



## Project

# Geotechnical solutions help California county meet updated FEMA 100-year flood criteria

**40+ miles**

of levees and floodwalls evaluated

## Summary

- Alameda County had to update infrastructure to meet FEMA's 100-year flood control criteria.
- The county and its partners relied on Haley & Aldrich to evaluate urban riverine levees and floodwalls across five flood control zones.
- We delivered rigorous testing and improvement plans that met FEMA's requirements and protected communities.

## Client challenge

The Alameda County Flood Control and Water Conservation District had to certify its levees and floodwalls to meet updated Federal Emergency Management Agency (FEMA) 100-year flood control criteria. But an analysis of existing infrastructure revealed issues, such as embankment instability, erosion, and the overall condition of some structures, that could cause it to fail in the event of a major flood.

The contractor guiding the certification process needed geotechnical experts to design solutions to these challenges. Haley & Aldrich brought technical expertise and a long-standing relationship with Alameda County, which included [other flood infrastructure work](#).

## Our approach

Along with project partners, Haley & Aldrich evaluated more than 40 miles of urban riverine levees and floodwalls across five flood control zones. Our team designed and implemented geotechnical exploration and testing programs, as well as the geotechnical design for improvements.

Our geotechnical evaluation, exploration, and laboratory testing program involved drilling and logging more than 200 borings, conducting more than 350 cone penetrometer tests, and lab testing more than 1,400 samples. Armed with insights from this comprehensive program, we collaborated with the county to develop improvement options for various locations.

After all parties had agreed on the solutions, our team reviewed designs, plans and specifications, and estimates for each. We delivered a variety of fixes, including levee raises, a soil bentonite cutoff wall, interior drainage improvements, and embankment toe erosion protection improvements. During the construction phase, we reviewed contractor submittals and conducted on-site observations and geotechnical testing to ensure the work would meet certification requirements.

## Value delivered

- Delivered rigorous testing and improvement plans for more than 40 miles of levees and floodwalls
- Collaborated with local and federal stakeholders to get consensus on improvement approaches
- Ensured that work would meet FEMA's certification requirements
- Provided oversight during the implementation of improvements



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