

Overview of 2D Unsteady Flow Modeling with HEC-RAS

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Objectives

- Overview of HEC-RAS Capabilities through Examples.
- Provide basic understanding of the types of 2D models that can be developed with HEC-RAS.
- Provide an understanding of the types of projects that HEC-RAS 2D models can be used for.



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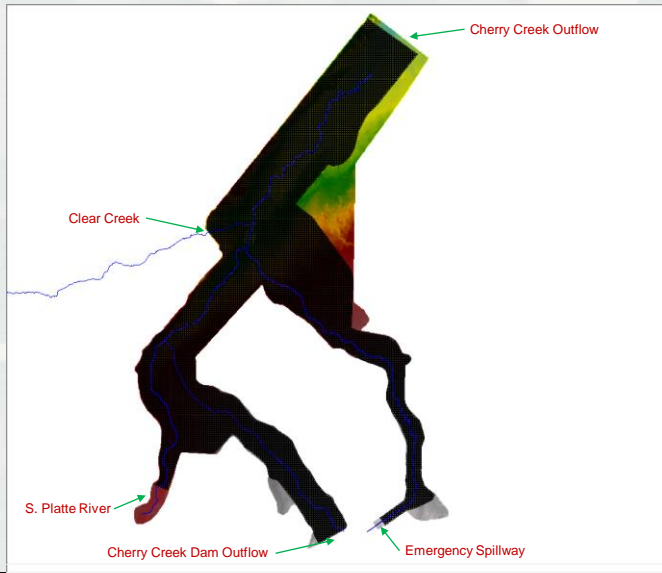


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Single 2D Area with Boundary Conditions

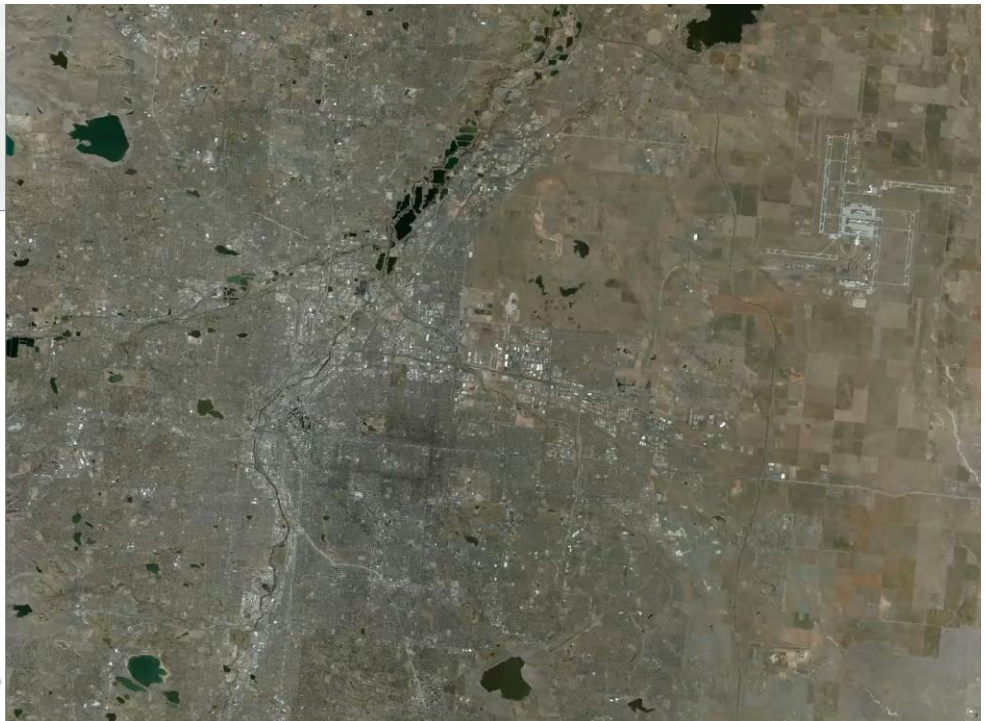
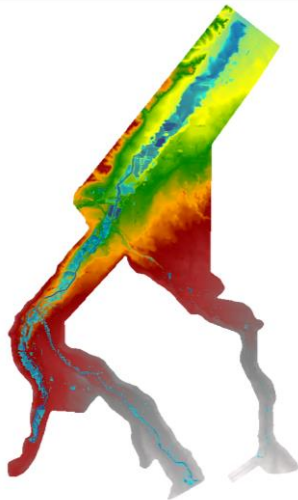


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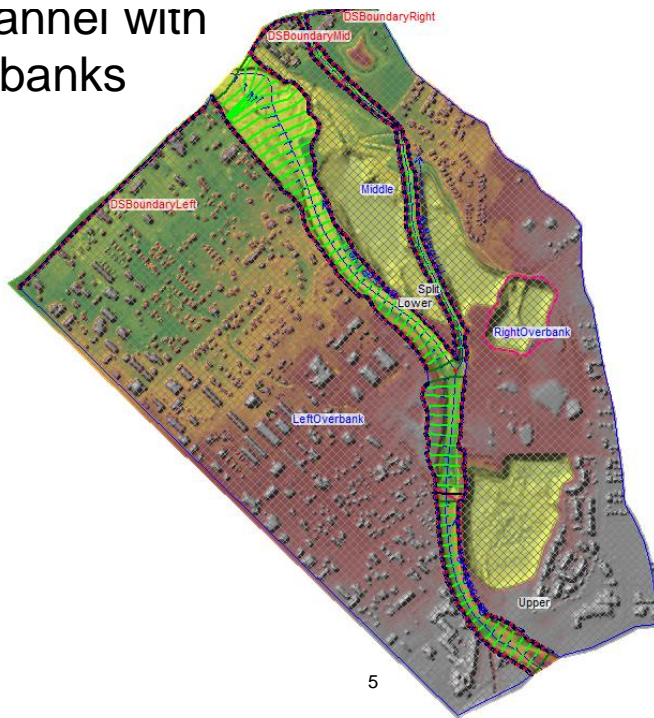
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Cherry Creek Example Animation



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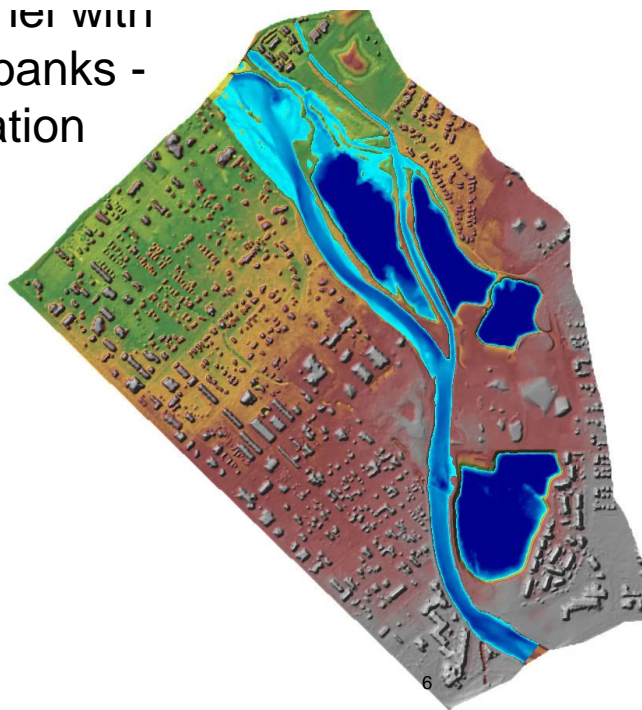
1D Main Channel with 2D Overbanks



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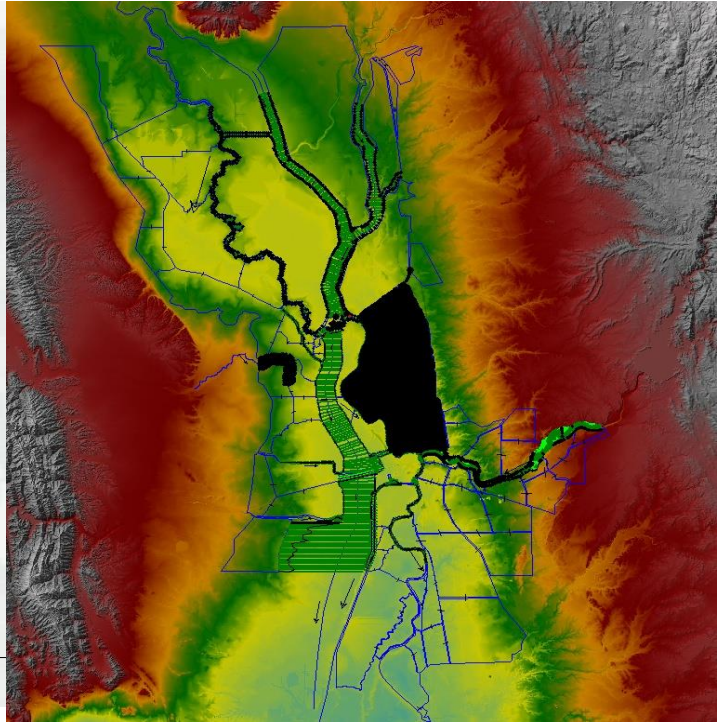
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1D Channel with 2D Overbanks - Animation



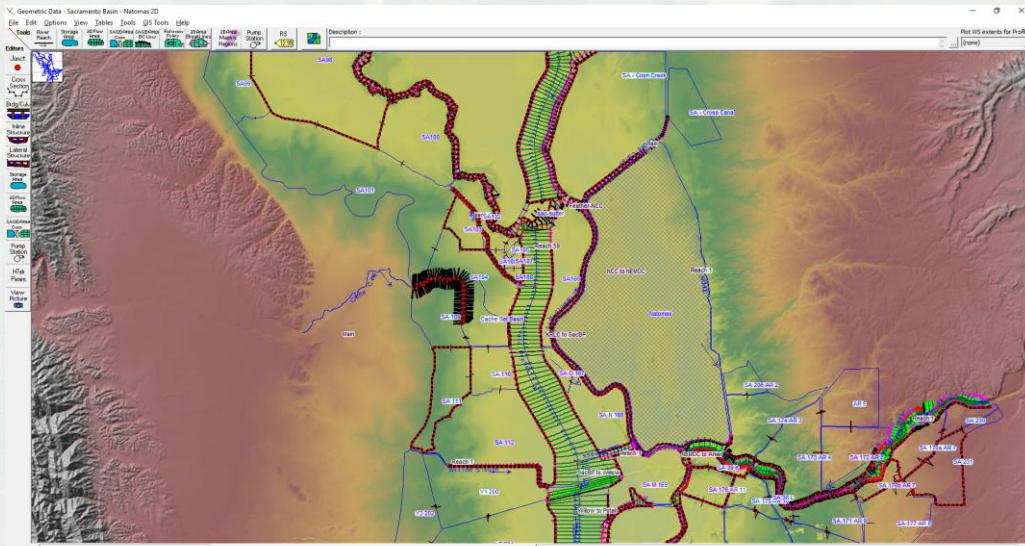
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Detailed 1D/2D Model Sacramento River System Model



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Sacramento River System Model

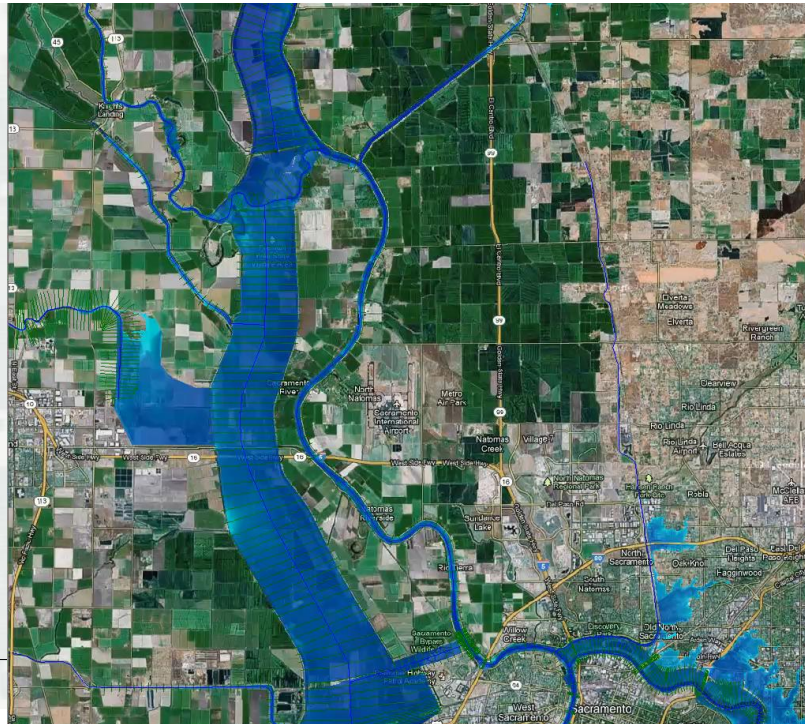


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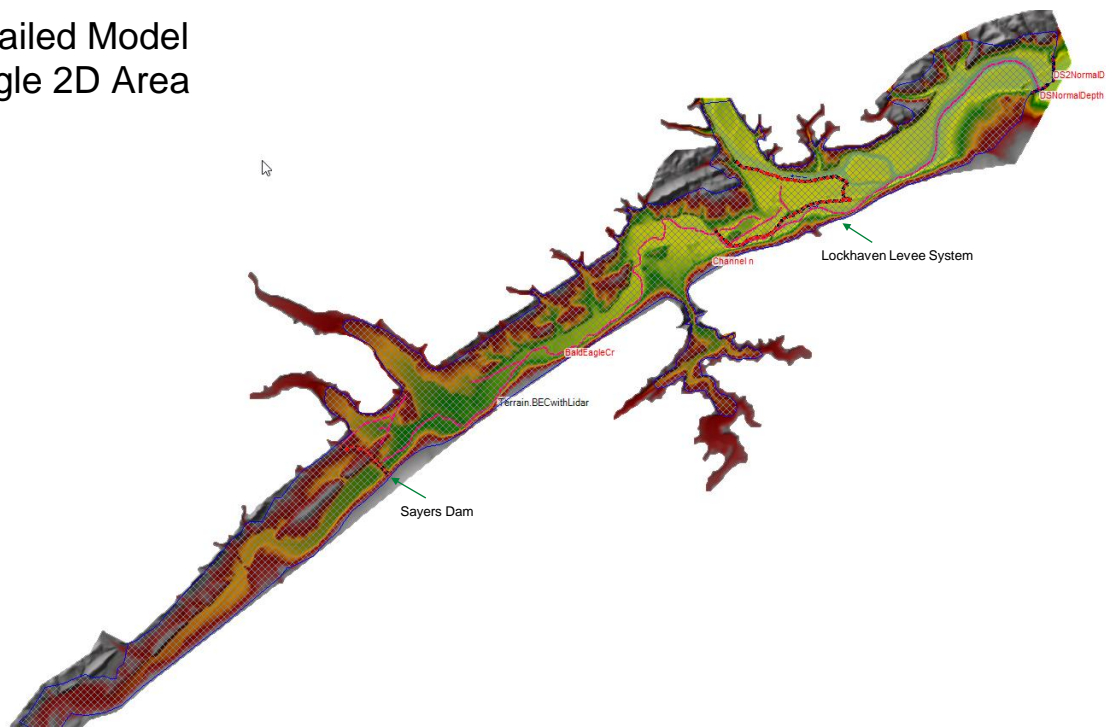
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Natomas, California



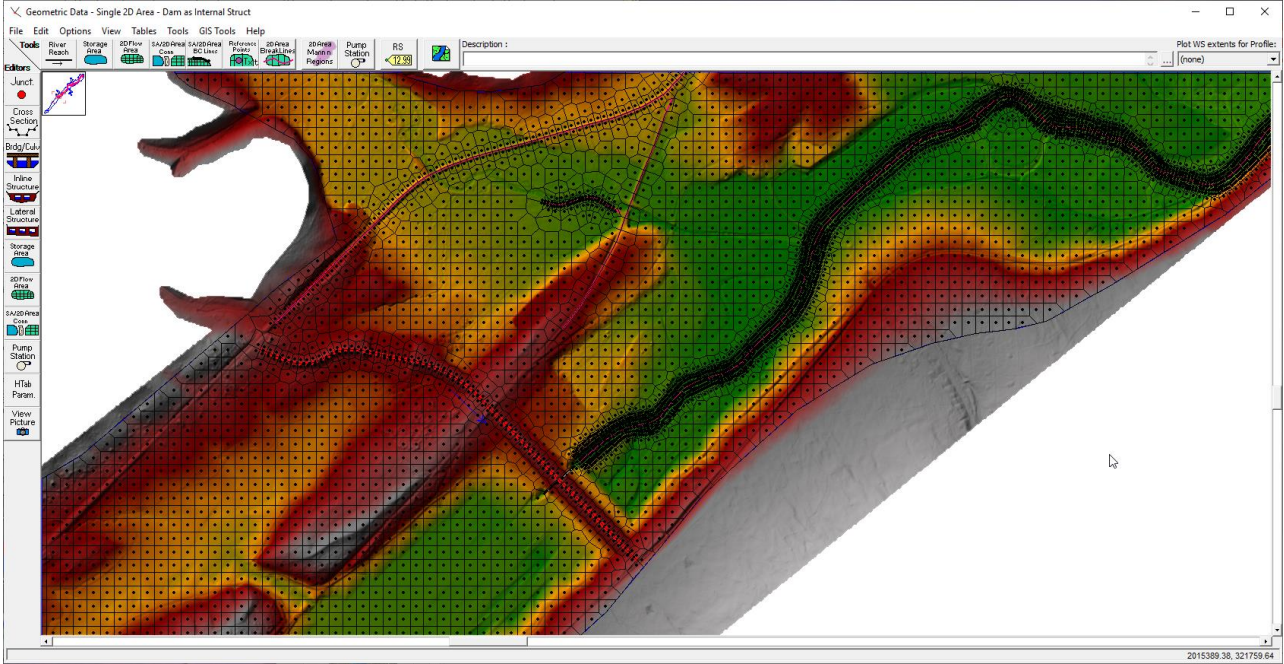
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Detailed Model Single 2D Area



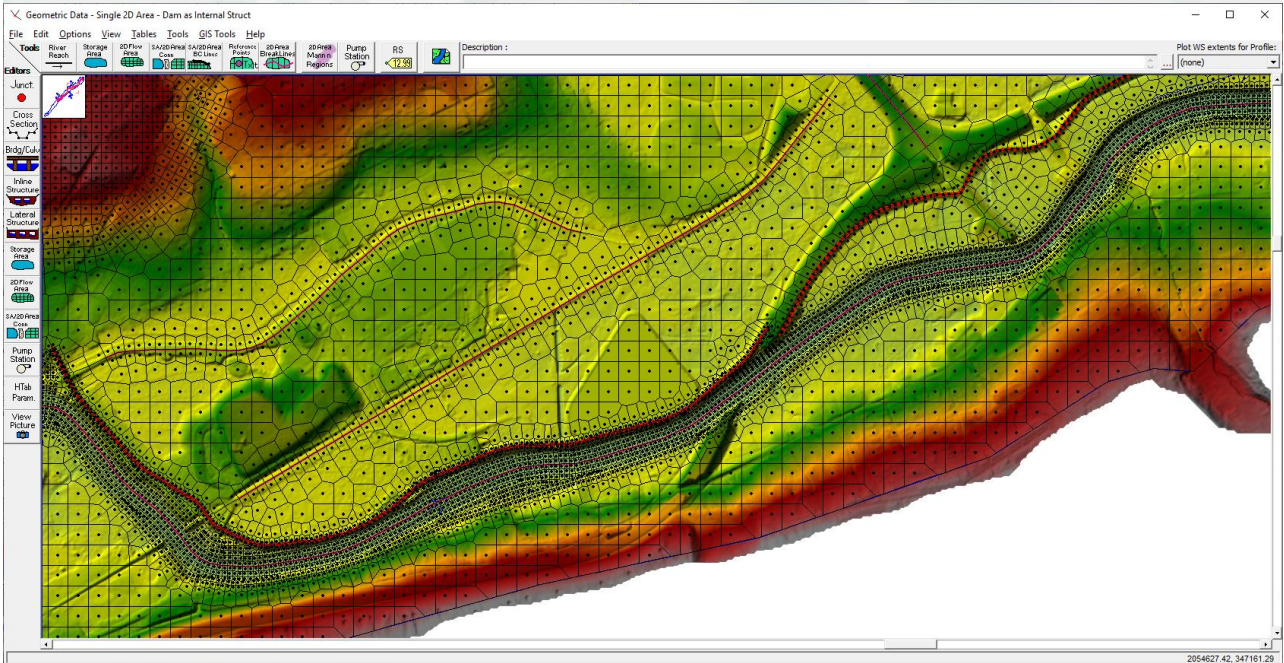
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HEC-RAS 2D Flow Area: Detailed Computational Mesh

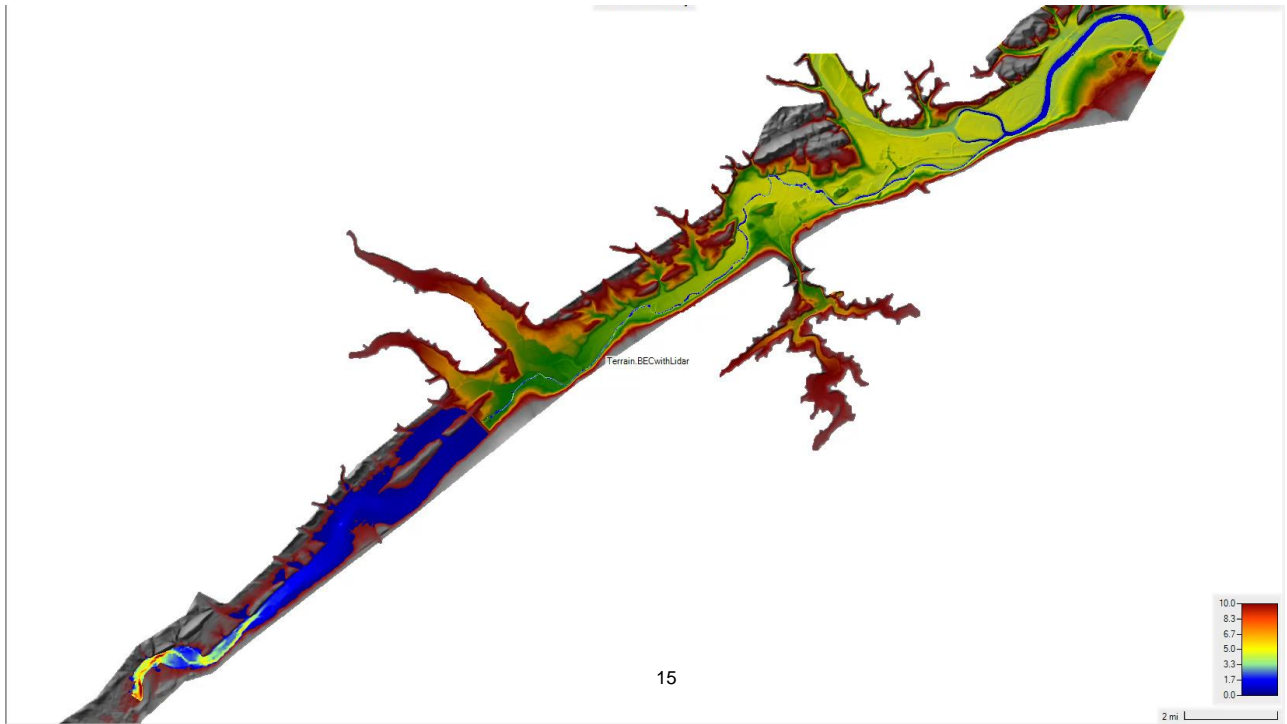


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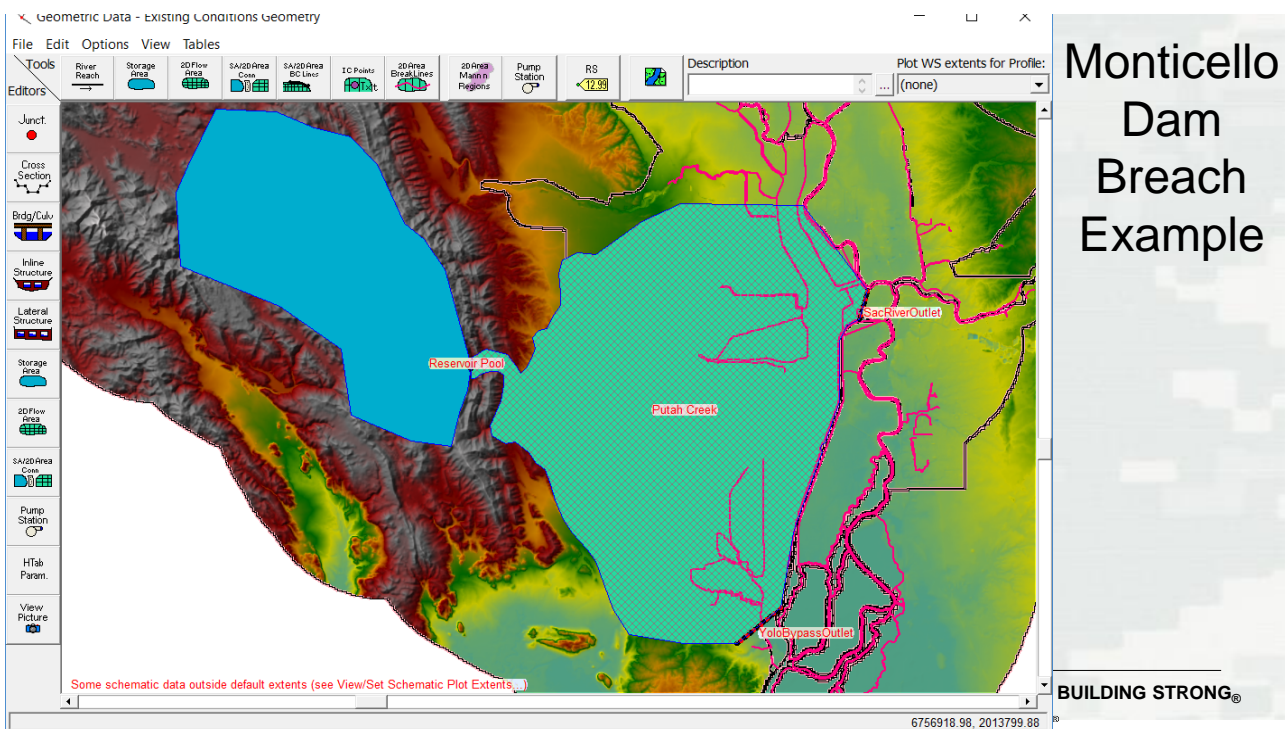
HEC-RAS 2D Flow Area: Detailed Computational Mesh



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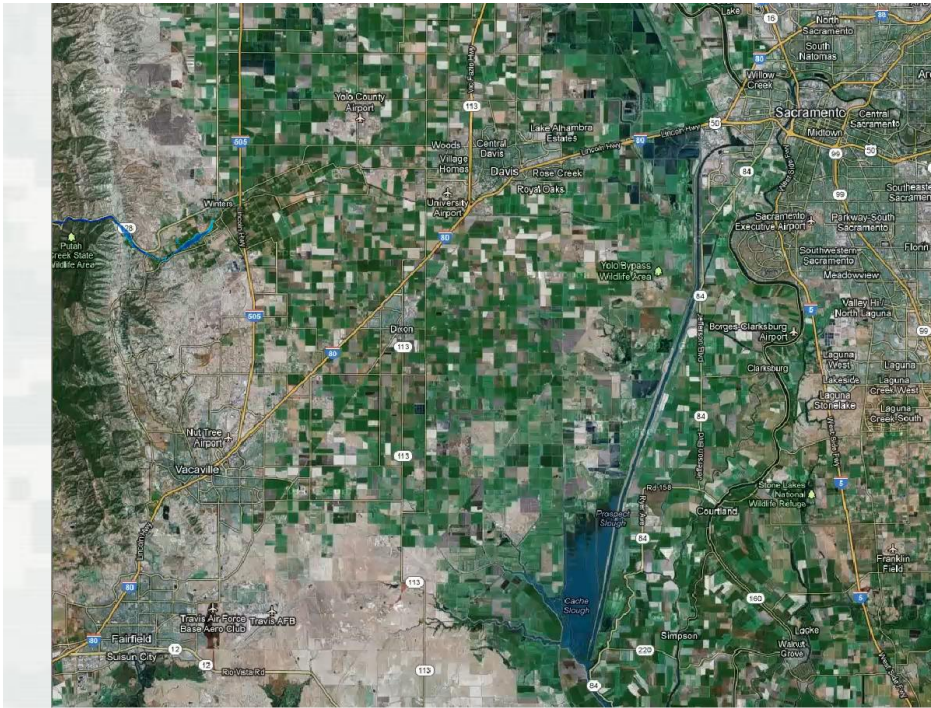


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Monticello Dam Breach Example

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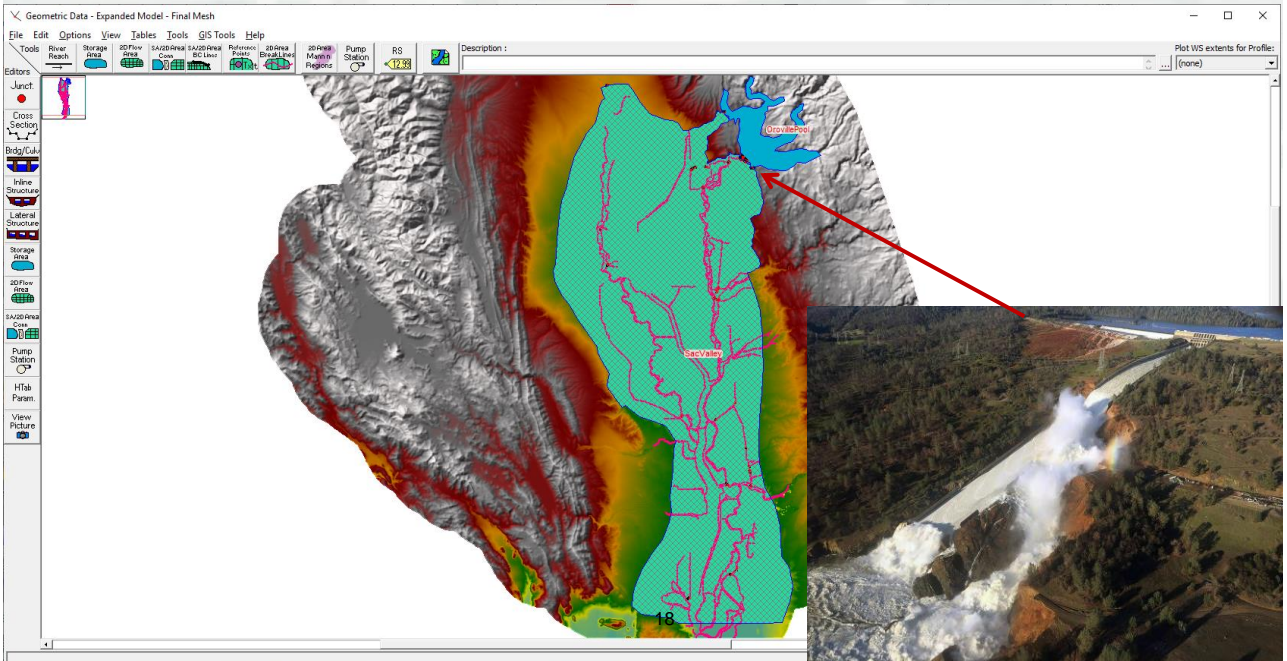


Monticello Dam Breach Example



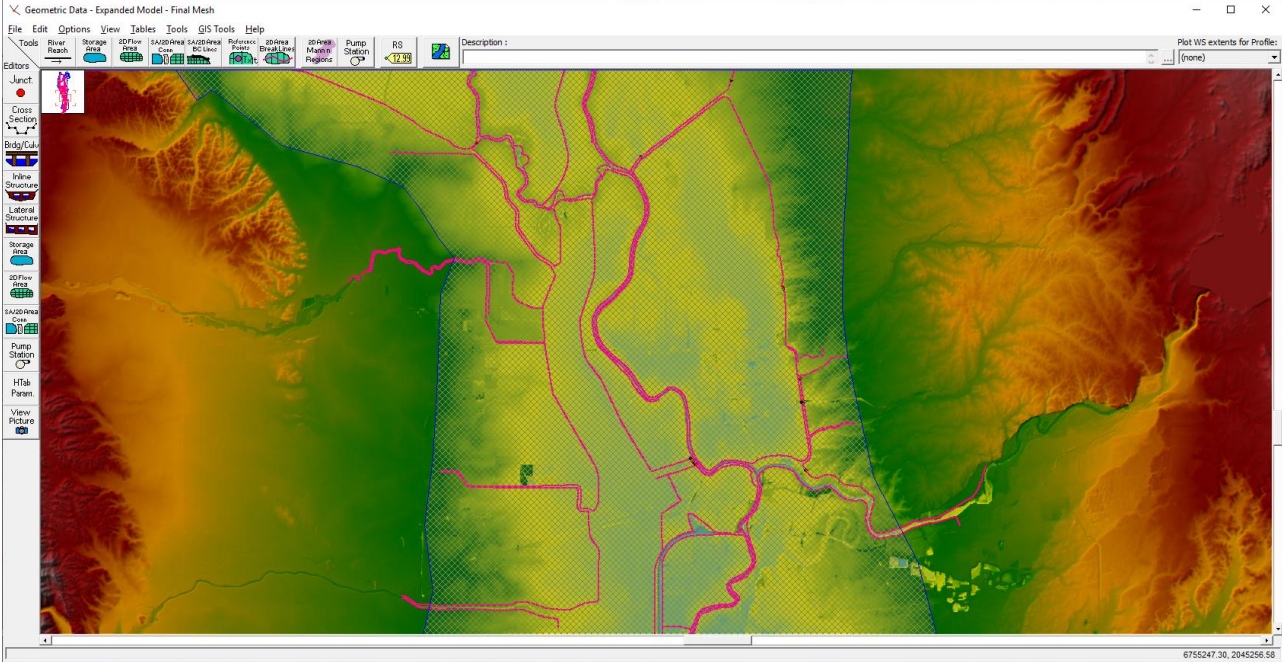
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Oroville Dam – Failure Analysis



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Oroville Dam – Failure Analysis

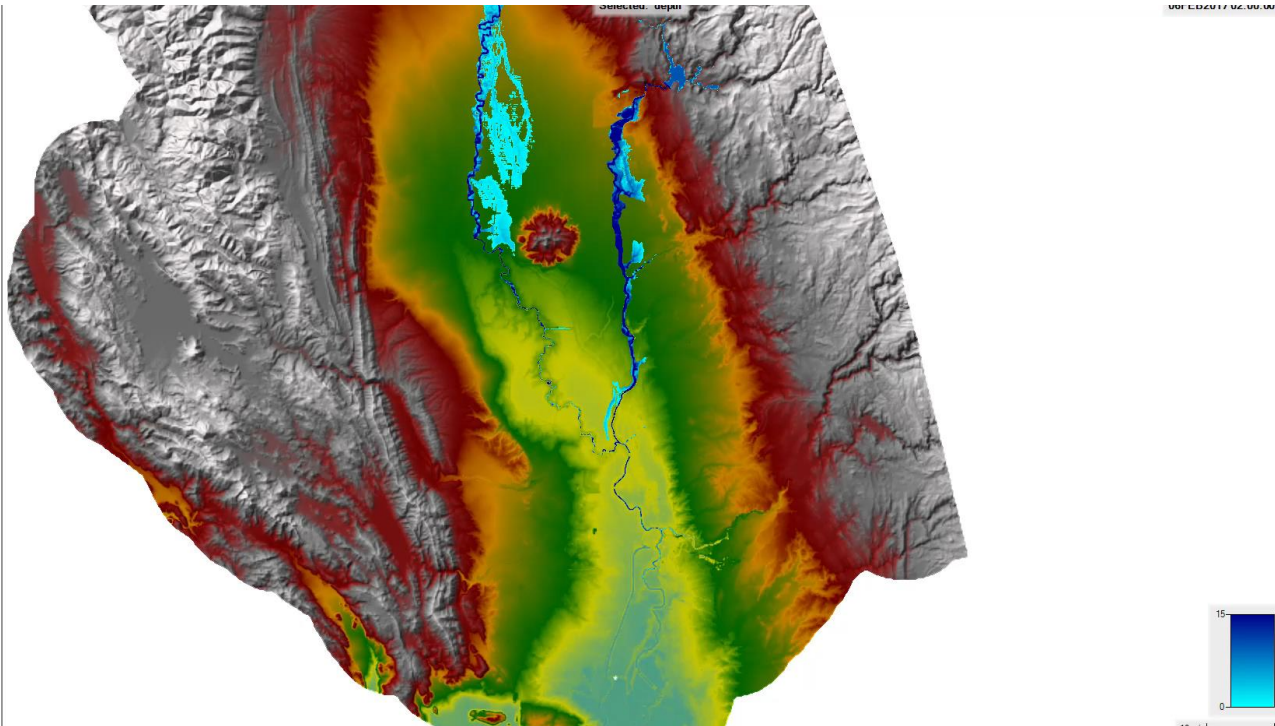


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Oroville Dam – Failure Analysis



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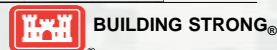


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2D Bridge Modeling

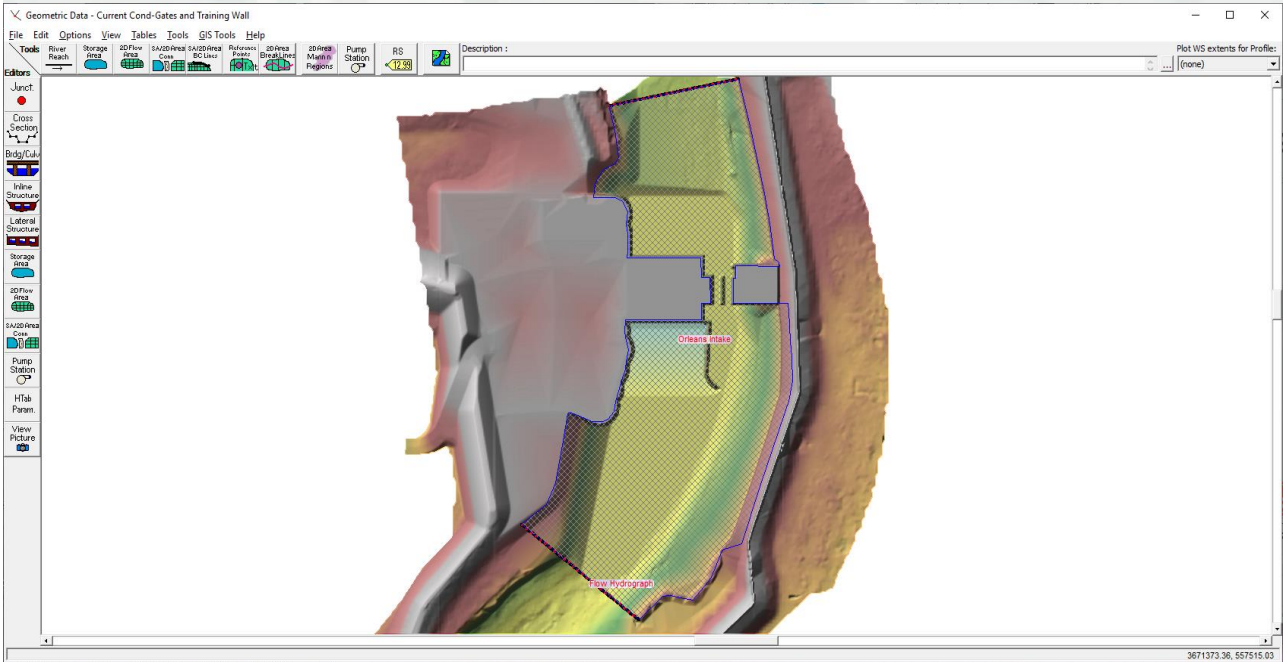
The image shows a screenshot of the HEC-RAS software interface. The main window displays a plan view of a bridge structure over a river channel, with a pink circle highlighting the bridge area. A 'Connection Data Editor' window is open, showing settings for 'Highway 120'. The 'Structure Type' is set to 'Bridge (Internal to 2D Flow Area)'. Below the main window, there are two plots: a 'Plan Boundary' plot showing water depth profiles across the bridge, and a 'Cross Section' plot showing the bridge structure and water depth profile. The HEC logo is visible in the bottom left corner.

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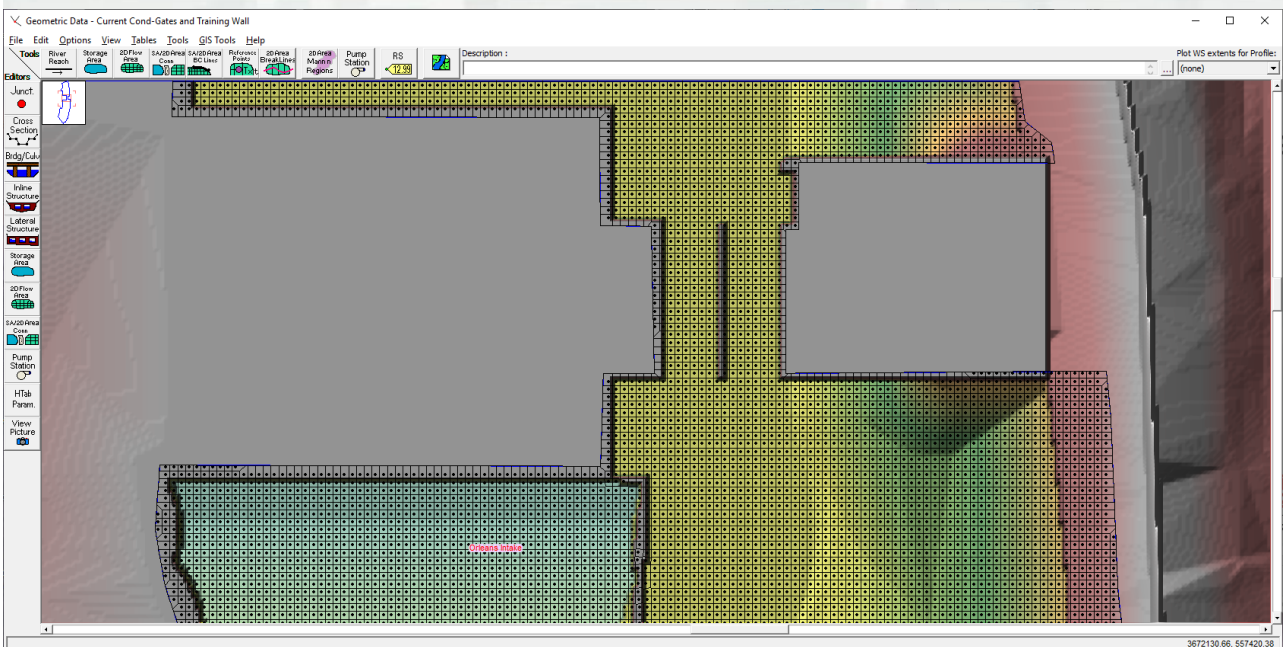
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Detailed Gate Modeling– Orleans Canal

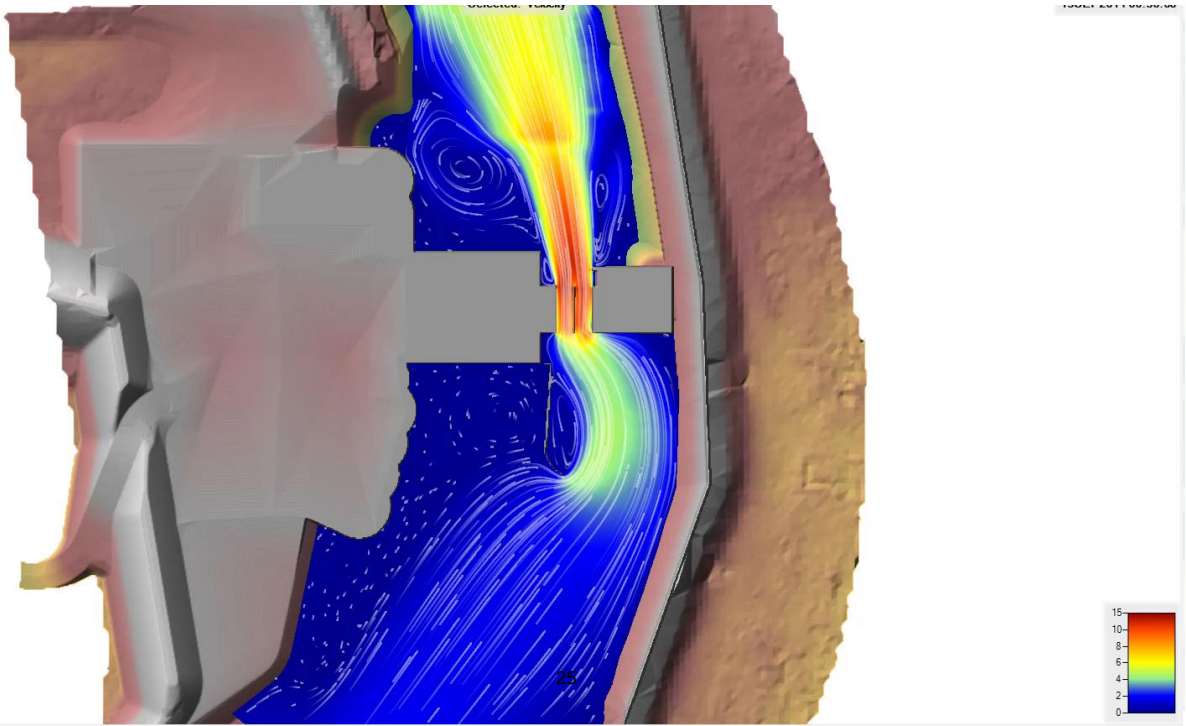


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Detailed Gate Modeling– Orleans Canal

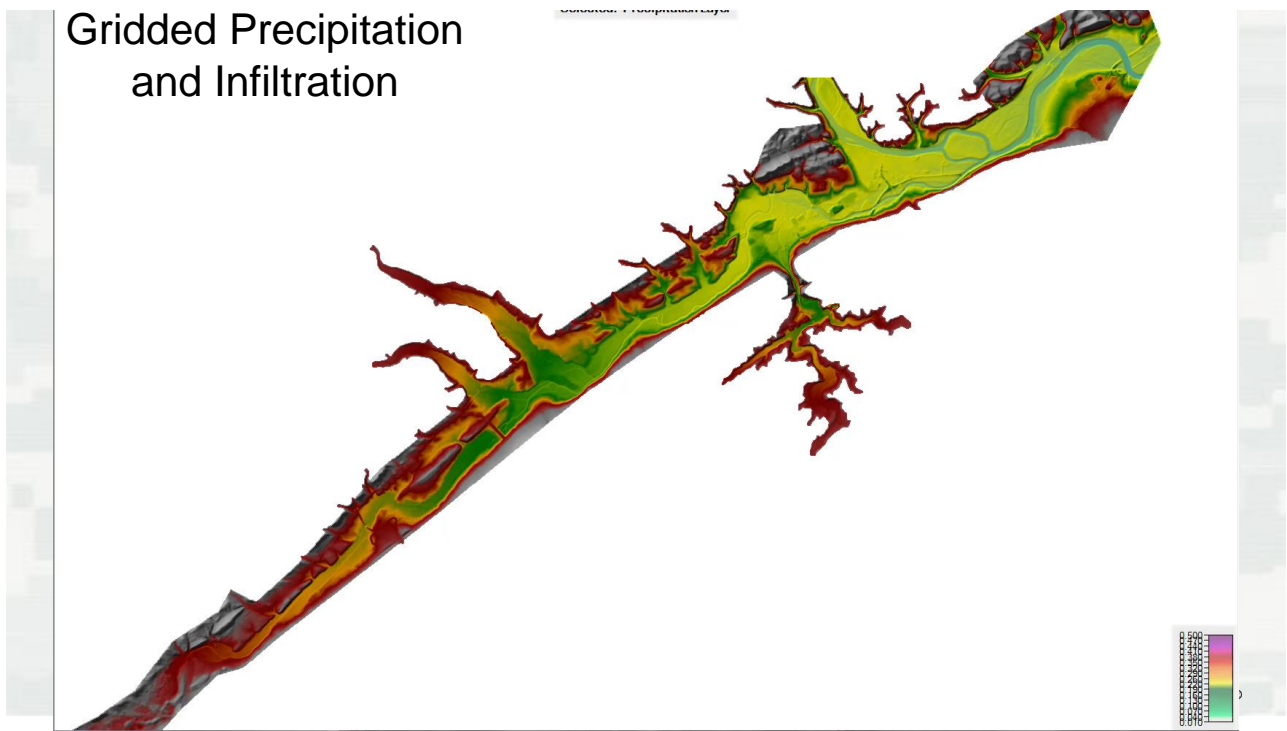


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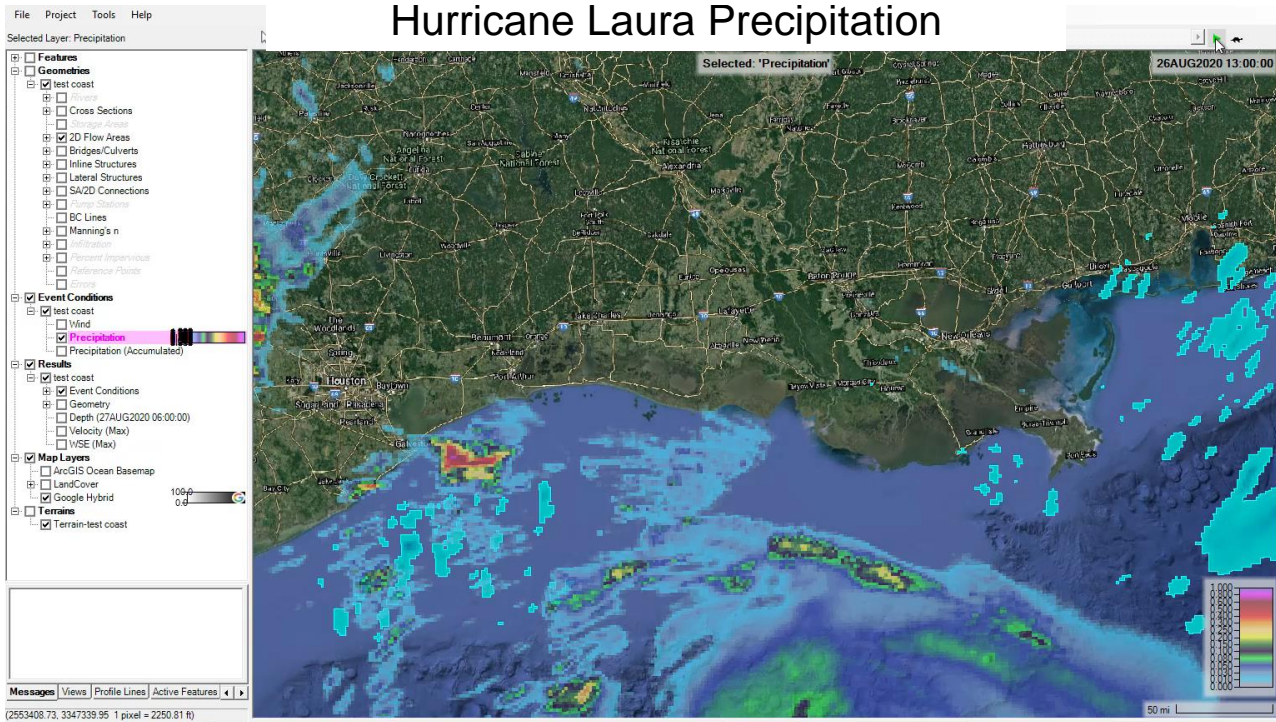
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Gridded Precipitation and Infiltration

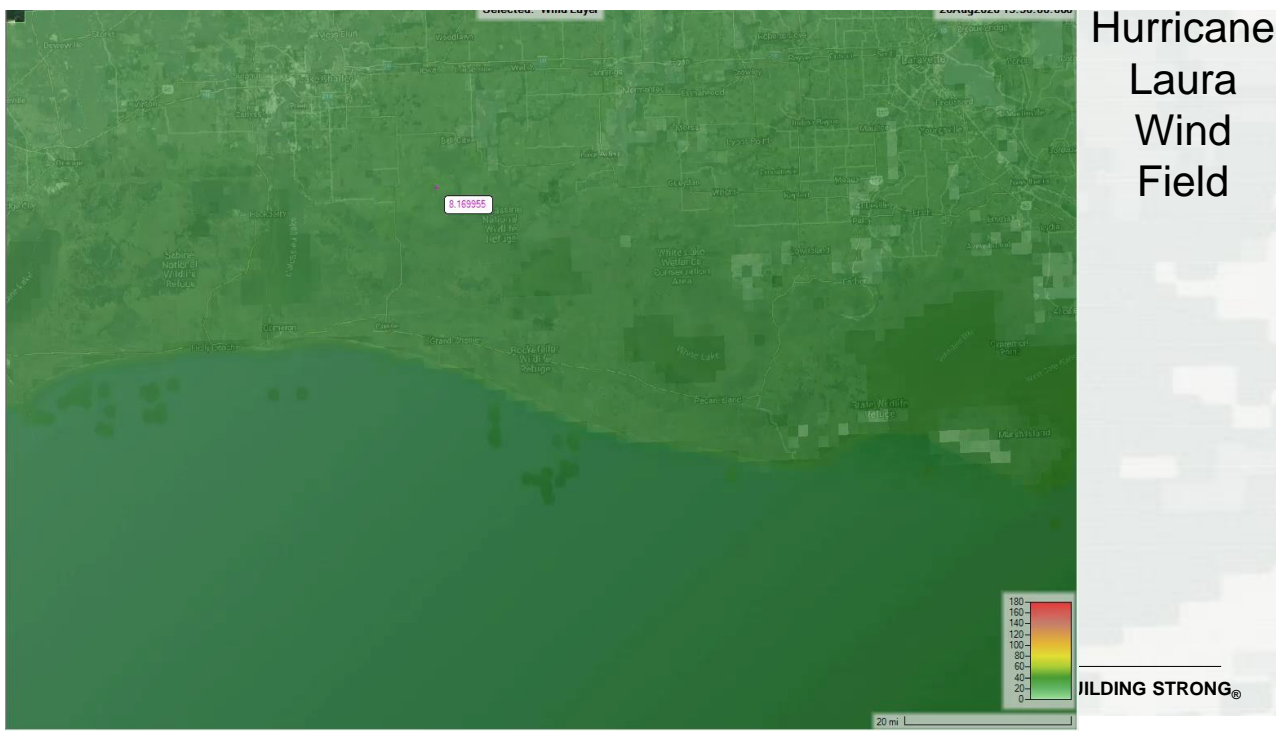


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Hurricane Laura Precipitation



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