



Waller Creek Corridor Restoration When Stream Restoration is Not Enough

National Stream Restoration Conference | Baltimore, MD | August 2023

Today's Presentation

- Brief History of Waller Creek in Austin, Texas
- Project Overview
- Corridor Restoration Priorities & Execution

WEST AUSTIN

UNIVERSITY OF TEXAS
AT AUSTIN

STATE CAPITOL

DOWNTOWN

**waterloo
greenway**

EAST AUSTIN

SOUTH AUSTIN



History of Flooding



History of Flooding



Public-Private Partnership

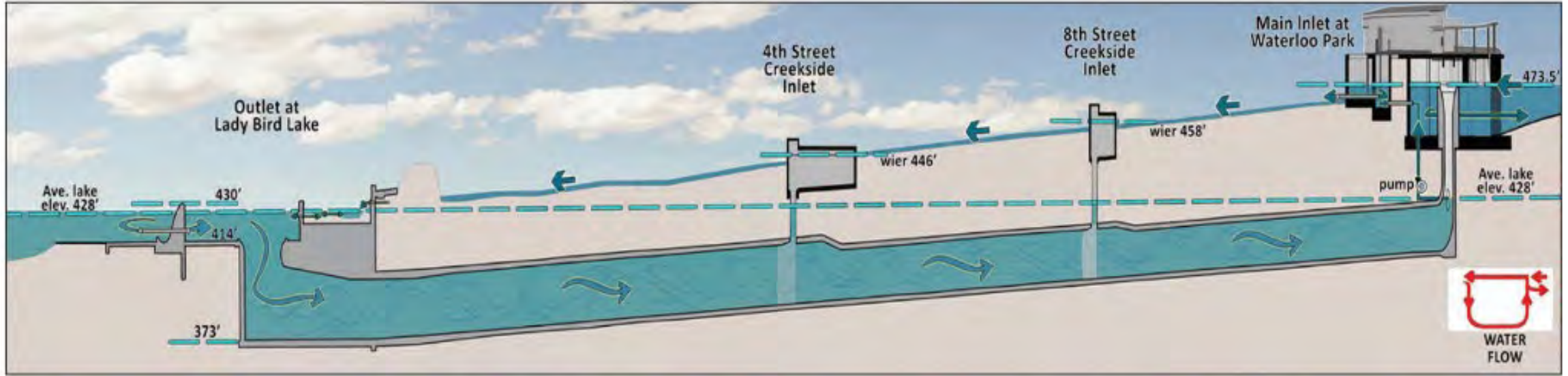
waterloo greenway

Sponsoring City Departments:
Watershed Protection Department &
Parks and Recreation Department

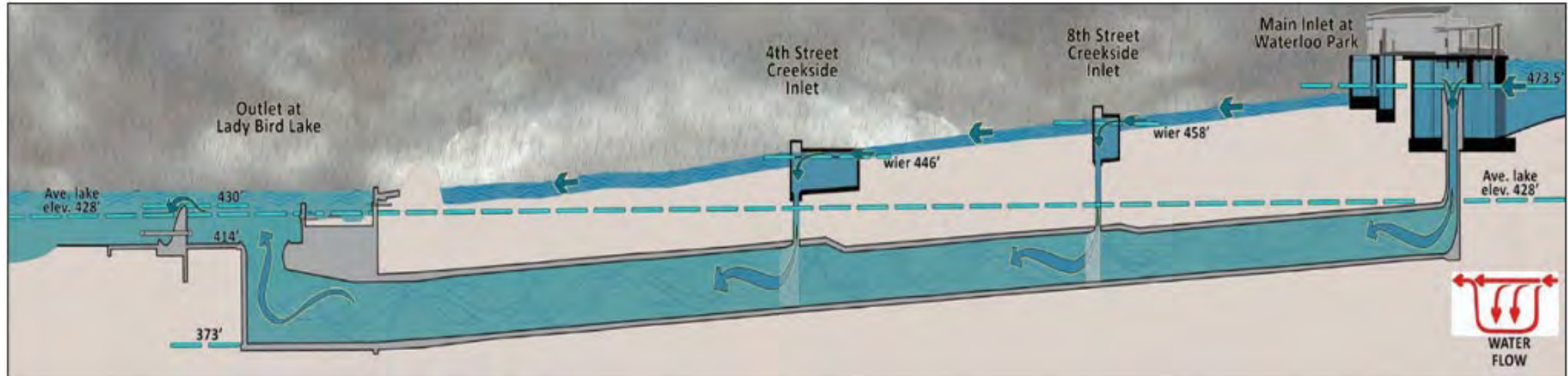


Non-Profit Partner:
Waterloo Greenway Conservancy

DRY WEATHER



WET WEATHER



Waller Creek



Waterloo Greenway Design Plan

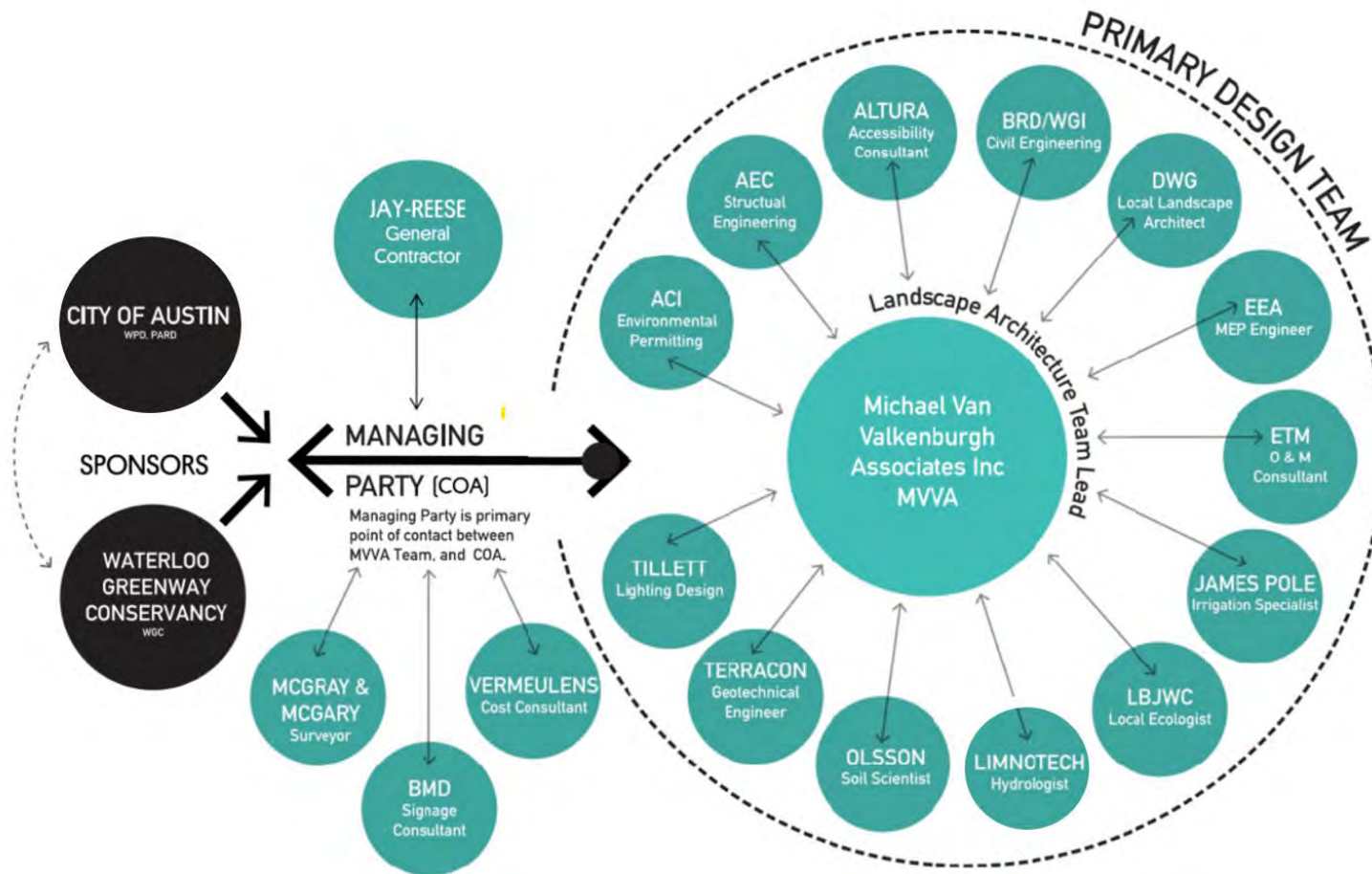


Mobility and Community Connectivity



Map produced by the Palm District Planning Initiative, led by the City of Austin

Stakeholders



- \$90M for lower reach. 18 Funding Sources, including US Army Corps of Engineers
- Critical utility infrastructure crossing creek
- Shared limits with multibillion-dollar light rail, freeway, and Convention Center expansion plans



WALLER CREEK

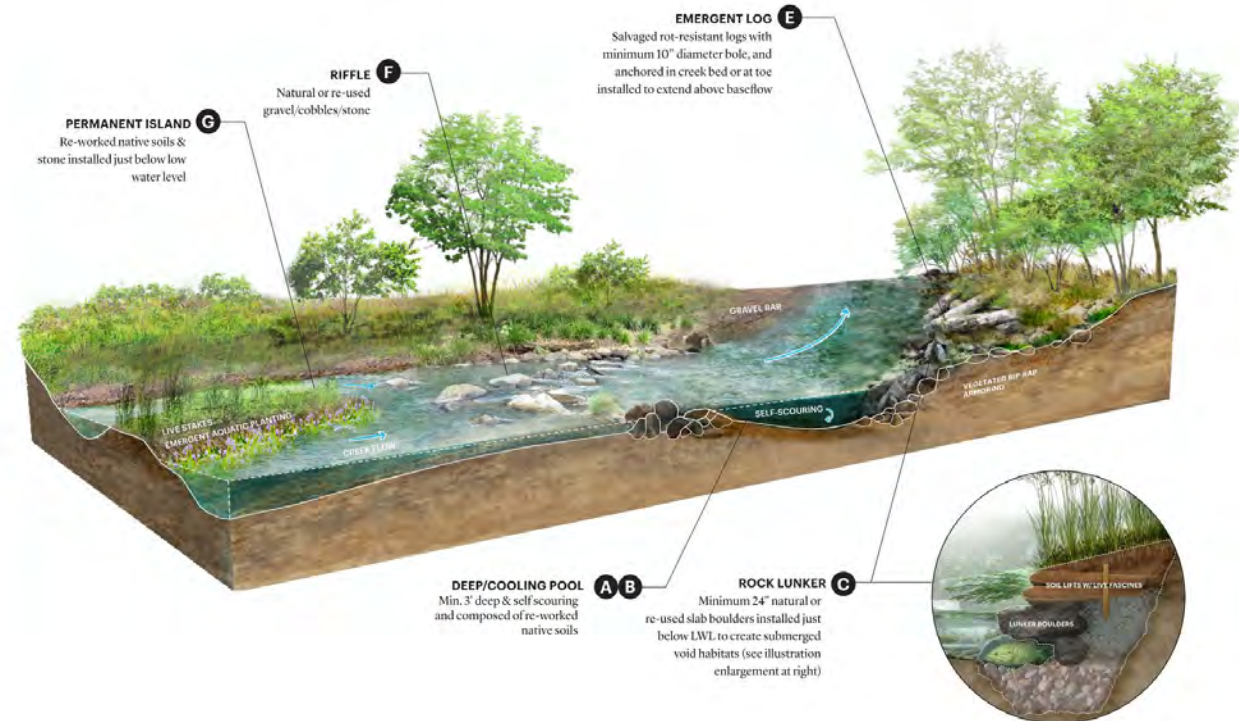
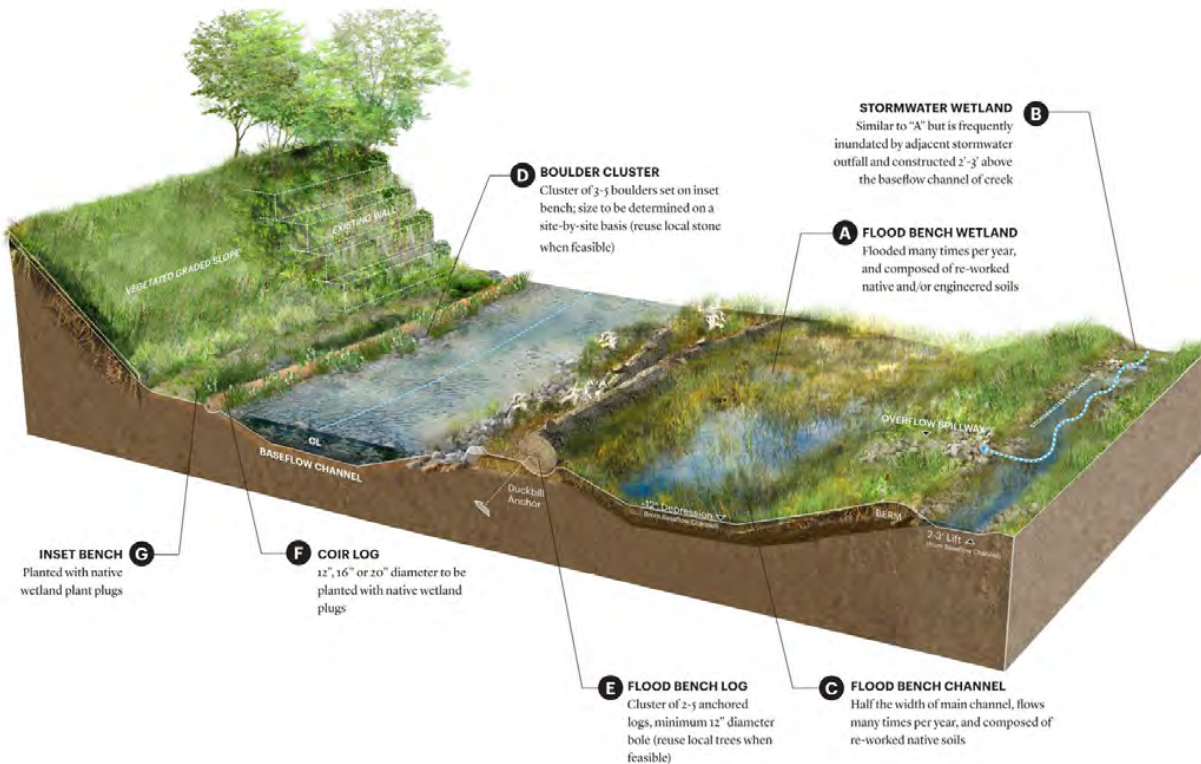


Our Design Path Forward: Shifts from traditional stream restoration dogma

- Community Needs equally valued to Stream Needs
- “Bend, don’t break” philosophy towards flood management
- Traditional bankfull identification techniques don’t apply
- Riparian benches in lieu of floodplain (it’s all we can get)
- Trail infrastructure to facilitate improvements is stream function

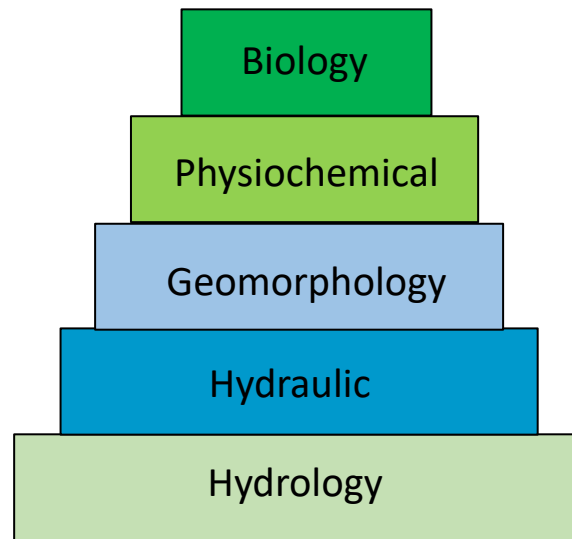
My Dream for the Creek

- Highly Functioning Creek
- Diverse Habitat
- Ecological Oasis in the Heart of Downtown

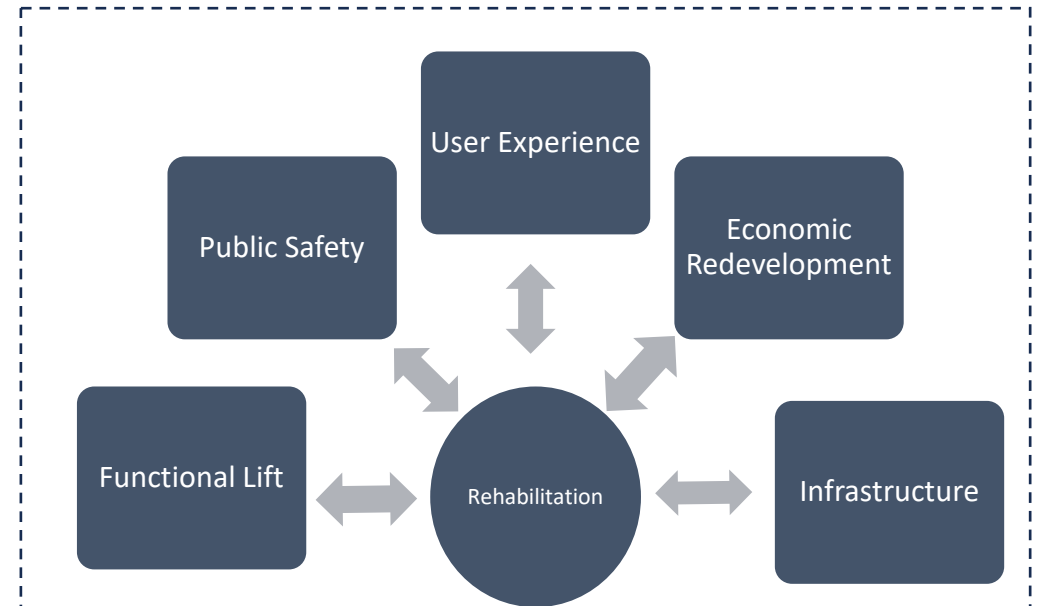


Corridor Restoration Priorities

Stream Function

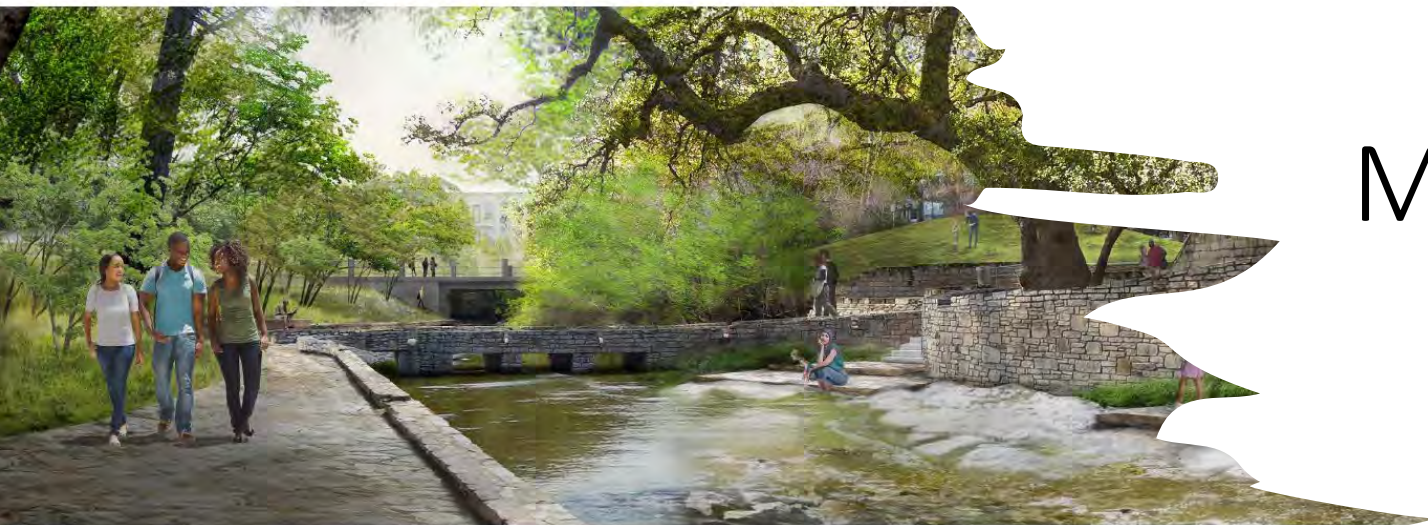


Community Needs



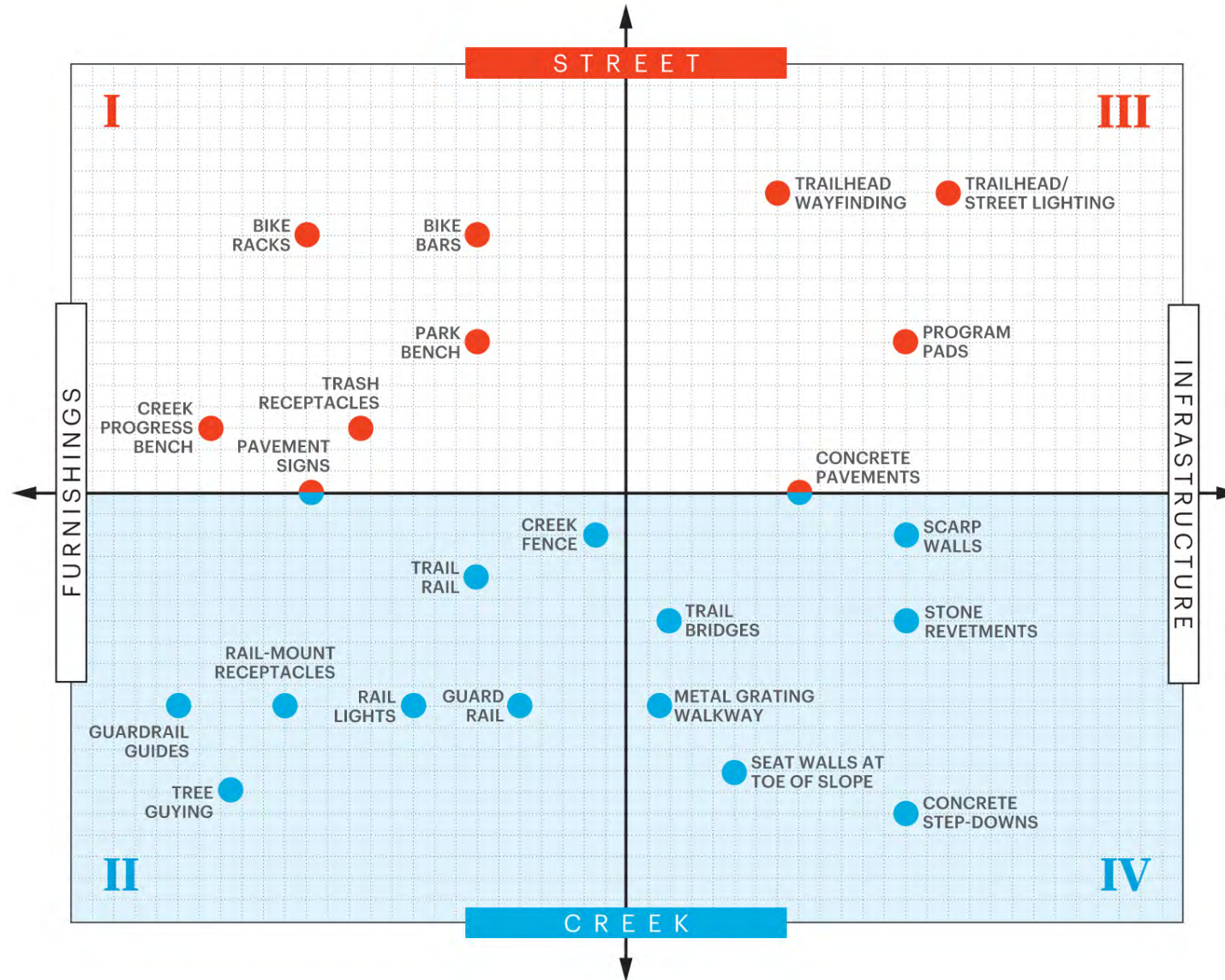
People are using the stream



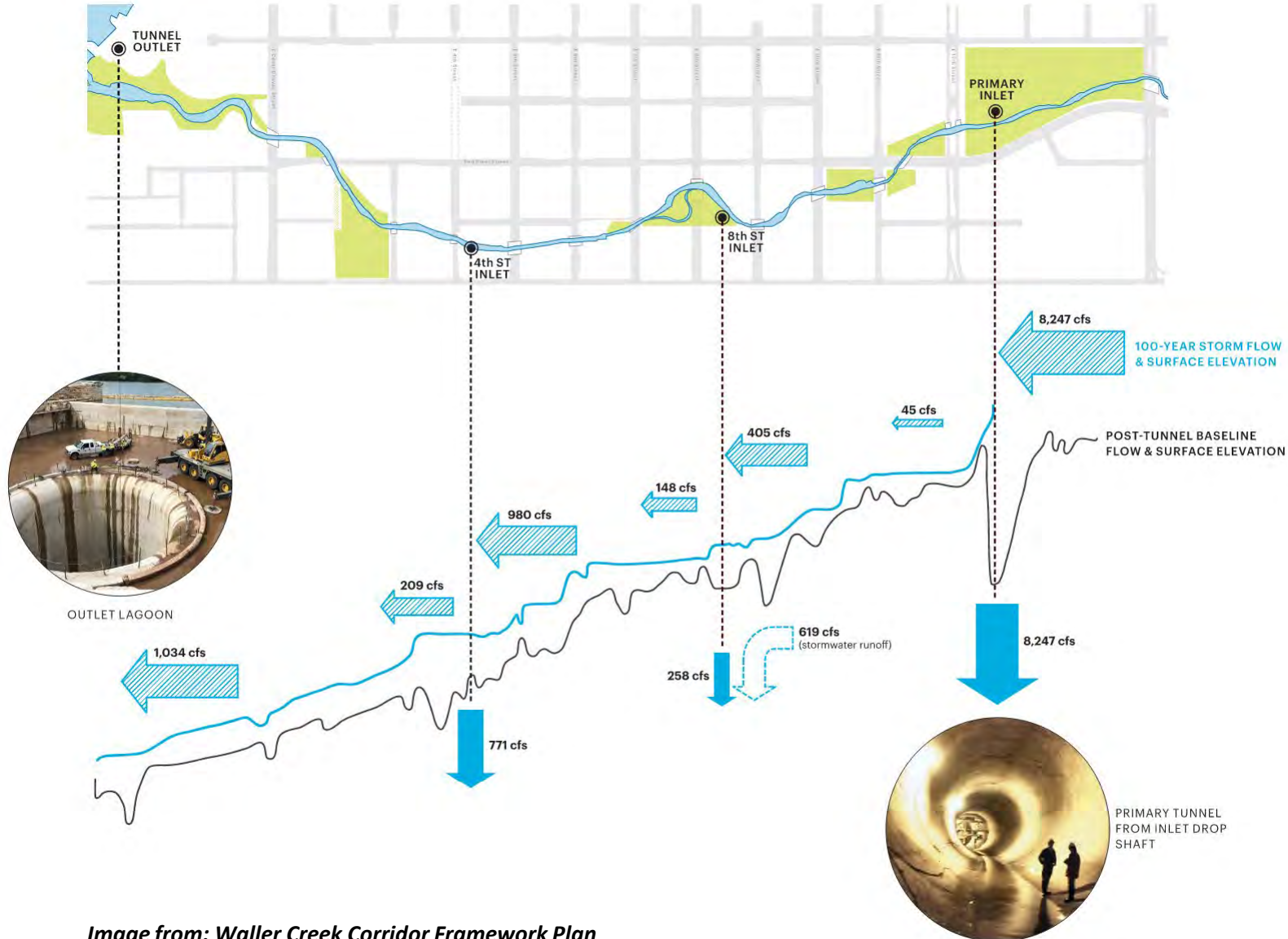


Motivated by People

Identity of the Corridor

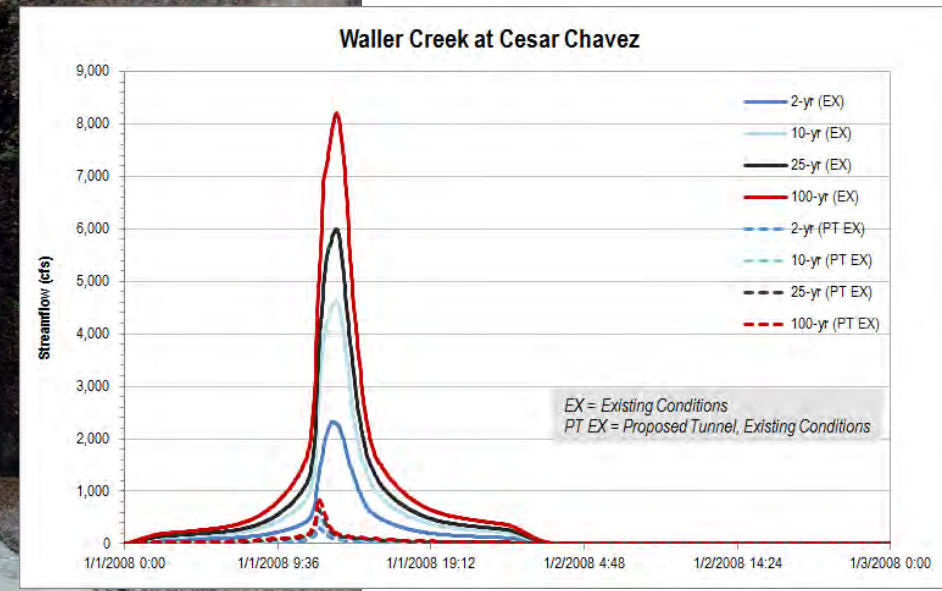


Tunnel Impacts on Creek Flow

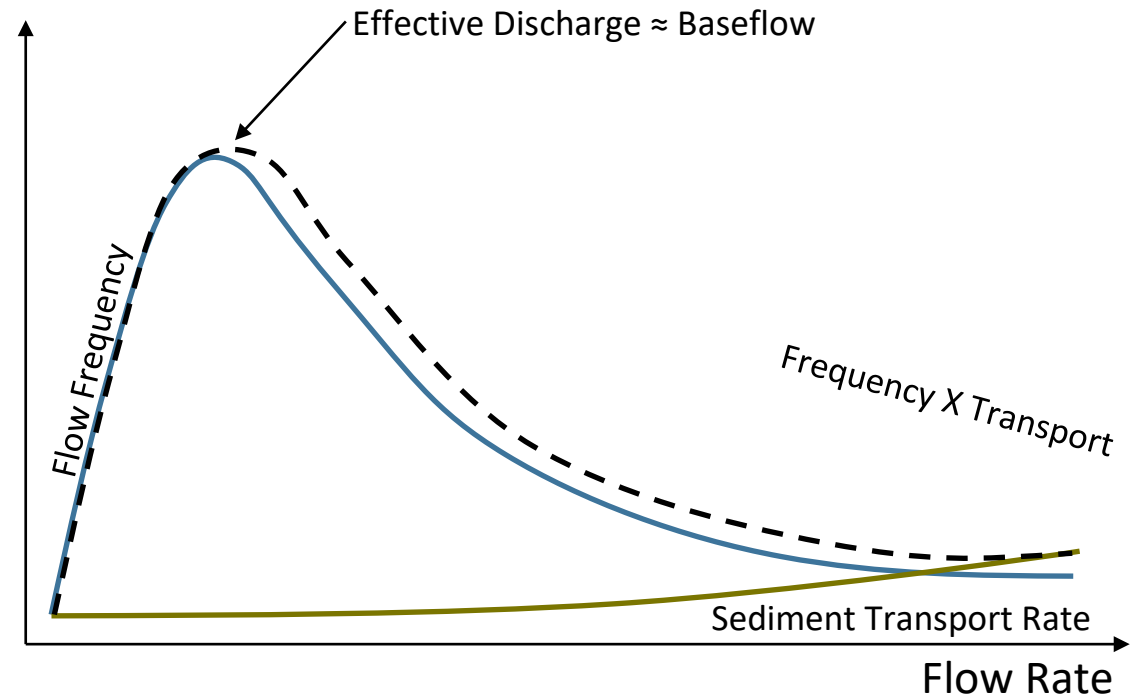
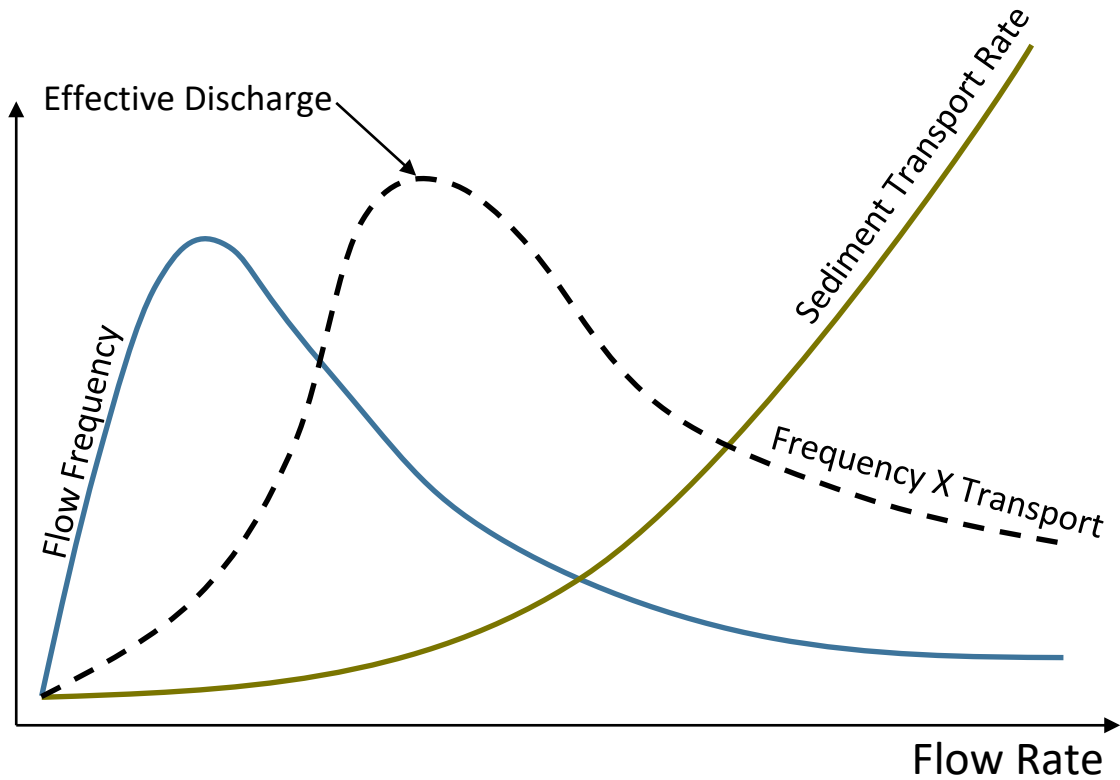


- 100-Year Flood Flow Decrease by 98%
- Baseflow increases from 1 cfs to 10 cfs.

New Flood Management Rules



What is our New Bankfull Channel?

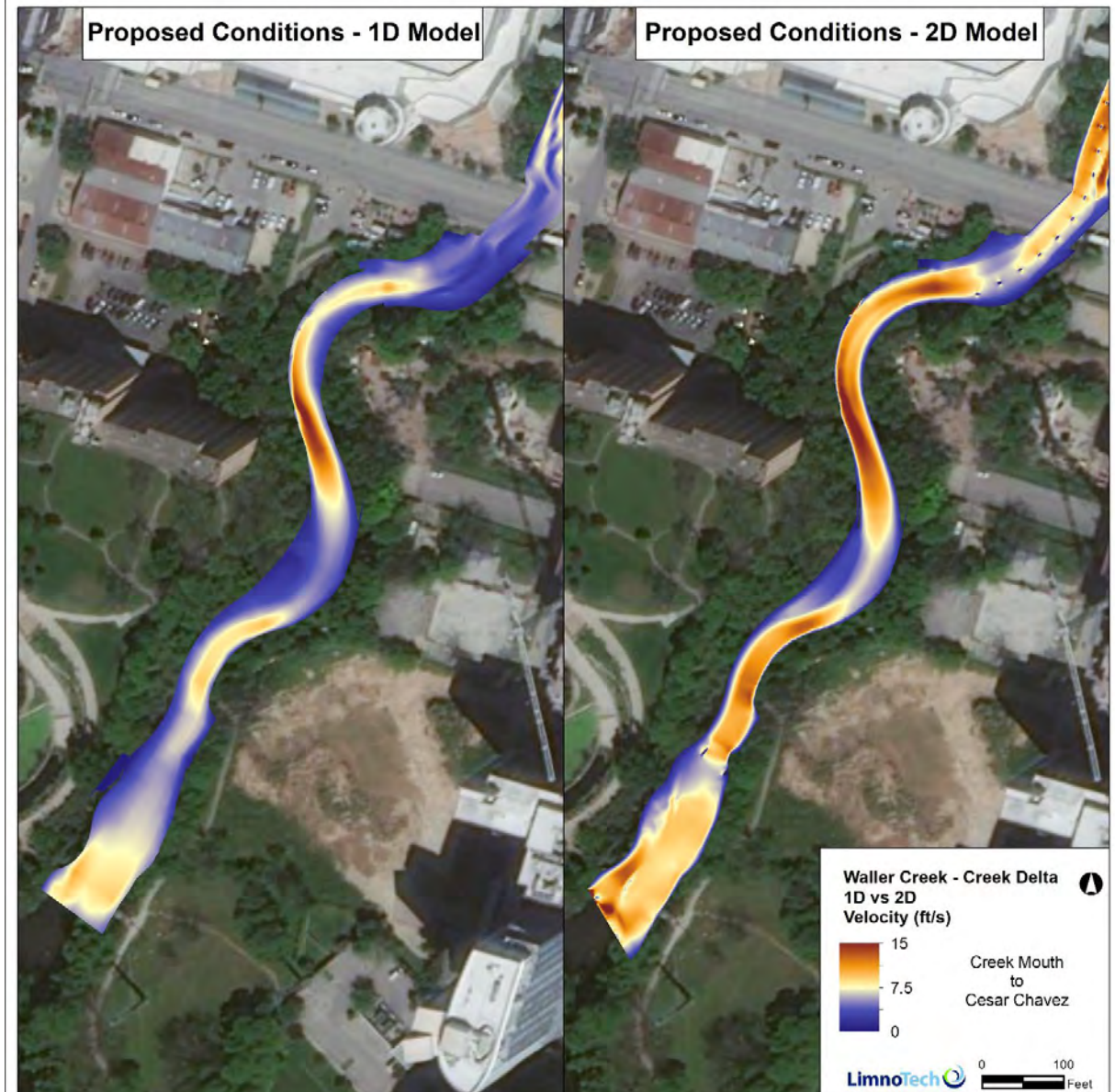
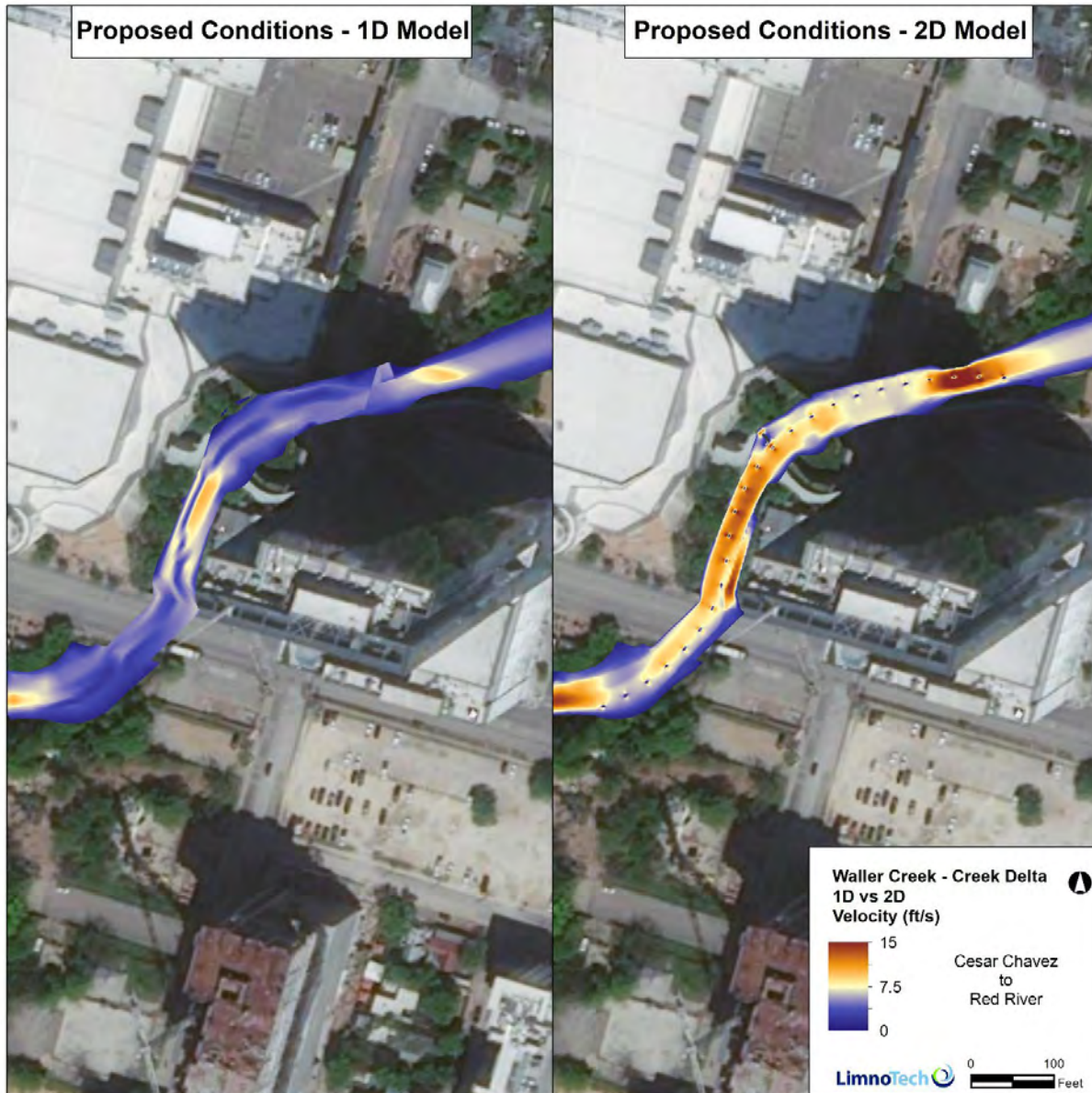


What is our New Bankfull Channel?



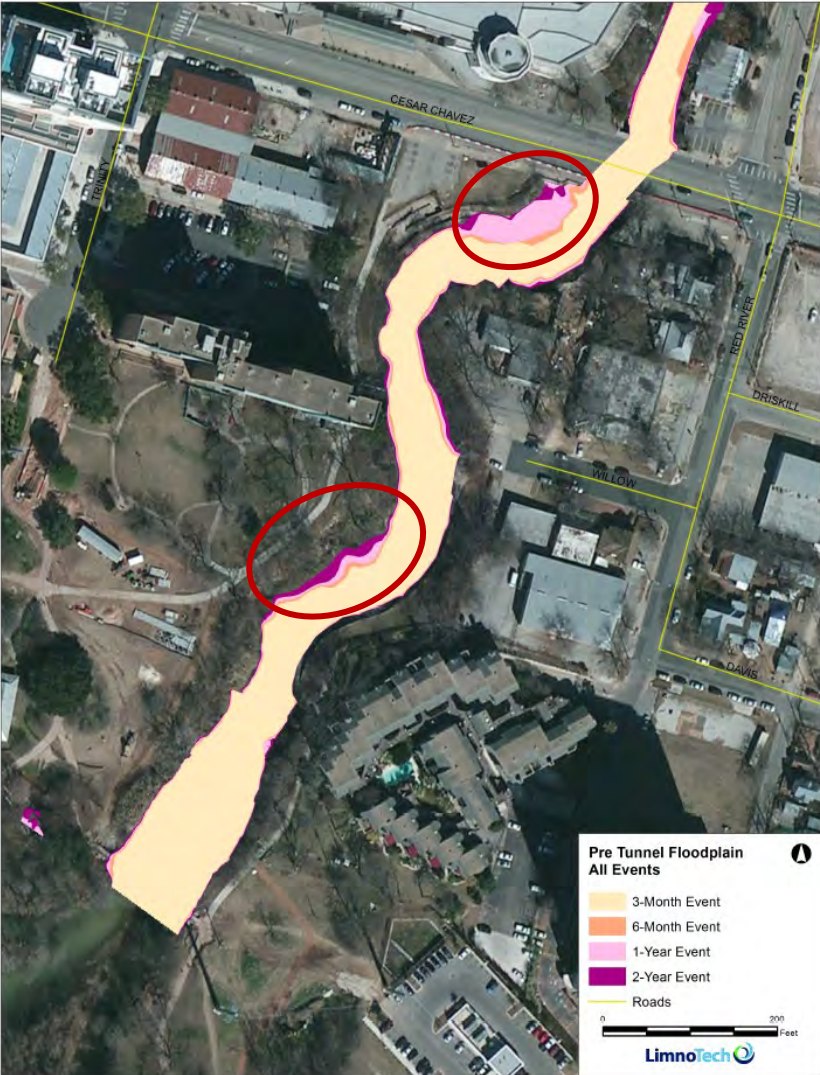
- Field Measurements
 - Tricky because the channel is still relatively “young.”
- Regional curves don’t apply
 - The tunnel interrupts the hydrology
- Power Laws
 - Few reference streams
 - Self-similar scaling: Do we scale up from baseflow or down from the 2-year?
- HEC-RAS Modeling to determine access to floodplain benches

Influence of New Modeling Tools



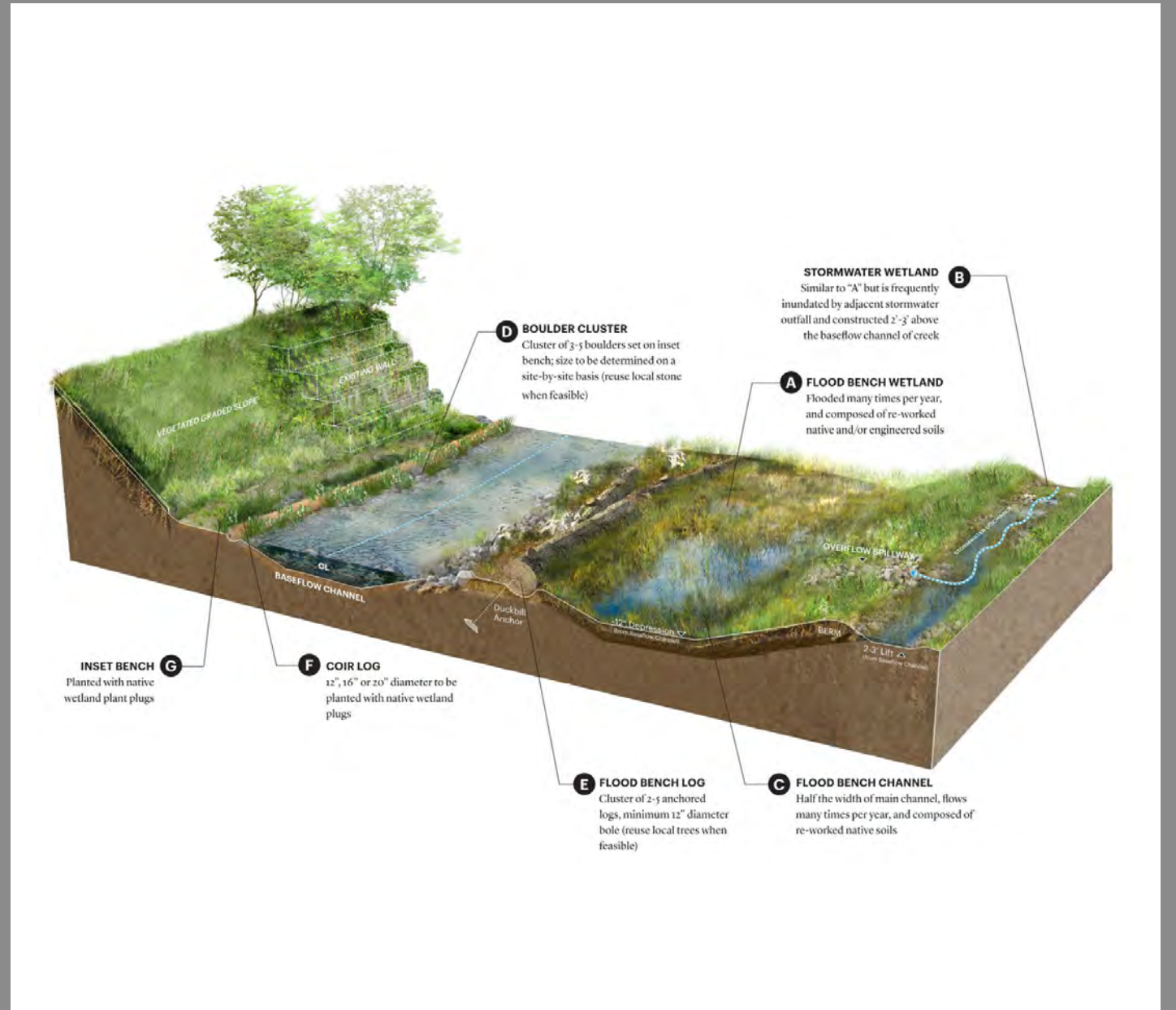
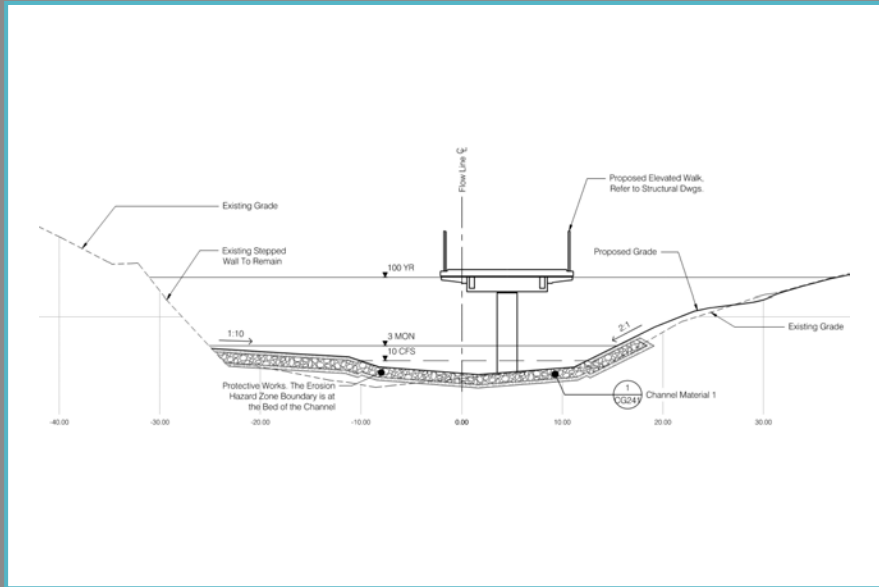
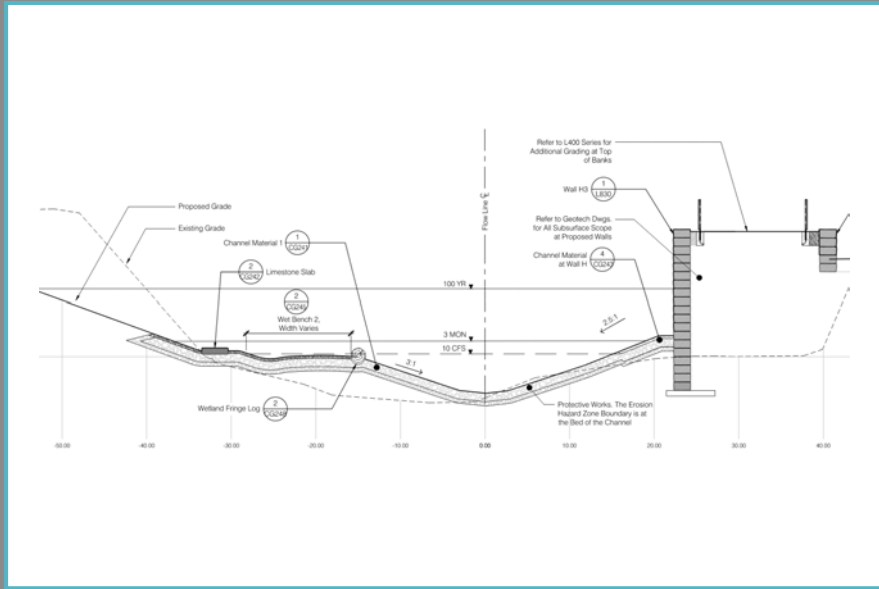
Riparian Benches

Pre-Tunnel Wet Extents



Post-Tunnel Wet Extents







THANK YOU!

LimnoTech

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