

Manteca Dry Land Levee Planning, Evaluation, and Concept Design Project Presentation

August 2, 2021



Meeting Overview

- Welcome/Introductions
- Project History
- Project Overview
- Questions/Discussion

Project Overview

Location

South of Manteca & RD 17

Lead Agency

SJAFCA

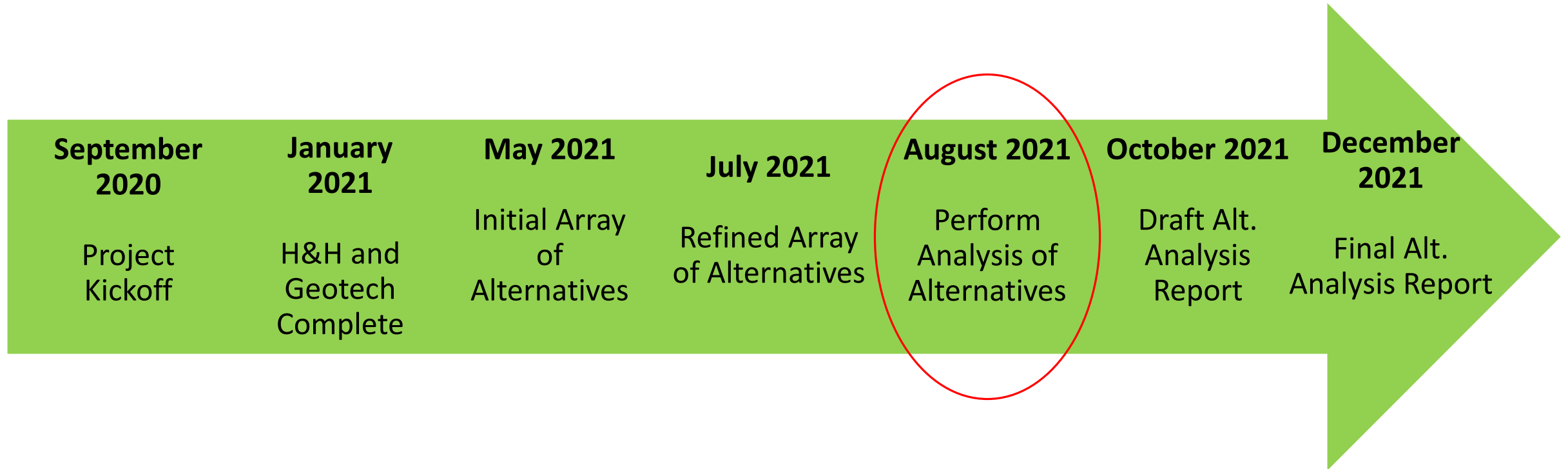
Need for the Project

- Senate Bill 5
- A breach of the Walthall Slough Levee during a 200-yr flood event results in Outflanking of the Existing Dryland Levee, impacting RD17 and Manteca

Project Goal

To leverage previous efforts in the development of a detailed alternatives analysis. This analysis will ultimately provide recommendations for the future design of a 200-yr Flood Protection Project that is consistent with SB 5 and can be advanced to preliminary design & environmental permitting.

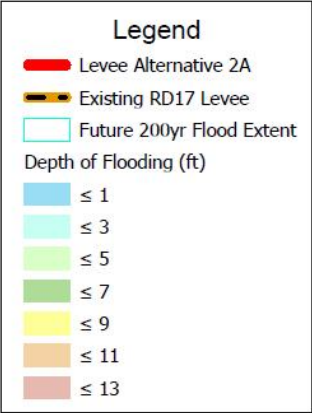
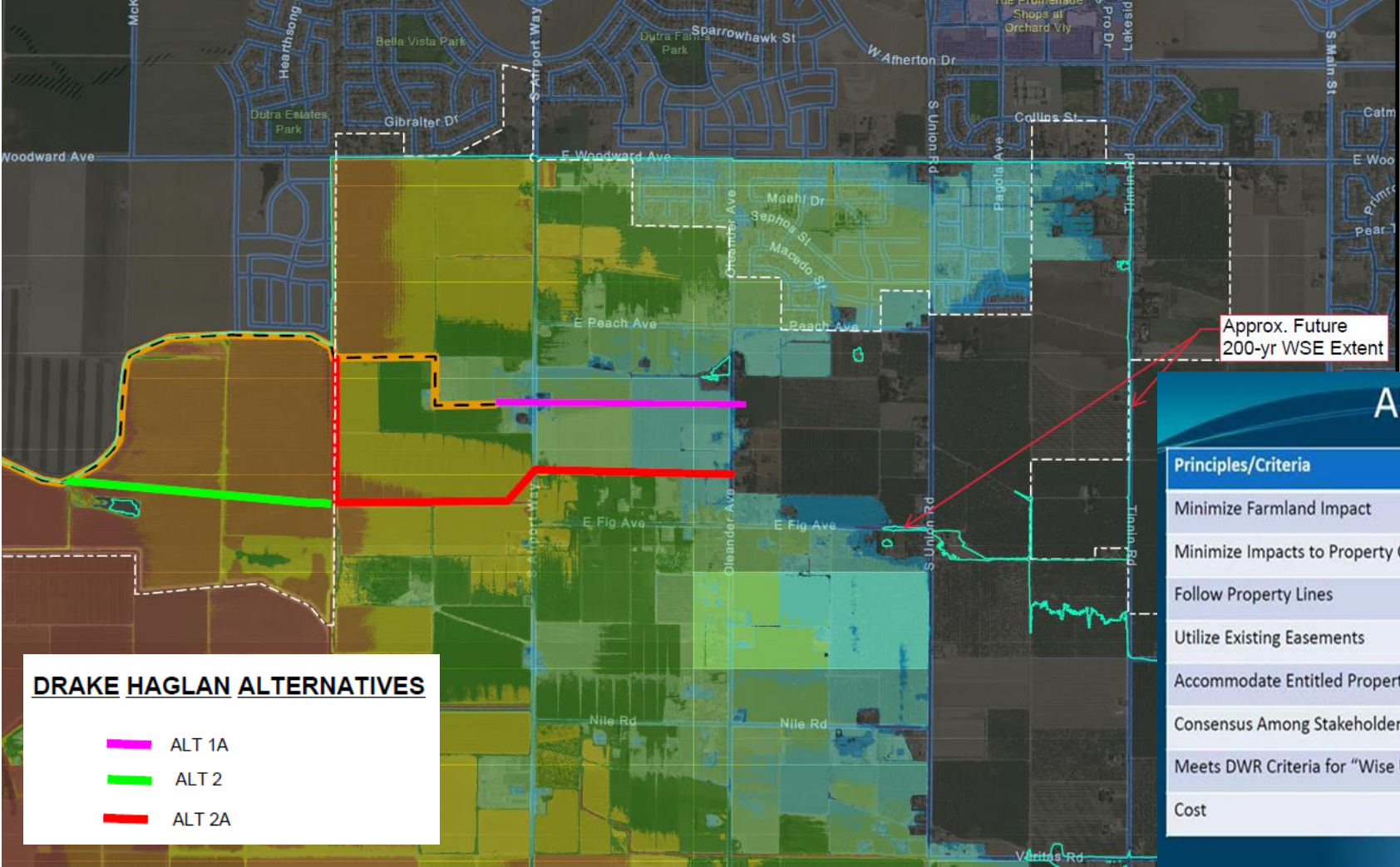
Project Timeline



Project Approach - Development of Alternatives

- Build Upon Previous Efforts by Drake Haglan and PBI
 - Alt 1A, Alt 2, Alt 2A
- Evaluate the alignments through a technical lens (i.e. geotech, H&H, environmental, etc.)
- Refine the alignments to incorporate geotechnical mitigation measures, eliminate end-around effects, balance impacts to property owners and SSJID facilities
- Evaluate a variety of WSE's to determine the appropriate design WSE
 - Current 200-yr WSE + 3.8' (freeboard)
 - Current 200-yr WSE + 3.8' (freeboard) + 1' (uncertainty)
 - Future 200-yr WSE (in the year 2065)

Project Approach – Revisiting Drake Haglan Alts



Alternatives Comparison							
Principles/Criteria	Alt 1	Alt 1A	Alt 2	Alt 2A	Alt 3	Alt 4	Alt 5
Minimize Farmland Impact	○	○	○	○	△	●	○
Minimize Impacts to Property Owner Access	△	△	○	○	○	○	●
Follow Property Lines	△	●	○	○	△	△	△
Utilize Existing Easements	△	△	△	△	△	△	△
Accommodate Entitled Properties	○	○	○	○	○	○	○
Consensus Among Stakeholders	●	●	○	△	△	●	●
Meets DWR Criteria for "Wise Use of Floodplains"	○	○	△	○	●	●	○
Cost	○	○	△	○	●	●	○
	\$8.5M	\$12M	\$25M	\$12M	\$31M	\$52M	\$11.6M

○ Meets Criteria
△ Partially Meets Criteria
● Does Not Meet Criteria

Project Approach

Preliminary Basis for Evaluation of Alternatives

- Flood Risk Reduction Benefits
- Flood System Flexibility and Resiliency
- Hydraulic Impacts/Transfer of Risk Considerations
- Floodplain Management/Wise Use of the Floodplain
- Ecosystem Enhancement
- Multi-Benefit Potential
- Operation and Maintenance Considerations
- Landowner Support
- Stakeholder Support
- Real Estate Impacts
- Estimated Costs

Work Completed Thus Far

Hydrologic and Hydraulic Modeling

- Current and Future (2065) 200-yr Floodplains Developed by MBK
- Findings:
 - Current 1/200 AEP WSE = 31.5' NAVD88
 - Minimum TOL = 31.9' + 3.8 (wind-wave) +1 (uncertainty) = 36.7' NAVD88
 - Future 1/200 AEP (2065) = 35.4' NAVD88
- Cooperation and Coordination with Engineering Teams of Prior Efforts
 - A concerted effort was made to coordinate this modeling effort with efforts that have already been completed in the region
 - A consensus was reached that all involved agreed upon

Geotechnical Analysis

- Seepage Mitigation Required: 45' – 70' Deep Cutoff Wall or 100' wide Seepage Berm
- Recommended Seepage Mitigation Measures are Preliminary and will be refined during later phases of design
- Eastern extent of seepage mitigation is assumed to be where there is less than 2' of head against the levee. This will also be refined in future phases of design.
- Cutoff wall is not expected to impact static groundwater elevations and therefore not expected to affect existing wells or crops.

Alternatives Considered

Alignment Alternatives

Note: All alignments utilized the previously developed Drake Haglan alignments (of the same names) as a starting point but have been modified to account for seepage mitigation measures, to minimize property impacts, and to extend the protection to the Future 200yr Floodplain Boundary.

- Alignment 1A
- Alignment 2
- Alignment 2A

Seepage Mitigation Types¹

- Option 1 (C)
 - Cutoff Wall (45'-70' Deep)
- Option 2 (S)
 - Seepage Berm (100' Wide)

1. Cutoff Wall Depth and Seepage Berm Width are conservative estimates and will be refined as more geotechnical explorations are conducted

ALTERNATIVES SUMMARY TABLE		
Alternative Designation	Alignment Alternative	Seepage Mitigation Type
1-C	1A	C - Cutoff Wall
1-S	1A	S -Seepage Berm
2A-C	2	C - Cutoff Wall
2A-S	2	S -Seepage Berm
2-C	2A	C - Cutoff Wall
2-S	2A	S -Seepage Berm

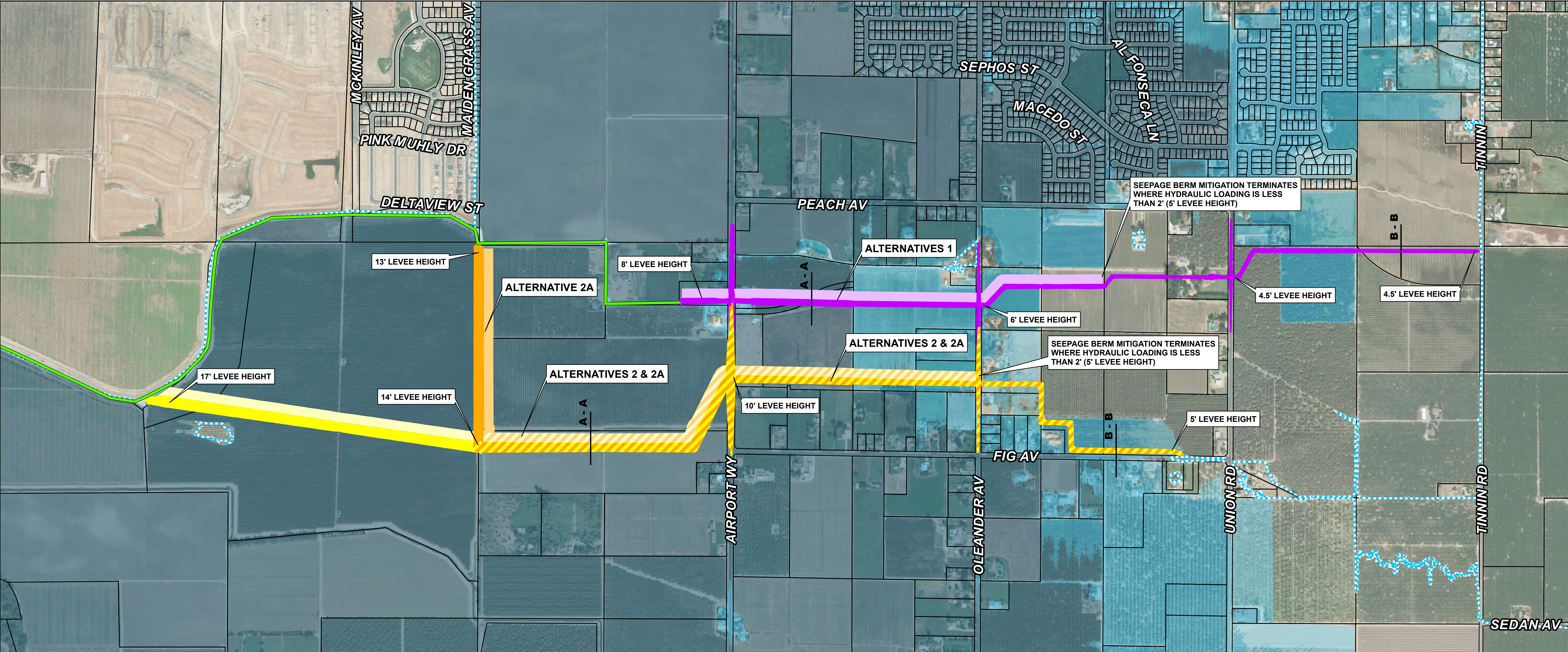


FIGURE 1
**SEEPAGE BERM
ALIGNMENT ALTERNATIVES**
MANTECA DRYLAND LEVEE
CITY OF MANTECA, CA
JULY 2021

- Levee Footprints**

 - Alternative 1 - Northern Alignment
 - Alternative 2A - Central Alignment
 - Alternative 2 - Southern Alignment
 - Alternative 2A/2 Overlap

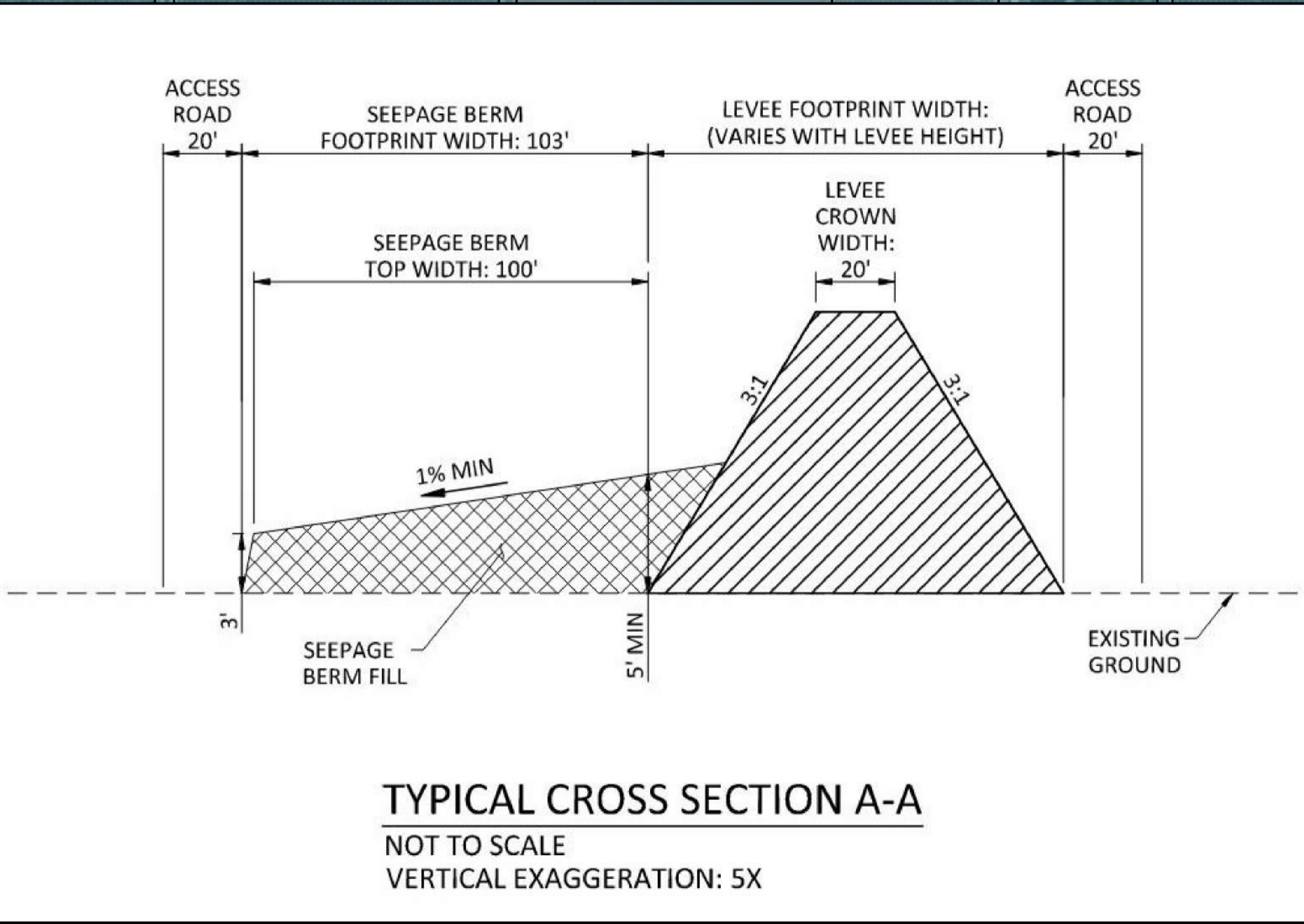
Seepage Berm Footprint

 - Alternative 1 - Northern Alignment
 - Alternative 2A - Central Alignment
 - Alternative 2 - Southern Alignment
 - Alternative 2A/2 Overlap
- Existing RD 17 Levee

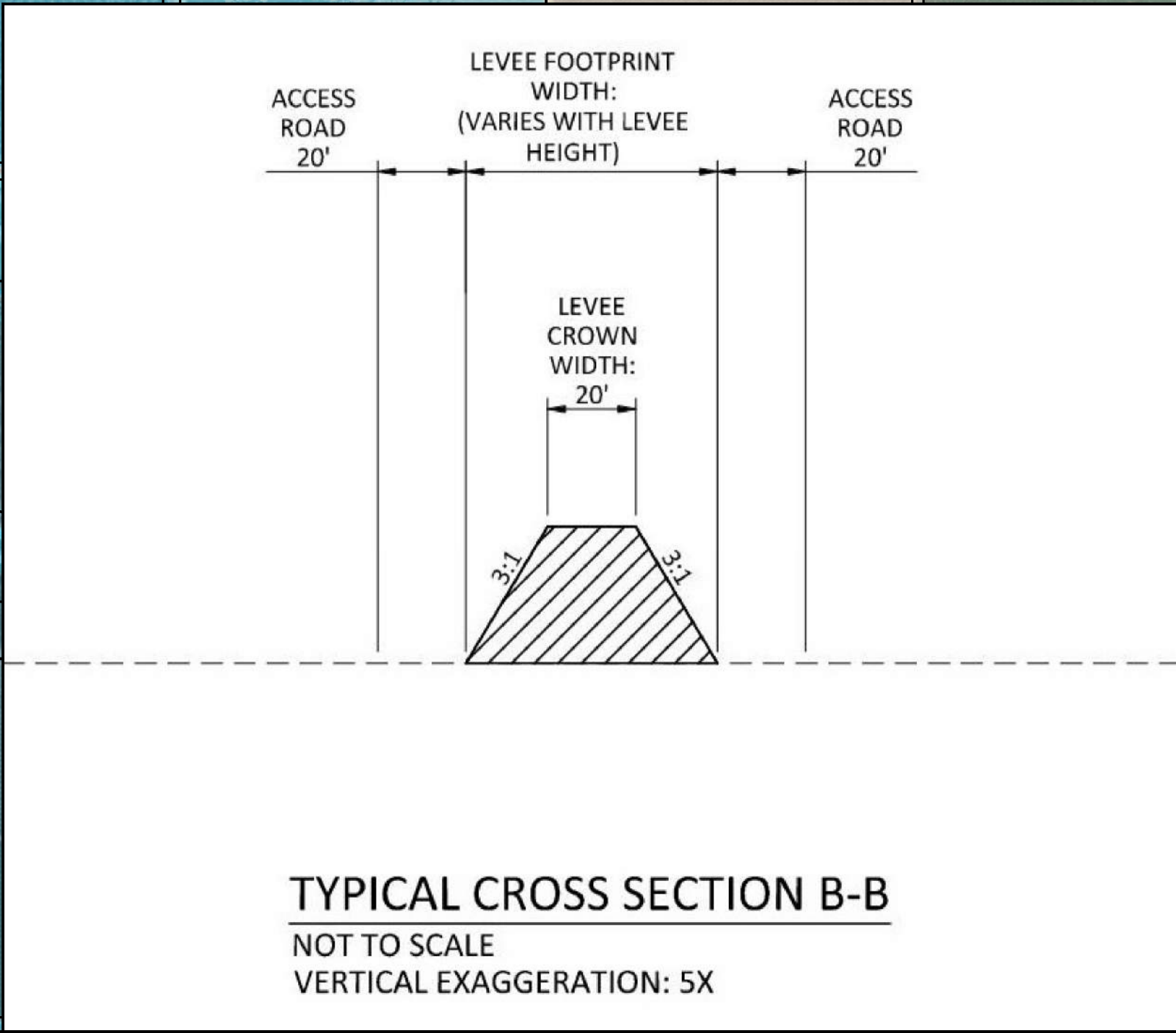
Current 200 year Flood Depth

 - 0 - 1ft
 - 1ft - 3ft
 - >3ft

Future 200yr Flood Extent



TYPICAL CROSS SECTION A-A
NOT TO SCALE
VERTICAL EXAGGERATION: 5X



TYPICAL CROSS SECTION B-B
NOT TO SCALE
VERTICAL EXAGGERATION: 5X

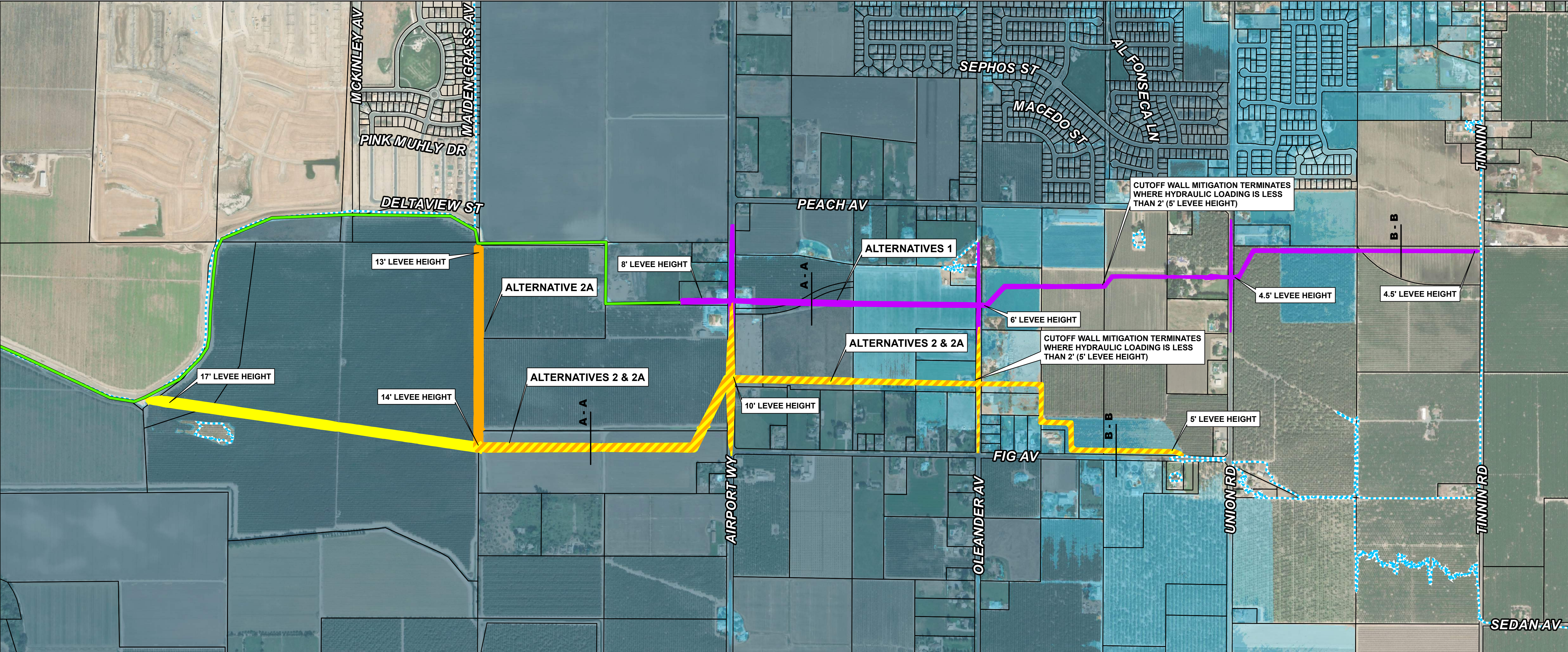
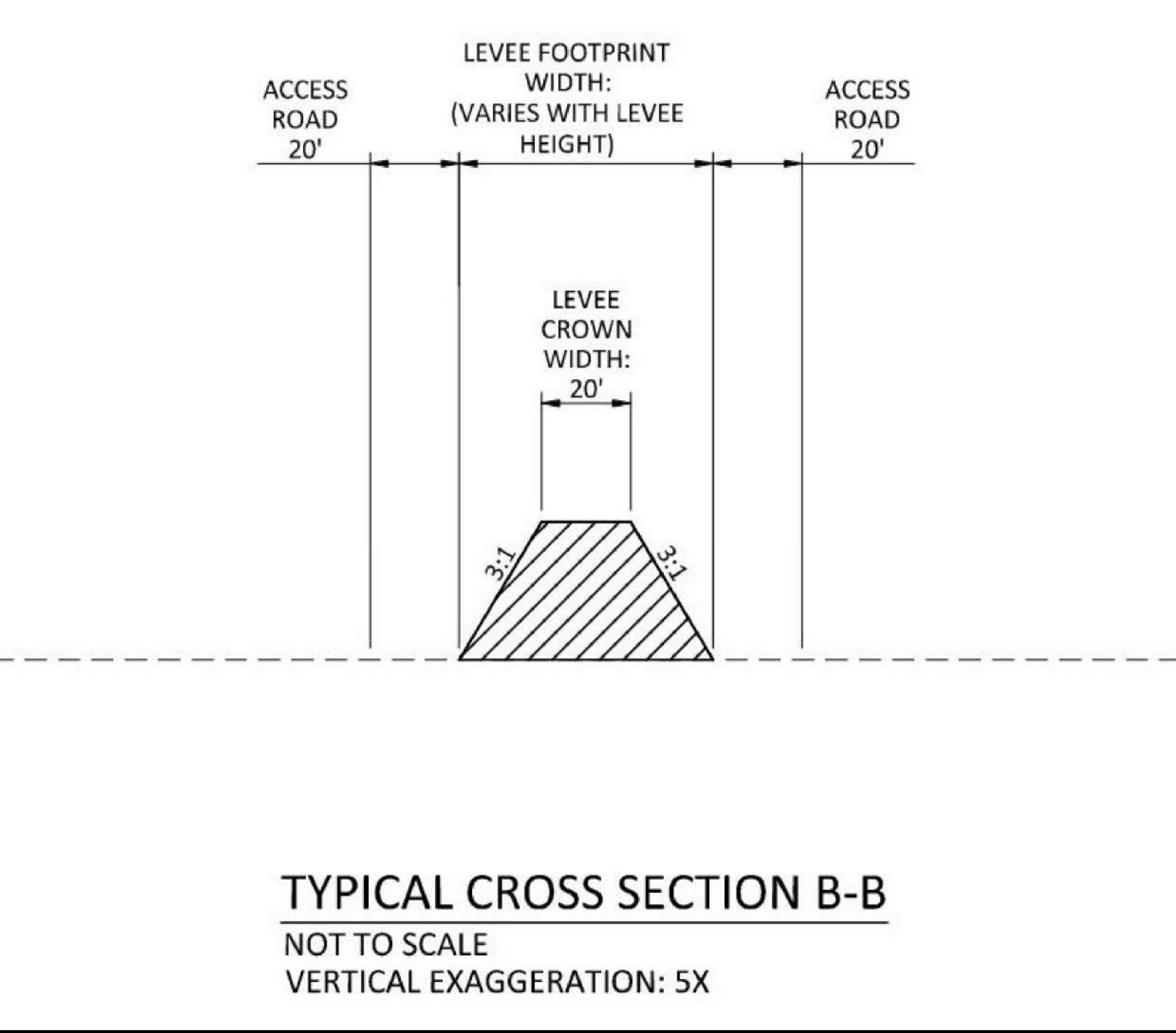
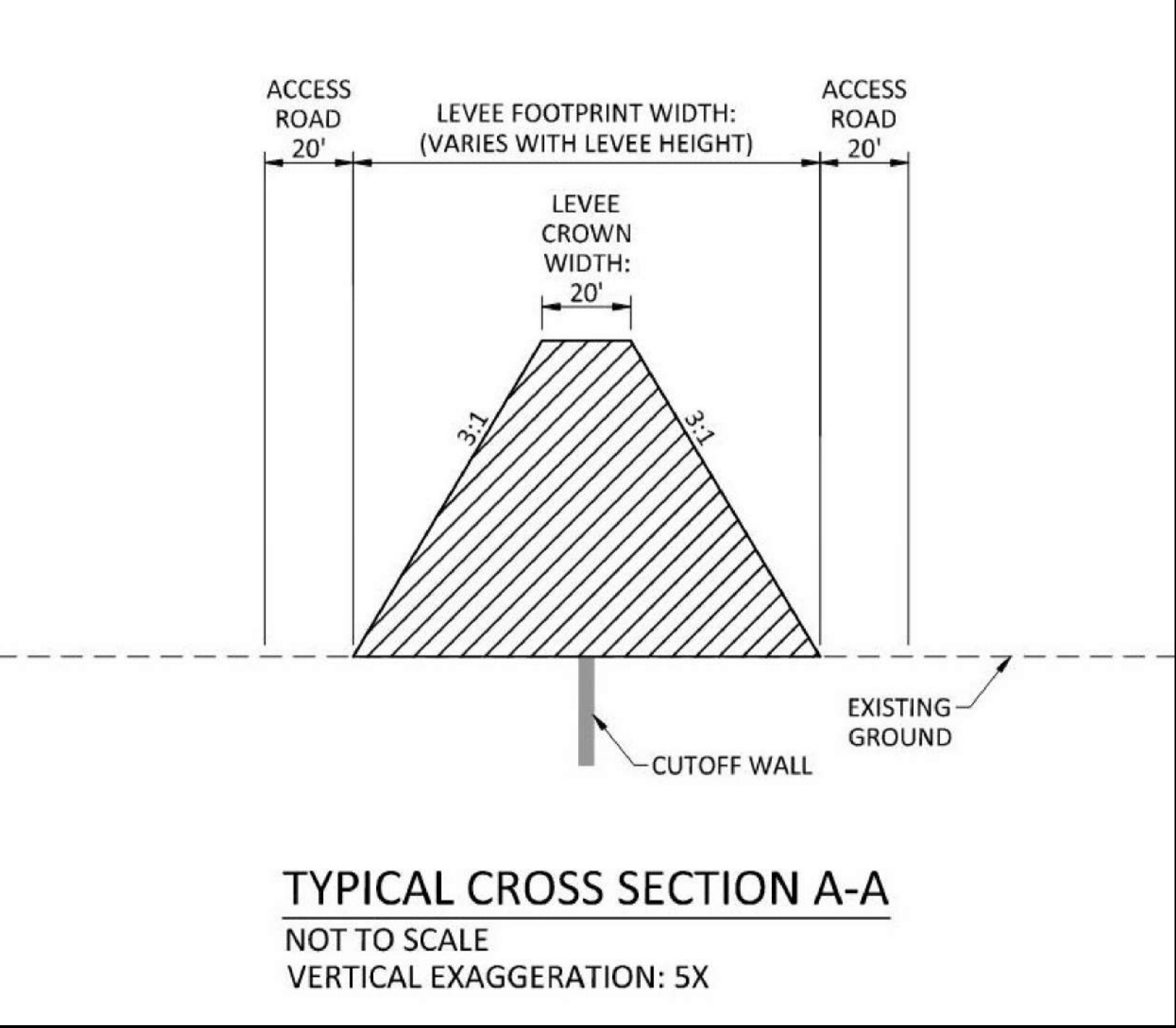


FIGURE 2
**CUTOFF WALL
ALIGNMENT ALTERNATIVES**
MANTECA DRYLAND LEVEE
CITY OF MANTECA, CA
JULY 2021

- Levee Footprints**

 - Alternative 1 - Northern Alignment
 - Alternative 2A - Central Alignment
 - Alternative 2 - Southern Alignment
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- Existing RD 17 Levee**

 - Current 200 year Flood Depth
 - 0 - 1ft
 - 1ft - 3ft
 - >3ft
 - Future 200yr Flood Extent



Next Steps

- Continue Refining Alternatives (Summer 2021)
- Evaluate and Rank Alternatives (Early Fall 2021)
- Develop Recommendations and Draft Alternatives Analysis Report (Late Fall 2021)

Questions/Discussion

- **Contact**

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