Walnut Springs Spillway Repair and Bank Stabilization Study

Project Update

7/2/2024

Project Objectives

1. Preliminary visual risk assessment
2. Data collection
3. Develop feasibility engineering concepts
4. Determine preliminary environmental permitting constraints
5. Estimate preliminary opinion of probable construction costs
6. Recommend bank stabilization alternatives

Project Limits

- Site 1

  Walnut Branch Linear Park (2010)

- Site 2

  US. Army Corps Walnut Branch Ecosystem Restoration Project (2016)






Preliminary Assessment Findings

Site 1 – North of Nolte

- Minor erosion on west bank
- Most erosion damage and bank failure on east bank
- Concrete spillway flanked by bank erosion and crest damaged

CONCLUSION

- <u>At Sites 1, additional wall and embankment failure is likely to occur causing alteration to property</u>






Preliminary Assessment Findings

Site 2 – South of Nolte

- Wall failure limited to upstream end
- Very minor backfill erosion at downstream end
- Remaining wall is visibly intact

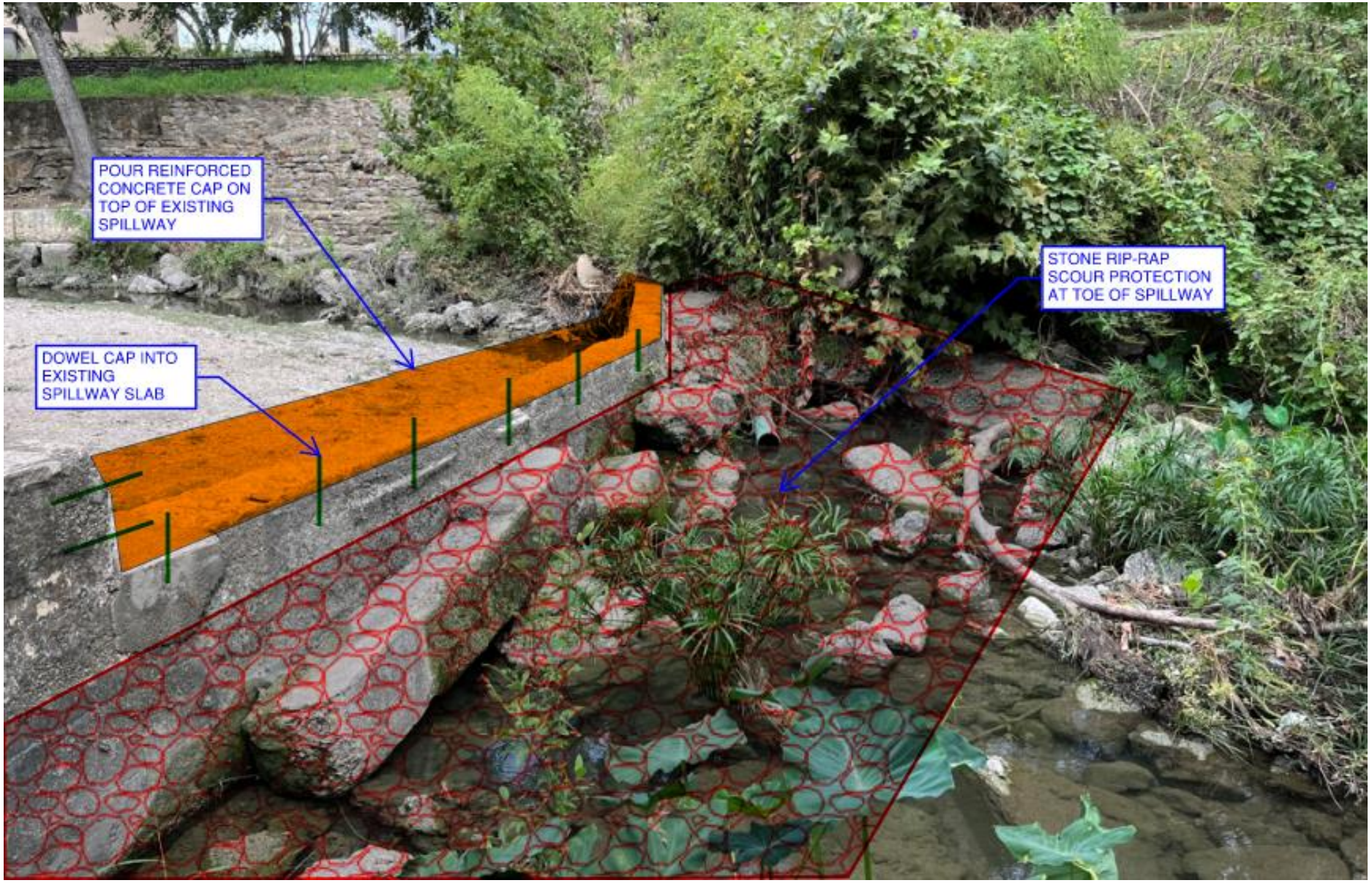
CONCLUSION

- <u>At Sites 2, additional wall and embankment failure may occur causing alteration to property</u>

Concrete Spillway

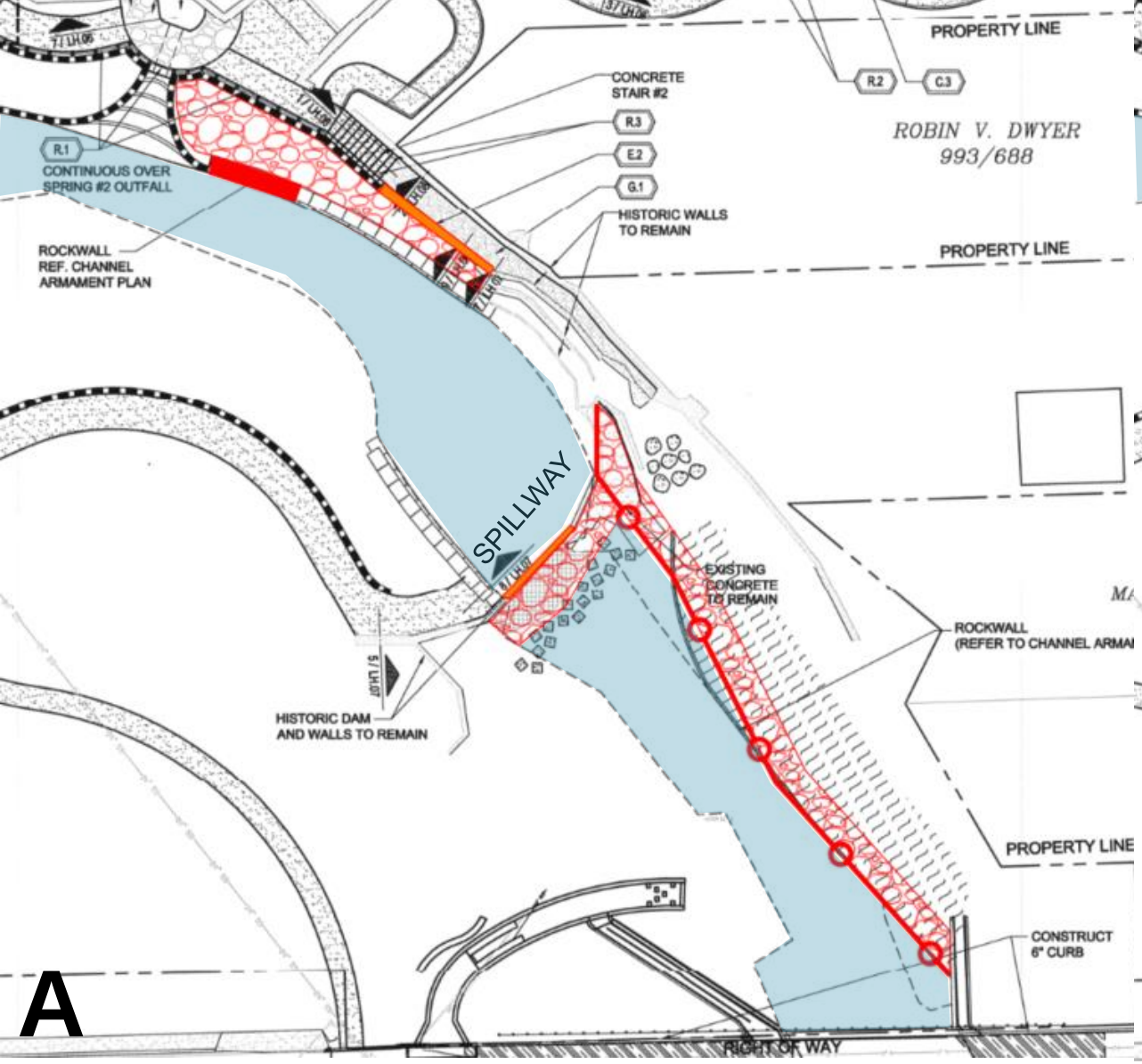
- Neither classified or regulated as a dam by TCEQ
- Low height and very limited impoundment
- Does not provide flood protection
- Collects sediment from upstream sources
- Provides grade control stabilizing bed of channel for upstream segment
- Largest risk for spillway is continued flanking and erosion of unprotected east bank

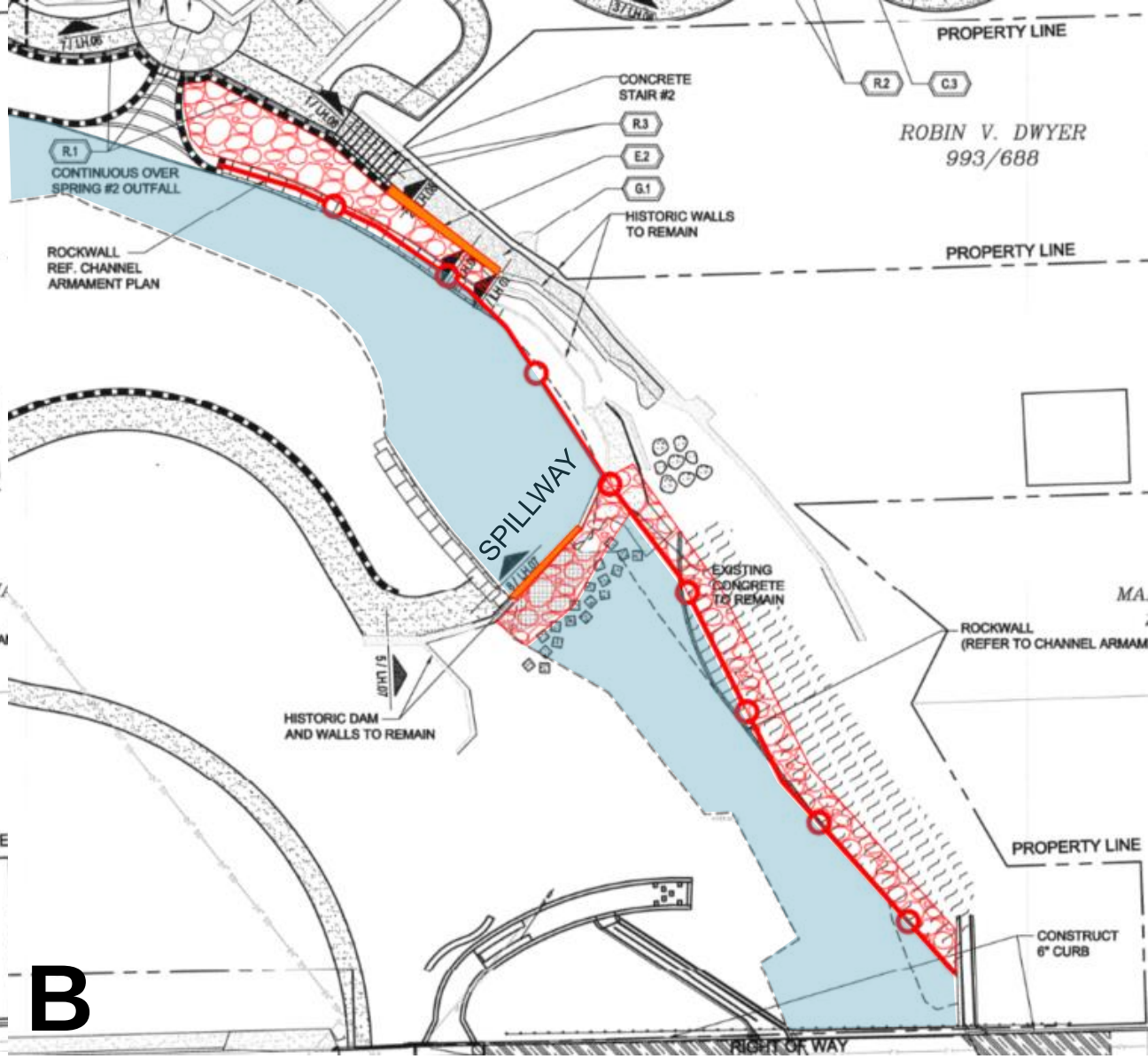
Preliminary Engineering Evaluations - Spillway



Preliminary Engineering Evaluations - Embankment

- Based on available data, Site 1 and 2 east bank walls appear to be founded on low strength clay soils
- Higher strength soils exist at deeper elevations
- It is recommended that toe of walls are tied into higher strength soils to improve stability
  - For Site 1, this may require deep foundations (higher strength soils ~10ft below existing wall)
  - For Site 2, this may require deepening foundation by at least 1 to 3ft





LIMITED REPAIR ONLY – UPSTREAM
ACHIEVE DESIGN STANDARD – DOWNSTREAM

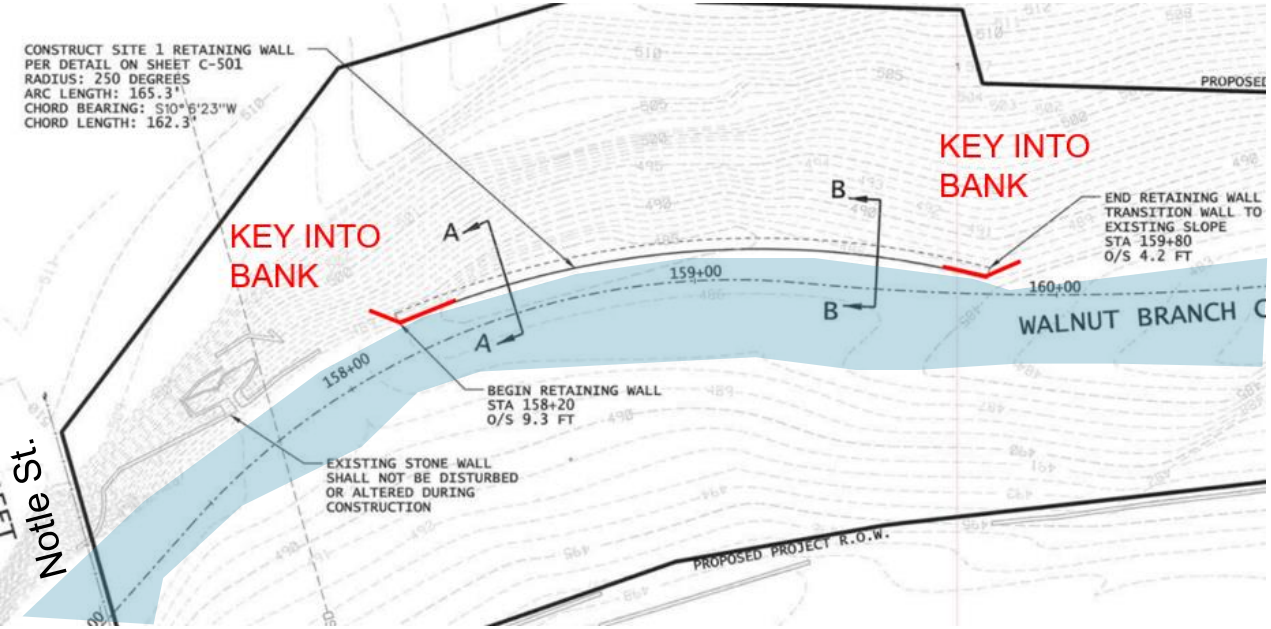
$621,000 to $1,086,000

ACHIEVE DESIGN STANDARD – UPSTREAM
ACHIEVE DESIGN STANDARD – DOWNSTREAM

$839,000 to $1,468,000

Combi Wall System

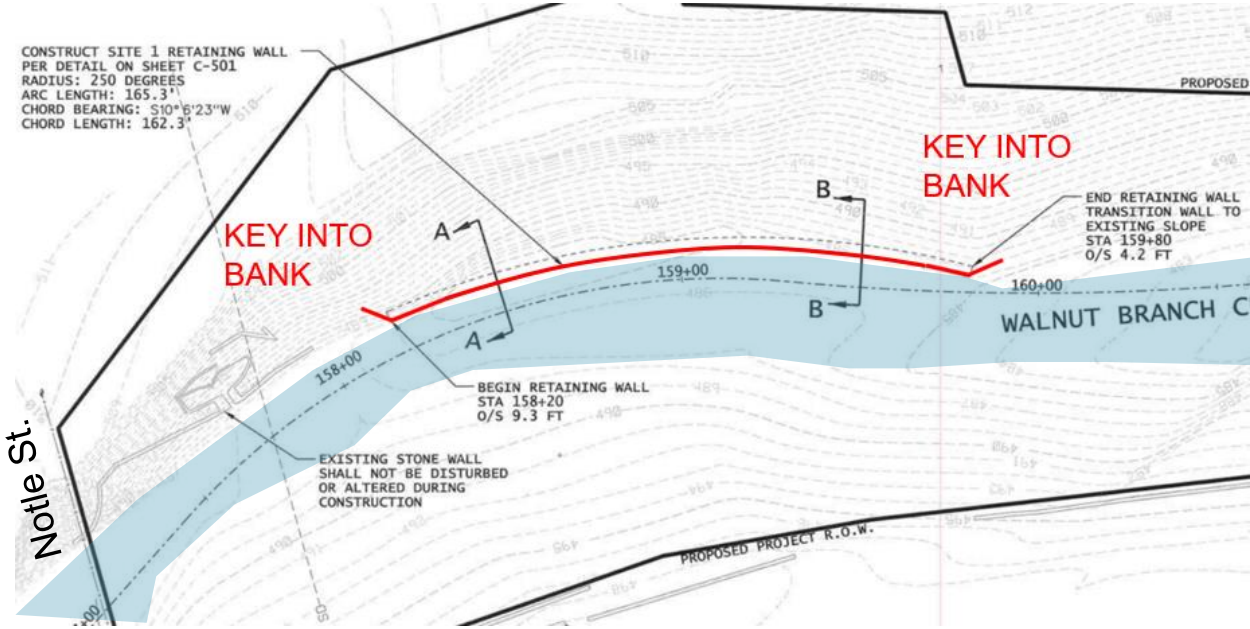
- Deep foundation system required to improve design standard
- Combination of driven steel sheet pile and circular king piles
- Minimum 10ft of embedment into higher strength soil recommended
- Provide concrete cap (similar to Max Starcke Park)
- Protect backfill with stone riprap



C

LIMITED REPAIR AT EACH END

$98,000 to $171,000



D

DEMO AND REPLACE BLOCK WALL
ACHIEVE DESIGN STANDARD

$275,000 to $480,000

Preliminary Opinion of Construction Costs (OPCC)

Alternative	Class 4 OPCC	Low End Range (-20%)	High End Range (+40%)
SITE 1			
A	$776,000	$621,000	$1,086,000
B	$1,049,000	$839,000	$1,468,000
SITE 2			
C	$122,000	$98,000	$171,000
D	$343,000	$275,000	$480,000

- Assumes May 2024 dollars, yearly escalation required for future costs
- Does not include data collection, engineering, or permitting

Preliminary Recommendation Considerations

- **The report/study is based in part on visual assessments and a limited number of observations and data**
- Sedimentation observed behind the spillway is expected to continue; preservation of the reflection pool will continue to require maintenance.
  - The upstream source of sedimentation was not identified with this study
- For Site 1 and 2, limited geotechnical subsurface investigation was performed and soil conditions may vary between or beyond the points explored or observed
- For the Site 1 deep foundation solutions, a specialty contractor should be consulted to verify site access, constructability, and vibratory impacts to existing park features

Other Considerations

- **Preliminary study is limited to the data and information available.**

- Study focused on structural integrity
  - Functionality of the park, use of trail, beautification were secondary to the focus.
  - Limitation for specific construction concerns and access
- A more detailed design consideration for a holistic park improvement may consider:
  - Impacts during construction
  - Landscaping and beautification
  - On-going maintenance concerns

Pre-Project Conditions

Post-Project Conditions

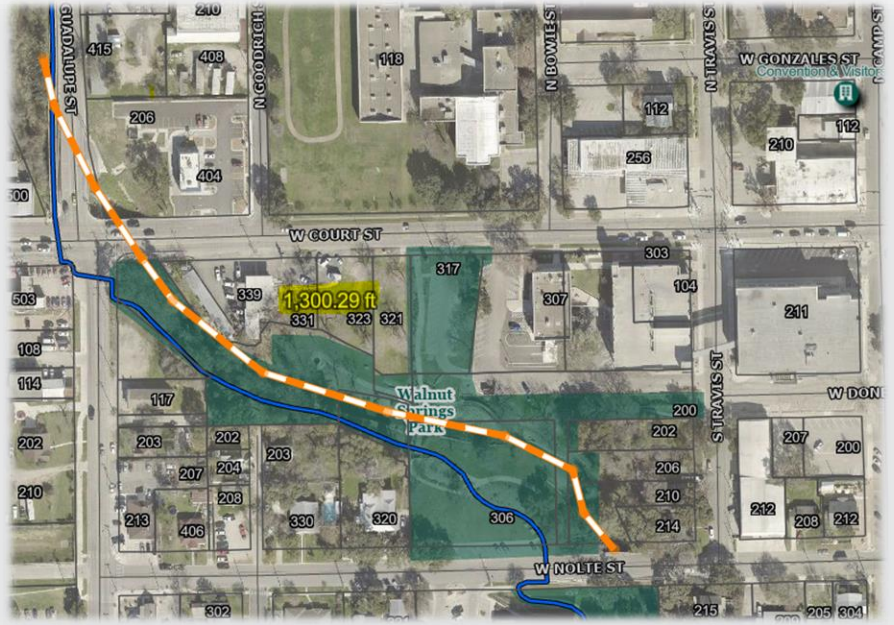
Design Considerations

- Consideration for a more holistic, natural, **full** stream restoration
- Future maintenance considerations
- Impacts during construction

Budget Considerations

- Structural Improvements at Site 1 $1,000,000 - $1,500,000
- Structural Improvements at Site 2 $ 200,000 - $ 500,000

- Natural Stream Bank Restoration $500 - $1,500/LF = $2,000,000
  - From Guadalupe Street to Nolte approx. 1,300 LF
  - Saves future maintenance
  - Stream quality improvements



- **<u>Phasing Options</u>**

Next Steps

- Budget consideration – CIP Plan
- Issue a Request for Qualifications (RFQ)
  - Design options FY 25
- Determine project phasing potential
  - FY 25
- Construction
  - FY 26
  - Potentially phased over multiple years

Questions?