NOTICE OF OPEN MEETING OF THE SAN ANTONIO REGIONAL FLOOD PLANNING GROUP TECHNICAL SUBCOMMITTEE

Region 12

03/09/2023

1:00 PM

TAKE NOTICE that a meeting of the Technical Subcommittee of the San Antonio Regional Flood Planning Group as established by the Texas Water Development Board will be held on Thursday, March 9, 2023, at 1:00 PM, in-person at the San Antonio River Authority, located at 100 E. Guenther St and virtually at https://meet.goto.com/308540909.

Agenda:

1. (1:00 PM) Roll-Call
2. Public Comments – limit 3 minutes per person
3. Review Progress on Task 12
4. Public Comments – limit 3 minutes per person
5. Date and Potential Agenda Items for Next Meeting
6. Adjourn

If you wish to provide written comments prior to or after the meeting, please email your comments to khayes@sariverauthority.org or physically mail them to the attention of Kendall Hayes at San Antonio River Authority, 100 E. Guenther, San Antonio, TX, 78204 and include "Region 12 San Antonio Flood Planning Group Meeting" in the subject line of the email.

Additional information may be obtained from: Kendall Hayes, (210) 302-3641, khayes@sariverauthority.org, San Antonio River Authority, 100 E. Guenther, San Antonio, TX 78204.

2023 San Antonio Regional Flood Plan
Project Summary Sheet

Project Name: Old Frio Road at North Prong Creek LWC Improvements

FMP ID: 12XXXXXX

Project Sponsor: Bexar County

Project Source: 2022 Bexar County Drainage Needs

Cost Information

Category	Cost*
Design	$244,559
Real Estate	$0
Environmental	$10,000
Construction	$1,111,852
Total Cost**	**$1,367,000**

*Costs are using 2020 prices
**Rounded up to the nearest thousand

Benefit Cost Analysis (BCA)

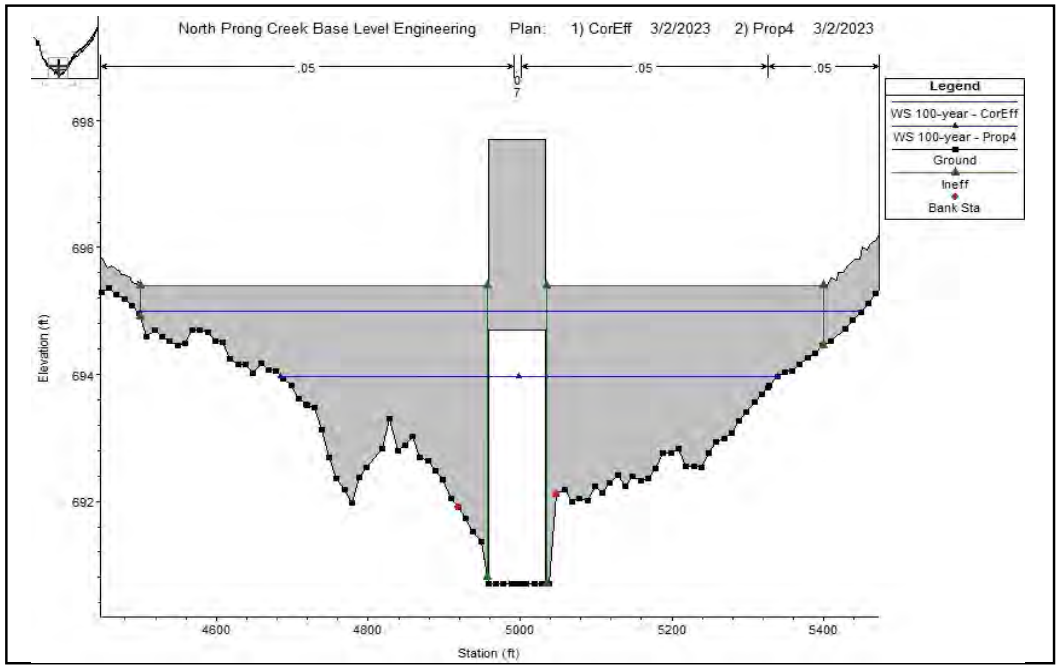
Event Damages	Baseline	Project
10-year storm	$ 299,403	$ 948,149
25-year storm	$ 191,618	$ 1,672,657
100-year storm	$ 191,618	$ 2,083,814
Total Benifits	**$ 273,446**	
BCA	**0.2**	

Impact Analysis

Post-Project Total Removed	Storm Event		
	10-year	25-year	100-year
Residential	-	-	-
Commercial	-	-	-
Critical	-	-	-
Others Note	N/A	N/A	N/A
SVI Score			-

Task 12 Work

Consultant	HDR		
Model	**Cost**	**Impact Analysis**	**BCA**
Yes	Yes	Yes	Yes



Project Description:

This project will eliminate overtopping of Old Frio City Road and provide 100-year conveyance design, removing structures from the existing conditions floodplain extents. Proposed improvements consist of channel regrading, increasing the road elevation and adding a bridge. The proposed road profile will increase 2ft from existing. The existing five 24" RCP will be replaced with a 75ft wide bridge with a 4ft high opening.

LWC Level of Service Existing Vs. Proposed

Condition	Level of Service	100-Yr Depth Over Road (ft)
Existing	< 10-Yr	1.5 ft
Proposed	100-Yr	0

Amended 2023 San Antonio Regional Flood Plan - Project Narrative

Project Name: **Old Frio City Road at North Prong Creek LWC Improvements**
FMP ID: **12XXXXX**
Project Sponsor: **Bexar County**
Date: **3/3/2023**

BACKGROUND INFORMATION:

As part of the amended 2023 San Antonio Regional Flood Plan (the Plan), Task 12 expands on previously identified FMXs from the Plan dated January 10th, 2023. The Old Frio City Road at North Prong Creek LWC Improvements, FME ID 121000163, from the 2022 Bexar County Line LWC Engineering Study was further developed during Task 12. The sponsor for this project is Bexar County.

The problem area is located at the intersection of Old Frio City Road and North Prong Creek, just after Unnamed Trib to North Prong Atascosa River confluences with Unnamed Trib 5 in North Prong Creek. Currently there is a low water crossing (LWC) at Old Frio City Road is composed of five 24" RCP. The LWC is undersized and results in it being overtopped during low storm events, 2-, 10-, 25-, and 100-Yr. When the structure overtops it cuts off a main connection route for the nearby neighborhood.

The Task 12 work that was completed for the Old Frio City Road at North Prong Creek LWC Improvements project was a drainage analysis, cost estimate, impact analysis, and a Benefit Cost Analysis (BCA).

PROPOSED PROJECT SCOPE

Refer to the Amended Flood Plan Technical Memo for documented assumptions and methodologies on drainage analysis to determine a feasible solution.

This project will eliminate overtopping of Old Frio City Road and provide 100-year conveyance design, removing structures from the existing conditions floodplain extents. Proposed improvements consist of channel regrading, increasing the road elevation and adding a bridge. The proposed road profile will increase 2ft from existing. The existing five 24" RCP will be replaced with a 75ft wide bridge with a 4ft high opening.

PROPOSED PROJECT SCOPING COST

Refer to the Amended Flood Plan Technical Memo for documented assumptions and methodologies on project costs.

The estimated the project cost for the Old Frio City Road at North Prong Creek LWC Improvements is $1,367,000, this was calculated using 2020 prices. The cost includes all the required applicable TWDB FMP ,costs including basic engineering fees, special services such as surveying, environmental, geotech, etc., other costs such as land/easement acquisition and administration, fiscal services, and contingency. See attached Cost Summary for cost breakdown. If there are underground utilities that require adjustments, this may increase depending upon any additional adjustments required. At this time, funding for the project has not been identified or approved.

PROPOSED PROJECT BENEFITS

This project will eliminate overtopping at Old Frio City Road and improve the level of service by providing a 100-year conveyance design.

Refer to the Amended Flood Plan Technical Memo for documented assumptions and methodologies on benefit cost analysis.

Amended 2023 San Antonio Regional Flood Plan - Project Narrative

Project Name: **Old Frio City Road at North Prong Creek LWC Improvements**
FMP ID: **12XXXXX**
Project Sponsor: **Bexar County**
Date: **3/3/2023**

The 10-, 25-, 100-year benefits that were evaluated for this project include; LWC improvements. The resulting benefit cost analysis was 0.1. The Table 1 below summarizes the components calculated in the TWDB BCA Tool.

Table 1: TWDB BCA Toolkit

Input Into BCA Toolkit

Project Useful Life	**30**

Event Damages	Baseline	Project
,10 - year storm	**$299,403**	**$0**
25 - year storm	**$191,618**	**$0**
100 - year storm	**$191,618**	**$0**

Total Benefits from BCA Toolkit	$273,446
Other Benefits (Not Recreation)	$0
Recreation Benefits	-
Total Costs	$1,674,634
Net Benefits	-$1,401,188
Net Benefits with Recreation	-$1,401,188
Final BCR	**0.2**
Final BCR with Recreation	**0.2**

IMPACT ANALYSIS

Refer to the Amended Flood Plan Technical Memo for documented assumptions and methodologies on impact analysis.

Existing and proposed conditions were analyzed for impact, the impacts that were evaluated are the water surface elevations (WSE) and velocities +/-2000ft of this project area. The WSE and velocities were compared in the HEC-RAS v5.0.5 model, see attached digital submittal for Table 1: HEC-RAS Existing vs Proposed Results Comparison Summary - the proposed conditions showed reduced levels with both components. From

the RAS results, the total inundated boundary was reduced in proposed conditions, see Exhibits 1-3 for existing, proposed, and an US view of the comparison of WSE. Flooded depths over the road were evaluated in the BCA, reduced impacts show lower flooded depths in proposed conditions. The following table summarizes the level of service pre and post project;

Table 2: Level of Service Existing Vs. Proposed

Condition	Level of Service	100-Yr Depth Over Road (ft)
Existing	< 10-Yr	1.5 ft
Proposed	100-Yr	0

(See full list of LWC impacts in the attached BCA results as well as Table 2: BCA Flooded Depth Structure Comparison)

PROJECT RISKS

ROW/Real Estate Acquisition:
No, land acquisition is not required for this project.

Utilities Coordination:
No, currently there are no evident utility conflicts. During the design phase, utility conflicts should be further evaluated.

Permitting/Environmental:
Yes, a USACE National permit and a FEMA permit will be required.

Stakeholder coordination:
Due to the road improvement and local surrounding community there will be various stakeholders involved in the process.

MITIGATION OF RISKS

Utility Coordination:
If utility conflicts are found, the utility coordinator will need to closely work with the affected utility companies to ensure timely completion of the proposed project. The project manager and contractor should minimize, as much as feasible, the amount of disruption of services and travel.

Permitting/Environmental:
Coordination and permitting process should be started early on with USACE and FEMA to avoid schedule delays.

Stakeholder Coordination:

Old Frio City Road is the main access for several residential properties. Road reconstruction will cause traffic disruptions and inconveniences for locals due to limited alternative access points. Public meetings and flyers will help communicate construction impacts to affected businesses of any service interruption or inconvenience. The businesses near the project limits should be notified several weeks before the construction start date. Construction phasing and traffic control will be an important design component for this project.

NATURE BASED SOLUTION CONSIDERATION

The proposed project employs a bridge instead of a low water crossing. Using a bridge benefits the natural ecosystem by allowing more sediment transport, passage of aquatic organisms and does not impound water. The larger opening also allows for natural substrate to cover the culvert bottom to allow for aquatic organism passage.

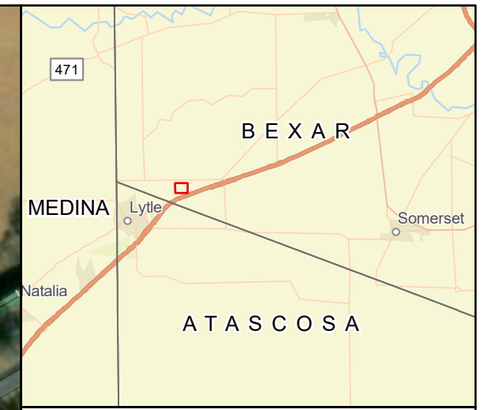
INTERRELATED PROJECTS

There are no interrelated projects.

2023 SAN ANTONIO REGIONAL FLOOD PLAN
PROJECT COST SUMMARY

Project Name:	**Old Frio City Road at North Prong Creek LWC Improvements**
Project Sponsor:	**Bexar County**
Firm Developing:	**HDR**
Date Developed:	**3/3/2023**
Unit Prices Used:	**11/1/2020**

CONSTRUCTION COSTS	
- STREET COST	**$784,866.73**
- DRAINAGE COST	**$11,078.69**
- LANDSCAPING (3%)	**$23,878.36**
- BOND AND INSURANCE (3%)	**$24,594.71**
- BARICADES (3%)	**$25,332.55**
- MOBILIZATION & PREPARATION OF R.O.W. (11% + 4%)	**$122,973.57**
TOTAL CONSTRUCTION COST ESTIMATE	**$992,724.61**
ENGINEER FEE (Fee Table plus 5%)	**$178,690.43**
ENGINEER CONTINGENCY (10%)	**$17,869.04**
CONSTRUCTION CONTINGENCY (10%)	**$99,272.46**
PERMIT REQUIREMENT COSTS	**$48,000.00**
ENVIRONMENTAL	**$10,000.00**
MATERIAL TESTING (2% Construction Cost - <$3M, 1.5% - >$3M)	**$19,854.49**
TOTAL PROJECT COST ESTIMATE	**$1,366,411.04**
DESIGN PHASE	$254,559.47
CONSTRUCTION PHASE	$1,111,851.57



Legend

- Streams
- Building Footprints

100-Year Flood Depth (ft.)

- < 0.5
- 0.5 - 1
- 1 - 2
- > 2

2023 SAN ANTONIO REGIONAL FLOOD PLAN

BEXAR COUNTY, TX
OLD FRIO CITY ROAD
NORTH PRONG CREEK
EXISTING CONDITIONS

N

0 70 140 280
FEET

REGION 12 SAN ANTONIO REGIONAL FLOOD PLANNING GROUP

HDR

MARCH 2023

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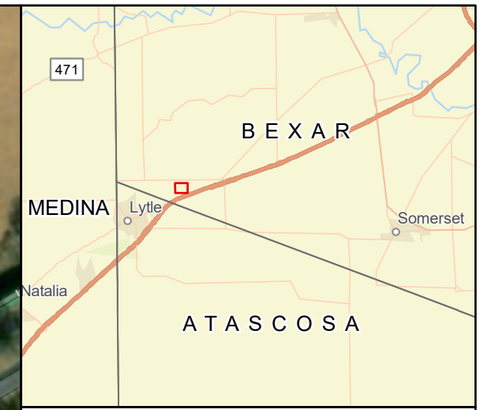


Legend

- Streams
- Building Footprints

100-Year Flood Depth (ft.)

- < 0.5
- 0.5 - 1
- 1 - 2
- > 2

2023 SAN ANTONIO REGIONAL FLOOD PLAN

BEXAR COUNTY, TX
OLD FRIO CITY ROAD
NORTH PRONG CREEK
PROPOSED CONDITIONS

N

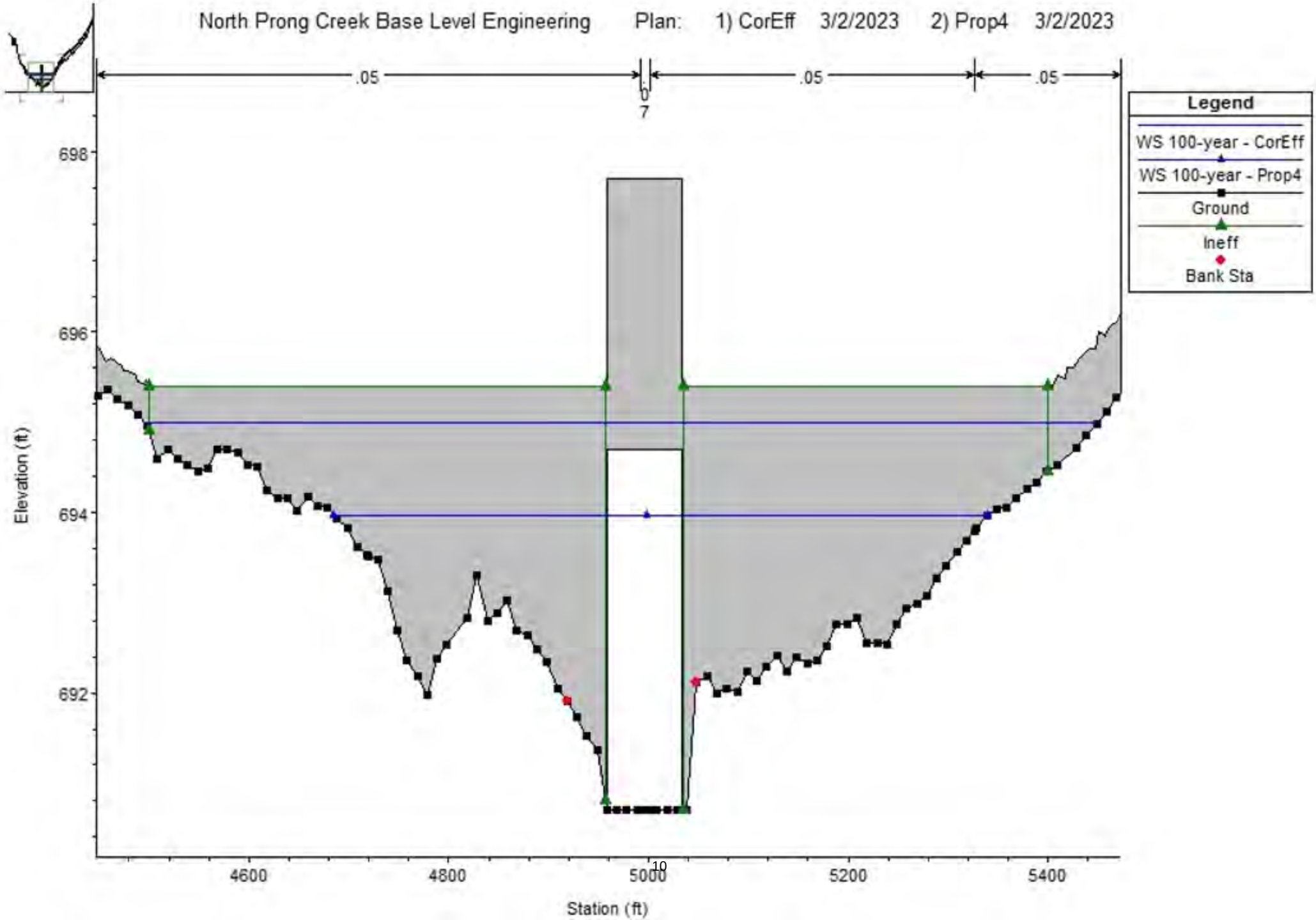
0 70 140 280
FEET

REGION 12 SAN ANTONIO REGIONAL FLOOD PLANNING GROUP

HDR

MARCH 2023

PATH: \\CMAPFS\GISAPPS\3\PROJECTS\PROJECTS\1\WUB\TWDB_RFP\GRFP2023_REGION12_ELECTRONICFILES_HDR_WORKING2\PROJECT\ENGINEERING_DESIGN\GIS\MAP\DOC\EXHIBITS\BEXAR\BEXARLWCS\BEXARLWCS.APRX


North Prong Creek Base Level Engineering
Plan: 1) CorEff 3/2/2023 2) Prop4 3/2/2023
.05
.05
.05
0
7
Legend
WS 100-year - CorEff
WS 100-year - Prop4
Ground
Ineff
Bank Sta
698
696
694
692
Elevation (ft)
4600
4800
5000
5200
5400
Station (ft)

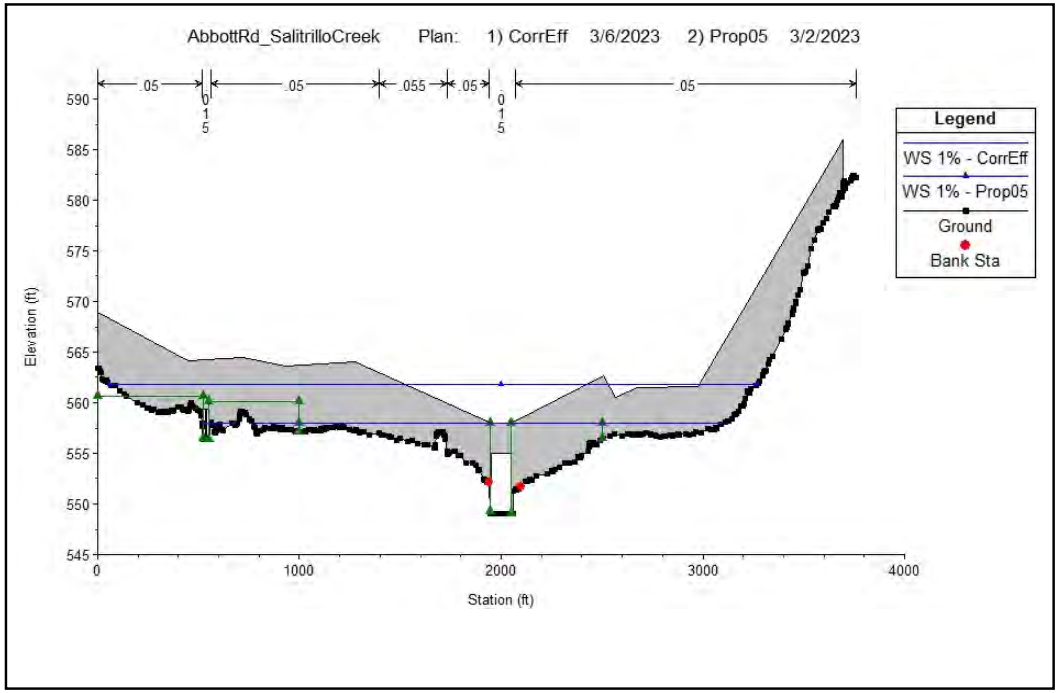
2023 San Antonio Regional Flood Plan
Project Summary Sheet

Project Name: Abbot Road at Trib A and Salitrillo Creek (CB-23) & (CB-24) LWC Improvements

FMP ID: 12XXXXXX

Project Sponsor: Bexar County

Project Source: 2022 Bexar County Drainage Needs



Cost Information

Category	Cost*
Design	$580,096
Real Estate	$0
Environmental	$10,000
Construction	$3,370,952
Total Cost**	**$3,962,000**

*Costs are using 2020 prices
**Rounded up to the nearest thousand

Benefit Cost Analysis (BCA)

Event Damages	Baseline	Project
10-year storm	$ 299,403	$ 948,149
25-year storm	$ 191,618	$ 1,672,657
100-year storm	$ 191,618	$ 2,083,814
Total Benifits	**$ 273,446**	
BCA	**0.1**	

Impact Analysis

Post-Project Total Removed	Storm Event		
	10-year	25-year	100-year
Residential	-	-	-
Commercial	-	-	-
Critical	-	-	-
Others Note	N/A	N/A	N/A
SVI Score			-

Task 12 Work

Consultant	HDR		
Model	**Cost**	**Impact Analysis**	**BCA**
Yes	Yes	Yes	Yes

Project Description:

This project will eliminate overtopping of Abbott Road and provide 100-year conveyance design, removing structures from the existing conditions floodplain extents. Proposed improvements consist of channel regrading, increasing the road elevation, upgrading culverts, and adding a bridge. The proposed road profile will increase 2.5ft from existing. The existing six 24" RCP will be replaced with three 8ft-3ft culverts and the four 48" RCP will be replaced with a 100ft wide bridge with a 6ft high opening.

LWC Level of Service Existing Vs. Proposed

Condition	Level of Service	100-Yr Depth Over Road (ft)
Existing	< 10-Yr	4 ft
Proposed	100-Yr	0

Amended 2023 San Antonio Regional Flood Plan - Project Narrative

Project Name: **Abbott Road at Trib A and Salitrillo Creek (CB-23) & (CB-24) LWC Improvements**
FMP ID: **12XXXXX**
Project Sponsor: **Bexar County**
Date: **3/3/2023**

BACKGROUND INFORMATION:

As part of the amended 2023 San Antonio Regional Flood Plan (the Plan), Task 12 expands on previously identified FMXs from the Plan dated January 10th, 2023. The Abbott Road at Trib A and Salitrillo Creek (CB-23) & (CB-24) LWC Improvements, FME ID 121000159, from the 2022 Bexar County LWC Engineering Study was further developed during Task 12. The sponsor for this project is Bexar County.

The problem area is located at the intersection of Abbott Road and both creeks Trib A to Salitrillo Creek and Salitrillo Creek. Currently the two low water crossings (LWC) at Abbott Road are composed of six 24" RCP (over Trib A) and four 48" RCP. The LWCs are undersized and results in them being overtopped during low storm events, 10-, 25-, 50-, and 100-Yr. When the structure overtops it cuts off a main connection route for the nearby neighborhood.

The Task 12 work that was completed for the Abbott Road at Trib A and Salitrillo Creek (CB-23) & (CB-24) LWC Improvements project was a drainage analysis, cost estimate, impact analysis, and a Benefit Cost Analysis (BCA).

PROPOSED PROJECT SCOPE

Refer to the Amended Flood Plan Technical Memo for documented assumptions and methodologies on drainage analysis to determine a feasible solution.

This project will eliminate overtopping of Abbott Road and provide 100-year conveyance design, removing structures from the existing conditions floodplain extents. Proposed improvements consist of channel regrading, increasing the road elevation, upgrading culverts, and adding a bridge. The proposed road profile will increase 2.5ft from existing. The existing six 24" RCP will be replaced with three 8ft-3ft culverts and the four 48" RCP will be replaced with a 100ft wide bridge with a 6ft high opening.

PROPOSED PROJECT SCOPING COST

Refer to the Amended Flood Plan Technical Memo for documented assumptions and methodologies on project costs.

The estimated the project cost for the Abbot Road at Trib A and Salitrillo Creek (CB-23) & (CB-24) LWC Improvements is $3,419,000, this was calculated using 2020 prices. The cost includes all the required applicable TWDB FMP costs including basic engineering fees, special services such as surveying, environmental, geotech, etc., other costs such as land/easement acquisition and administration, fiscal services, and contingency. See attached Cost Summary for cost breakdown. If there are underground utilities that require adjustments, this may increase the cost depending upon any additional adjustments required. At this time, funding for the project has not been identified or approved.

PROPOSED PROJECT BENEFITS

This project will eliminate overtopping at Abbott Road and improve the level of service by providing a 100-year conveyance design.

Amended 2023 San Antonio Regional Flood Plan - Project Narrative

Project Name: **Abbott Road at Trib A and Salitrillo Creek (CB-23) & (CB-24) LWC Improvements**
FMP ID: **12XXXXX**
Project Sponsor: **Bexar County**
Date: **3/3/2023**

Refer to the Amended Flood Plan Technical Memo for documented assumptions and methodologies on benefit cost analysis.

The 10-, 25-, 100-year benefits that were evaluated for this project include; LWC improvements. The resulting benefit cost analysis was 0.1. The Table 1 below summarizes the components calculated in the TWDB BCA Tool.

Table 1: TWDB BCA Toolkit

Input Into BCA Toolkit

Project Useful Life **30**

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Event Damages	Baseline	Project
10 - year storm	**$299,403**	**$0**
25 - year storm	**$191,618**	**$0**
100 - year storm	**$191,618**	**$0**

Total Benefits from BCA Toolkit	$273,446
Other Benefits (Not Recreation)	$0
Recreation Benefits	-
Total Costs	$4,853,620
Net Benefits	-$4,580,174
Net Benefits with Recreation	-$4,580,174
Final BCR	**0.1**
Final BCR with Recreation	**0.1**

IMPACT ANALYSIS

Refer to the Amended Flood Plan Technical Memo for documented assumptions and methodologies on impact analysis.

Existing and proposed conditions were analyzed for impact, the impacts that were evaluated are the water surface elevations (WSE) and velocities +/-2000ft of this project area. The WSE and velocities were compared in the HEC-RAS v6.3.1 model, see attached digital submittal for Table 1: HEC-RAS Existing vs Proposed

Results Comparison Summary - the proposed conditions showed reduced levels with both components. From the RAS results, the total inundated boundary was reduced in proposed conditions, see Exhibits 1-3 for existing, proposed, and an US view of the comparison of WSE. Flooded depths over the road were evaluated in the BCA, reduced impacts show lower flooded depths in proposed conditions. The following table summarizes the level of service pre and post project;

Table 2: Level of Service Existing Vs. Proposed

Condition	Level of Service	100-Yr Depth Over Road (ft)
Existing	< 10-Yr	4 ft
Proposed	100-Yr	0

(See full list of LWC impacts in the attached BCA results as well as Table 2: BCA Flooded Depth Structure Comparison)

PROJECT RISKS

ROW/Real Estate Acquisition:
No, land acquisition is not required for this project.

Utilities Coordination:
No, currently there are no evident utility conflicts. During the design phase, utility conflicts should be further evaluated.

Permitting/Environmental:
Yes, a USACE National Permit and FEMA permitting will be required.

Stakeholder coordination:
Due to the road improvement and local surrounding community there will be various stakeholders involved in the process.

MITIGATION OF RISKS

Utility Coordination:
If utility conflicts are found, the utility coordinator will need to closely work with the affected utility companies to ensure timely completion of the proposed project. The project manager and contractor should minimize, as much as feasible, the amount of disruption of services and travel.

Permitting/Environmental:
Coordination and permitting process should be started early on with USACE and TxDOT acquisitions to avoid schedule delays.

Amended 2023 San Antonio Regional Flood Plan - Project Narrative

Project Name: **Abbott Road at Trib A and Salitrillo Creek (CB-23) & (CB-24) LWC Improvements**
FMP ID: **12XXXXX**
Project Sponsor: **Bexar County**
Date: **3/3/2023**

Stakeholder Coordination:

Abbott Road is the main access for several residential properties. Road reconstruction will cause traffic disruptions and inconveniences for locals due to limited alternative access points. Public meetings and flyers will help communicate construction impacts to affected businesses of any service interruption or inconvenience. The businesses near the project limits should be notified several weeks before the construction start date. Construction phasing and traffic control will be an important design component for this project.

NATURE BASED SOLUTION CONSIDERATION

The proposed project employs a bridge instead of a low water crossing. Using a bridge benefits the natural ecosystem by allowing more sediment transport, passage of aquatic organisms and does not impound water. The larger opening also allows for natural substrate to cover the culvert bottom to allow for aquatic organism passage.

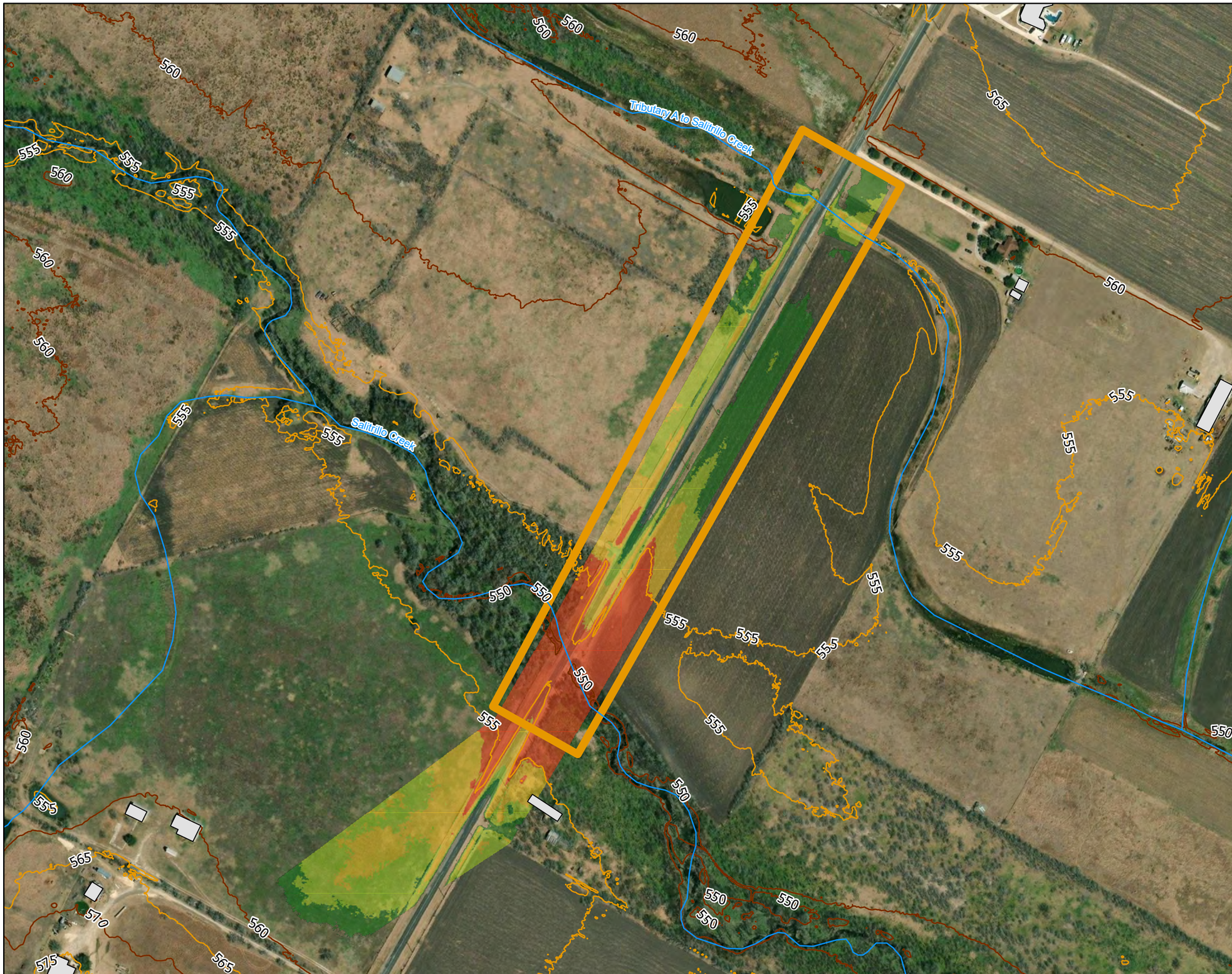
INTERRELATED PROJECTS

There are no interrelated projects.

2023 SAN ANTONIO REGIONAL FLOOD PLAN
PROJECT COST SUMMARY

Project Name:	**Abbot Road at Trib A and Salitrillo Creek (CB-23) & (CB-24) LWC Improvements**
Project Sponsor:	**Bexar County**
Firm Developing:	**HDR**
Date Developed:	**3/3/2023**
Unit Prices Used:	**11/1/2020**

CONSTRUCTION COSTS	
- STREET COST	**$2,402,883.75**
- DRAINAGE COST	**$21,113.89**
- LANDSCAPING (3%)	**$72,719.93**
- BOND AND INSURANCE (3%)	**$74,901.53**
- BARICADES (3%)	**$77,148.57**
- MOBILIZATION & PREPARATION OF R.O.W. (11% + 4%)	**$374,507.63**
TOTAL CONSTRUCTION COST ESTIMATE	**$3,023,275.30**
ENGINEER FEE (Fee Table plus 5%)	**$483,724.05**
ENGINEER CONTINGENCY (10%)	**$48,372.40**
CONSTRUCTION CONTINGENCY (10%)	**$302,327.53**
PERMIT REQUIREMENT COSTS	**$48,000.00**
ENVIRONMENTAL	**$10,000.00**
MATERIAL TESTING (2% Construction Cost - <$3M, 1.5% - >$3M)	**$45,349.13**
TOTAL PROJECT COST ESTIMATE	**$3,961,048.41**
DESIGN PHASE	$590,096.45
CONSTRUCTION PHASE	$3,370,951.96



Legend

- Streams
- Contours (5ft.)
- Contours (10ft.)
- Abbott Road Tributary A Project Area
- Building Footprints

100-Year Flood Depth (ft.)

- < 0.5
- 0.5 - 1
- 1 - 2
- > 2

2023 SAN ANTONIO REGIONAL FLOOD PLAN

BEXAR COUNTY, TX
ABBOTT ROAD AT TRIB A AND
SALITRILLO CREEK (CB-23) & (CB-24)
EXISTING CONDITIONS

N

0 125 250 500
FEET

REGION 12 SAN ANTONIO REGIONAL FLOOD PLANNING GROUP

HDR

MARCH 2023

Legend

- Streams
- Contours (5ft.)
- Contours (10ft.)
- Abbott Road Tributary A Project Area
- Building Footprints

100-Year Flood Depth (ft.)

- < 0.5
- 0.5 - 1
- 1 - 2
- > 2

2023 SAN ANTONIO REGIONAL FLOOD PLAN

BEXAR COUNTY, TX
ABBOTT ROAD AT TRIB A AND
SALITRILLO CREEK (CB-23) & (CB-24)
PROPOSED CONDITIONS

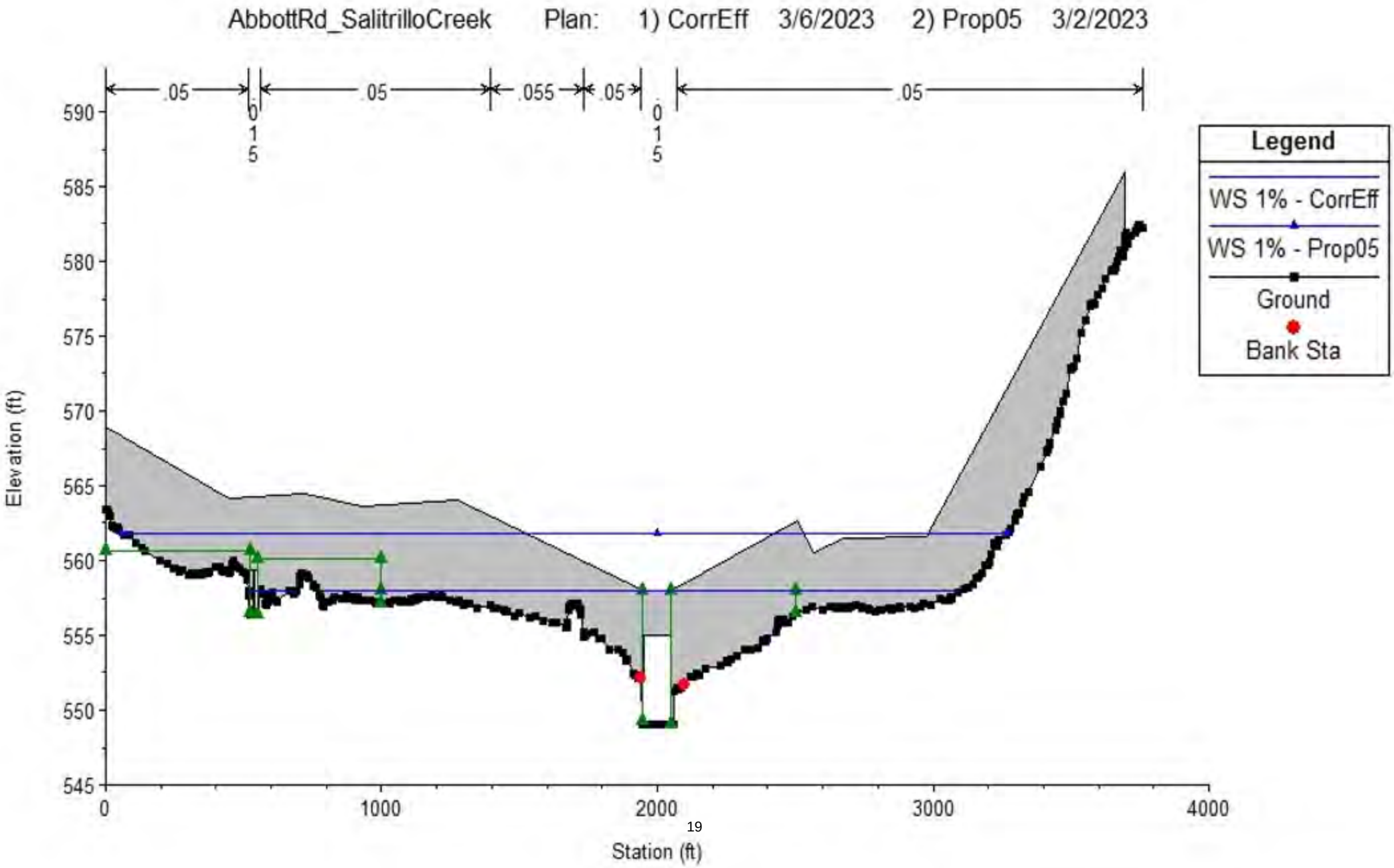
N

0 125 250 500
FEET

REGION 12 SAN ANTONIO REGIONAL FLOOD PLANNING GROUP

HDR

MARCH 2023


AbbottRd_SalitrilloCreek Plan: 1) CorrEff 3/6/2023 2) Prop05 3/2/2023
.05
.015
.05
.055
.05
.015
.05
Legend
WS 1% - CorrEff
WS 1% - Prop05
Ground
Bank Sta
Elevation (ft)
590
585
580
575
570
565
560
555
550
545
0
1000
2000
3000
4000
Station (ft)

2023 San Antonio Regional Flood Plan
Project Summary Sheet

Project Name: Abbott Road at Unnamed Tributary 1 to Salitrillo Creek (CB-25) LWC Improvements

FMP ID: 12XXXXXX

Project Sponsor: Bexar County

Project Source: 2022 Bexar County Drainage Needs

Cost Information

Category	Cost*
Design	$275,774
Real Estate	$0
Environmental	$10,000
Construction	$1,364,210
Total Cost**	**$1,650,000**

*Costs are using 2020 prices
**Rounded up to the nearest thousand

Benefit Cost Analysis (BCA)

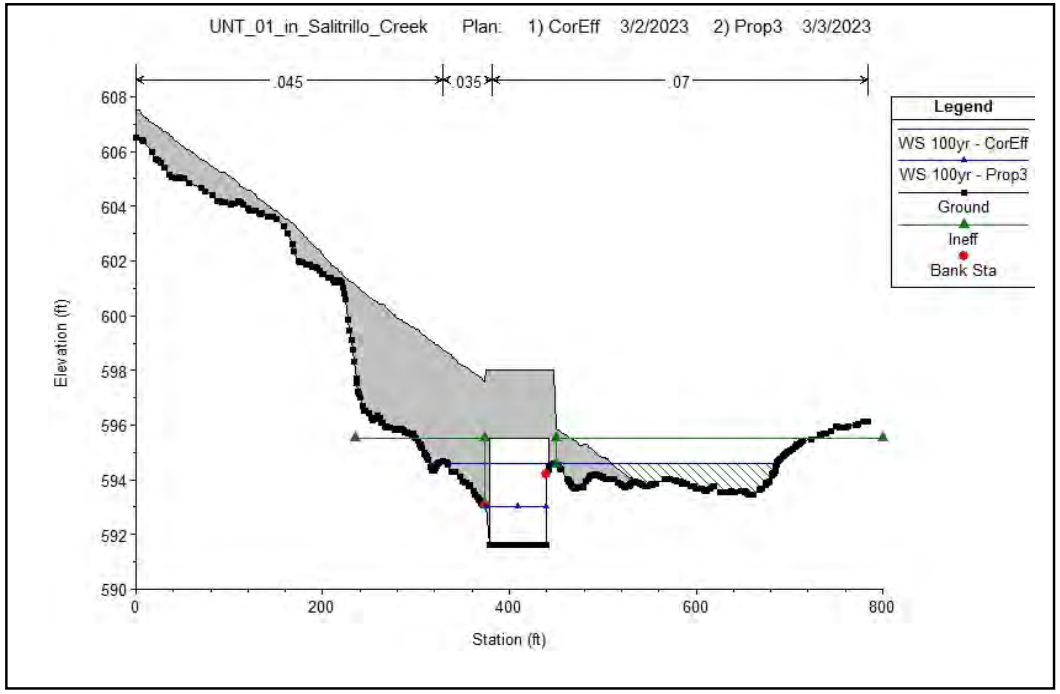
Event Damages	Baseline	Project
10-year storm	$ 299,403	$ -
25-year storm	$ 191,618	$ -
100-year storm	$ 191,618	$ -
Total Benifits	**$ 273,446**	
BCA	**0.1**	

Impact Analysis

Post-Project Total Removed	Storm Event		
	10-year	25-year	100-year
Residential	-	-	-
Commercial	-	-	-
Critical	-	-	-
Others Note	N/A	N/A	N/A
SVI Score			-

Task 12 Work

Consultant	HDR		
Model	**Cost**	**Impact Analysis**	**BCA**
Yes	Yes	Yes	Yes



Project Description:

This project will eliminate overtopping of Abbott Road and provide 100-year conveyance design, removing structures from the existing conditions floodplain extents. Proposed improvements consist of channel regrading, increasing the road elevation and adding a bridge. The proposed road profile will increase 2ft from existing. The existing two 36" RCP will be replaced with a 65ft wide bridge with a 4ft high opening.

LWC Level of Service Existing Vs. Proposed

Condition	Level of Service	100-Yr Depth Over Road (ft)
Existing	< 10-Yr	0.5 ft
Proposed	100-Yr	0

Amended 2023 San Antonio Regional Flood Plan - Project Narrative

Project Name: **Abbott Road at Unnamed Tributary 1 to Salitrillo Creek (CB-25) LWC Improvements**
FMP ID: **12XXXXX**
Project Sponsor: **Bexar County**
Date: **3/3/2023**

BACKGROUND INFORMATION:

As part of the amended 2023 San Antonio Regional Flood Plan (the Plan), Task 12 expands on previously identified FMXs from the Plan dated January 10th, 2023. The Abbott Road at Unnamed Tributary 1 to Salitrillo Creek (CB-25) LWC Improvements, FME ID 121000163, from the 2022 Bexar County Line LWC Engineering Study was further developed during Task 12. The sponsor for this project is Bexar County.

The problem area is located at the intersection of Abbott Road and Unnamed Trib 01 to Salitrillo Creek. Currently there is a low water crossing (LWC) at Abbott Road is composed of two 36" RCP. The LWC is undersized and results in it being overtopped during low storm events, 10-, 25-, 50-, and 100-Yr. When the structure overtops it cuts off a main connection route for the nearby neighborhood.

The Task 12 work that was completed for the Abbott Road and Unnamed Trib 01 to Salitrillo Creek LWC Improvements project was a drainage analysis, cost estimate, impact analysis, and a Benefit Cost Analysis (BCA).

PROPOSED PROJECT SCOPE

Refer to the Amended Flood Plan Technical Memo for documented assumptions and methodologies on drainage analysis to determine a feasible solution.

This project will eliminate overtopping of Abbott Road and provide 100-year conveyance design, removing structures from the existing conditions floodplain extents. Proposed improvements consist of channel regrading, increasing the road elevation and adding a bridge. The proposed road profile will increase 2ft from existing. The existing two 36" RCP will be replaced with a 65ft wide bridge with a 4ft high opening.

PROPOSED PROJECT SCOPING COST

Refer to the Amended Flood Plan Technical Memo for documented assumptions and methodologies on project costs.

The estimated the project cost for the Abbott Road and Unnamed Trib 01 to Salitrillo Creek LWC Improvements is $1,650,000, this was calculated using 2020 prices. The cost includes all the required applicable TWDB FMP costs including basic engineering fees, special services such as surveying, environmental, geotech, etc., other costs such as land/easement acquisition and administration, fiscal services, and contingency. See attached Cost Summary for cost breakdown. If there are underground utilities that require adjustments, this may increase the cost depending upon any additional adjustments required. At this time, funding for the project has not been identified or approved.

PROPOSED PROJECT BENEFITS

This project will eliminate overtopping at Abbott Road and improve the level of service by providing a 100-year conveyance design.

Amended 2023 San Antonio Regional Flood Plan - Project Narrative

Project Name: **Abbott Road at Unnamed Tributary 1 to Salitrillo Creek (CB-25) LWC Improvements**
FMP ID: **12XXXXX**
Project Sponsor: **Bexar County**
Date: **3/3/2023**

Refer to the Amended Flood Plan Technical Memo for documented assumptions and methodologies on benefit cost analysis.

The 10-, 25-, 100-year benefits that were evaluated for this project include; LWC improvements. The resulting benefit cost analysis was 0.1. The Table 1 below summarizes the components calculated in the TWDB BCA Tool.

Table 1: TWDB BCA Toolkit

Input Into BCA Toolkit

Project Useful Life	**30**

Event Damages	Baseline	Project
10 - year storm	**$299,403**	**$0**
25 - year storm	**$191,618**	**$0**
100 - year storm	**$191,618**	**$0**

Total Benefits from BCA Toolkit	$273,446
Other Benefits (Not Recreation)	$0
Recreation Benefits	-
Total Costs	$2,021,321
Net Benefits	-$1,747,875
Net Benefits with Recreation	-$1,747,875
Final BCR	**0.1**
Final BCR with Recreation	**0.1**

IMPACT ANALYSIS

Refer to the Amended Flood Plan Technical Memo for documented assumptions and methodologies on impact analysis.

Existing and proposed conditions were analyzed for impact, the impacts that were evaluated are the water surface elevations (WSE) and velocities +/-2000ft of this project area. The WSE and velocities were compared in the HEC-RAS v5.0.7 model, see attached digital submittal for Table 1: HEC-RAS Existing vs Proposed

Results Comparison Summary - the proposed conditions showed reduced levels with both components. From the RAS results, the total inundated boundary was reduced in proposed conditions, see Exhibits 1-3 for existing, proposed, and an US view of the comparison of WSE. Flooded depths over the road were evaluated in the BCA, reduced impacts show lower flooded depths in proposed conditions. The following table summarizes the level of service pre and post project;

Table 2: Level of Service Existing Vs. Proposed

Condition	Level of Service	100-Yr Depth Over Road (ft)
Existing	< 10-Yr	0.5 ft
Proposed	100-Yr	0

(See full list of LWC impacts in the attached BCA results as well as Table 2: BCA Flooded Depth Structure Comparison)

PROJECT RISKS

ROW/Real Estate Acquisition:
No, land acquisition is not required for this project.

Utilities Coordination:
No, currently there are no evident utility conflicts. During the design phase, utility conflicts should be further evaluated.

Permitting/Environmental:
Yes, a USACE National permit and a FEMA permit will be required.

Stakeholder coordination:
Due to the road improvement and local surrounding community there will be various stakeholders involved in the process.

MITIGATION OF RISKS

Utility Coordination:
If utility conflicts are found, the utility coordinator will need to closely work with the affected utility companies to ensure timely completion of the proposed project. The project manager and contractor should minimize, as much as feasible, the amount of disruption of services and travel.

Permitting/Environmental:
Coordination and permitting process should be started early on with USACE and FEMA to avoid schedule delays.

Amended 2023 San Antonio Regional Flood Plan - Project Narrative

Project Name: **Abbott Road at Unnamed Tributary 1 to Salitrillo Creek (CB-25) LWC Improvements**
FMP ID: **12XXXXX**
Project Sponsor: **Bexar County**
Date: **3/3/2023**

Stakeholder Coordination:

Abbott Road is the main access for several residential properties. Road reconstruction will cause traffic disruptions and inconveniences for locals due to limited alternative access points. Public meetings and flyers will help communicate construction impacts to affected businesses of any service interruption or inconvenience. The businesses near the project limits should be notified several weeks before the construction start date. Construction phasing and traffic control will be an important design component for this project.

NATURE BASED SOLUTION CONSIDERATION

The proposed project employs a bridge instead of a low water crossing. Using a bridge benefits the natural ecosystem by allowing more sediment transport, passage of aquatic organisms and does not impound water. The larger opening also allows for natural substrate to cover the culvert bottom to allow for aquatic organism passage.

INTERRELATED PROJECTS

There are no interrelated projects.

2023 SAN ANTONIO REGIONAL FLOOD PLAN
PROJECT COST SUMMARY

Project Name:	**Abbott Road at Unnamed Tributary 1 to Salitrillo Creek (CB-25) LWC Improvements**
Project Sponsor:	**Bexar County**
Firm Developing:	**HDR**
Date Developed:	**3/3/2023**
Unit Prices Used:	**11/1/2020**

CONSTRUCTION COSTS	
- STREET COST	**$965,523.42**
- DRAINAGE COST	**$11,078.69**
- LANDSCAPING (3%)	**$29,298.06**
- BOND AND INSURANCE (3%)	**$30,177.01**
- BARICADES (3%)	**$31,082.32**
- MOBILIZATION & PREPARATION OF R.O.W. (11% + 4%)	**$150,885.03**
TOTAL CONSTRUCTION COST ESTIMATE	**$1,218,044.52**
ENGINEER FEE (Fee Table plus 5%)	**$207,067.57**
ENGINEER CONTINGENCY (10%)	**$20,706.76**
CONSTRUCTION CONTINGENCY (10%)	**$121,804.45**
PERMIT REQUIREMENT COSTS	**$48,000.00**
ENVIRONMENTAL	**$10,000.00**
MATERIAL TESTING (2% Construction Cost - <$3M, 1.5% - >$3M)	**$24,360.89**
TOTAL PROJECT COST ESTIMATE	**$1,649,984.19**
DESIGN PHASE	$285,774.33
CONSTRUCTION PHASE	$1,364,209.86

Legend

- Streams
- Contours (5ft.)
- Contours (10ft.)
- Abbott Rd Unnamed Tributary Project Area
- Building Footprints

100-Year Flood Depth (ft.)

- < 0.5
- 0.5 - 1
- 1 - 2
- > 2

2023 SAN ANTONIO REGIONAL FLOOD PLAN

BEXAR COUNTY, TX
ABBOTT ROAD AT UNNAMED
TRIBUTARY 1 TO SALITRILLO CREEK (CB-25)
EXISTING CONDITIONS

N

0 25 50 100
FEET

REGION 12 SAN ANTONIO REGIONAL FLOOD PLANNING GROUP

HDR

MARCH 2023

Legend

- Streams
- Contours (5ft.)
- Contours (10ft.)
- Abbott Rd Unnamed Tributary Project Area
- Building Footprints

100- Year Flood Depth (ft.)

- < 0.5
- 0.5 - 1
- 1 - 2
- > 2

2023 SAN ANTONIO REGIONAL FLOOD PLAN

BEXAR COUNTY, TX
ABBOTT ROAD AT UNNAMED
TRIBUTARY 1 TO SALITRILLO CREEK (CB-25)
PROPOSED CONDITIONS

N

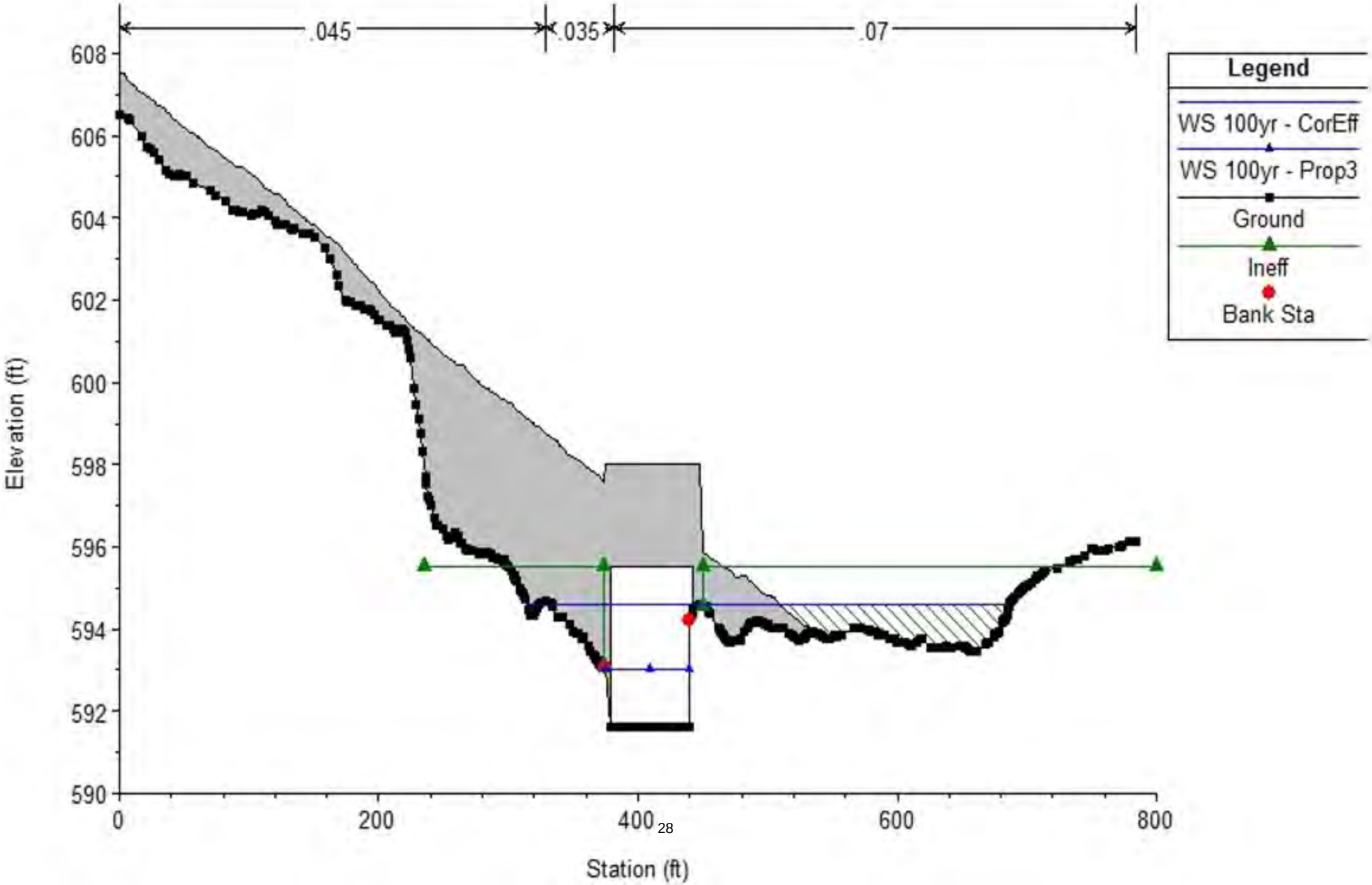
0 25 50 100
FEET

REGION 12 SAN ANTONIO REGIONAL FLOOD PLANNING GROUP

HDR

MARCH 2023

UNT_01_in_Salitrillo_Creek Plan: 1) CorEff 3/2/2023 2) Prop3 3/3/2023



2023 San Antonio Regional Flood Plan
Project Summary Sheet

Project Name: Gass Road at Culebra Creek Tributary D LWC Improvements

FMP ID: 12XXXXXX

Project Sponsor: Bexar County

Project Source: 2022 Bexar County Drainage Needs

Cost Information

Category	Cost*
Design	$237,526
Real Estate	$0
Environmental	$10,000
Construction	$1,072,065
Total Cost**	**$1,320,000**

*Costs are using 2020 prices
**Rounded up to the nearest thousand

Benefit Cost Analysis (BCA)

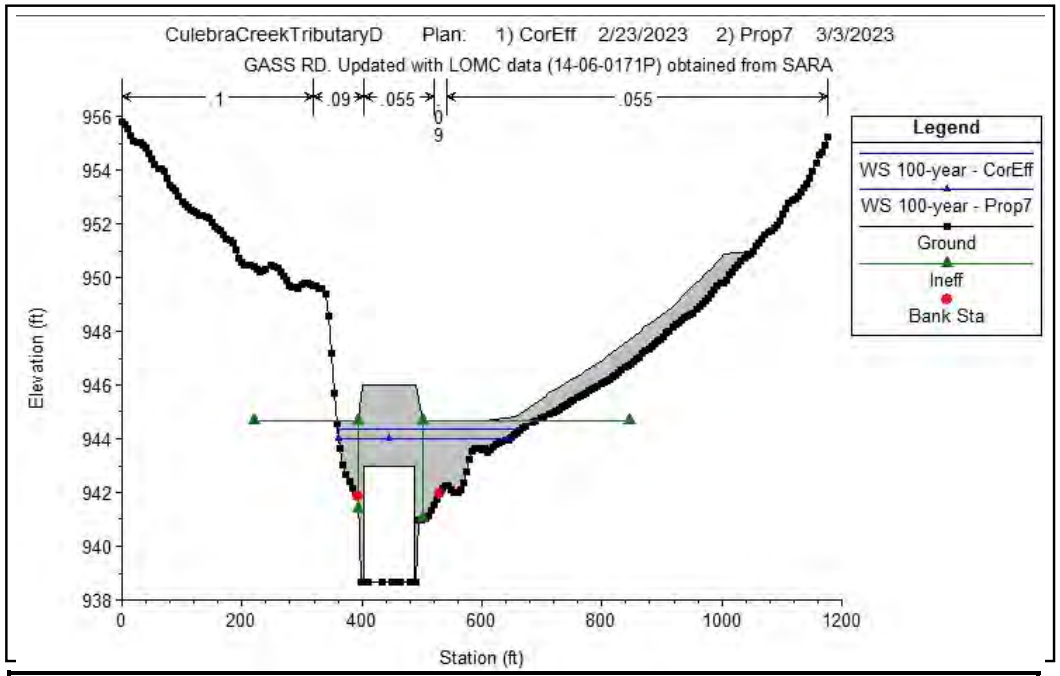
Event Damages	Baseline	Project
10-year storm	$ 299,403	$ -
25-year storm	$ 191,618	$ -
100-year storm	$ 191,618	$ -
Total Benifits	**$ 273,446**	
BCA	**0.2**	

Impact Analysis

Post-Project Total Removed	Storm Event		
	10-year	25-year	100-year
Residential	-	-	-
Commercial	-	-	-
Critical	-	-	-
Others Note	N/A	N/A	N/A
SVI Score			-

Task 12 Work

Consultant	HDR		
Model	**Cost**	**Impact Analysis**	**BCA**
Yes	Yes	Yes	Yes



Project Description:

This project will eliminate overtopping of Gass Road and provide 100-year conveyance design, removing structures from the existing conditions floodplain extents. Proposed improvements consist of channel regrading, increasing the road elevation and adding a bridge. The proposed road profile will increase 2ft from existing. The existing one 2.25" arch pipe will be replaced with a 85ft wide bridge with a 4.5ft high opening.

LWC Level of Service Existing Vs. Proposed

Condition	Level of Service	100-Yr Depth Over Road (ft)
Existing	< 10-Yr	3.0 ft
Proposed	100-Yr	0

Amended 2023 San Antonio Regional Flood Plan - Project Narrative

Project Name: **Gass Road at Culebra Creek Tributary D LWC Improvements**
FMP ID: **12XXXXX**
Project Sponsor: **Bexar County**
Date: **3/3/2023**

BACKGROUND INFORMATION:

As part of the amended 2023 San Antonio Regional Flood Plan (the Plan), Task 12 expands on previously identified FMXs from the Plan dated January 10th, 2023. The Gass Road at Culebra Creek Tributary D LWC Improvements, FME ID 121000159, from the 2022 Bexar County LWC Engineering Study was further developed during Task 12. The sponsor for this project is Bexar County.

The problem area is located at the intersection of Gass Road and Culebra Creek Tributary D. Currently there is a low water crossing (LWC) at Gass Road, composed of one 2.25" arch pipe. The LWC is undersized and results in it being overtopped during low storm events, 10-, 25-, 50-, and 100-Yr. When the structure overtops it cuts off a main connection route for the nearby neighborhood.

The Task 12 work that was completed for the Gass Road at Culebra Creek Tributary D LWC Improvements project was a drainage analysis, cost estimate, impact analysis, and a Benefit Cost Analysis (BCA).

PROPOSED PROJECT SCOPE

Refer to the Amended Flood Plan Technical Memo for documented assumptions and methodologies on drainage analysis to determine a feasible solution.

This project will eliminate overtopping of Gass Road and provide 100-year conveyance design, removing structures from the existing conditions floodplain extents. Proposed improvements consist of channel regrading, increasing the road elevation and adding a bridge. The proposed road profile will increase 2ft from existing. The existing one 2.25" arch pipe will be replaced with a 85ft wide bridge with a 4.5ft high opening.

PROPOSED PROJECT SCOPING COST

Refer to the Amended Flood Plan Technical Memo for documented assumptions and methodologies on project costs.

The estimated the project cost for the Gass Road at Culebra Creek Tributary D LWC Improvements is $1,320,000, this was calculated using 2020 prices. The cost includes all the required applicable TWDB FMP costs including basic engineering fees, special services such as surveying, environmental, geotech, etc., other costs such as land/easement acquisition and administration, fiscal services, and contingency. See attached Cost Summary for cost breakdown. If there are underground utilities that require adjustments, this may increase the cost depending upon any additional adjustments required. At this time, funding for the project has not been identified or approved.

PROPOSED PROJECT BENEFITS

This project will eliminate overtopping at Gass Road and improve the level of service by providing a 100-year conveyance design.

Refer to the Amended Flood Plan Technical Memo for documented assumptions and methodologies on benefit cost analysis.

Amended 2023 San Antonio Regional Flood Plan - Project Narrative

Project Name: **Gass Road at Culebra Creek Tributary D LWC Improvements**
FMP ID: **12XXXXX**
Project Sponsor: **Bexar County**
Date: **3/3/2023**

The 10-, 25-, 100-year benefits that were evaluated for this project include; LWC improvements. The resulting benefit cost analysis was 0.2. The Table 1 below summarizes the components calculated in the TWDB BCA Tool.

Table 1: TWDB BCA Toolkit

Input Into BCA Toolkit

Project Useful Life	**30**

Event Damages	Baseline	Project
10 - year storm	**$299,403**	**$0**
25 - year storm	**$191,618**	**$0**
100 - year storm	**$191,618**	**$0**

Total Benefits from BCA Toolkit	$273,446
Other Benefits (Not Recreation)	$0
Recreation Benefits	-
Total Costs	$1,617,057
Net Benefits	-$1,343,611
Net Benefits with Recreation	-$1,343,611
Final BCR	**0.2**
Final BCR with Recreation	**0.2**

IMPACT ANALYSIS

Refer to the Amended Flood Plan Technical Memo for documented assumptions and methodologies on impact analysis.

Existing and proposed conditions were analyzed for impact, the impacts that were evaluated are the water surface elevations (WSE) and velocities +/-2000ft of this project area. The WSE and velocities were compared in the HEC-RAS v6.0 model, see attached digital submittal for Table 1: HEC-RAS Existing vs Proposed Results Comparison Summary - the proposed conditions showed reduced levels with both components. From the RAS results, the total inundated boundary was reduced in proposed conditions, see Exhibits 1-3 for existing, proposed, and an US view of the comparison of WSE. Flooded depths over the road were evaluated in the BCA, reduced impacts show lower flooded depths in proposed conditions. The following table summarizes the level of service pre and post project;

Table 2: Level of Service Existing Vs. Proposed

Condition	Level of Service	100-Yr Depth Over Road (ft)
Existing	< 10-Yr	3.0 ft
Proposed	100-Yr	0

(See full list of LWC impacts in the attached BCA results as well as Table 2: BCA Flooded Depth Structure Comparison)

PROJECT RISKS

ROW/Real Estate Acquisition:
No, land acquisition is not required for this project.

Utilities Coordination:
No, currently there are no evident utility conflicts. During the design phase, utility conflicts should be further evaluated.

Permitting/Environmental:
Yes, a USACE National permit and a FEMA permit will be required.

Stakeholder coordination:
Due to the road improvement and local surrounding community there will be various stakeholders involved in the process.

MITIGATION OF RISKS

Utility Coordination:
If utility conflicts are found, the utility coordinator will need to closely work with the affected utility companies to ensure timely completion of the proposed project. The project manager and contractor should minimize, as much as feasible, the amount of disruption of services and travel.

Permitting/Environmental:
Coordination and permitting process should be started early on with USACE and FEMA to avoid schedule delays.

Stakeholder Coordination:
Abbott Road is the main access for several residential properties. Road reconstruction will cause traffic disruptions and inconveniences for locals due to limited alternative access points. Public meetings and flyers will help communicate construction impacts to affected businesses of any service interruption or inconvenience. The businesses near the project limits should be notified several weeks before the construction start date. Construction phasing and traffic control will be an important design component for this project.

Amended 2023 San Antonio Regional Flood Plan - Project Narrative

Project Name: **Gass Road at Culebra Creek Tributary D LWC Improvements**
FMP ID: **12XXXXX**
Project Sponsor: **Bexar County**
Date: **3/3/2023**

NATURE BASED SOLUTION CONSIDERATION

The proposed project employs a bridge instead of a low water crossing. Using a bridge benefits the natural ecosystem by allowing more sediment transport, passage of aquatic organisms and does not impound water. The larger opening also allows for natural substrate to cover the culvert bottom to allow for aquatic organism passage.

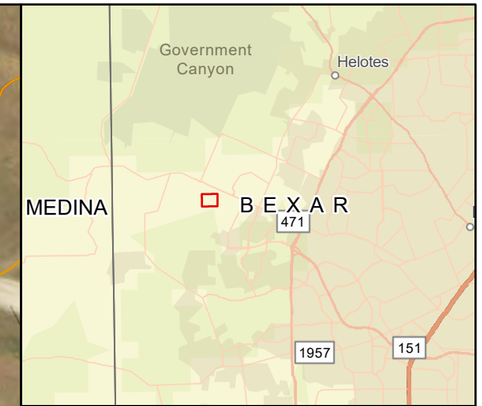
INTERRELATED PROJECTS

There are no interrelated projects.

2023 SAN ANTONIO REGIONAL FLOOD PLAN
PROJECT COST SUMMARY

Project Name:	**Gass Road at Culebra Creek Tributary D LWC Improvements**
Project Sponsor:	**Bexar County**
Firm Developing:	**HDR**
Date Developed:	**3/3/2023**
Unit Prices Used:	**11/1/2020**

CONSTRUCTION COSTS	
- STREET COST	**$756,384.35**
- DRAINAGE COST	**$11,078.69**
- LANDSCAPING (3%)	**$23,023.89**
- BOND AND INSURANCE (3%)	**$23,714.61**
- BARICADES (3%)	**$24,426.05**
- MOBILIZATION & PREPARATION OF R.O.W. (11% + 4%)	**$118,573.04**
TOTAL CONSTRUCTION COST ESTIMATE	**$957,200.63**
ENGINEER FEE (Fee Table plus 5%)	**$172,296.11**
ENGINEER CONTINGENCY (10%)	**$17,229.61**
CONSTRUCTION CONTINGENCY (10%)	**$95,720.06**
PERMIT REQUIREMENT COSTS	**$48,000.00**
ENVIRONMENTAL	**$10,000.00**
MATERIAL TESTING (2% Construction Cost - <$3M, 1.5% - >$3M)	**$19,144.01**
TOTAL PROJECT COST ESTIMATE	**$1,319,590.43**
DESIGN PHASE	$247,525.72
CONSTRUCTION PHASE	$1,072,064.70



Legend

- Streams
- Contours (5ft.)
- Contours (10ft.)
- Gass Road Project Area
- Building Footprints

100-Year Flood Depth (ft.)

- < 0.5
- 0.5 - 1
- 1 - 2
- > 2

2023 SAN ANTONIO REGIONAL FLOOD PLAN

BEXAR COUNTY, TX
GASS ROAD LWC
EXISTING CONDITIONS

N

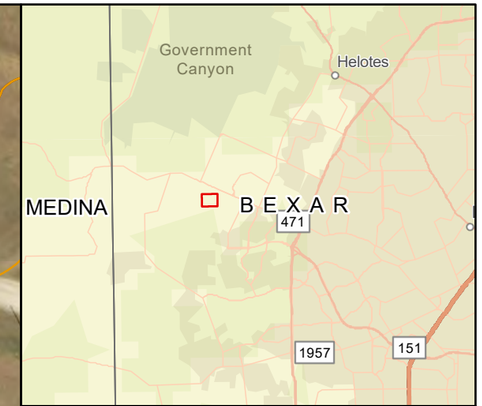
0 90 180 360
FEET

REGION 12 SAN ANTONIO REGIONAL FLOOD PLANNING GROUP

HDR

MARCH 2023

PATH: \\OMAPHGISAPP03\PROJECTS\PROJECTS\1WUB\1WUB_RFP\GRP22023_REGION12_ELECTRONICFILES_HDR_WORKING\PROJECT\ENGINEERING_DESIGN\GIS\MAPDOC\EXHIBITS\BEXAR\BEXARLWCS\BEXARLWCS.APRX



Legend

- Streams
- Contours (5ft.)
- Contours (10ft.)
- Gass Road Project Area
- Building Footprints

100-Year Flood Depth (ft.)

- < 0.5
- 0.5 - 1
- 1 - 2
- > 2

2023 SAN ANTONIO REGIONAL FLOOD PLAN

BEXAR COUNTY, TX
GASS ROAD LWC
PROPOSED CONDITIONS

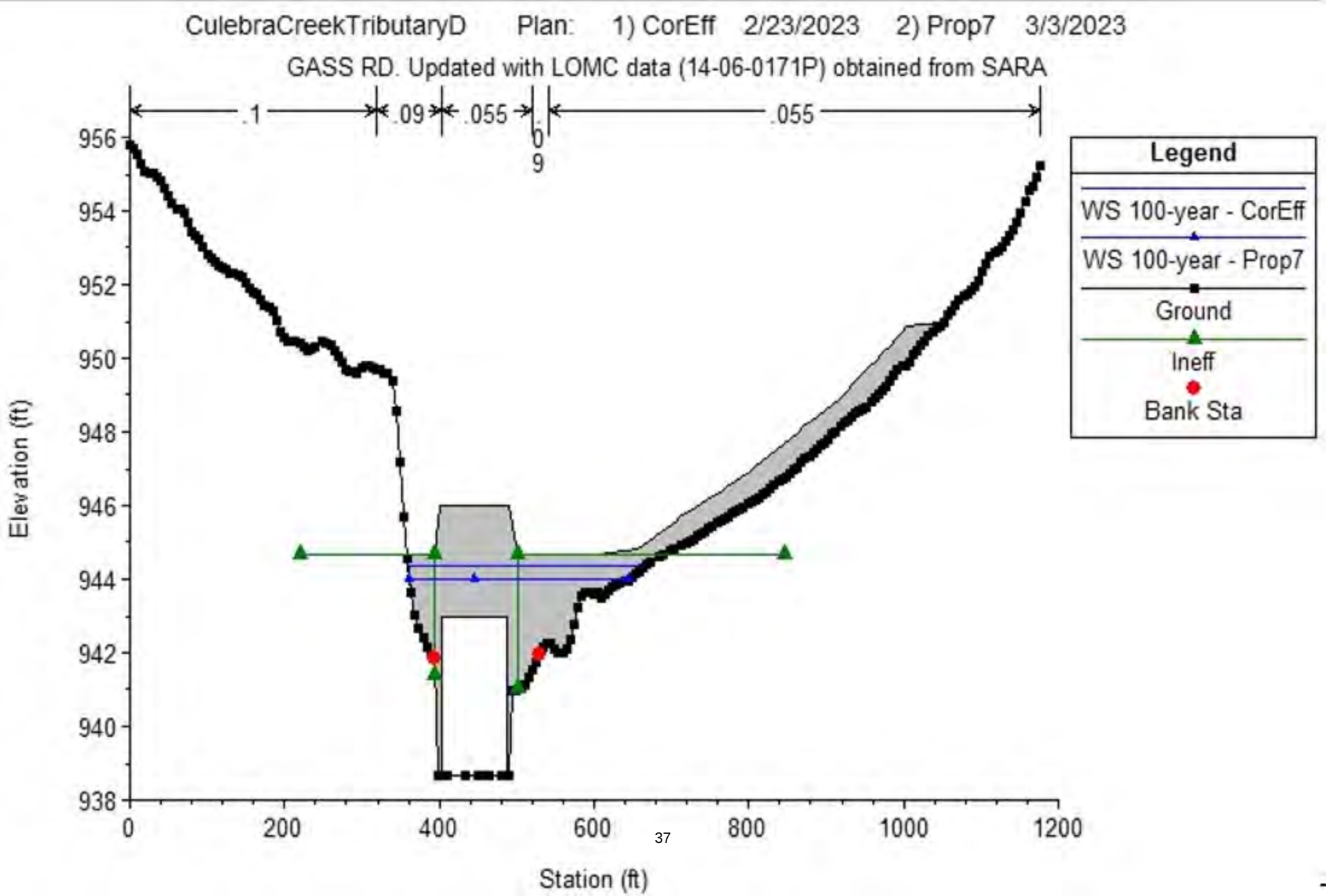
N

0 90 180 360
FEET

REGION 12 SAN ANTONIO REGIONAL FLOOD PLANNING GROUP

HDR

MARCH 2023


CulebraCreekTributaryD Plan: 1) CorEff 2/23/2023 2) Prop7 3/3/2023
GASS RD. Updated with LOMC data (14-06-0171P) obtained from SARA
.1
.09
.055
.055
Legend
WS 100-year - CorEff
WS 100-year - Prop7
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
956
954
952
950
948
946
944
942
940
938
0
200
400
600
800
1000
1200

2023 San Antonio Regional Flood Plan
Project Summary Sheet

Project Name: Elm Creek Drainage Improvements

FMP ID: 12XXXXXX

Project Sponsor: City of Shavano Park

Project Source:

Cost Information

Category		Cost*
Design	$	340,048.99
Real Estate		
Environmental	$	10,000.00
Construction	$	1,679,059.39
Total Cost**	**$**	**2,030,000.00**

*Costs Adjusted using CCI
**Rounded up to the nearest thousand

Benefit Cost Analysis (BCA)

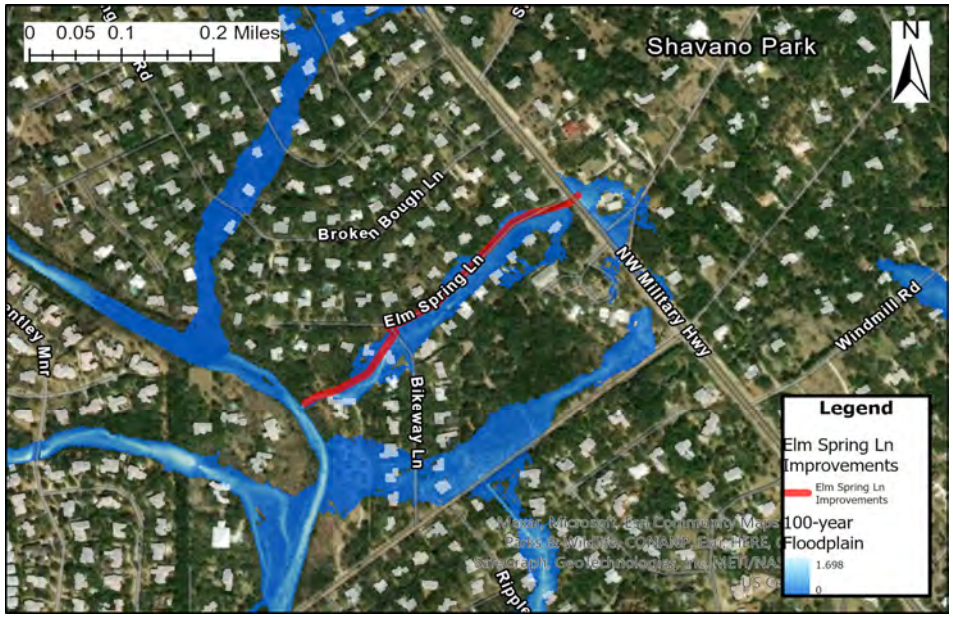
Event Damages		Baseline		Project
25-year storm	$	1,374,633.95	$	948,149.23
100-year storm	$	2,791,156.52	$	2,083,814.17
Total Benifits	**$**	**35,320.00**		
BCA		**0.0**		

Impact Analysis

Post-Project Total Removed	Storm Event		
	25-year	100-year	
Residential	3.00	-	
Commercial	N/A	N/A	
Critical	N/A	N/A	
Road (miles)	0.06	0.09	
Others Note	N/A	N/A	
SVI Score	N/A	N/A	

Task 12 Work

Consultant	Halff		
Model	**Cost**	**Impact Analysis**	**BCA**
No	Yes	Yes	Yes



Project Description:

Currently, almost all of Elm Spring Ln experiences significant flooding in any rainfall event eliminating access to to all but one home along Elm Spring Ln. The flooding occurs at the intersection of Elm Spring and and NW Military Hwy and extends beyond the Bikeway Ln and Elm Spring Ln intersection.
An underground storm drain system has been proposed to alleviate roadway flooding by intercepting water near NW Military with a 4-way inlet, conveying it through the underground system and discharging into an earthen channel that flows downstream into Olmos Creek.
The project is anticipated to remove at least three of the ten homes from the limits of the 25-year floodplain.

Amended 2023 San Antonio Regional Flood Plan - Project Narrative

Project Name: **Elm Springs**
FME ID: **N/A**
Project Sponsor: **City of Shavano Park**
Date: **3/3/2023**

BACKGROUND INFORMATION:

As part of the amended 2023 San Antonio Regional Flood Plan (the Plan), Task 12 expands on previously identified FMEs from the Plan dated January 10th, 2023. Shavano Park Ripple Creek, from the 2020 Preliminary Engineering Report (PER) was expanded on during Task 12. The sponsor for this project is the City of Shavano Park.

Nearly all of Elm Spring Ln experiences significant flooding in any rainfall event eliminating access to all but one home along Elm Spring Ln. Flooding occurs at the intersection of Elm Spring and NW Military Hwy and extends beyond the Bikeway Ln and Elm Spring Ln intersection.

The work that was completed for the Elm Springs project was an update to the cost estimate, and a Benefit Cost Analysis (BCA).

PROPOSED PROJECT SCOPE

An underground storm drain system has been proposed to alleviate roadway flooding by intercepting water near NW Military into an underground system and discharging into an earthen channel that flows downstream into Olmos Creek. The project is anticipated to remove at least three of the ten homes from the limits of the 25-year floodplain and will reduce flooding for

PROPOSED PROJECT SCOPING COST

Refer to the Amended Flood Plan Technical Memo for documented assumptions and methodologies on project costs.

The estimated total project cost to be $1,686,851 in the 2020 City of Shavano Park Preliminary Engineering Report. The cost estimate was updated using the Construction Cost Index (CCI) of 1.008 from April 2020 to September 2020. The total project cost resulted to $2,029,108. There are underground utilities that require relocation and driveway acquisition that might require additional update. Currently, funding for the project has not been identified or approved.

PROPOSED PROJECT BENEFITS

This project will reduce flood depths on Elm Springs Ln and improve the level of service by providing a 100-year conveyance design. The storm drain system will improve the flooding on the surrounding roads and provide access during a storm event.

Refer to the Amended Flood Plan Technical Memo for documented assumptions and methodologies on benefit cost analysis.

The benefits that were evaluated for this project is flooded streets. The resulting benefit cost analysis was 0.4. The Table 1 below summarizes the components calculated in the TWDB BCA Tool.

Amended 2023 San Antonio Regional Flood Plan - Project Narrative

Project Name: **Elm Springs**
FME ID: **N/A**
Project Sponsor: **City of Shavano Park**
Date: **3/3/2023**

Table 1: TWDB BCA Toolkit

Input Into BCA Toolkit		
Project Useful Life	30	
Event Damages	Baseline	Project
100 - year storm	$663,007	$0
Total Benefits from BCA Toolkit	$346,987	
Other Benefits (Not Recreation)	$0	
Recreation Benefits	-	
Total Costs	$980,908	
Net Benefits	-$633,921	
Net Benefits with Recreation	-$633,921	
Final BCR	0.4	
Final BCR with Recreation	0.4	

PROJECT RISKS

ROW/Real Estate Acquisition

No, land acquisition is not required.

Utilities Coordination:

Yes, there is possible utility conflict running underground along NW Military Hwy. The proposed storm drain would cause them to relocate.

Permitting/Environmental:

A USACE nationwide permit will be required. NW Military Hwy is a TxDOT roadway and coordination and permitting will be required.

Stakeholder coordination:

Due to the road improvement, and utility relocation, the stakeholder will be involved in the process.

Amended 2023 San Antonio Regional Flood Plan - Project Narrative

Project Name: **Elm Springs**
FME ID: **N/A**
Project Sponsor: **City of Shavano Park**
Date: **3/3/2023**

MITIGATION OF RISKS

Utility Coordination:

The utility coordinator will need to closely work with the affected utility companies to ensure timely completion of the proposed project. The project manager and contractor should minimize, as much as feasible, the amount of disruption of services and travel.

Stakeholder Coordination/Permitting:

Coordination and permitting process should be started early on with Shavano Park acquisitions to avoid schedule delays. In addition, coordination should start early with TxDOT concerning impacts to NW Military Hwy.

NW Military Hwy and Elm Springs Lane intersection is a main road into the several residential buildings. Road reconstruction will cause traffic disruptions and inconveniences for businesses due to limited alternative access points. Public meetings and flyers will help communicate construction impacts to affected businesses of any service interruption or inconvenience. The businesses near the project limits should be notified several weeks before the construction start date. Construction phasing and traffic control will be an important design component for this project.

NATURE BASED SOLUTION CONSIDERATION

Nature based solutions could be considered for this project. During design this project could incorporate natural channel design components or low impact development.

INTERRELATED PROJECTS

This project interrelates with other projects mentioned within the PER, but project completion will not depend on other projects.

2023 SAN ANTONIO REGIONAL FLOOD PLAN
PROJECT COST SUMMARY

Version: 7/2/2021

Project Name:	**Elm Creek Drainage Improvements**
Project Sponsor:	**City of Shavano Park**
Firm Developing:	**KFW**
Person Developing:	
Date Developed:	**2/10/2023**
Unit Prices Used:	**11/1/2020**

CONSTRUCTION COSTS	
- STREET COST	
- DRAINAGE COST	**$1,096,632.73**
- TRAFFIC COST	
- TREE PRESERVATION (2%)	**$21,932.65**
- LANDSCAPING (10%)	**$109,663.27**
- BOND AND INSURANCE (3%)	**$36,846.86**
- BARICADES (3%)	**$37,952.27**
- MOBILIZATION & PREPARATION OF R.O.W. (11% + 4%)	**$184,234.30**
TOTAL CONSTRUCTION COST ESTIMATE	**$1,487,262.07**
PROGRAM MANAGEMENT FEE (0% of Costs)	
ENGINEER FEE (Fee Table plus 5%)	**$252,834.55**
ENGINEER CONTINGENCY (10%)	**$25,283.46**
CONSTRUCTION CONTINGENCY (10%)	**$148,726.21**
DESIGN ENHANCEMENT (0% Construction Costs)	
PERMIT REQUIREMENT COSTS	**$33,000.00**
UTILITY RELOCATION COSTS	
RIGHT-OF-WAY (LAND ACQUISITION)	
RIGHT-OF-WAY SURVEY	
ENVIRONMENTAL	**$10,000.00**
MATERIAL TESTING (2% Construction Cost - <$3M, 1.5% - >$3M)	**$29,745.24**
FEMA FLOOD PLAIN STUDY	
PROJECT ADMIN. (0%)	
PRIMELink Costs (0%)	
INFLATION FACTOR (0% compounded for 5 years)	
TOTAL PROJECT COST ESTIMATE	**$1,986,851.53**
DESIGN PHASE	$321,118.01
CONSTRUCTION PHASE	$1,665,733.52

ELM SPRING EXISTING CONDITIONS

Key To Features

Existing 100 Year Floodplains

- 0 - 0.625999987
- 0.625999987 - 0.958999991
- 0.958999991 - 1.697999954
- Roads

N
W E
S

0 100 200 400
Feet
1 inch = 200 feet

halff

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ELM SPRING PROPOSED CONDITIONS

Key To Features

Elms Spring

Proposed 100 Year Floodplains

0 - 0.457

0.457 - 0.6096

0.6096 - 0.762

Roads

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W E
S

0 100 200 400

Feet

1 inch = 200 feet

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ELM SPRING PROPOSED AND EXISTING CONDITIONS

Key To Features

Elms Spring

Proposed 100 Year Floodplain

Existing 100 Year Floodplain

Roads

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0 100 200 400
Feet
1 inch = 200 feet

halff

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2023 San Antonio Regional Flood Plan
Project Summary Sheet

Project Name: Damage Center 2- Project 2 Road connection from Mosspoint to Sunshine

FMP ID: 121000051

Project Sponsor: City of Poth

Project Source: 2012 Wilson County Watershed Master Plan

Cost Information

Category	Cost*
Design	$202,508
Real Estate	$76,050
Environmental	$10,000
Construction	$1,100,245
Total Cost**	**$1,389,000**

*Costs Adjusted from 2012 to 2020 using CCI
**Rounded up to the nearest thousand

Benefit Cost Analysis (BCA)

Event Damages	Baseline	Project
10-year storm	$ 40	$ -
50-year storm	$ 50	$ -
100-year storm	$ 62	$ -
Total Benifits	**$ 23,725**	
BCA	**0.02**	

Impact Analysis

Post-Project Total Removed	Storm Event		
	10-year	50-year	100-year
Residential			
Commercial			
Critical	-	-	-
Road (miles)			
Others Note	N/A	N/A	N/A
SVI Score	-	-	

Task 12 Work

Consultant	Halff		
Model	**Cost**	**Impact Analysis**	**BCA**
Yes	Yes	n/a	Yes

Project Description:

Residents along Moss Point Street in Poth, Texas to no have a safe route of travel for evacuation during a flood event. At Moss Point Drive, the only outlet, Oakland Street, becomes overtopped starting at the 10-year flood event and flood waters cover up to 0.14 miles of Oakland Street at depths of up to 6.2 feet. This project will provide unflooded access from Moss Point Street to Sunshine Drive. Adding a new roadway from the dead end of Moss Point, north towards FM 541 at Sunshine Dr, will provide safe access in the event of a 100-year flood. Under current conditions, they will remain trapped during the 10-year, 50-year, 100-year flood events. In addition to safe passage for residents, this additional access will allow emergency vehicles to access the are during a flood event. The proposed access road will be approximately 3000 feet in length with a width of 28 feet that will tie to both FM 541 and Sunshine Drive.

2023 San Antonio Regional Flood Plan - Project Narrative

Project Name: **Damage Center 2- Project 2 Road Connection from Moss Point to Sunshine**
FME ID: **121000051**
Project Sponsor: **Wilson County**
Date: **3/2/2023**

BACKGROUND INFORMATION:

As part of the amended 2023 San Antonio Regional Flood Plan (the Plan), Task 12 expands on previously identified FME ID 121000051 from the Plan dated January 10th, 2023. Damage Center 2- Project 2 Road connection from Moss Point to Sunshine came from the 2012 Wilson County Watershed Master Plan. The sponsor for this project is the City of Poth.

The problem area is located along Moss Point Drive and the surrounding residents in the City of Poth. Current conditions leave these residents with only one route, Oakland Street, to the main roads. Oakland Street runs through floodplains. The 10-year storm is currently overtopping the roadway so significantly that the residents in the area have no means of gaining access to main roads.

The work that was completed for Damage Center 2- Project 2 Road Connection from Moss Point to Sunshine was an update to the cost estimate, impact analysis, and a Benefit Cost Analysis (BCA).

PROPOSED PROJECT SCOPE

Residents along Moss Point Street in Poth, Texas to no have a safe route of travel for evacuation during a flood event. At Moss Point Drive, the only outlet, Oakland Street, becomes overtopped starting at the 10-year flood event and flood waters cover up to 0.14 miles of Oakland Street at depths of up to 6.2 feet. This project will provide unflooded access from Moss Point Street to Sunshine Drive. Adding a new roadway from the dead end of Moss Point, north towards FM 541 at Sunshine Dr, will provide safe access in the event of a 100-year flood. Under current conditions, they will remain trapped during the 10-year, 50-year, 100-year flood events. In addition to safe passage for residents, this additional access will allow emergency vehicles to access the are during a flood event. The proposed access road will allow residents safe passage out of their homes in the event of the 10-year flood. The proposed access road will be approximately 3000 feet in length with a width of 28 feet that will tie to both FM 541 and Sunshine Drive.

PROPOSED PROJECT SCOPING COST

Refer to the Amended City of Poth, Wilson County Watershed Master Plan for documented assumptions and methodologies on project costs.

The estimated the total project cost to be $1,388,803 according to Halff's Cost Estimate Summary and the completed TWDB BCA. At this time, the project is unfunded.

PROPOSED PROJECT BENEFITS

This project will provide safe access for residents on and around Moss Point Drive to safer, less flooded, zones in the event of the 10-year storm by building the access road on an area not within the floodplain. Additionally, the roadway will minimally impact the floodway since it is built outside of the floodplain.

2023 San Antonio Regional Flood Plan - Project Narrative

Project Name: **Damage Center 2- Project 2 Road Connection from Moss Point to Sunshine**
FME ID: **121000051**
Project Sponsor: **Wilson County**
Date: **3/2/2023**

The benefits that were evaluated for this project revolve mainly around residential buildings and public safety. The resulting benefit cost analysis was 0.02. The Table 1 below summarizes the components calculated in the TWDB BCA Tool.

Table 1: TWDB BCA Toolkit

Input Into BCA Toolkit

Project Useful Life	30

Event Damages	Baseline	Project
10 - year storm	$7	$1
50 - year storm	$9	$2
100 - year storm	$11	$3

Total Benefits from BCA Toolkit	$20
Other Benefits (Not Recreation)	$6,222
Recreation Benefits	-
Total Costs	$873,342
Net Benefits	-$867,101
Net Benefits with Recreation	-$867,101
Final BCR	0.02
Final BCR with Recreation	0.02

IMPACT ANALYSIS

Existing and proposed conditions were analyzed, the following table summarizes the total amount of impacted structures in each storm;

2023 San Antonio Regional Flood Plan - Project Narrative

Project Name: **Damage Center 2- Project 2 Road Connection from Moss Point to Sunshine**
FME ID: **121000051**
Project Sponsor: **Wilson County**
Date: **3/2/2023**

Storm (Year)	Existing	Proposed	Difference
10	28	10	18
50	35	17	18
100	43	25	18

Storm (Year)	Existing Depth (ft)	Proposed Depth (ft)	Difference
10	7.6	7.6	0
50	8.6	8.6	0
100	8.95	8.95	0

PROJECT RISKS

ROW/Real Estate Acquisition (Y/N)

Yes, land acquisition is required.

Utilities Coordination (Y/N):

No, there are no known utility considerations for the purpose of this project. The access way will be built on unutilized land.

Permitting/Environmental (Y/N):

No, a USACE nationwide permit will not be required.

Stakeholder coordination:

Due to the land acquisition and road, there will be various stakeholders involved in the process. The access road runs through three parcels of private owned land.

MITIGATION OF RISKS

Stakeholder Coordination/Permitting:

Coordination and permitting process should be started early on with TxDOT and the three owners of the land parcels needed to build the access road.

2023 San Antonio Regional Flood Plan - Project Narrative

Project Name: **Damage Center 2- Project 2 Road Connection from Moss Point to Sunshine**
FME ID: **121000051**
Project Sponsor: **Wilson County**
Date: **3/2/2023**

FM 541 is one of the two main roadways going through the City of Poth. Road reconstruction will cause traffic disruptions and inconveniences for businesses due to limited alternative access points. Public meetings and flyers will help communicate construction impacts to affected businesses of any service interruption or inconvenience. The businesses near the project limits should be notified several weeks before the construction start date. Construction phasing and traffic control will be an important design component for this project.

NATURE BASED SOLUTION CONSIDERATION

There are no nature based solutions for this particular project; however, Low Impact Development (LID) can be implemented along the roadway.

INTERRELATED PROJECTS

This project does not require any interrelated projects to be completed before this project can be constructed.

2023 SAN ANTONIO REGIONAL FLOOD PLAN
PROJECT COST SUMMARY

Project Name:	**Damage Center 1: Project 1A, B, C**
Project Sponsor:	**City of Poth**
Firm Developing:	**0**
Date Developed:	**2/10/2023**
Unit Prices Used:	**11/1/2020**

CONSTRUCTION COSTS	
- STREET COST	**$724,344.32**
- TREE PRESERVATION (2%)	**$14,486.89**
- LANDSCAPING (10%)	**$72,434.43**
- BOND AND INSURANCE (3%)	**$24,337.97**
- BARICADES (3%)	**$25,068.11**
- MOBILIZATION & PREPARATION OF R.O.W. (11% + 4%)	**$121,689.85**
TOTAL CONSTRUCTION COST ESTIMATE	**$982,361.56**
ENGINEER FEE (Fee Table plus 5%)	**$176,825.08**
ENGINEER CONTINGENCY (10%)	**$17,682.51**
CONSTRUCTION CONTINGENCY (10%)	**$98,236.16**
PERMIT REQUIREMENT COSTS	**$8,000.00**
RIGHT-OF-WAY (LAND ACQUISITION)	**$68,550.00**
RIGHT-OF-WAY SURVEY	**$7,500.00**
ENVIRONMENTAL	**$10,000.00**
MATERIAL TESTING (2% Construction Cost - <$3M, 1.5% - >$3M)	**$19,647.23**
TOTAL PROJECT COST ESTIMATE	**$1,388,802.54**
DESIGN PHASE	$288,557.59
CONSTRUCTION PHASE	$1,100,244.95

MOSS POINT TO SUNSHINE EXISTING CONDITIONS

Key To Features

- Existing Roadways
- 100 Year FloodPlain

N
W E
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0 200 400 800

Feet

1 inch = 400 feet

halff

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MOSS POINT TO SUNSHINE PROPOSED ACCESSROAD

Key To Features

- Existing Roadways
- Proposed AccessRoad
- 100 Year FloodPlain

N
W E
S

0 200 400 800

Feet

1 inch = 400 feet

halff

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2023 San Antonio Regional Flood Plan
Project Summary Sheet

Project Name: Old Fredericksburg Road at Balcones Creek

FMP ID: 121000096

Project Sponsor: Kendall County

Project Source: Kendall County

Cost Information

Category	Cost*
Design	$1,380,487
Real Estate	$264,039
Environmental	$10,000
Construction	$8,370,591
Total Cost**	**$10,026,000**

*Costs Adjusted from 2012 to 2020 using CCI
**Rounded up to the nearest thousand

Benefit Cost Analysis (BCA)

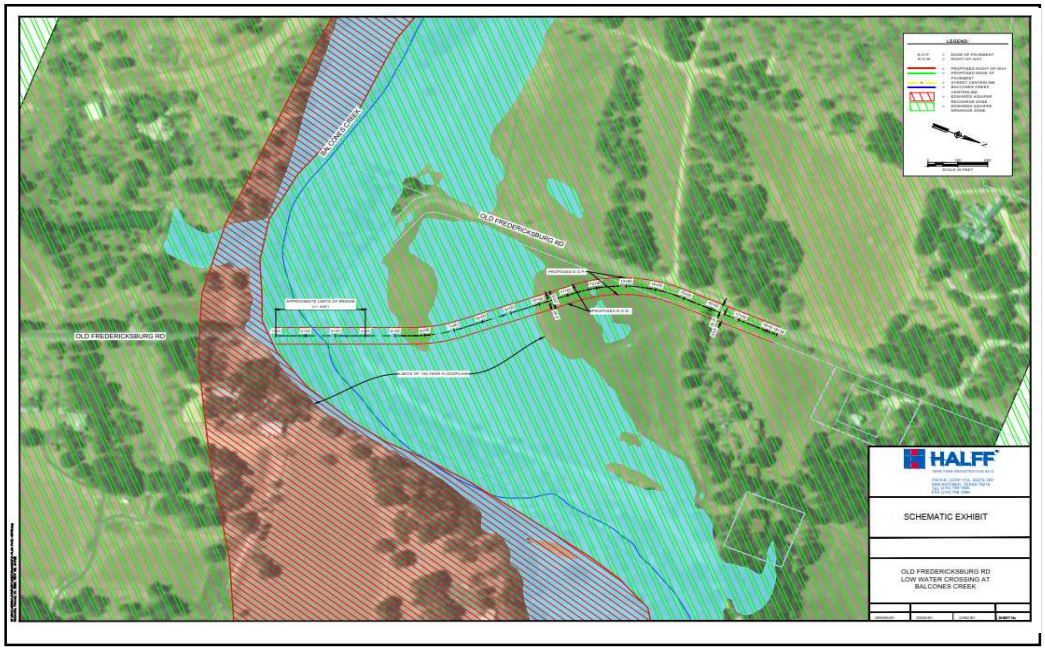
Event Damages	Baseline	Project
10-year storm	$ 287,431	$ -
50-year storm	$ 287,431	$ -
100-year storm	$ 287,431	$ 105,238
Total Benifits	**$ 343,606**	
BCA	**0**	

Impact Analysis

Post-Project Total Removed	Storm Event
	100-year
Residential	N/A
Commercial	N/A
Critical	N/A
Road (miles)	0.12
Others Note	N/A
SVI Score	

Task 12 Work

Consultant	HALFF		
Model	**Cost**	**Impact Analysis**	**BCA**
Yes	Yes	Yes	Yes



Project Description:

At the Old Fredericksburg Road crossing with Balcones Creek, the road is currently overtopped by the 10-year flood event and flood waters reach a maximum depth of 10 feet. The length of roadway flooded is approximately 0.12 miles. The proposed improvements include constructing a bridge to raise the roadway over the low water crossing at the intersection of Balcones Creek and Old Fredericksburg Road and roadway realignment to straighten the sharp curves that currently exist on Old Fredericksburg Road near the Balcones Creek crossing. The proposed bridge will safely pass the 10-year flood event and lower the depth of water overtopping the roadway during larger flood events. The proposed bridge will be approximately 400 feet in length with a connecting roadway realignment of 1350 feet that ties into the existing road.

Amended 2023 San Antonio Regional Flood Plan - Project Narrative

Project Name: **Old Fredericksburg Road at Balcones Creek - Low Water Crossing**
FME ID: **121000093**
Project Sponsor: **Kendall County**
Date: **2/6/2023**

BACKGROUND INFORMATION:

As part of the amended 2023 San Antonio Regional Flood Plan (the Plan), Task 12 expands on previously identified FMEs from the Plan dated January 10th, 2023. Old Fredericksburg Road at Balcones Creek, FME ID 121000093, from Kendall County was expanded on during Task 12. The sponsor for this project is Kendall County.

The problem area is located along Old Fredericksburg Road at a low water crossing with Balcones Creek. Currently there is flooding over the roadway crossing and in the surrounding areas. The 10-year storm is currently overtopping the roadway crossing due to a lower grade in the terrain.

The work completed for the Old Fredericksburg Road project was an update to the cost estimate, roadway realignment, hydraulic analysis, and a Benefit Cost Analysis (BCA).

PROPOSED PROJECT SCOPE

At the Old Fredericksburg Road crossing with Balcones Creek, the road is currently overtopped by the 10-year flood event and flood waters reach a maximum depth of 10 feet. The length of roadway being flooded is approximately 0.12 miles. The proposed improvements include constructing a bridge to raise the roadway over the low water crossing at the intersection of Balcones Creek and Old Fredericksburg Road and road realignment to straighten the sharp curves that currently exist in Old Fredericksburg Road near the Balcones Creek crossing. The proposed bridge will safely pass the 10-year flood event and lower the depth of water overtopping the roadway during larger flood events. The proposed bridge will be approximately 400 feet in length with a connecting roadway realignment of 1350 feet that ties into the existing road.

PROPOSED PROJECT SCOPING COST

Refer to the Regional Flood Plan Cost Estimate for documented assumptions and methodologies on project costs.

These costs were input into resulting in a project cost of $10,025,117. There are underground utilities that require adjustments, this may increase depending upon any additional adjustments required. At this time, funding for the project has not been identified or approved.

PROPOSED PROJECT BENEFITS

This project will eliminate overtopping at Old Fredericksburg Road for the 10-year and 50-year storm events by raising the roadway to provide conveyance. The bridge pier design will provide minimal obstruction to the water floodway and remove roadway out of the floodplain. The bridge is designed to have no adverse impact; therefore, the structure will not change the floodplain extents.

Refer to the Amended Flood Plan Technical Memo for documented assumptions and methodologies on benefit cost analysis.

Amended 2023 San Antonio Regional Flood Plan - Project Narrative

Project Name: **Old Fredericksburg Road at Balcones Creek - Low Water Crossing**
FME ID: **121000093**
Project Sponsor: **Kendall County**
Date: **2/6/2023**

The benefits that were evaluated for this project are, residential buildings, commercial buildings, and recreational. The resulting benefit cost analysis was 0.0. The Table 1 below summarizes the components calculated in the TWDB BCA Tool.

Table 1: TWDB BCA Toolkit

Input Into BCA Toolkit

Project Useful Life	30

Event Damages	Baseline	Project
10 – year storm	$287,431	$0
50 – year storm	$287,431	$0
100 - year storm	$287,431	$105,238

Total Benefits from BCA Toolkit	$343,606
Other Benefits (Not Recreation)	$24,731
Recreation Benefits	-
Total Costs	$8,332,030
Net Benefits	-$7,963,693
Net Benefits with Recreation	-$7,963,693
Final BCR	0.0
Final BCR with Recreation	0.0

PROJECT RISKS

ROW/Real Estate Acquisition (Y/N)

Yes, land acquisition is required.

Utilities Coordination:

Yes, there is possible utility conflict running underground along Old Fredericksburg Road. The proposed bridge would cause them to relocate.

Permitting/Environmental:

Yes, a USACE nationwide permit will be required.

Stakeholder coordination:

Due to the land acquisition, road improvement, and utility relocation, there will be various stakeholders involved in the process.

MITIGATION OF RISKS

Utility Coordination:

The utility coordinator will need to closely work with the affected utility companies to ensure timely completion of the proposed project. The project manager and contractor should minimize, as much as feasible, the amount of disruption of services and travel.

Stakeholder Coordination/Permitting:

Coordination and permitting process should be started early on with USACE and property owner acquisitions to avoid schedule delays. The realignment of the roadway will cut through a property and require acquisition.

Old Fredericksburg Road is a low-traffic area and provides access to rural residential communities and a few businesses. Road reconstruction will cause traffic disruptions and inconveniences for a few private entities. Public meetings and flyers will help communicate construction impacts to affected businesses of any service interruption or inconvenience. Any businesses near the project limits should be notified several weeks before the construction start date. Construction phasing and traffic control will be an important design component for this project.

NATURE BASED SOLUTION CONSIDERATION

Nature based solutions could be considered for this project. During design this project could incorporate natural channel design components and possible floodplain buffers.

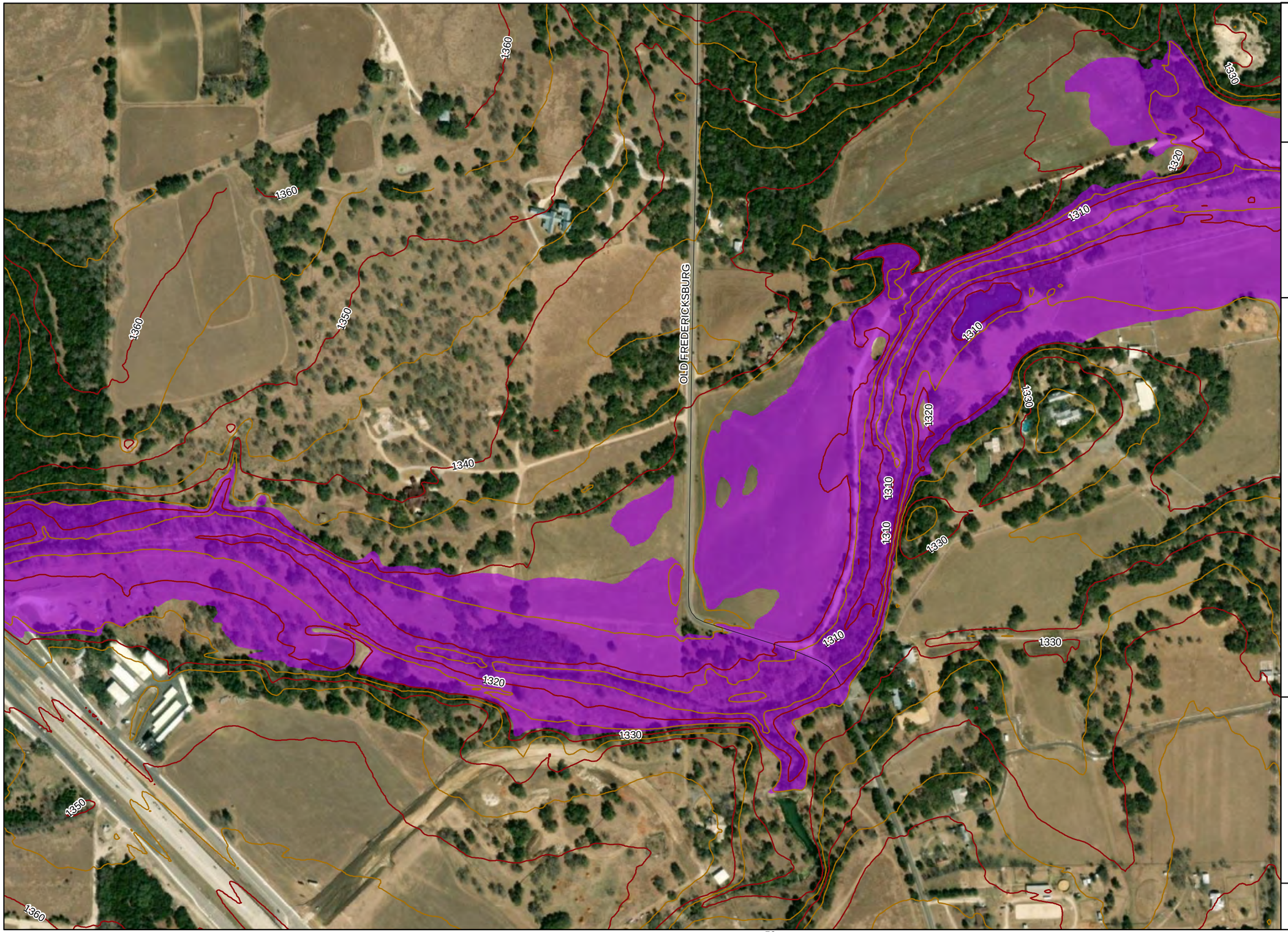
INTERRELATED PROJECTS

This project does not require any interrelated projects to be completed before this project can be constructed.

2023 SAN ANTONIO REGIONAL FLOOD PLAN
PROJECT COST SUMMARY

Project Name:	**Old Fredericksburg Road at Balcones Creek**
Project Sponsor:	**Kendall County**
Firm Developing:	**HALFF**
Date Developed:	**2/10/2023**
Unit Prices Used:	**11/1/2020**

CONSTRUCTION COSTS	
- DRAINAGE COST	**$4,244,429.76**
- TREE PRESERVATION (2%)	**$110,709.52**
- LANDSCAPING (10%)	**$553,547.60**
- BOND AND INSURANCE (3%)	**$185,991.99**
- BARICADES (3%)	**$191,571.75**
- MOBILIZATION & PREPARATION OF R.O.W. (11% + 4%)	**$929,959.97**
TOTAL CONSTRUCTION COST ESTIMATE	**$7,507,256.81**
ENGINEER FEE (Fee Table plus 5%)	**$1,163,624.81**
ENGINEER CONTINGENCY (10%)	**$116,362.48**
CONSTRUCTION CONTINGENCY (10%)	**$750,725.68**
PERMIT REQUIREMENT COSTS	**$50,500.00**
RIGHT-OF-WAY (LAND ACQUISITION)	**$261,538.80**
RIGHT-OF-WAY SURVEY	**$2,500.00**
ENVIRONMENTAL	**$10,000.00**
MATERIAL TESTING (2% Construction Cost - <$3M, 1.5% - >$3M)	**$112,608.85**
TOTAL PROJECT COST ESTIMATE	**$10,025,117.44**
DESIGN PHASE	$1,654,526.09
CONSTRUCTION PHASE	$8,370,591.35



OLD FREDERICKSBURG ROAD LWC: EXISTING CONDITIONS

Key To Features

- 10 ft Contour
- 5 ft Contour
- Existing Conditions 100-yr FP

N
W E
S

0 200 400 800
Feet
1 inch = 400 feet

halff

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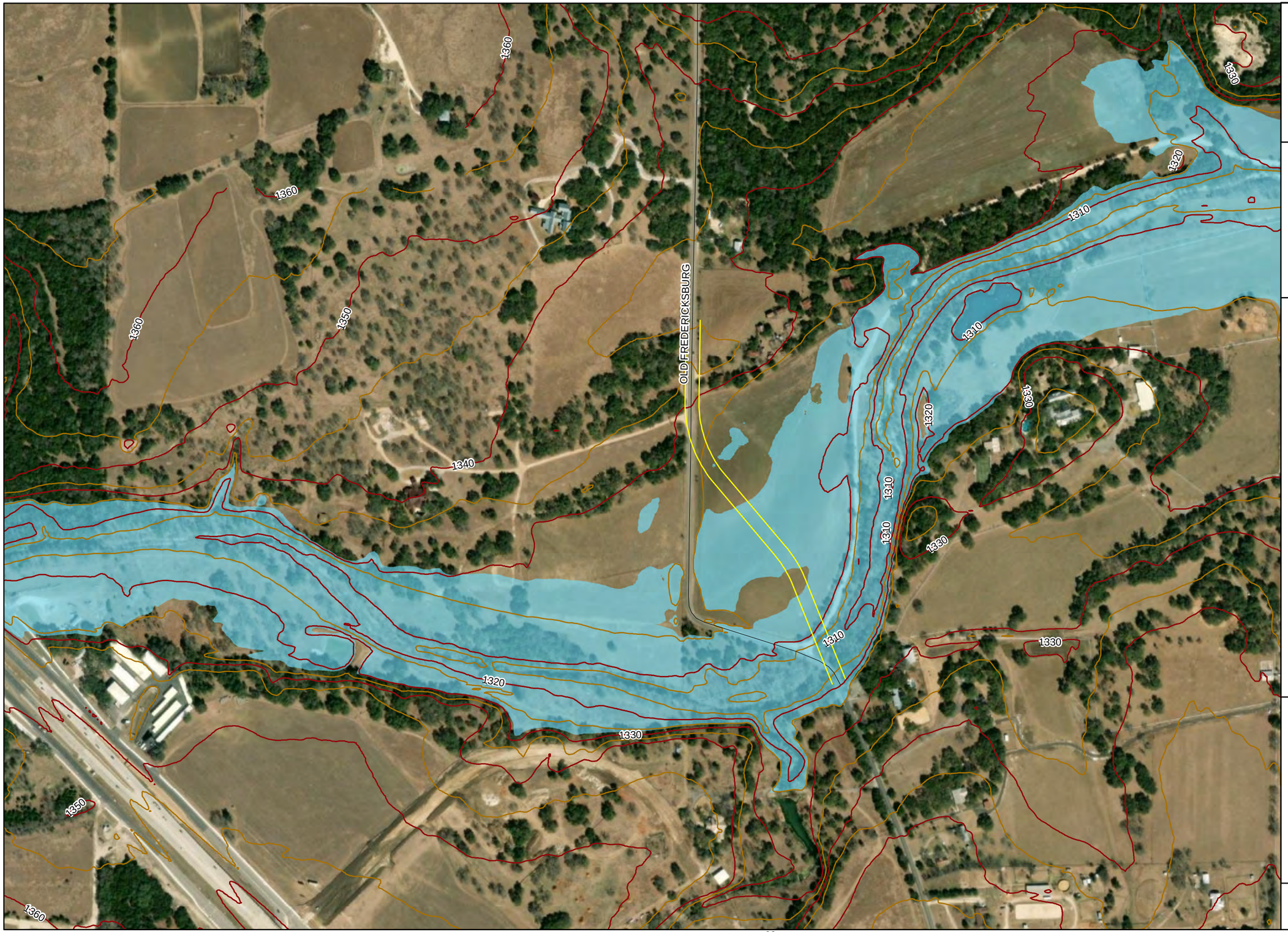
OLD FREDERICKSBURG ROAD LWC: PROPOSED CONDITIONS



Key To Features

- Proposed Roadway
- 10 ft Contour
- 5 ft Contour
- Proposed 100-yr FP Limits

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Feet
1 inch = 400 feet

halff

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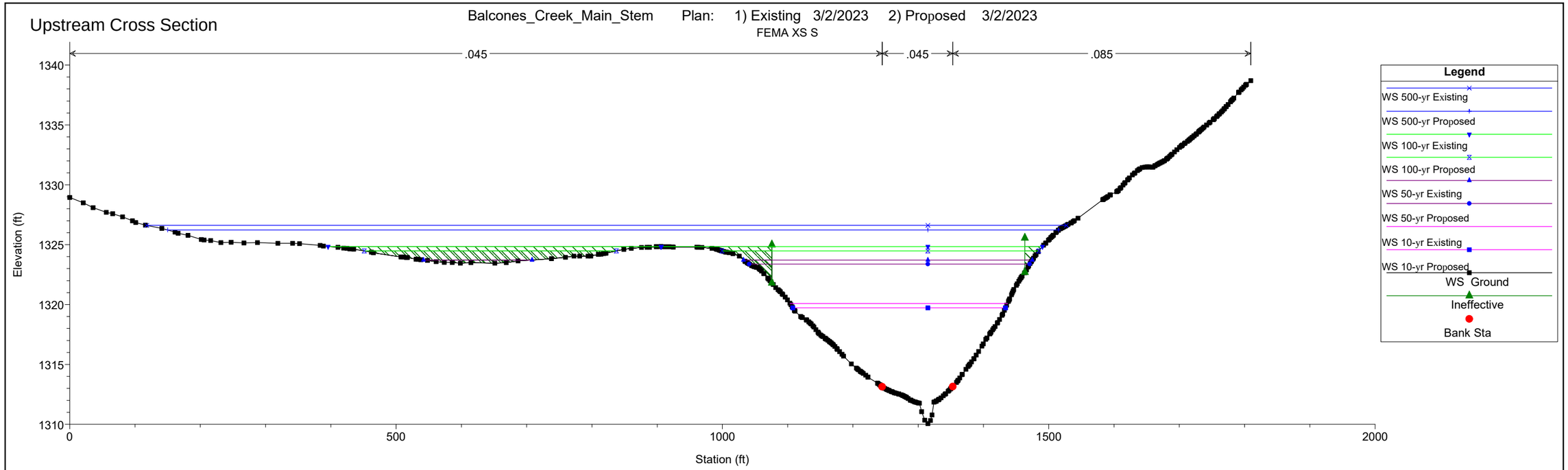
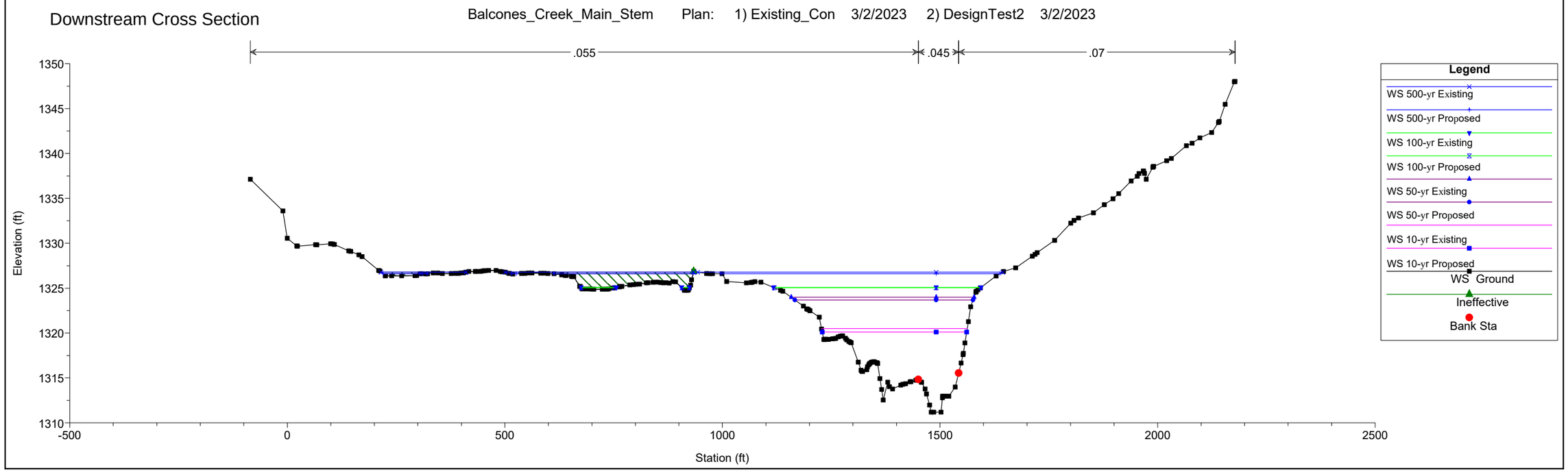
Old Fredericksburg Proposed Low Water Crossing Improvements





2023 San Antonio Regional Flood Plan
Project Summary Sheet

Project Name: Ripple Creek Drainage Improvements

FMP ID: 12XXXXXX

Project Sponsor: City of Shavano Park

Project Source:

Cost Information

Category	Cost
Design	$280,861.58
Real Estate	
Environmental	$10,000.00
Construction	$1,469,394.73
Total Cost**	**$1,788,000.00**

Benefit Cost Analysis (BCA)

Event Damages	Baseline	Project
25-year storm	$ 420,818	$ 297,492
100-year storm	$ 140,926	$ 126,140
Total Benifits	**$ 275.00**	
BCA	**0.0**	

**Rounded up to the nearest thousand

Impact Analysis

Post-Project Total Removed	Storm Event		
	25-year	100-year	
Residential	1.00	1.00	
Commercial	N/A	N/A	
Critical	**N/A**	N/A	
Road (miles)	0.10	0.11	
Others Note	N/A	N/A	
SVI Score	N/A	N/A	

Task 12 Work

Consultant	Halff		
Model	**Cost**	**Impact Analysis**	**BCA**
Yes	Yes	Yes	Yes

Project Description:

A significant amount of runoff collects in a low spot along De Zavala Rd, northeast of Ripple Creek Rd. This pooled storm water is conveyed through a natural low behind almost two dozen homes. Nine homes are subjected to varying degrees of flooding. The natural channel also crosses Ripple Creek Rd, rendering the roadway unnavigable by nearby residents during any storm event and relegating residents to alternative access points.

This project proposes an underground storm drain system that intercepts much of the runoff from the low at De Zavala Rd through an inlet and conveys it southwest towards an existing culvert crossing on De Zavala Rd where it then discharges into Olmos Creek.

This design is anticipated to remove a significant stretch of De Zavala Rd from the floodplain as well as at least one home from both the 25-year and 100-year floodplains.

Amended 2023 San Antonio Regional Flood Plan - Project Narrative

Project Name: **Ripple Creek**
FME ID: **N/A**
Project Sponsor: **City of Shavano Park**
Date: **2/3/2023**

BACKGROUND INFORMATION:

As part of the amended 2023 San Antonio Regional Flood Plan (the Plan), Task 12 expands on previously identified FMEs from the Plan dated January 10th, 2023. Shavano Park Ripple Creek, from the 2020 Preliminary Engineering Report (PER) was expanded on during Task 12. The sponsor for this project is the City of Shavano Park.

The problem area is located along De Zavala Road and Ripple Creek Road, flooding flows across the Municipal Tract across De Zavala Road to Ripple Creek Road. Currently a ridge transvers through the munitract with a northwest portion of the munitract property sheet flowing onto existing lots along Bikeway Ln and the southwest portion of the munitract sheet flows towards an existing low and culvert crossing located at Da Zavala. From this crossing, flow enters an existing low that runs behind residences and crosses Ripple Creek Road, there are no structure within the flooded area.

The work that was completed for the Ripple creek project was an update to the cost estimate, and a Benefit Cost Analysis (BCA).

PROPOSED PROJECT SCOPE

The proposed option to mitigate the drainage concerns with this area include capturing on the southern side of De Zavala with a storm drain and conveying the runoff along De Zavala and discharging into Olmos Creek at De Zavala. The construction of this storm drain would be within the De Zavala ROW and cross Painted Post Ln and several driveways located along De Zavala.

PROPOSED PROJECT SCOPING COST

Refer to the Amended Flood Plan Technical Memo for documented assumptions and methodologies on project costs.

The estimated total project cost to be $1,775,380 in the 2020 City of Shavano Park Preliminary Engineering Report. The cost estimate was updated using the Construction Cost Index (CCI) of 1.008 from April 2020 to September 2020. The total project cost resulted to $1,787,256. There are underground utilities that require relocation and driveway acquisition that might require additional update. Currently, funding for the project has not been identified or approved.

PROPOSED PROJECT BENEFITS

This project will eliminate overtopping at De Zavala Rd and improve the level of service by providing a 100-year conveyance design. The storm drain system will improve the flooding on the surrounding roads and provide access during a storm event.

Refer to the Amended Flood Plan Technical Memo for documented assumptions and methodologies on benefit cost analysis.

The benefits that were evaluated for this project is flooded streets. The resulting benefit cost analysis was 0. The Table 1 below summarizes the components calculated in the TWDB BCA Tool.

Amended 2023 San Antonio Regional Flood Plan - Project Narrative

Project Name: **Ripple Creek**
FME ID: **N/A**
Project Sponsor: **City of Shavano Park**
Date: **2/3/2023**

Table 1: TWDB BCA Toolkit

Input Into BCA Toolkit		
Project Useful Life	30	
Event Damages	**Baseline**	**Project**
25 - year storm	$420,818	$297,492
100 - year storm	$140,926	$126,140
Total Benefits from BCA Toolkit	$31,577	
Other Benefits (Not Recreation)	$0	
Recreation Benefits	-	
Total Costs	$941,042	
Net Benefits	-$909,465	
Net Benefits with Recreation	-$909,465	
Final BCR	**0.0**	
Final BCR with Recreation	**0.0**	

PROJECT RISKS

ROW/Real Estate Acquisition

No, land acquisition is not required.

Utilities Coordination:

Yes, there is possible utility conflict running underground along De Zavala Road. The proposed storm drain would cause them to relocate.

Permitting/Environmental:

Yes, a USACE nationwide permit will be required.

Stakeholder coordination:

Due to the road improvement, and utility relocation, the stakeholder will be involved in the process.

Amended 2023 San Antonio Regional Flood Plan - Project Narrative

Project Name: **Ripple Creek**
FME ID: **N/A**
Project Sponsor: **City of Shavano Park**
Date: **2/3/2023**

MITIGATION OF RISKS

Utility Coordination:

The utility coordinator will need to closely work with the affected utility companies to ensure timely completion of the proposed project. The project manager and contractor should minimize, as much as feasible, the amount of disruption of services and travel.

Stakeholder Coordination/Permitting:

Coordination and permitting process should be started early on with Shavano Park acquisitions to avoid schedule delays.

De Zavala and Ripple Road intersection is a main road into the several residential buildings. Road reconstruction will cause traffic disruptions and inconveniences for businesses due to limited alternative access points. Public meetings and flyers will help communicate construction impacts to affected businesses of any service interruption or inconvenience. The businesses near the project limits should be notified several weeks before the construction start date. Construction phasing and traffic control will be an important design component for this project.

NATURE BASED SOLUTION CONSIDERATION

Nature based solutions could be considered for this project. During design this project could incorporate natural channel design components and possible floodplain buffers. To preserve the open space, a park can be considered.

INTERRELATED PROJECTS

This project interrelates with other projects mentioned within the PER, but project completion will not depend on other projects.

2023 SAN ANTONIO REGIONAL FLOOD PLAN
PROJECT COST SUMMARY

Version: 7/2/2021

Project Name:	Ripple Creek Drainage Improvements
Project Sponsor:	City of Shavano Park
Firm Developing:	KFW
Person Developing:	0
Date Developed:	2/10/2023
Unit Prices Used:	11/1/2020

CONSTRUCTION COSTS	
- STREET COST	$0.00
- DRAINAGE COST	$977,330.19
- TRAFFIC COST	$0.00
- TREE PRESERVATION (2%)	$19,546.60
- LANDSCAPING (10%)	$97,733.02
- BOND AND INSURANCE (3%)	$32,838.29
- BARICADES (3%)	$33,823.44
- MOBILIZATION & PREPARATION OF R.O.W. (11% + 4%)	$164,191.47
TOTAL CONSTRUCTION COST ESTIMATE	**$1,325,463.02**
PROGRAM MANAGEMENT FEE (0% of Costs)	$0.00
ENGINEER FEE (Fee Table plus 5%)	$225,328.71
ENGINEER CONTINGENCY (10%)	$22,532.87
CONSTRUCTION CONTINGENCY (10%)	$132,546.30
DESIGN ENHANCEMENT (0% Construction Costs)	$0.00
PERMIT REQUIREMENT COSTS	$33,000.00
UTILITY RELOCATION COSTS	$0.00
RIGHT-OF-WAY (LAND ACQUISITION)	$0.00
RIGHT-OF-WAY SURVEY	$0.00
ENVIRONMENTAL	$10,000.00
MATERIAL TESTING (2% Construction Cost - <$3M, 1.5% - >$3M)	$26,509.26
FEMA FLOOD PLAIN STUDY	$0.00
PROJECT ADMIN. (0%)	$0.00
PRIMELink Costs (0%)	$0.00
INFLATION FACTOR (0% compounded for 5 years)	$0.00
TOTAL PROJECT COST ESTIMATE	**$1,775,380.17**
DESIGN PHASE	$290,861.58
CONSTRUCTION PHASE	$1,484,518.58

RIPPLE CREEK DRAINAGE IMPROVEMENTS

EXISTING CONDITIONS

Key to Features

- Proposed Storm Drain
- Houses
- Existing 100-yr Floodplain

N
W E
S

1 in = 200 ft

halff

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RIPPLE CREEK DRAINAGE IMPROVEMENTS

PROPOSED CONDITIONS

Key to Features

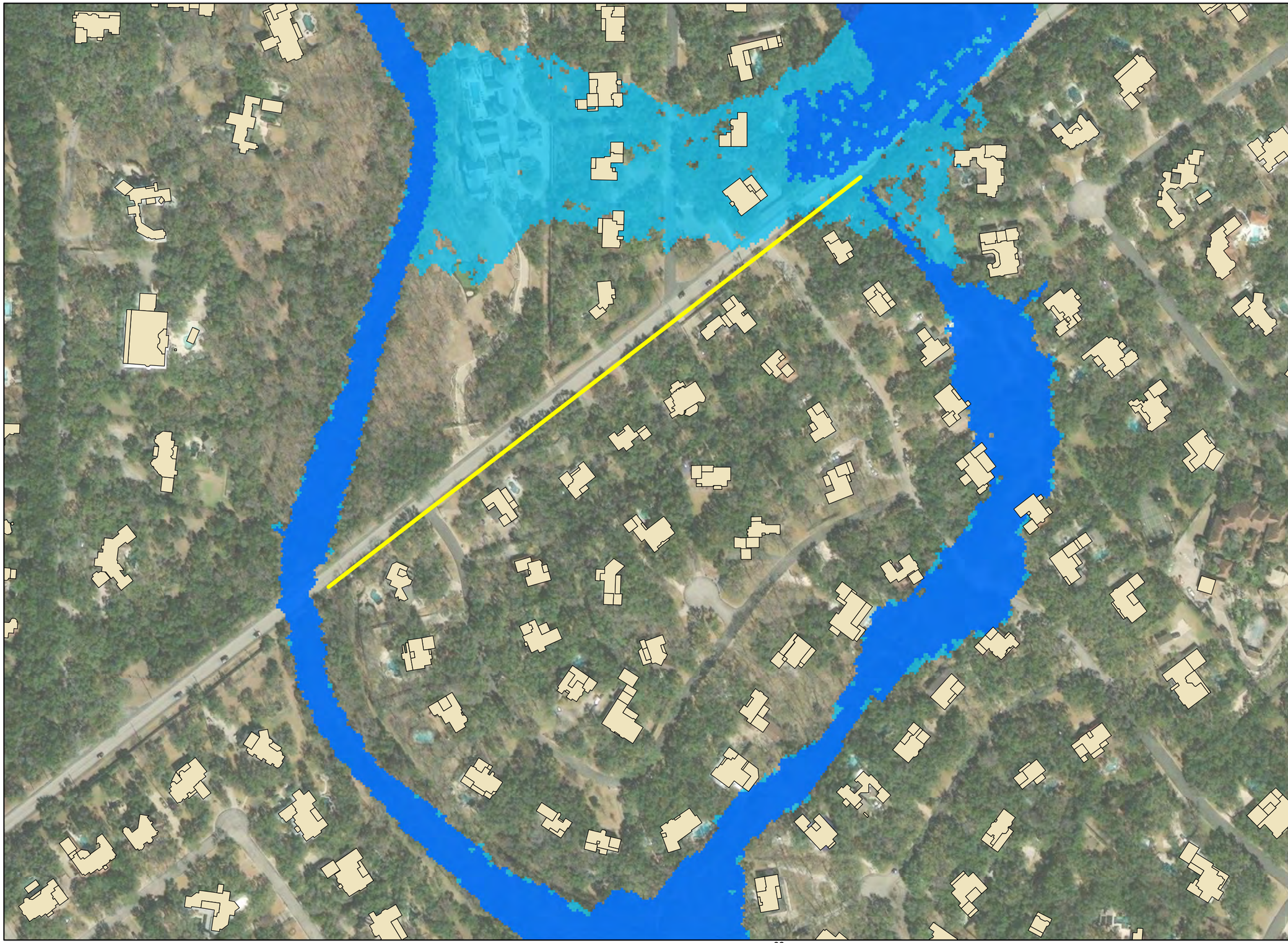
- Proposed Storm Drain
- Houses
- Proposed 100-yr Floodplain

N
W E
S

1 in = 200 ft

halff

Map Document: (Parcels_Affected) 11/8/2006 -- 2:22:32 PM



RIPPLE CREEK DRAINAGE IMPROVEMENTS

EX. AND PROP. CONDITIONS

Key to Features

- Proposed Storm Drain
- Houses
- Proposed 100-yr Floodplain
- Existing 100-yr Floodplain

N
W E
S

1 in = 200 ft

halff

Map Document: (Parcels_Affected) 11/8/2006 -- 2:22:32 PM

2023 San Antonio Regional Flood Plan
Project Summary Sheet

Project Name: Toutant Beauregard at Balcones Creek

FMP ID:

Project Sponsor: Kendall County

Project Source: Kendall County

Cost Information

Category	Cost*
Design	$542,587
Real Estate	$30,550
Environmental	$10,000
Construction	$2,728,028
Total Cost**	**$3,312,000**

*Costs Adjusted from 2012 to 2020 using CCI
**Rounded up to the nearest thousand

Benefit Cost Analysis (BCA)

Event Damages	Baseline	Project
10-year storm	$ 565,032	$ -
50-year storm	$ 565,032	$ 64,649
100-year storm	$ 565,032	$ 323,245
Total Benefits	**$ 643,099**	
BCA	**0.2**	

Impact Analysis

Post-Project Total Removed	Storm Event
	100-year
Residential	N/A
Commercial	N/A
Critical	N/A
Road (miles)	0.12
Others Note	N/A
SVI Score	

Task 12 Work

Consultant	HALFF		
Model	**Cost**	**Impact Analysis**	**BCA**
Yes	Yes	Yes	Yes

Project Description:

At the Toutant Beauregard crossing with Balcones Creek, the road is currently being overtopped by the 10-year flood event at a maximum depth of 7.5 ft. The length of roadway being flooded is approximately 0.017 miles. Constructing a bridge to raise the roadway over the low water crossing at the intersection of Balcones Creek and Toutant Beauregard. The proposed bridge will overtop the 10-year flood event and lower the depth of water overtopping the roadway for larger flood events. The proposed roadway and bridge alignment will straighten the sharp curves that currently exist in Old Fredericksburg Road within the proximity of the Balcones Creek crossing.The proposed bridge will be approximately 150' in length with a connecting roadway realignment of 450' that ties into the existing road.

Amended 2023 San Antonio Regional Flood Plan - Project Narrative

Project Name: **Toutant Beauregard at Balcones Creek - Low Water Crossing**
FME ID: **----------**
Project Sponsor: **Kendall County**
Date: **3/3/2023**

BACKGROUND INFORMATION:

As part of the amended 2023 San Antonio Regional Flood Plan (the Plan), Task 12 expands on previously identified FMEs from the Plan dated January 10th, 2023. Toutant Beauregard at Balcones Creek, FME ID not yet created, from Kendall County was expanded on during Task 12. The sponsor for this project is Kendall County.

The problem area is located along Toutant Beauregard at a low water crossing with Balcones Creek. Currently there is flooding over the roadway crossing and in the surrounding areas. The 10-year storm is currently overtopping the roadway crossing due to a lower grade in the terrain.

The work completed for the Toutant Beauregard at Balcones Creek project was an update to the cost estimate, roadway realignment, hydraulic analysis, and a Benefit Cost Analysis (BCA).

PROPOSED PROJECT SCOPE

At the Toutant Beauregard crossing with Balcones Creek, the road is currently being overtopped by the 10-year flood event at a maximum depth of 7.5 ft. The length of roadway being flooded is approximately 0.017 miles. The project proposes to replace the bridge and raise the roadway over the low water crossing at the intersection of Balcones Creek and Toutant Beauregard. The proposed bridge will safely pass during the 10-year flood event and lower the depth of water overtopping the roadway for larger flood events. The proposed bridge will be approximately 150' in length with a connecting roadway realignment of 450' that ties into the existing road.

PROPOSED PROJECT SCOPING COST

Refer to the Regional Flood Plan Cost Estimate for documented assumptions and methodologies on project costs.

These costs were input into resulting in a project cost of $3,311,165. There are drainage costs that require adjustments, this may increase depending upon any additional adjustments required. At this time, funding for the project has not been identified or approved.

PROPOSED PROJECT BENEFITS

This project will eliminate overtopping at Toutant Beauregard for the 10-year storm event by raising the roadway to provide conveyance. The bridge pier design will provide minimal obstruction to the water floodway and remove roadway out of the floodplain. The bridge is designed to have no adverse impact; therefore, the structure will not change the floodplain extents.

Refer to the Amended Flood Plan Technical Memo for documented assumptions and methodologies on benefit cost analysis.

Amended 2023 San Antonio Regional Flood Plan - Project Narrative

Project Name: **Toutant Beauregard at Balcones Creek - Low Water Crossing**
FME ID: **----------**
Project Sponsor: **Kendall County**
Date: **3/3/2023**

The benefits that were evaluated for this project are, residential buildings, commercial buildings, and recreational. The resulting benefit cost analysis was 0.2. The Table 1 below summarizes the components calculated in the TWDB BCA Tool.

Table 1: TWDB BCA Toolkit

Input Into BCA Toolkit

Project Useful Life 30

Event Damages	Baseline	Project
10 – year storm	$565,032	$0
50 – year storm	$565,032	$64,649
100 - year storm	$565,032	$323,245

Total Benefits from BCA Toolkit	$643,099
Other Benefits (Not Recreation)	$2,861
Recreation Benefits	-
Total Costs	$2,704,762
Net Benefits	-$2,058,802
Net Benefits with Recreation	-$2,058,802
Final BCR	0.2
Final BCR with Recreation	0.2

PROJECT RISKS

ROW/Real Estate Acquisition (Y/N)
Yes, land acquisition is required.

Utilities Coordination (Y/N):
No.

Permitting/Environmental (Y/N):
Yes, a USACE nationwide permit will be required.

Amended 2023 San Antonio Regional Flood Plan - Project Narrative

Project Name: **Toutant Beauregard at Balcones Creek - Low Water Crossing**
FME ID: **----------**
Project Sponsor: **Kendall County**
Date: **3/3/2023**

Stakeholder coordination:

Due to the road improvement and drainage considerations, there will be one stakeholder involved that owns the area where all the construction would occur.

MITIGATION OF RISKS

Utility Coordination:

The utility coordinator will need to closely work with the affected utility companies to ensure timely completion of the proposed project. The project manager and contractor should minimize, as much as feasible, the amount of disruption of services and travel.

Stakeholder Coordination/Permitting:

Coordination and permitting process should be started early on with USACE and property owner acquisitions to avoid schedule delays.

Toutant Beauregard is a low-traffic area. Road reconstruction will cause traffic disruptions and inconveniences for a few private entities. Public meetings and flyers will help communicate construction impacts to affected businesses of any service interruption or inconvenience. Any businesses near the project limits should be notified several weeks before the construction start date. Construction phasing and traffic control will be an important design component for this project.

NATURE BASED SOLUTION CONSIDERATION

Nature based solutions could be considered for this project. During design this project could incorporate natural channel design components and possible floodplain buffers.

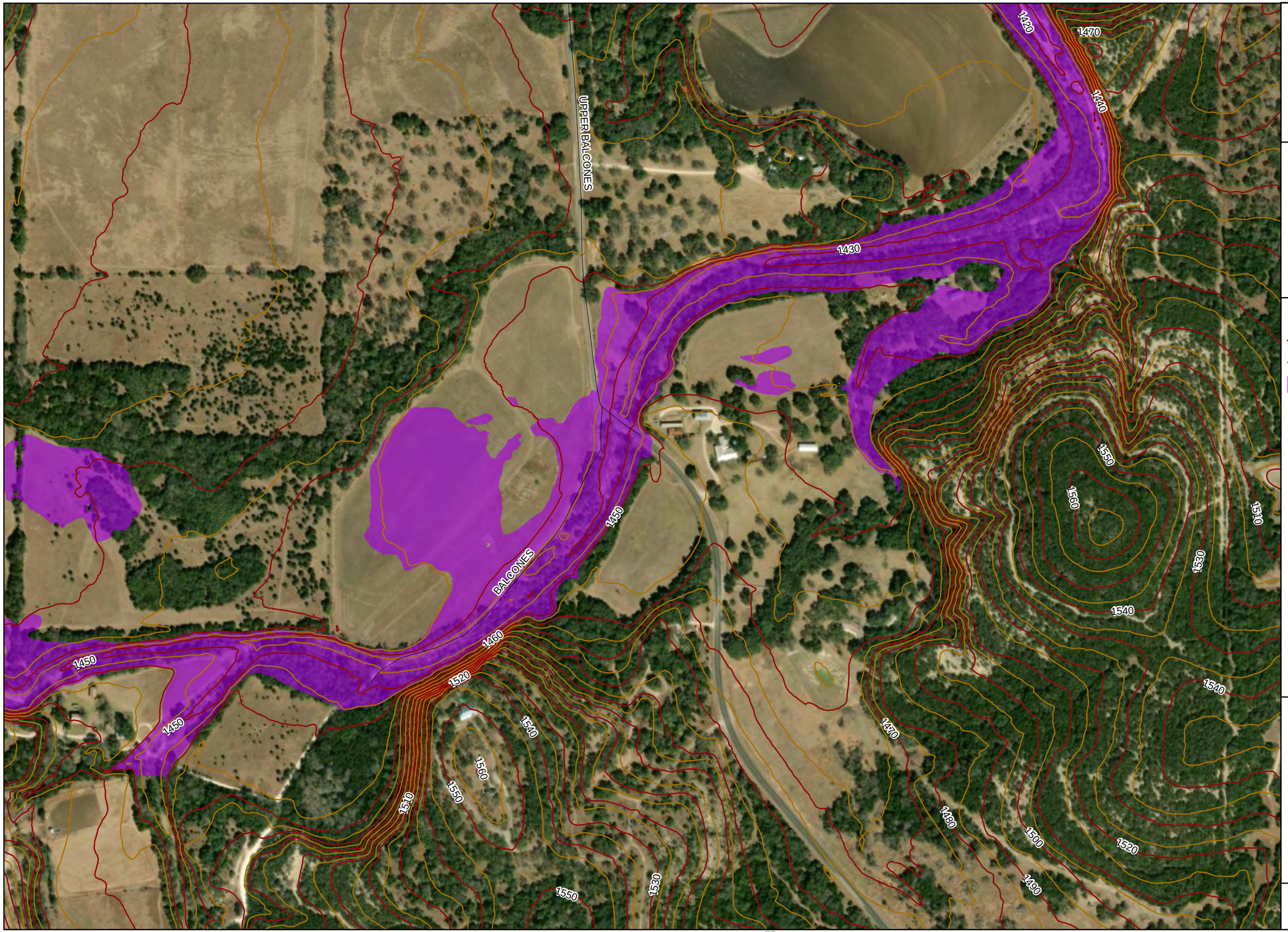
INTERRELATED PROJECTS

This project does not require any interrelated projects to be completed before this project can be constructed.

2023 SAN ANTONIO REGIONAL FLOOD PLAN
PROJECT COST SUMMARY

Project Name:	**Toutant Beauregard at Balcones Creek**
Project Sponsor:	**Kendall County**
Firm Developing:	**HALFF**
Date Developed:	**2/10/2023**
Unit Prices Used:	**11/1/2020**

CONSTRUCTION COSTS	
- DRAINAGE COST	**$1,346,703.98**
- TREE PRESERVATION (2%)	**$35,919.85**
- LANDSCAPING (10%)	**$179,599.25**
- BOND AND INSURANCE (3%)	**$60,345.35**
- BARICADES (3%)	**$62,155.71**
- MOBILIZATION & PREPARATION OF R.O.W. (11% + 4%)	**$301,726.73**
TOTAL CONSTRUCTION COST ESTIMATE	**$2,435,739.36**
ENGINEER FEE (Fee Table plus 5%)	**$401,896.99**
ENGINEER CONTINGENCY (10%)	**$40,189.70**
CONSTRUCTION CONTINGENCY (10%)	**$243,573.94**
PERMIT REQUIREMENT COSTS	**$50,500.00**
RIGHT-OF-WAY (LAND ACQUISITION)	**$28,050.00**
RIGHT-OF-WAY SURVEY	**$2,500.00**
ENVIRONMENTAL	**$10,000.00**
MATERIAL TESTING (2% Construction Cost - <$3M, 1.5% - >$3M)	**$48,714.79**
TOTAL PROJECT COST ESTIMATE	**$3,311,164.77**
DESIGN PHASE	$583,136.69
CONSTRUCTION PHASE	$2,728,028.08



TOUTANT BEAUREGARD ROAD LWC: EXISTING CONDITIONS

Key To Features

- 10 ft Contour
- 5 ft Contour
- Existing Conditions 100-yr FP

N
W E
S

0 200 400 800
Feet
1 inch = 400 feet

halff

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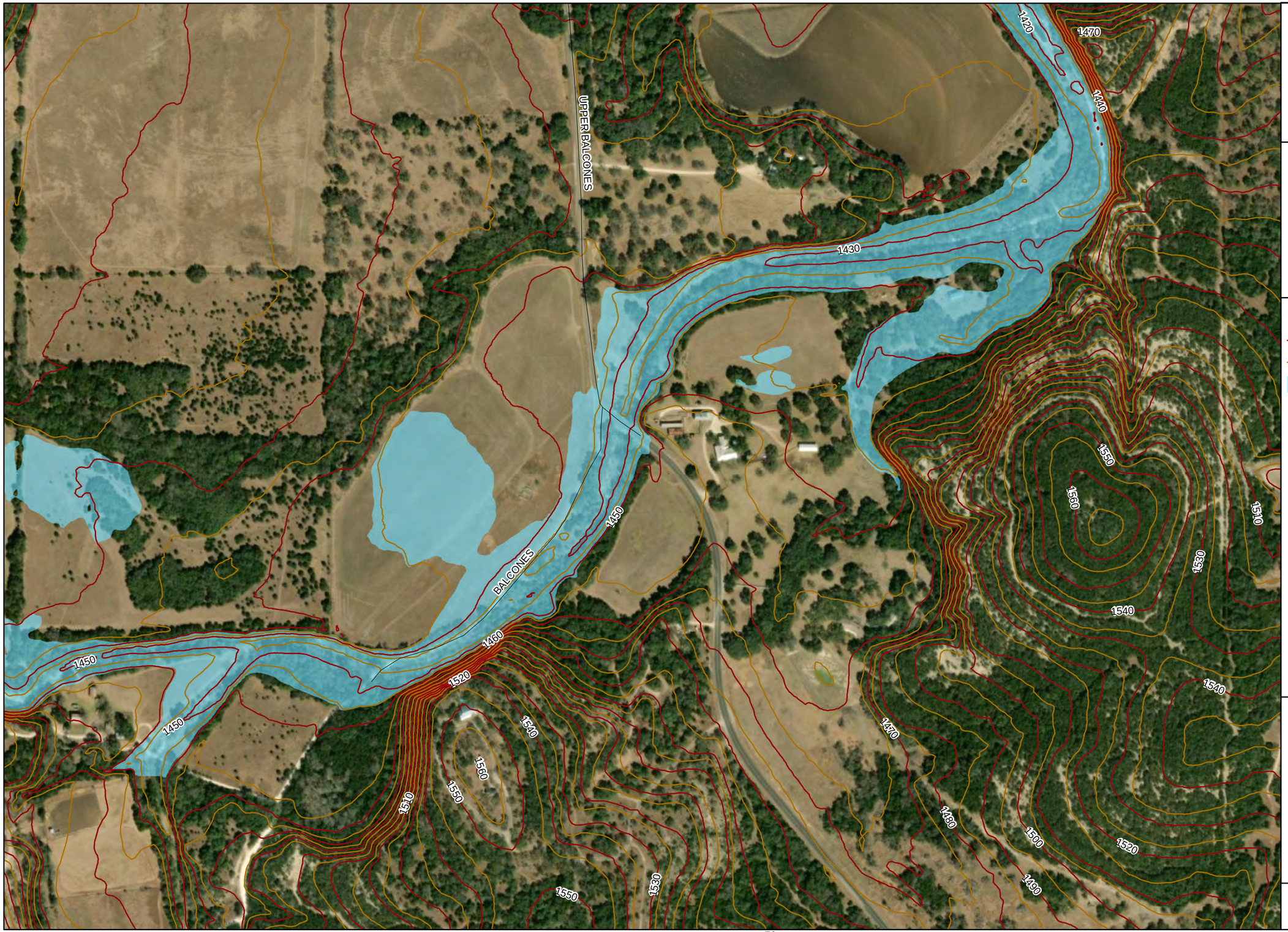

TOUTANT BEAUREGARD ROAD LWC: PROPOSED CONDITIONS

Key To Features

- 10 ft Contour
- 5 ft Contour
- Proposed 100-yr FP Limits

N
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S

0 200 400 800
Feet
1 inch = 400 feet

halff

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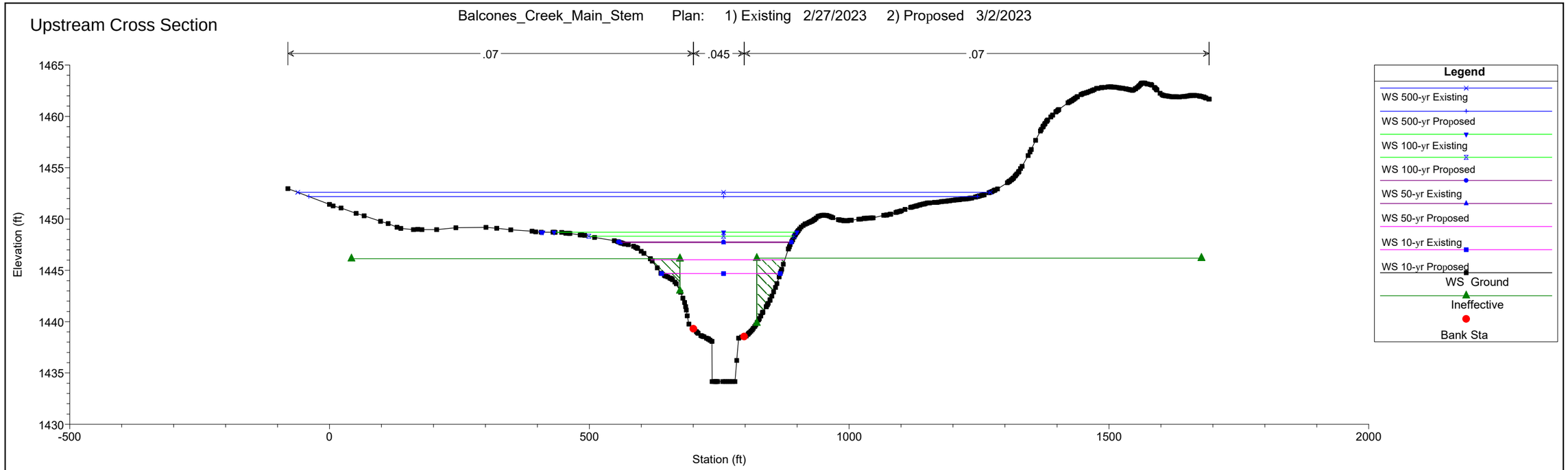
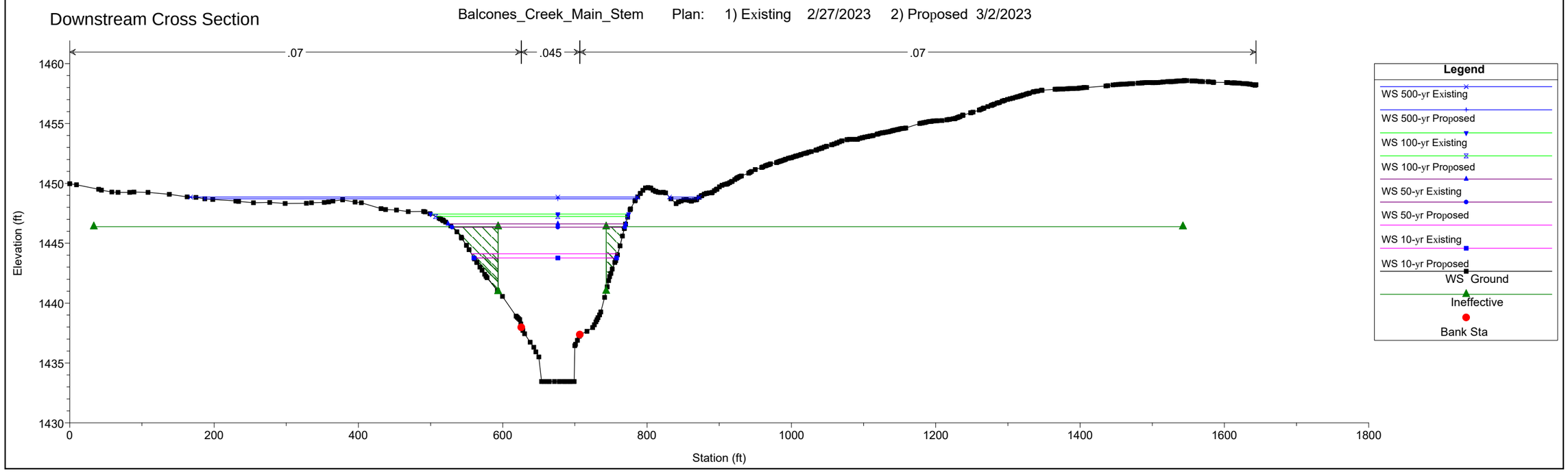
Toutant Beauregard Proposed Low Water Crossing Improvements





2023 San Antonio Regional Flood Plan
Project Summary Sheet

Project Name: Trainer Hale Low Water Crossing

FMP ID: 12XXXXXX

Project Sponsor: Bexar County

Project Source: Bexar County

Cost Information

Category	Cost*
Design	$1,409,369
Real Estate	$0
Environmental	$10,000
Construction	$5,830,564
Total Cost**	**$7,250,000**

Benefit Cost Analysis (BCA)

Event Damages	Baseline	Project
10-year storm	$190,505	-
50-year storm	$262,786	$96,215
100-year storm	$307,887	$150,335
Total Benifits	**$ 262,042**	
BCA	**0.1**	

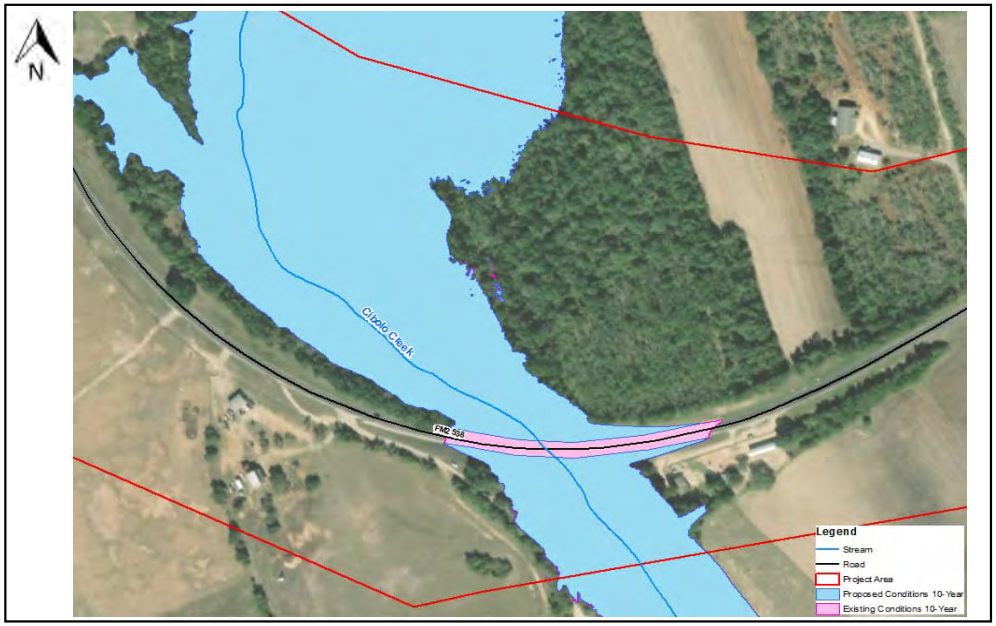
**Rounded up to the nearest thousand

Impact Analysis

Post-Project Total Removed	Storm Event		
	10-year	50-year	100-year
Residential	-	-	-
Commercial	-	-	-
Critical	-	-	-
Road (miles)	0.15	-	-
Others Note	-	-	-
SVI Score	-	-	-

Task 12 Work

Consultant	Halff		
Model	**Cost**	**Impact Analysis**	**BCA**
Yes	Yes	Yes	Yes



Project Description:

At the Trainer Hale Rd (FM 2538) crossing with Cibolo Creek, the road is currently being overtopped by the 10-year flood event at a maximum depth of 21 ft. The proposed project involves raising the bridge to contain the 10-year flood, realigning the road and channel excavation. This project will eliminate overtopping at Trainer Hale for the 10-year storm event by raising the roadway to provide conveyance. The bridge pier design will provide minimal obstruction to the water floodway and remove roadway out of the floodplain. The bridge is designed to have no adverse impact; therefore, the structure will not change the floodplain extents. Trianer Hale Rd (FM 2538) is within TxDOT's right-of-way and the bridge is a TxDOT maintained asset.

Amended 2023 San Antonio Regional Flood Plan - Project Narrative

Project Name: **Trainer Hale at Cibolo Creek - Low Water Crossing**
FME ID: **----------**
Project Sponsor: **Bexar County**
Date: **3/6/2023**

BACKGROUND INFORMATION:

As part of the amended 2023 San Antonio Regional Flood Plan (the Plan), Task 12 expands on previously identified FMEs from the Plan dated January 10th, 2023. Trainer Hale Rd at Cibolo Creek, Low Water Crossing project on the Bexar County line, FME 121000163, was expanded on during Task 12. The sponsor for this project is Bexar County.

The problem area is located along Trainer Hale (FM 2583) at a low water crossing over Cibolo Creek. Currently there is an existing bridge crossing that does not contain the flooding. The 10-year storm event overtops the roadway crossing by a max depth of 21 ft due to a lower grade in the terrain.

The work completed for the Trainer Hale at Cibolo Creek project was an update to the cost estimate, roadway realignment, hydraulic analysis, and a Benefit Cost Analysis (BCA).

PROPOSED PROJECT SCOPE

At the Trainer Hale crossing with Cibolo Creek, the road is currently being overtopped by the 10-year flood event at a maximum depth of 21 ft. The length of roadway being flooded is approximately 0.15 miles. the proposed project includes reconstructing the bridge to raise the roadway over the low water crossing at the intersection of Cibolo Creek and Trainer Hale. The proposed bridge will overtop the 10-year flood event and lower the depth of water overtopping the roadway for larger flood events. The proposed roadway and bridge alignment will straighten the sharp curves that currently exist at Trainer Hale within the proximity of the Cibolo Creek crossing. The proposed bridge will be approximately 516 ft in length.

PROPOSED PROJECT SCOPING COST

Refer to the Regional Flood Plan Cost Estimate for documented assumptions and methodologies on project costs.

These costs were input into resulting in a project cost of $7,249,933. There are drainage costs that require adjustments, this may increase depending upon any additional adjustments required. Currently, funding for the project has not been identified or approved.

PROPOSED PROJECT BENEFITS

This project will eliminate overtopping at Trainer Hale for the 10-year storm event by raising the roadway to provide conveyance. The bridge pier design will provide minimal obstruction to the water floodway and remove roadway out of the floodplain. The bridge is designed to have no adverse impact; therefore, the structure will not change the floodplain extents.

Refer to the Amended Flood Plan Technical Memo for documented assumptions and methodologies on benefit cost analysis.

Amended 2023 San Antonio Regional Flood Plan - Project Narrative

Project Name: **Trainer Hale at Cibolo Creek - Low Water Crossing**
FME ID: **----------**
Project Sponsor: **Bexar County**
Date: **3/6/2023**

The benefits that were evaluated for this project are, residential buildings, commercial buildings, and recreational. The resulting benefit cost analysis was 0.1. The Table 1 below summarizes the components calculated in the TWDB BCA Tool.

Table 1: TWDB BCA Toolkit

Input Into BCA Toolkit		
Project Useful Life	30	
Event Damages	Baseline	Project
10 - year storm	$190,505	$0
50 - year storm	$262,786	$96,215
100 - year storm	$307,887	$150,335
Total Benefits from BCA Toolkit	$262,042	
Other Benefits (Not Recreation)	$0	
Recreation Benefits	-	
Total Costs	$4,328,912	
Net Benefits	-$4,066,870	
Net Benefits with Recreation	-$4,066,870	
Final BCR	0.1	
Final BCR with Recreation	0.1	

PROJECT RISKS

ROW/Real Estate Acquisition (Y/N)
No.

Utilities Coordination (Y/N):
No.

Permitting/Environmental (Y/N):
No

Stakeholder coordination:

Due to road improvement and drainage considerations, there will be one stakeholder involved that owns the area where all the construction will tentatively occur. Coordination with stakeholder and TxDOT will be required.

MITIGATION OF RISKS

Utility Coordination:

The utility coordinator will need to closely work with the affected utility companies to ensure timely completion of the proposed project. The project manager and contractor should minimize, as much as feasible, the amount of disruption of services and travel.

Stakeholder Coordination/Permitting:

Coordination and permitting process should be started early on with USACE and property owner acquisitions to avoid schedule delays. In addition, Trainer Hale is a TxDOT roadway, and the bridge is a TxDOT maintained asset. Coordination and a partnership with TxDOT will need to be established with TxDOT for a project to occur in this location.

Trainer Hale Road is a low-traffic area. Road reconstruction will cause traffic disruptions and inconveniences for a few private entities. Public meetings and flyers will help communicate construction impacts to affected businesses of any service interruption or inconvenience. Any businesses near the project limits should be notified several weeks before the construction start date. Construction phasing and traffic control will be an important design component for this project.

NATURE BASED SOLUTION CONSIDERATION

Nature based solutions could be considered for this project. During design this project could incorporate natural channel design components and possible floodplain buffers.

INTERRELATED PROJECTS

This project does not require any interrelated projects to be completed before this project can be constructed.

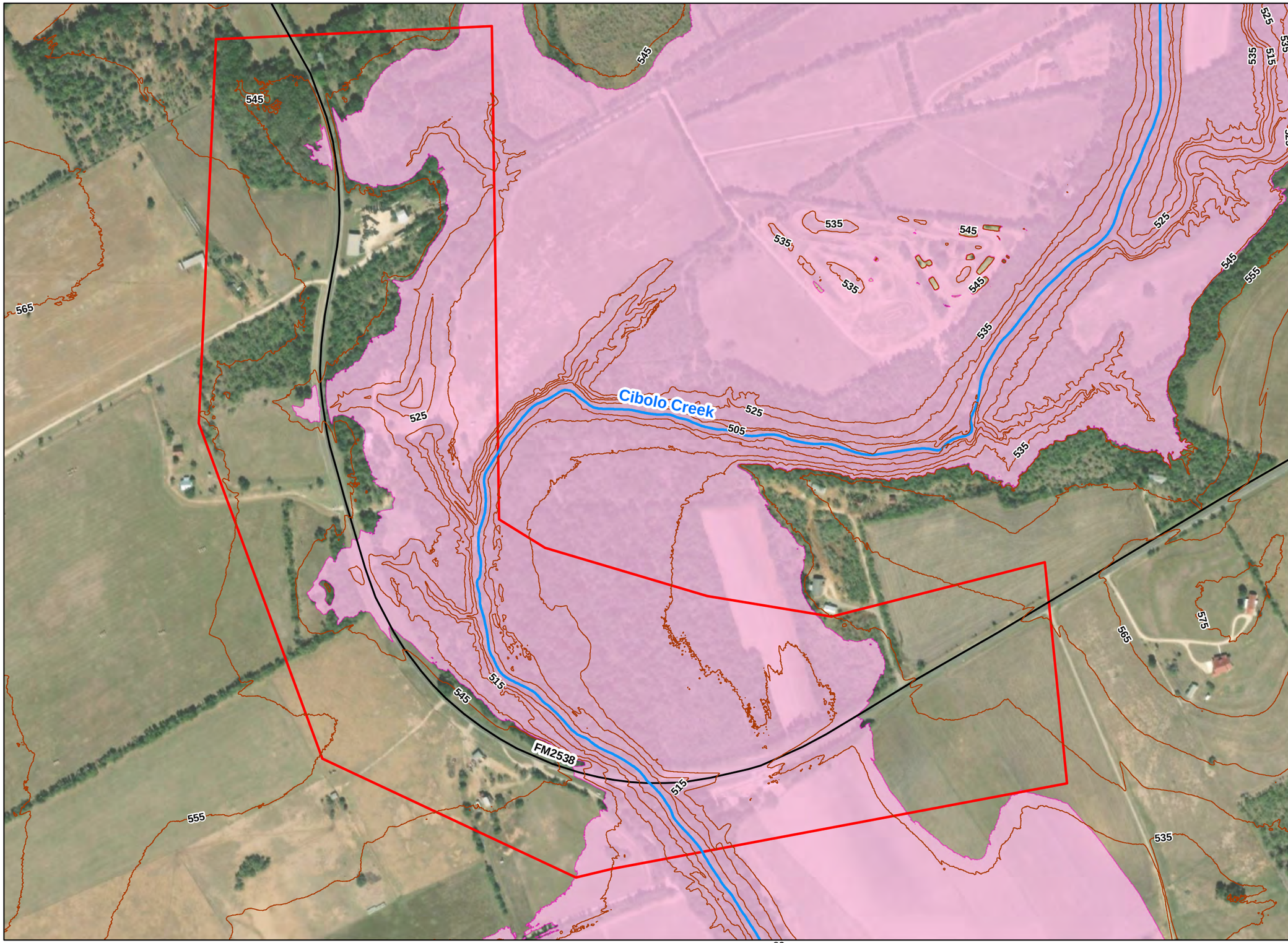
2023 SAN ANTONIO REGIONAL FLOOD PLAN
PROJECT COST SUMMARY

Project Name:	**Trainer Hale Low Water Crossing**
Project Sponsor:	**Bexar County**
Firm Developing:	**HALFF**
Date Developed:	**3/3/2023**
Unit Prices Used:	**11/1/2020**

CONSTRUCTION COSTS	
- STREET COST	**$947,781.84**
- DRAINAGE COST	**$2,907,972.70**
- TREE PRESERVATION (2%)	**$77,115.09**
- LANDSCAPING (10%)	**$385,575.45**
- BOND AND INSURANCE (3%)	**$129,553.35**
- BARICADES (3%)	**$133,439.95**
- MOBILIZATION & PREPARATION OF R.O.W. (11% + 4%)	**$647,766.76**
TOTAL CONSTRUCTION COST ESTIMATE	**$5,229,205.15**
ENGINEER FEE (Fee Table plus 5%)	**$810,526.80**
ENGINEER CONTINGENCY (10%)	**$81,052.68**
CONSTRUCTION CONTINGENCY (10%)	**$522,920.51**
PERMIT REQUIREMENT COSTS	**$48,000.00**
RIGHT-OF-WAY (LAND ACQUISITION)	**$0.00**
RIGHT-OF-WAY SURVEY	**$0.00**
ENVIRONMENTAL	**$10,000.00**
MATERIAL TESTING (2% Construction Cost - <$3M, 1.5% - >$3M)	**$78,438.08**
TOTAL PROJECT COST ESTIMATE	**$6,780,143.22**
DESIGN PHASE	$949,579.48
CONSTRUCTION PHASE	$5,830,563.74

REGION 12 SAN ANTONIO FLOOD PLANNING GROUP

TRAINER HALE (FM2538) LWC: EXISTING CONDITION



Key to Features

- 10ft_contour
- Stream
- Road
- Project Area
- Existing Conditions 100-Year

N
W E
S

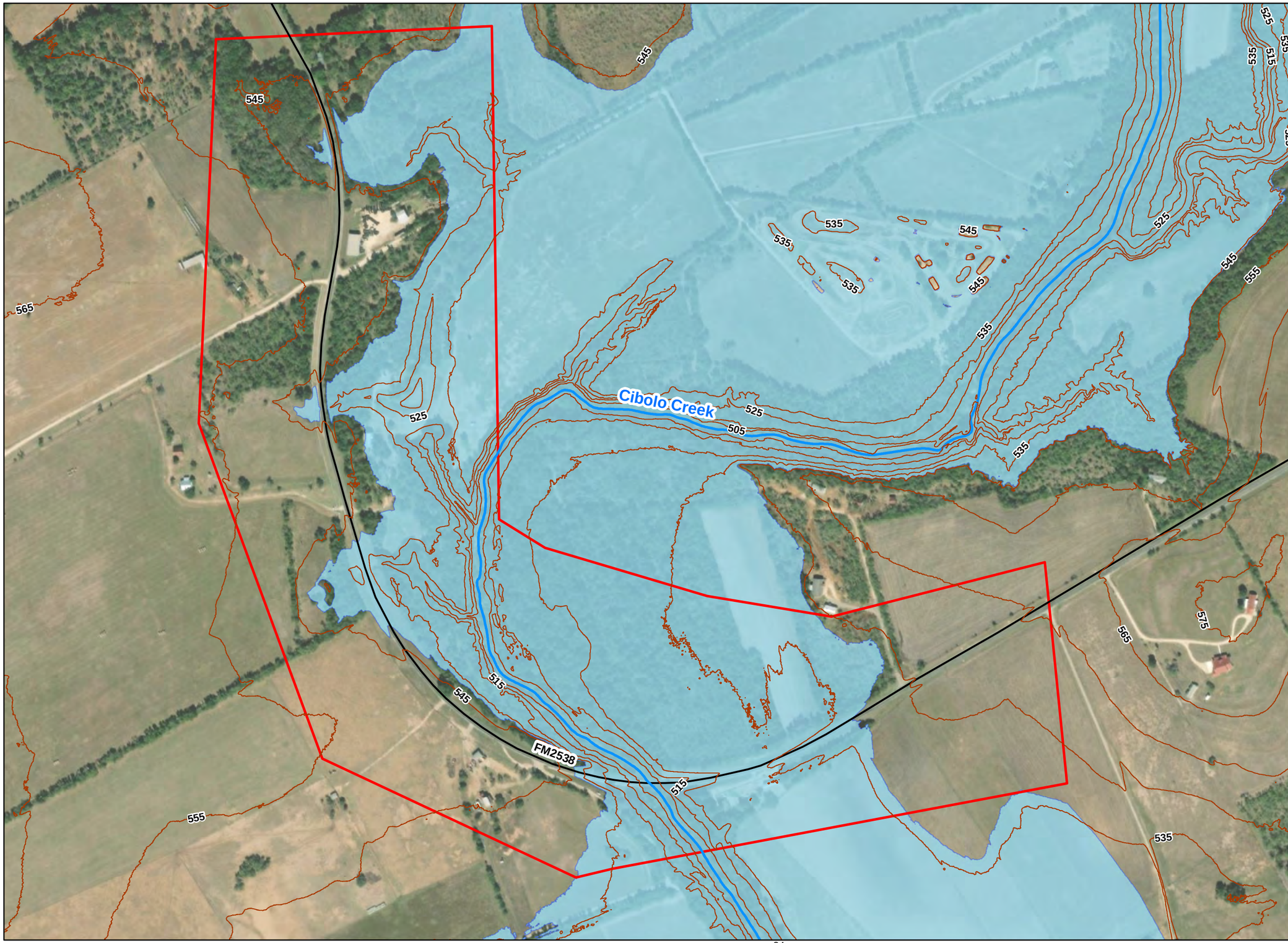
0 200 400 800
Feet
1 inch = 500 feet

halff

Map Document: (Parcels_Affected) 11/8/2006 -- 2:22:32 PM

REGION 12 SAN ANTONIO FLOOD PLANNING GROUP

TRAINER HALE (FM2538) LWC: PROPOSED CONDITION



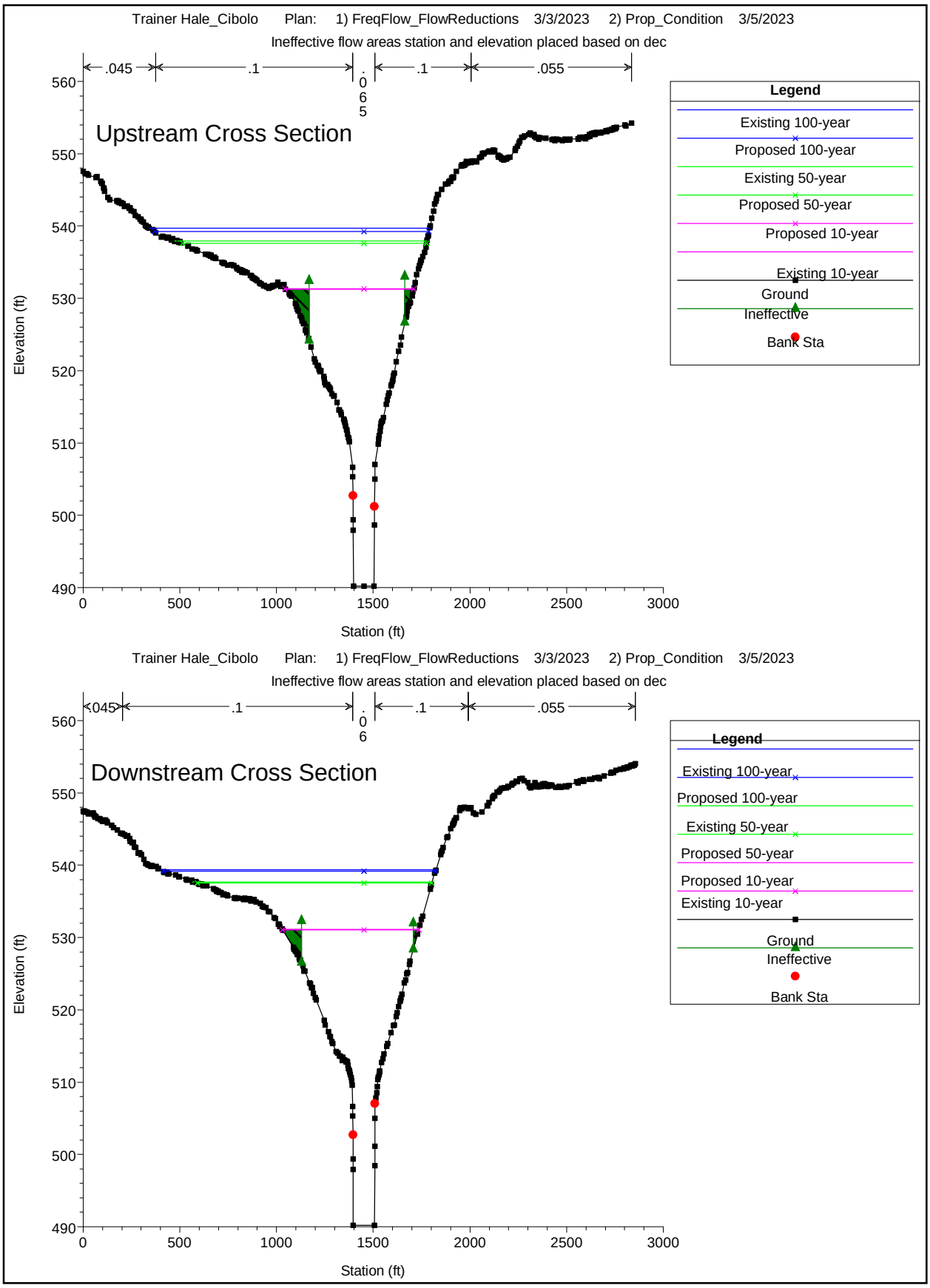
Key to Features

- 10ft_contour
- Stream
- Road
- Project Area
- Proposed Conditions 100-Year

N
W E
S

0 200 400 800
Feet
1 inch = 500 feet

halff

Map Document: (Parcels_Affected) 11/8/2006 -- 2:22:32 PM

Trainer Hale Rd (FM 2536) Proposed Low Water Crossing Improvements