season = April to October

2016 Modified Project Cost

- ▶ **Modified Project preliminary construction cost: \$330M.**
- ▶ **Total Project Cost ~ \$400M**
(doubles current CIP cost estimate of \$200M)
- ▶ **Net Present Value of Investment: \$410M**
 - ▶ Assumes 50-year life of Project
 - ▶ Includes annual O&M costs

Cost of Not Undertaking Dam Retrofit

- ▶ **DSOD: Permanent reservoir restriction cannot be long-term dam safety measure**
 - ▶ Anderson Reservoir to remain empty, except for temporary flood-related retention
 - ▶ New outlet still required
 - ▶ New water source(s) ~47,000 acre-feet per year (AFY) plus storage
- ▶ **Net Present Cost of replacing Anderson Reservoir's average 47,000 AFY yield: \$1.8 Billion**
 - ▶ Based on \$750/AF cost
 - ▶ Assumes 50-year time period
 - ▶ Does not include cost of new storage facilities / outlet

Project Schedule



NEPA/CEQA/Permitting

NEPA / CEQA / Permitting

Design

Design

Legend

Original Baseline

December, 2016

Construction

Construction through 2024

Summary

- ▶ 2016 Modified Project
 - ▶ More extensive embankment retrofit
 - ▶ Increases total cost of Project from \$200M to \$400M
 - ▶ Start of Construction extended to 2020
 - ▶ Supported by dam regulators and Board of Consultants

