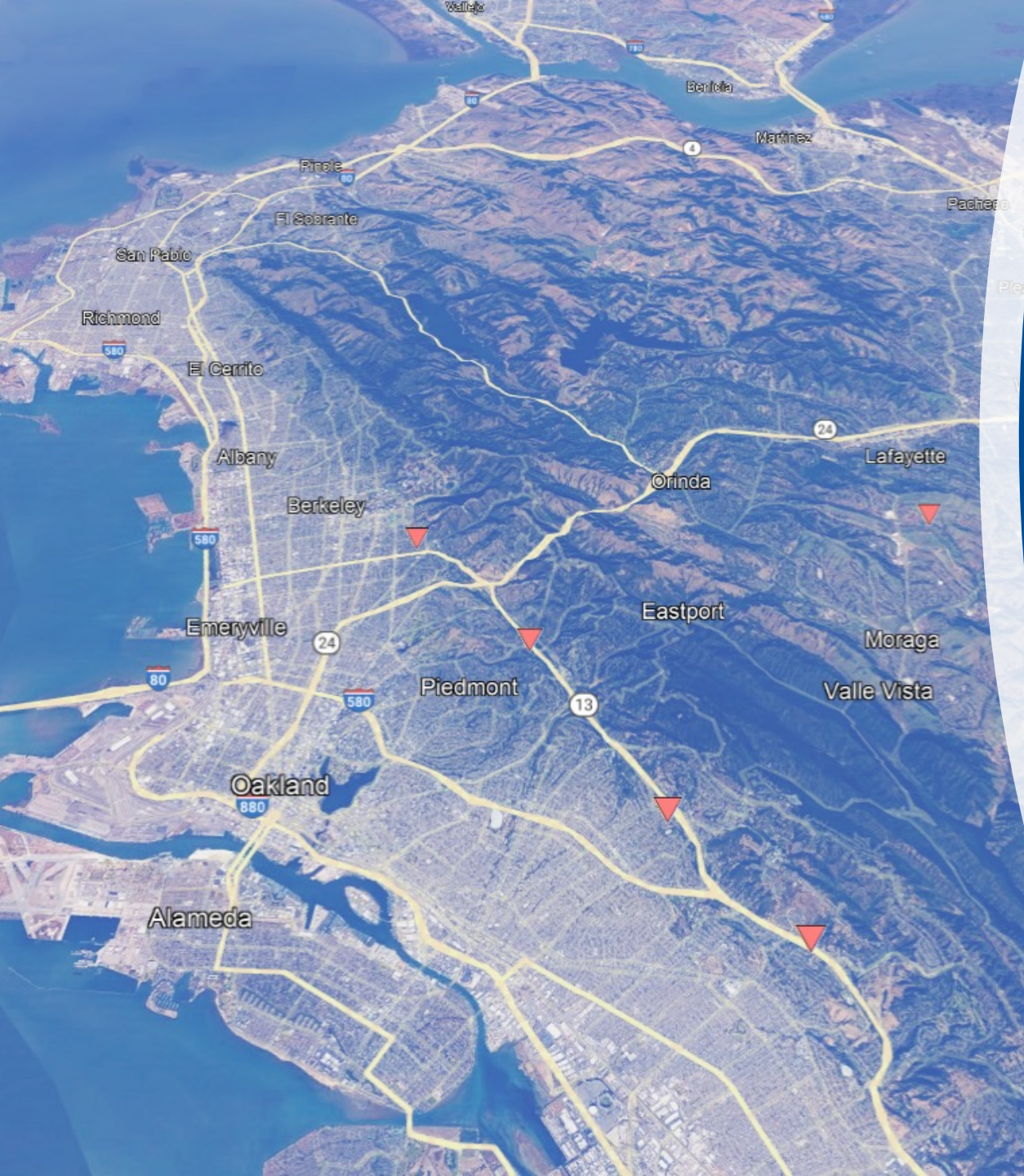

One Size Does Not Fit All – Dam Breach Analysis of EBMUD's Small Urban Distribution Reservoirs

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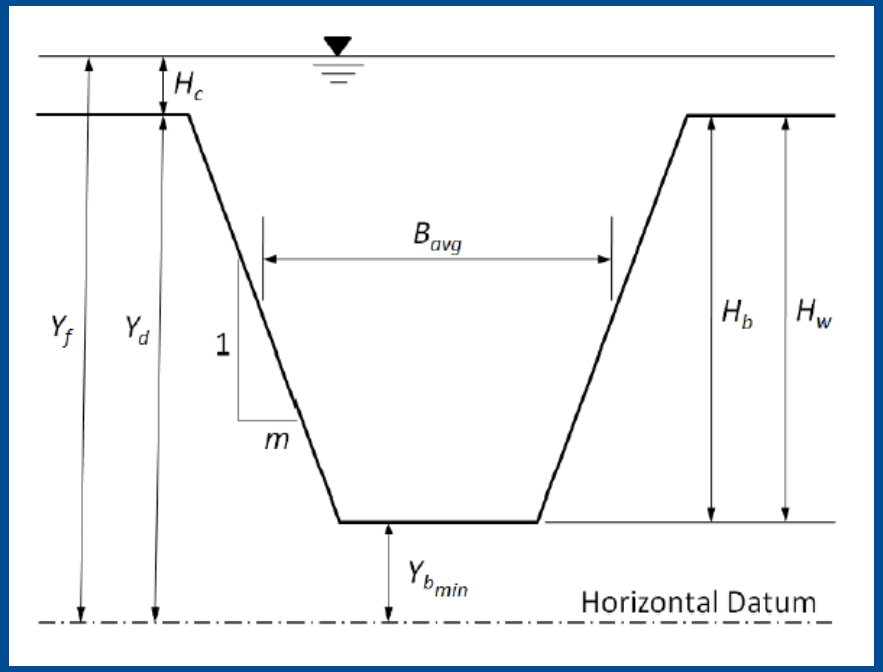
EAST BAY MUNICIPAL UTILITY DISTRICT

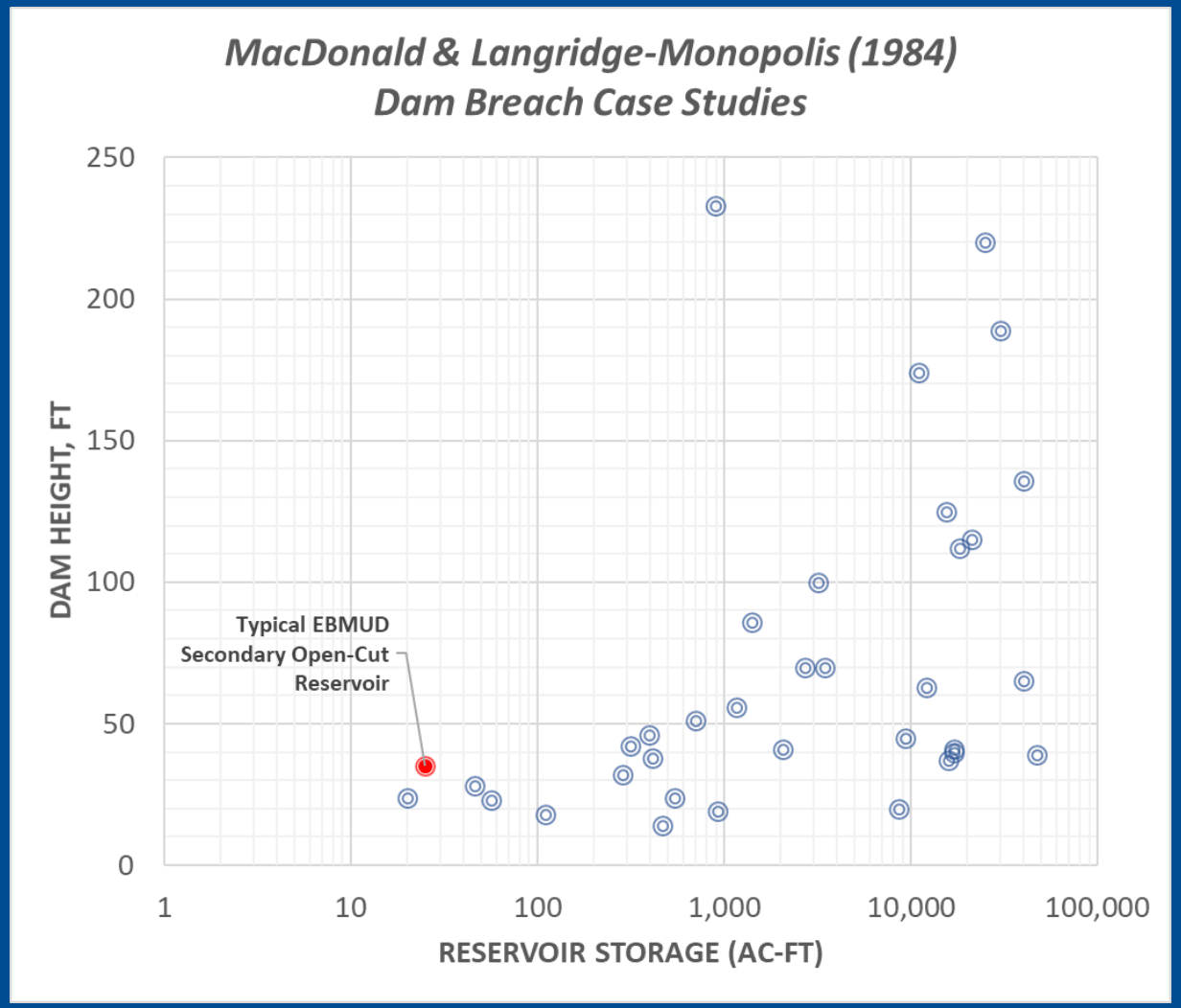


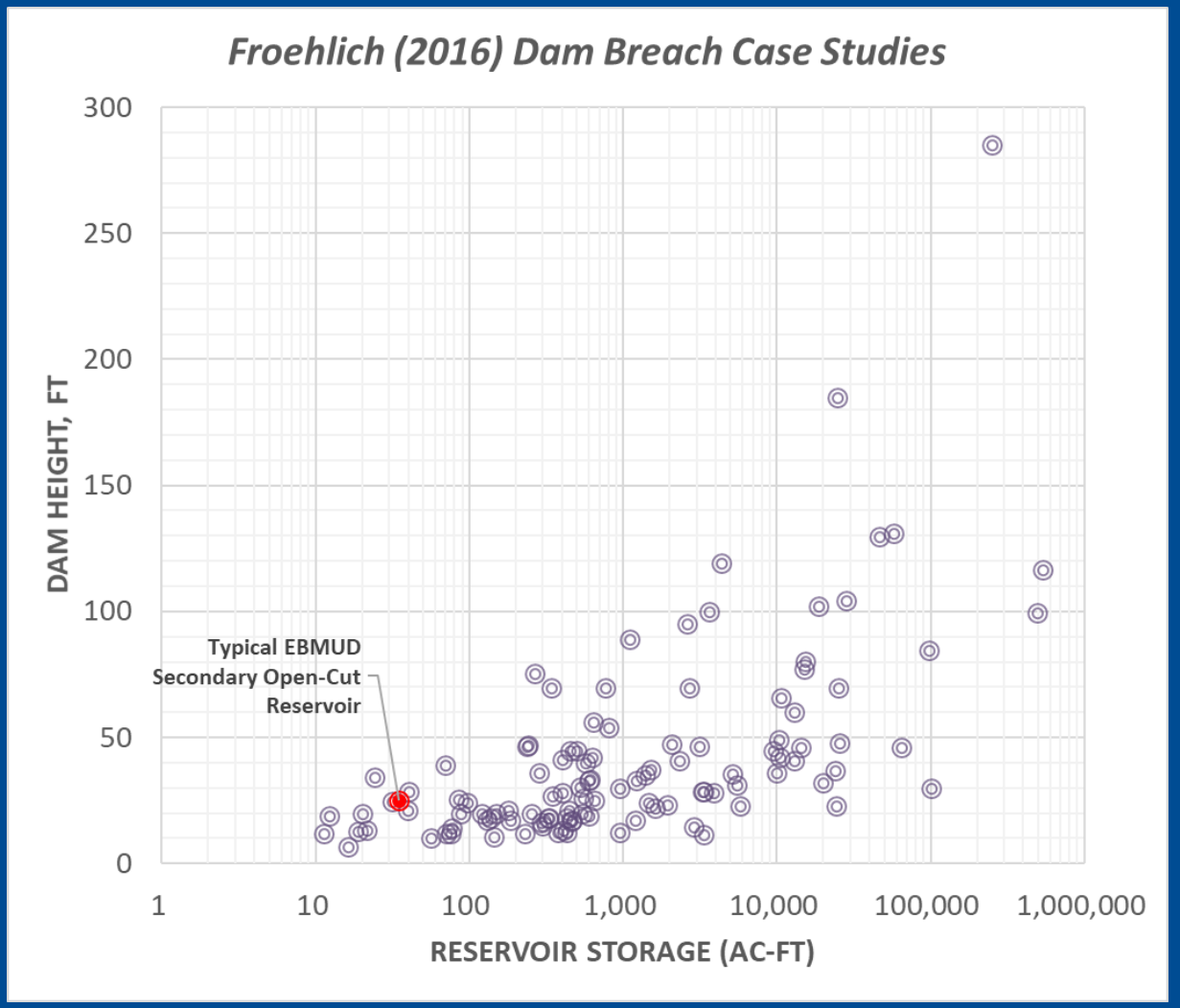
The Conventional Approach to Dam Breach Analysis

- Estimate Dam Breach Parameters with Regression-based Equations
- Compute Breach Outflow Hydrograph and Rout Through Downstream Area
- Map Inundation Extents and Results

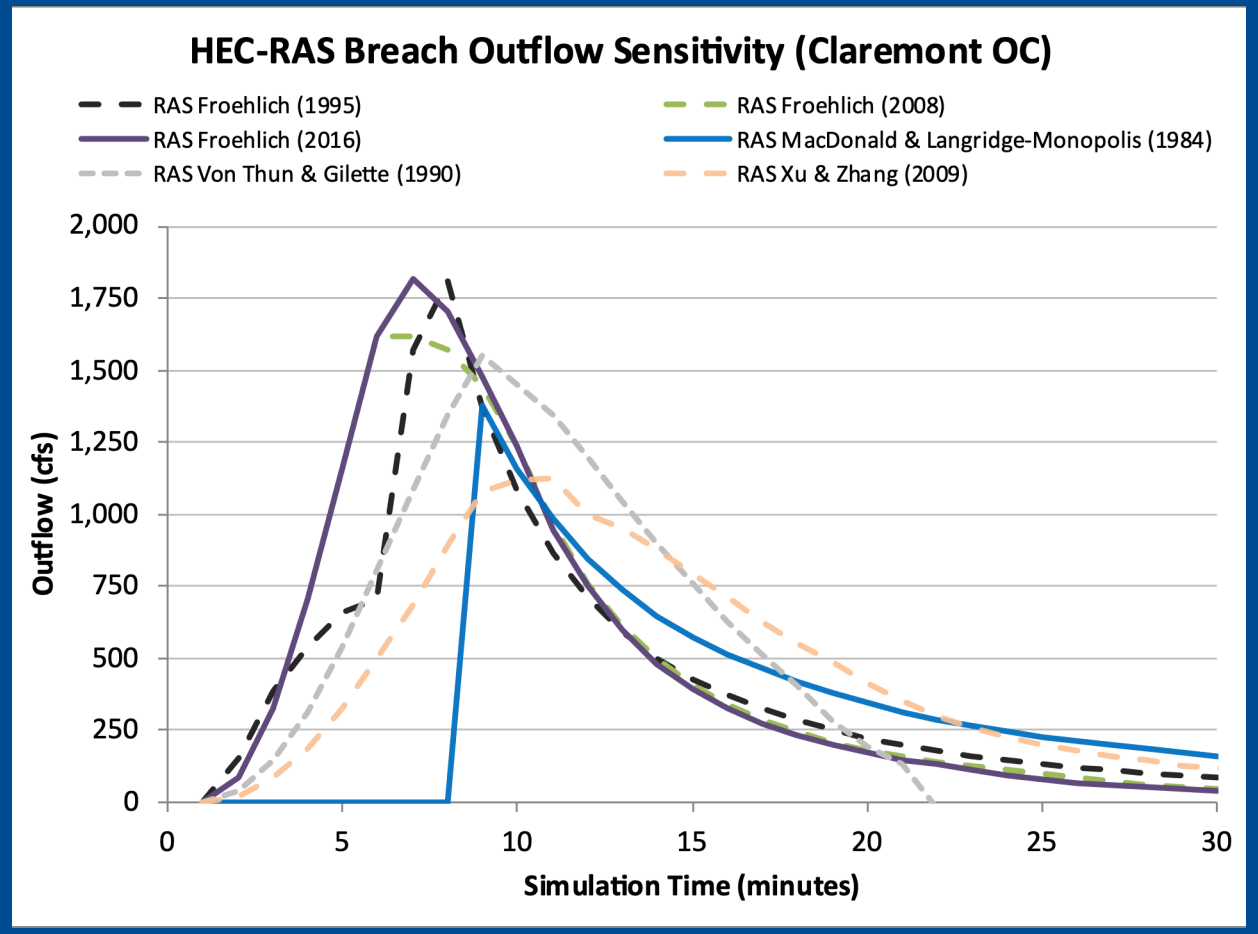
*Two **unique challenges** with analyzing the District's Open-Cut Reservoirs:*

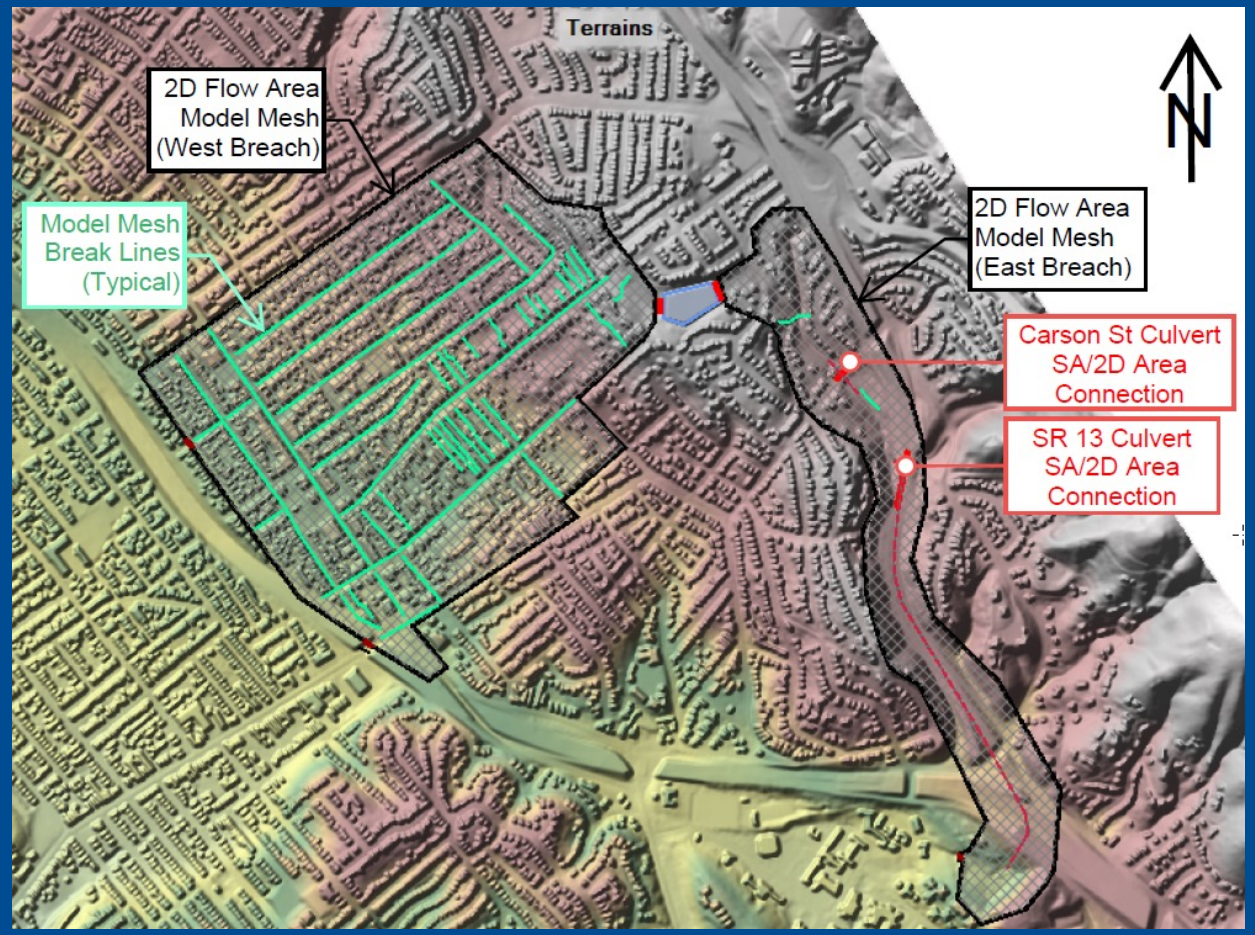
- Storage capacity generally below 25 acre-feet with typical dam height of 30 feet
- Routing of smaller volumes through urban area downstream requires additional detail in the model terrain development





Dam Breach Regression Equations Case Studies





Routing the Breach Floodwave over Urban Areas

Overall Findings & Lessons-Learned

- *Further **examination of regression-based breach parameter methods** is advised, especially if study dam is within a **high variance** from typical dam breach case studies.*
- *Consider the **characteristics of the case study datasets** when selection the appropriate breach parameter regression-equations.*
- ***Froehlich (2016) method** was a robust option for breach parameter estimation given the range of dam/reservoir sizes in its case studies*
- *Considering the **scale of the facility and routed breach volume,** additional **care and detail is needed in developing the model terrain,** particularly in capturing key stormwater infrastructure.*

Acknowledgement:
Carlos J. Pari Acuna, Junior Engineer, EBMUD
Priyanka K. Jain, Senior Civil Engineer, EBMUD

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