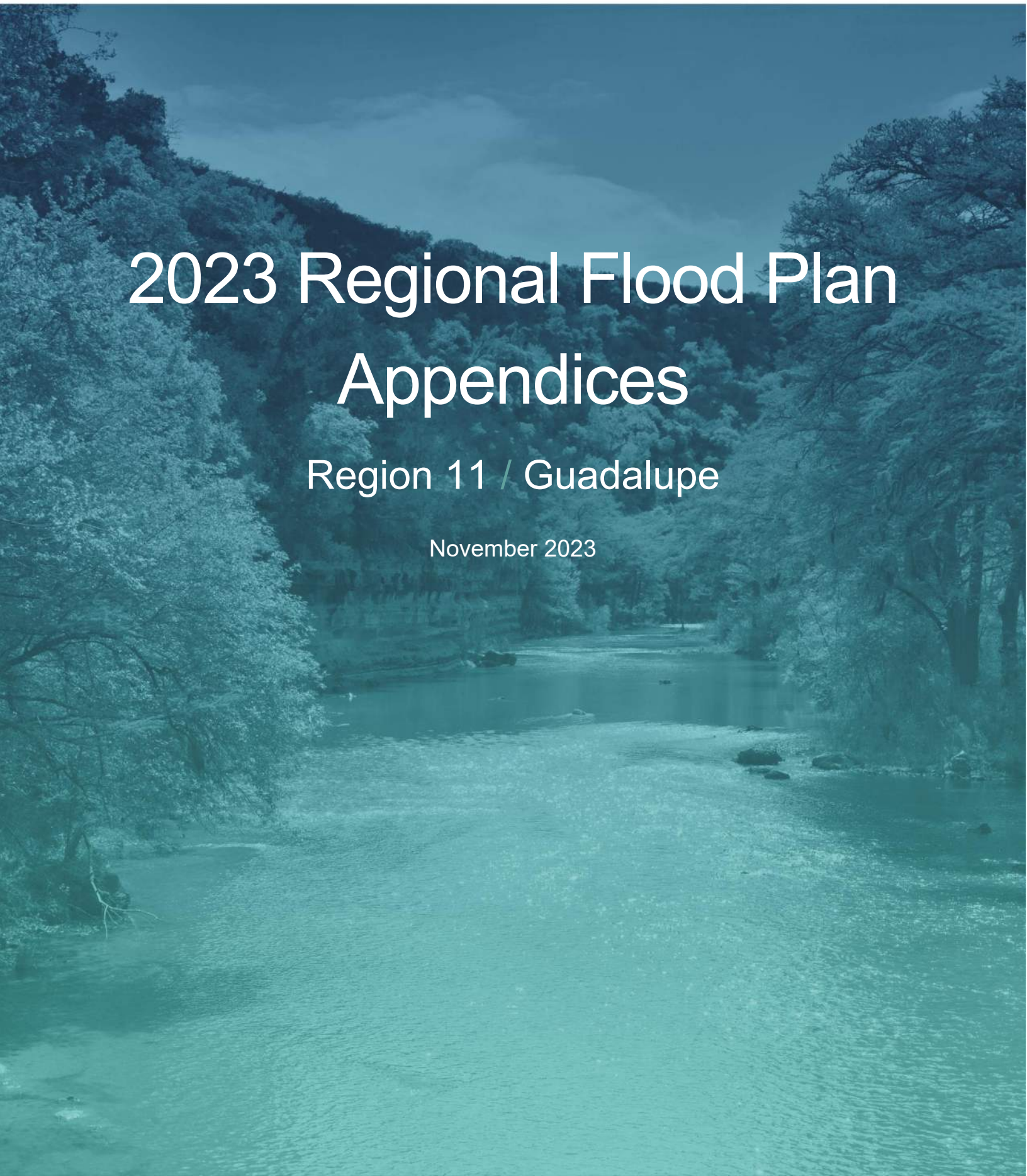
REGION 11 GUADALUPE
REGIONAL FLOOD PLANNING GROUP

Volume 3



2023 Regional Flood Plan Appendices

Region 11 / Guadalupe

November 2023

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Volume III – Lists and Documents

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Appendix 1-A

List of Previous Studies Considered for Development of the Regional Flood Plan

List of Previous Studies Relevant to the Regional Flood Plan

Tile	Study Area	Sponsor	Year
Bandera County Flood Insurance Study (FIS)	Bandera County	Federal Emergency Management Agency (FEMA)	2020
Bastrop County FIS	Bastrop County	FEMA	2016
Blanco County FIS	Blanco County	FEMA	1991
Blanco County Hazard Mitigation Plan	Blanco County, City of Johnson City	Blanco County	2016
Caldwell County FIS	Caldwell County	FEMA	2020
Caldwell County Flood Protection Planning	Caldwell County	Caldwell County	2020
Caldwell County Hazard Mitigation Action Plan	Caldwell County, City of Lockhart, City of Luling, City of Martindale, Emergency Service District (ESD) #1, ESD #3, ESD #4, County Line Special Utility District, Lockhart Independent School District (ISD), Luling ISD, Martindale Water Supply Corporation, Maxwell Water Supply Corporation, and Plum Creek Conservation District	Caldwell County	2020
Hays Caldwell Water Treatment Plant Floodwall	Portion of Hays County	Canyon Regional Water Authority (WA)	2020
Pipeline Bore Under Lake Dunlap	Lake Dunlap	Canyon Regional WA	2020
Calhoun County FIS	Calhoun County	FEMA	2018
Calhoun County Hazard Mitigation Plan	Calhoun County, City of Port Lavaca, City of Seadrift, and City of Point Comfort	Calhoun County	2017
Comal County FIS	Comal County	FEMA	2009
Comal County Hazard Mitigation Action Plan	Comal County, City of Bulverde, City of Garden Ridge, and City of New Braunfels	Comal County	2018
River Road Low Water Crossing Improvement	Comal County	Comal County Master Water Improvement District (WID)	2020
Veramendi Regional Stormwater Detention Facility	Comal County	Comal County Master WID	2020
DeWitt County FIS	DeWitt County	FEMA	2011
DeWitt County Mitigation Action Plan	Unincorporated DeWitt County, City of Cuero, City of Nordheim, City of Yorktown, DeWitt County Drainage District	DeWitt County	2016
Flood Warning System & Stream Gage Network	DeWitt County	DeWitt County Drainage District #1	2020
Fayette County FIS	Fayette County	FEMA	2006

Tile	Study Area	Sponsor	Year
Fayette County Multi-Jurisdictional Hazard Mitigation Plan Update	Fayette County, City of Carmine, City of Flatonia, City of LaGrange	Texas Colorado River Floodplain Coalition	2011
Gillespie County FIS	Gillespie County	FEMA	2001
City of Fredericksburg and Gillespie County Hazard Mitigation Plan	The City of Fredericksburg and Gillespie County	The City of Fredericksburg and Gillespie County	2018
Goliad County FIS	Goliad County	FEMA	2010
Goliad County Hazard Mitigation Action Plan	Goliad County	Goliad County Emergency Management	2015
Gonzales County FIS	Gonzales County	FEMA	2020
Gonzalez County Multi-Hazard Mitigation Plan	Gonzales County, City of Gonzales, City of Nixon, City of Smiley, and City of Waelder	Gonzales County	2018
Guadalupe County FIS	Guadalupe County	FEMA	2020
Guadalupe County Hazard Mitigation Action Plan	Guadalupe County, City of Cibolo, and City of Seguin	Guadalupe County	2021
Lake Dunlap Spillgate Replacement and Dam Armoring	Lake Dunlap	Guadalupe-Blanco River Authority (RA)	2020
Lake McQueeney Spillgate Replacement and Dam Armoring	Lake McQueeney	Guadalupe-Blanco RA	2020
Lake Placid Spillgate Replacement and Dam Armoring	Lake Placid	Guadalupe-Blanco RA	2020
Hays County FIS	Hays County	FEMA	2005
Hays County Hazard Mitigation Plan	Hays County, Village of Bear Creek, City of Buda, City of Dripping Springs, City of Hays, City of Kyle, City of Mountain City, City of Niederwald, City of San Marcos, City of Uhland, City of Wimberley, and City of Woodcreek	Hays County	2017
Hays County Community Flood Mitigation	Hays County	Hays County	2020
Karnes County FIS	Karnes County	FEMA	2010
Karnes County Multi-Jurisdictional – Wilson County Multi-Jurisdictional Hazard Mitigation Action Plan	Karnes County, Wilson County, City of Floresville, City of La Vernia, City of Poth, City of Stockdale, Falls City, Karnes City, City of Kennedy, City of Runge, La Vernia ISD, and Karnes City ISD	Karnes County and Wilson County	2020
Flood Protection Planning Study	Karnes County	Karnes County	2020
Kendall County FIS	Kendall County	FEMA	2020
Kendall County Hazard Mitigation Plan	Kendall County, Lower Colorado River Authority, Pedernales Electric Cooperative, Bandera Electric Cooperative, Boerne Chamber of Commerce, Boerne Kendall County Economic Development Corporation, Comfort Floodplain	Kendall County	2017

Tile	Study Area	Sponsor	Year
	Coalition, and Methodist Healthcare System		
Kerr County FIS	Kerr County	FEMA	2020
Kerr County Multi-Hazard Mitigation Plan	Center Point ISD, City of Ingram, City of Kerrville, Hunt ISD, Ingram ISD, Kerr County, Kerrville ISD, Schreiner University, Sid Peterson Memorial Hospital, and Upper Guadalupe River Authority	Kerr County	2018
Lavaca County FIS	Lavaca County	FEMA	2010
Lavaca County Hazard Mitigation Plan	Lavaca County, City of Hallettsville, City of Moulton, City of Shiner, City of Yoakum	Lavaca County	2018
Real County Hazard Mitigation Plan	Real County, City of Leaky, and City of Camp Wood	Real County	2012
Refugio County FIS	Refugio County	FEMA	2014
Refugio County Multi-Hazard Mitigation Plan	Refugio County, Town of Refugio, Town of Woodsboro, Refugio ISD, and Woodsboro ISD	Refugio County	2016
San Marcos Flood Protection Plan	San Marcos	San Marcos	2007
CDBG-DR Infrastructure Feasibility Study	San Marcos	San Marcos	2017
CDBG-DR Hydrology and Hydraulics Technical Memorandum	San Marcos	San Marcos	2017
2D Flood Mitigation Analysis Cottonwood Creek	San Marcos	San Marcos	2021
Briarwood and River Ridge Improvements	San Marcos	San Marcos	2020
Castle Forest Drainage Improvements	San Marcos	San Marcos	2020
Wallace Addition Offsite Drainage Improvements	San Marcos	San Marcos	2020
Travis County FIS	Travis County	FEMA	2020
Travis County Hazard Mitigation Plan	Travis County, City of Pflugerville, City of Sunset Valley, City of Manor, City of Lakeway, and Village of the Hills	Travis County	2017
City of Victoria FIS	City of Victoria	FEMA	1999
Storm Drainage Master Plan	City of Victoria	City of Victoria	2007
Kerr County Flood Warning System Preliminary Engineering Study	Kerr County	Kerr County	2016
New Braunfels Drainage Area Master Plan – Future Phases	New Braunfels	New Braunfels	2021
Drainage CIP List	New Braunfels	New Braunfels	2013
Landa Park Aquatics Center Parking Lot – Green Infrastructure Retrofit	New Braunfels	New Braunfels	2020
Victoria County FIS	Victoria County	FEMA	1998
Victoria County Hazard Mitigation Action Plan	Victoria County, City of Victoria, and Victoria ISD	Victoria County	2018

Tile	Study Area	Sponsor	Year
Annex 2 – TRN Interim Feasibility Study – Phase 2	Victoria County	Victoria County	2016
Wilson County FIS	Wilson County	FEMA	2010
Wimberley Flood Hazard/Risk Assessment Project	Wimberley	Wimberley	2020
Stormwater Master Plan	City of San Marcos	City of San Marcos	2018

Appendix 4-C|

Task 12 Studies Technical Memorandums

REGION 11 GUADALUPE
REGIONAL FLOOD PLANNING GROUP

TO: Chair Doug Miller
Guadalupe Regional Flood Planning Group

FROM: Daniel Harris, PE, CFM
Scheibe Consulting, LLC (TBPE Firm # 13880)

SUBJECT: Task 12 Flood Management Evaluation

DATE: 6/14/2023

PROJECT: Victoria County – Nursery Road at Spring Creek

STATE OF TEXAS
DANIEL LEE HARRIS
104646
LICENSED
PROFESSIONAL ENGINEER

The Guadalupe Regional Flood Planning Group directed the Technical Consultant to complete this Flood Management Evaluation (FME) to develop a potentially feasible Flood Mitigation Project (FMP) under Task 12 for inclusion in the Region 11 Guadalupe Amended Regional Flood Plan.

Background and Study Overview

This study includes an analysis of the low water crossing at Nursery Road on Spring Creek in Victoria County and a recommendation for an improved structure that will be able to pass at least the 10% ACE (10-yr) event without overtopping. The existing structure consists of a single-span bridge and currently passes only a 50% ACE (2-yr) event. The best available hydrology and hydraulics models were developed as part of Phase 2 of the Guadalupe Interim Feasibility Study completed by the USACE and GBRA in 2015. These models will be used as the basis for this study and will be updated with current Atlas 14 rainfall data, current LiDAR upstream and downstream of Nursery Road, and field survey data collected as part of this study. Alternatives to be considered will include the replacement of the existing bridge structure with a new box culvert structure that will be able to pass the required flow without overtopping the roadway or the implementation of flood warning signage and barriers. The project location is provided in ***Figure 1***.

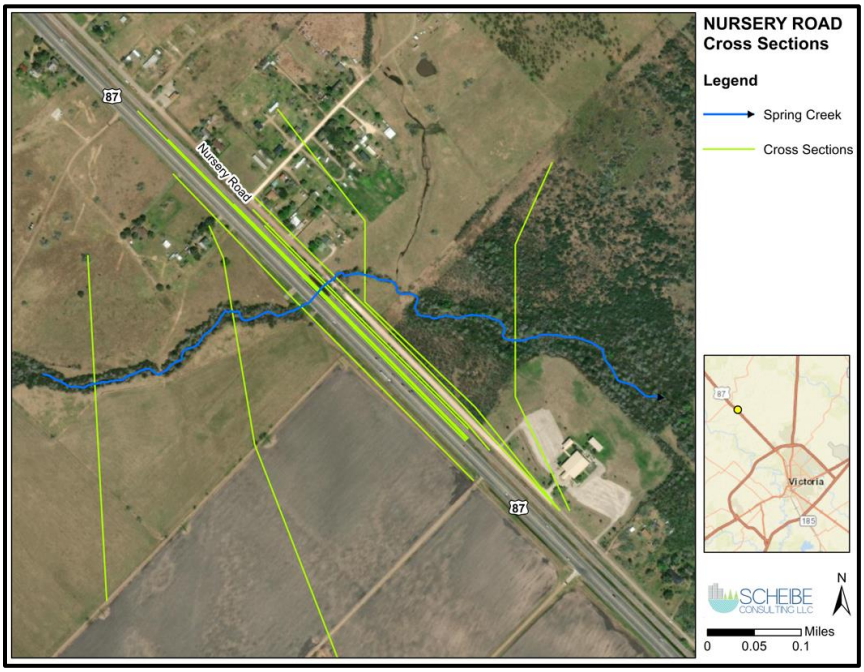

Figure 1: *Study Area*

Hydrologic and Hydraulic Analysis

The sections below provide a summary of the data used and modeling analysis performed to identify existing flood risk and to evaluate potential mitigation alternatives. A georeferenced hydrologic analysis was performed using HEC-HMS (version 3.5) for this project. In addition, a georeferenced hydraulic analysis was performed to evaluate impacts on the study area using a HEC-RAS model (version 6.3.1). These models were developed first as part of Phase 2 of the Guadalupe Interim Feasibility Study completed by the USACE and GBRA in 2015. Following is a detailed description of the assumptions made and the hydrologic and hydraulic analysis performed.

Data Collection and Site Visits

Survey grade GPS equipment was used to obtain elevation points for the roadway, natural ground, and stream flowline for the Nursery Road crossing. ***Figure 2*** and ***Figure 3*** show the downstream and upstream views of Spring Creek from Nursery Road.

Figure 2: *Downstream View at Nursery Road*

Figure 3: *Upstream View at Nursery Road*

Hydrologic Modeling

HEC- HMS was used to calculate peak flows for the study stream. An existing hydrologic model was used from the Phase 2 of the Guadalupe Interim Feasibility Study completed by the USACE and GBRA in 2015. The standard coordinate system used for the GBRA area is NAD 83 (1993) State Plane Coordinates, Texas South Central (Zone 4204) presented in US Survey Feet with a Vertical Datum set to North American Vertical Datum of 1988. Details related to the development of hydrologic parameters can be found in the Technical Report Notebooks for Phase 2 of the Guadalupe Interim Feasibility Study. ***Figure 4*** shows the full model of the Spring Creek watershed. The flow data used for this study was taken from the junctions within the circle shown in the ***Figure 4***. ***Table 1*** contains the flows results from the HMS model utilized for the Nursery Road analysis. ***Table 2*** provides the Atlas 14 rainfall depths used for the analysis, which were taken from the NOAA website for the Nursery Road project location. No additional hydrologic parameters were updated as part of this analysis.

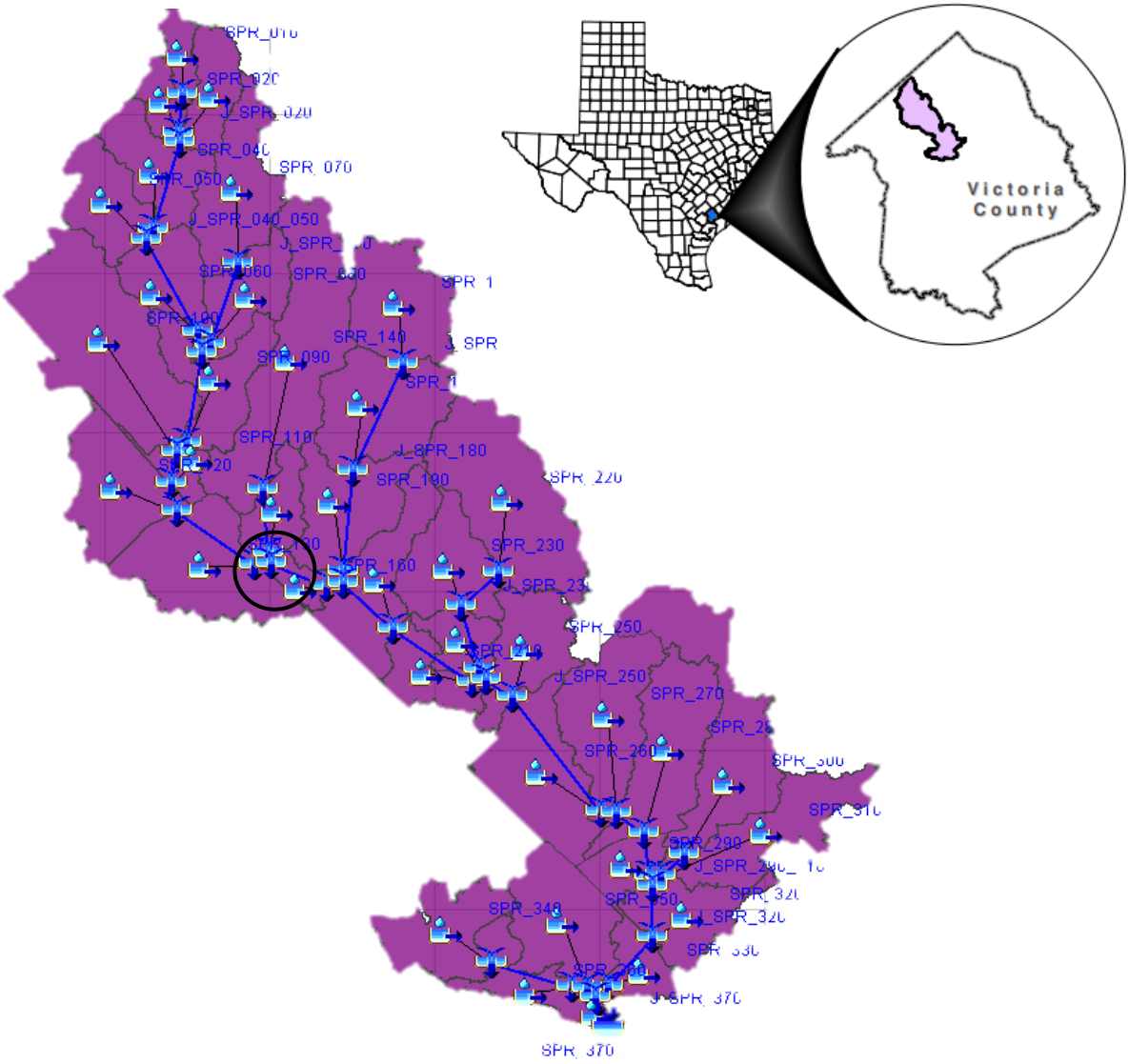

***Figure 4**: Spring Creek Watershed*

***Table 1:** HMS Flow Data*

	Total Outflow (IN)	Peak Outflow (CFS)	Total Outflow (IN)	Peak Outflow (CFS)	Total Outflow (IN)	Peak Outflow (CFS)	Total Outflow (IN)	Peak Outflow (CFS)	Total Outflow (IN)	Peak Outflow (CFS)
	2-YR		**5-YR**		**10-YR**		**25-YR**		**100-YR**	
J_SPR_130	0.9	525.1	2.61	1773.7	4.08	2987.9	6.08	4617	10.38	7487.2
J_SPR_130_150	0.91	615.6	2.61	2049	4.08	3429.5	6.07	5313.2	10.35	8756.1

Table 2: *Atlas 14 Frequency - Depth Table*

Frequency	2-yr	5-yr	10-yr	25-yr	50-yr	100-yr	200-yr	500-yr
5-min	0.53	0.684	0.784	0.918	1.02	1.12	1.22	1.34
15-min	1.13	1.37	1.57	1.83	2.04	2.24	2.43	2.67
60-min	2.12	2.57	2.94	3.45	3.83	4.21	4.21	5.15
2-hour	2.65	3.28	3.81	4.56	5.15	5.75	6.41	7.31
3-hour	2.96	3.72	4.37	5.31	6.06	6.85	7.71	8.91
6-hour	3.5	4.49	5.37	6.64	7.7	8.83	10.1	11.9
12-hour	4.02	5.24	6.36	8.01	9.4	10.9	12.6	15.1
24-hour	4.56	6.05	7.44	9.51	11.3	13.2	15.4	18.5

Hydraulic Modeling

The following is a summary of data sources, assumptions, and procedures used to create updated HEC-RAS models for the study area. Pre-project and post-project hydraulic analyses were performed along Spring Creek near Nursery Road in Victoria County. The current effective steady state HEC-RAS 1D model from the previous study was updated and truncated to meet the scope of this project (see ***Figure 1***). Cross sections and terrain were updated using the latest TNRIS LiDAR topographic data (dated December, 2020). Manning's roughness values were not altered from those used in the original study.

Existing Condition Flood Risk

The existing structure consists of a single-span bridge and currently passes only a 50% ACE (2-yr) event. Nursery Road was not surveyed as part of the Guadalupe Interim Feasibility Study. Therefore, survey grade GPS equipment was used to obtain top of road elevations, rail elevations, pier shots and upstream and downstream flowline elevations. This survey data was used to update the Nursery Road structure in the HEC-RAS model to establish existing conditions water surface profiles as shown in ***Figure 5***, which shows the profile view of Nursery Road, the railroad, and Highway 87 (left to right).

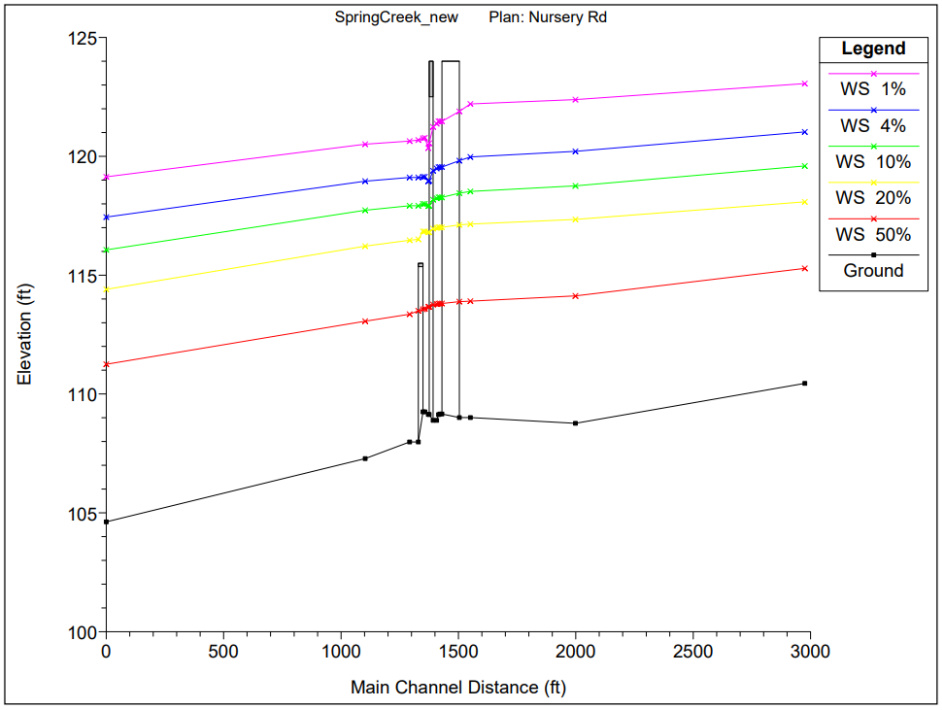

Figure 5: *Profile View of Existing Conditions*

Proposed Flood Risk Reduction

An alternative analysis was performed to evaluate different culvert sizes and deck heights with the goal of reducing the flooding over the low water crossing. The following section describes the proposed project improvements and flood risk reduction benefits of the alternatives evaluated.

Alternative 1

Alternative 1 consists of five (8ft x 8ft) box culverts with the road deck raised between 1.8 feet and 3.7 feet depending on location. This alternative was designed to convey a 5-year flood frequency through the structure without overtopping. The results can be found in ***Table 3*** and ***Figure 6***.

Table 3: *LWC Table for Alternative 1*

Flood Risk	5-year Event		100-Year Event	
	Pre-Project	Post-Project	Pre-Project	Post-Project
Roadway Overtopping Depth (in)	16	0	63	22
Overtopping Duration (hours)	17	0	30	18.7
Daily Traffic Count	349			
Detour Length (min)	1	0	1	1
Structures at Risk	0	0	2	2

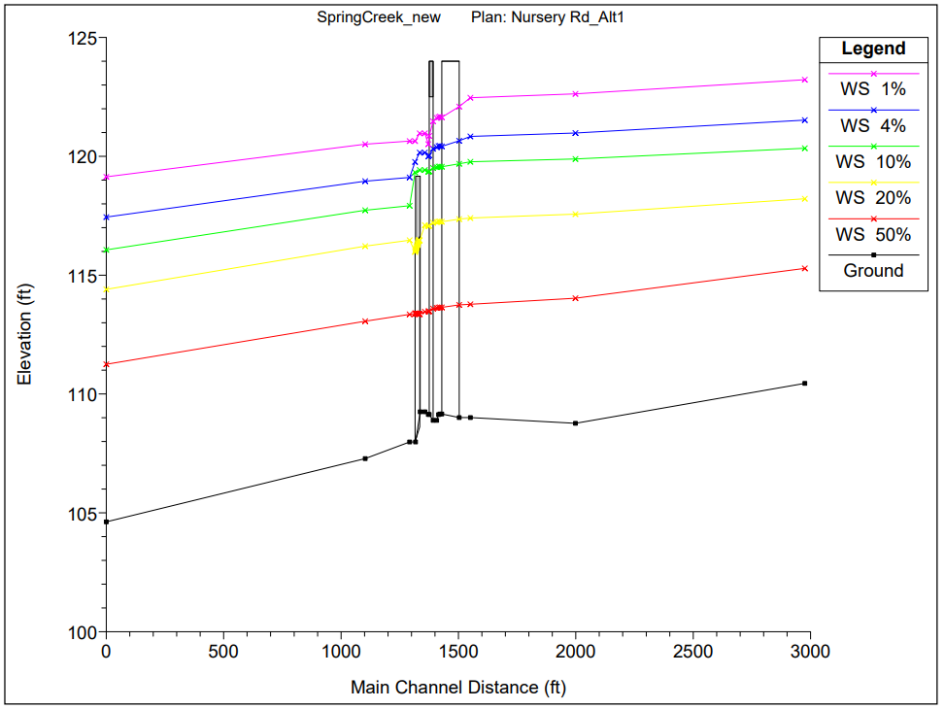

Figure 6: *Profile View of Alternative 1*

Alternative 2

Alternative 2 consists of five (9ft x 9ft) box culverts with the road deck raised between 1.8 feet and 3.7 feet depending on location. This alternative was designed to convey a 10-year flood frequency through the structure without overtopping. The results can be found in ***Table 4*** and ***Figure 7***.

Table 4: *LWC Table for Alternative 2*

Flood Risk	10-year Storm		100-Year Storm	
	Pre-Project	Post-Project	Pre-Project	Post-Project
Roadway Overtopping Depth (in)	29	0	63	20
Overtopping Duration (hours)	21	0	30	18.1
Daily Traffic Count	349			
Detour Length (min)	1	0	1	1
Structures at Risk	1	0	2	2

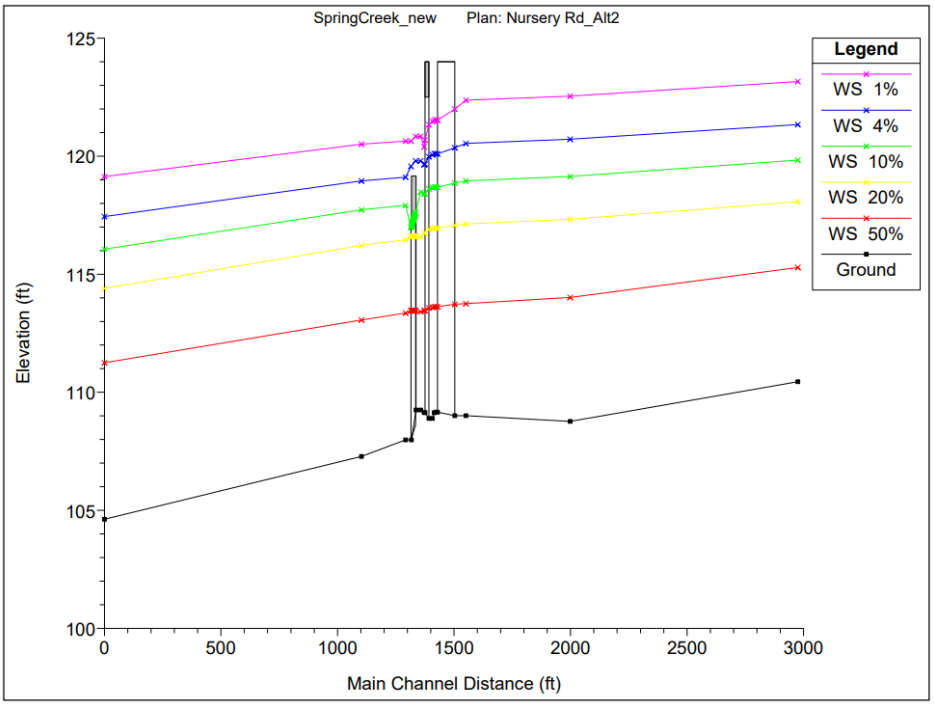

Figure 7: *Profile View of Alternative 2*

Alternative 3

Alternative 3 consists of 7 (10ft x 10ft) box culverts with the road deck raised 2.8 feet and 4.7 feet depending on location. This alternative was designed to convey a 25-year flood frequency through the structure without overtopping. The results can be found in ***Table 5*** and ***Figure 8***.

Table 5: *LWC Table for Alternative 3*

Flood Risk	25-year Storm		100-Year Storm	
	Pre-Project	Post-Project	Pre-Project	Post-Project
Roadway Overtopping Depth (in)	44	0	63	13
Overtopping Duration (hours)	24.7	0	30	16
Daily Traffic Count	349			
Detour Length (min)	1	0	1	1
Structures at Risk	1	0	2	2

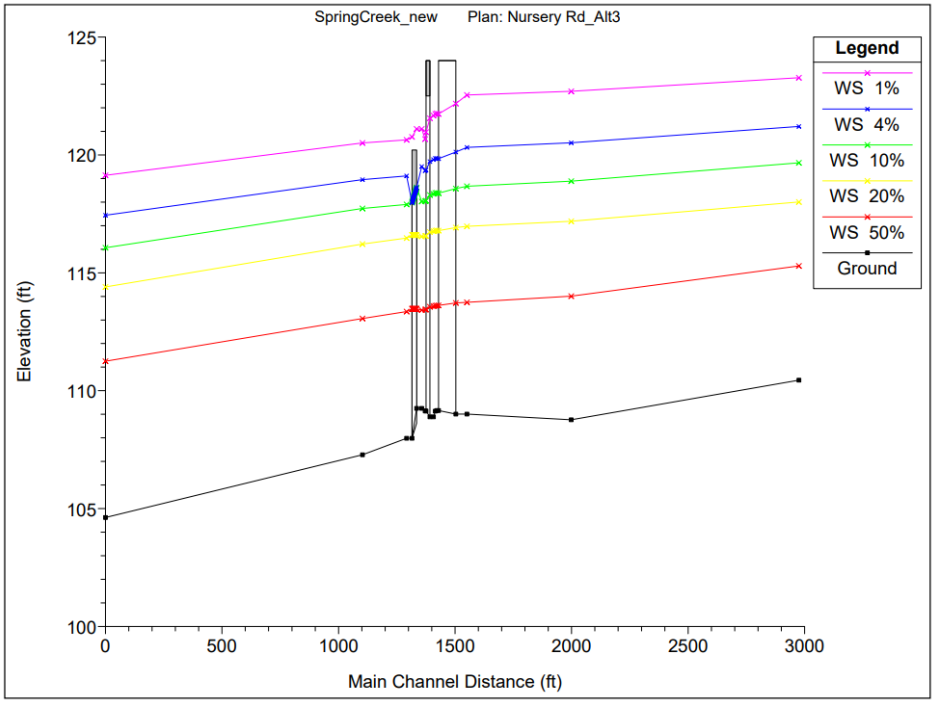

Figure 8: *Profile View of Alternative 3*

Summary

Table 6 gives a summary of all of the alternatives discussed, as well as the cost and benefit-cost ratio of only adding signage, barricades, and maintaining the existing structure (Alternative 4). There is a recommendation to implement Alternative 2 which consists of five (9ft x 9ft) box culverts that will be able to pass the 10% ACE (10-yr) event without overtopping. This includes increasing the bridge deck elevation between 1.8 feet and 3.7 feet depending on location. A detailed cost estimate for Alternative 2 is shown in ***Table 7***.

Table 6: *Summary of Alternatives*

Alternative	Description	Probable Cost	BCR
Alternative 1	Designed for a 20% ACE	$669,570	1.9
Alternative 2	Designed for a 10% ACE	$786,045	1.1
Alternative 3	Designed for a 4% ACE	$983,395	0.3
Alternative 4	Cost of warning signs, barriers, and maintaining existing structure	$65,824	0.02

Table 7: *Opinions of Probable Project Cost for Alternative 2*

TxDot Item No.	Description of Item	Probable Quantity	Unit	Unit Price	Cost
169-6004	Soil Retention Blankets (CL1) (TY D)	1873	SY	$ 2.50	$ 4,683
164-6023	CELL FBR MLCH SEED(PERM)(RURAL)(CLAY)	1873	SY	$ 0.73	$ 1,367
100-6001	Preparing ROW	2	AC	$ 17,851.73	$ 35,703
105-6026	Removing Stab Base & Asph Pav (13" - 18")	2200	SY	$ 6.50	$ 14,300
132-6005	EMBANKMENT (FINAL)(ORD COMP)(TY C)	1310	CY	$ 17.63	$ 23,095
496-6009	Remove Str (Bridge 0-99 ft length)	1	EA	$ 23,000.00	$ 23,000
462-6028	Concrete Box Culvert (9ft x 9ft)	140	LF	$ 1,200.00	$ 168,000
466-6156	Wingwall (FW-0) (HW=9ft)	4	EA	$ 18,000.00	$ 72,000
260-6007	Lime TRT (New Base) (6")	175	SY	$ 3.95	$ 691
247-6056	FL BS (CMP IN PLC)(TY D GR 4)(FNAL POS)	611	CY	$ 65.00	$ 39,715
340-6122	D-GR HMA(SQ) TY-D PG70-22	272	TON	$ 145.00	$ 39,440
450-6018	Rail (TY T631)	350	LF	$ 80.70	$ 28,245
502-6001	Barricades, Signs and Traffic Handling	1	MO	$ 4,500.00	$ 4,500
168-6001	Vegetation Watering	126	MG	$ 25.00	$ 3,150
5052-6001	Barrier Gate	2	EA	$ 20,000.00	$ 40,000
636-6001	Aluminum Signs	4	EA	$ 35.00	$ 140
	Staff Gauge	2	EA	$ 500.00	$ 1,000
	Temporary Erosion Control	1	LS	$ 25,000.00	$ 25,000
				SUBTOTAL	**$ 524,030**
				Mobilization (10%)	$ 52,403
				Engineering Fees (10%)	$ 52,403
				Contingency (30%)	$ 157,209
				TOTAL	**$ 786,045**

Post-project flood risk was evaluated for the recommended alternative in accordance with the *TWDB Technical Guidelines for Regional Flood Planning* to verify the project will not increase flood risk to surrounding properties during the 100-year event (1% annual chance event). The guidelines recommend "…that no rise in water surface elevation or discharge should be permissible and that the analysis extent must be vast enough to prove proposed project conditions are equal to or less than the existing conditions."

Based on the results of the hydraulic modeling shown above, the preliminary evaluation indicates that rises less than 0.05 feet may be occurring upstream of Nursery Road due to the proposed alternative. It is my professional opinion that these impacts can be resolved during final design or be acceptable to the local sponsor as non-adverse impacts. As the recommended project is advanced, the impact analysis should be updated to reflect the final design and shall confirm no adverse impacts result from project implementation.

Sponsor Coordination and Feedback

The Technical Consultant shared the results of the study with the Sponsor and held a phone meeting on 04/13/2023 to discuss the results. The Sponsor agreed with the recommended alternative and indicated their support for the submittal of the FMP to the Regional Flood Planning Group for consideration and inclusion in the Amended Plan.

End of Memorandum

REGION 11 GUADALUPE
REGIONAL FLOOD PLANNING GROUP

TO: Chair Doug Miller
Guadalupe Regional Flood Planning Group

FROM: Daniel Harris, PE, CFM
Scheibe Consulting, LLC (TBPE Firm 13880)

SUBJECT: Task 12 Flood Management Evaluation

DATE: 6/14/2023

PROJECT: Victoria County – Parsons Road at Spring Creek

STATE OF TEXAS
DANIEL LEE HARRIS
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LICENSED
PROFESSIONAL ENGINEER

The Guadalupe Regional Flood Planning Group directed the Technical Consultant to complete this Flood Management Evaluation (FME) to develop a potentially feasible Flood Mitigation Project (FMP) under Task 12 for inclusion in the Region 11 Guadalupe Amended Regional Flood Plan.

Background and Study Overview

This study includes an analysis of the low water crossing at Parsons Road on Spring Creek in Victoria County and a recommendation for an improved structure that will be able to pass at least the 10% ACE (10-yr) event without overtopping. The existing structure consists of a two-span bridge and currently does not pass a 50% ACE (2-yr) event. The best available hydrology and hydraulics models were developed as part of Phase 2 of the Guadalupe Interim Feasibility Study completed by the USACE and GBRA in 2015. These models will be used as the basis for this study and will be updated with current Atlas 14 rainfall data, current LiDAR upstream and downstream of Parsons Road, and field survey data collected as part of this study. Alternatives to be considered will include replacement of the existing bridge structure with a new box culvert structure that will be able to pass the required flow without overtopping the roadway or implementation of flood warning signage and barriers. The project location is provided in ***Figure 1***.

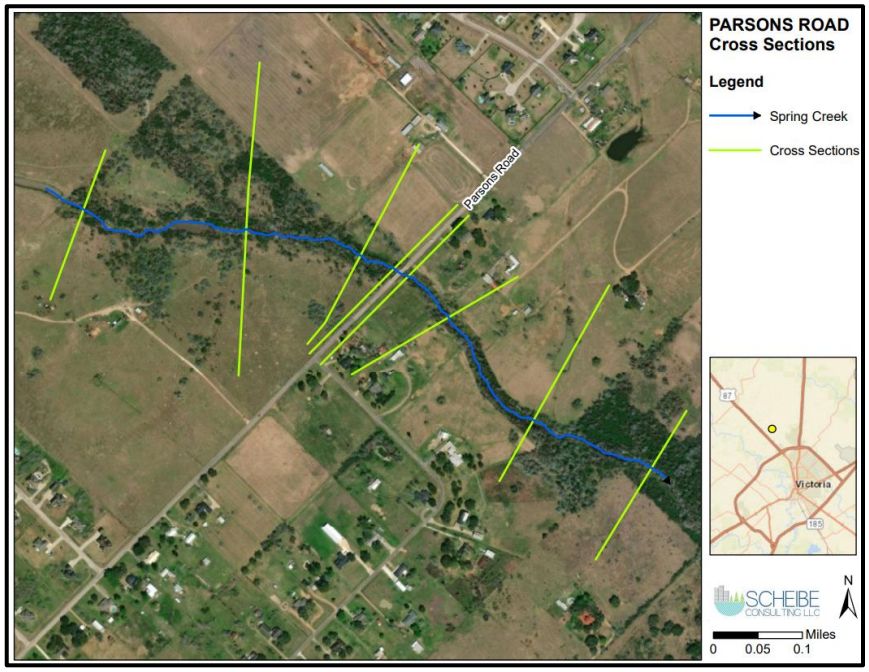


Figure 1: *Study Area*

Hydrologic and Hydraulic Analysis

The sections below provide a summary of the data used and modeling analysis performed to identify existing flood risk and to evaluate potential mitigation alternatives. A georeferenced hydrologic analysis was performed using HEC-HMS (version 3.5) for this project. In addition, a georeferenced hydraulic analysis was performed to evaluate impacts to the study area using a HEC-RAS model (version 6.3.1). These models were developed first as part of Phase 2 of the Guadalupe Interim Feasibility Study completed by the USACE and GBRA in 2015. Following is a detailed description of the assumptions made and the hydrologic and hydraulic analysis performed.

Data Collection and Site Visits

Survey grade GPS equipment was used to obtain elevation points for the roadway, natural ground, and stream flowline for the Parsons Road crossing. ***Figure 2*** and ***Figure 3*** show the downstream and upstream views of Spring Creek from Parsons Road.

Figure 2: *Downstream View at Parsons Road*

Figure 3: Upstream View at Parsons Road

Hydrologic Modeling

HEC- HMS was used to calculate peak flows for the study stream. An existing hydrologic model was used from the Phase 2 of the Guadalupe Interim Feasibility Study completed by the USACE and GBRA in 2015. The standard coordinate system used for the GBRA area is NAD 83 (1993) State Plane Coordinates, Texas South Central (Zone 4204) presented in US Survey Feet with a Vertical Datum set to North American Vertical Datum of 1988. Details related to the development of hydrologic parameters can be found in the Technical Report Notebooks for Phase 2 of the Guadalupe Interim Feasibility Study. ***Figure 4*** shows the full model of the Spring Creek watershed. The flow data used for this study was taken from the junctions within the circle shown in ***Figure 4***. ***Table 1*** contains the flows results from the HMS model utilized for the Parson Road analysis. ***Table 2*** provides the Atlas 14 rainfall depths used for the analysis, which were taken from the NOAA website for the Parsons Road project location. No additional hydrologic parameters were updated as part of this analysis.

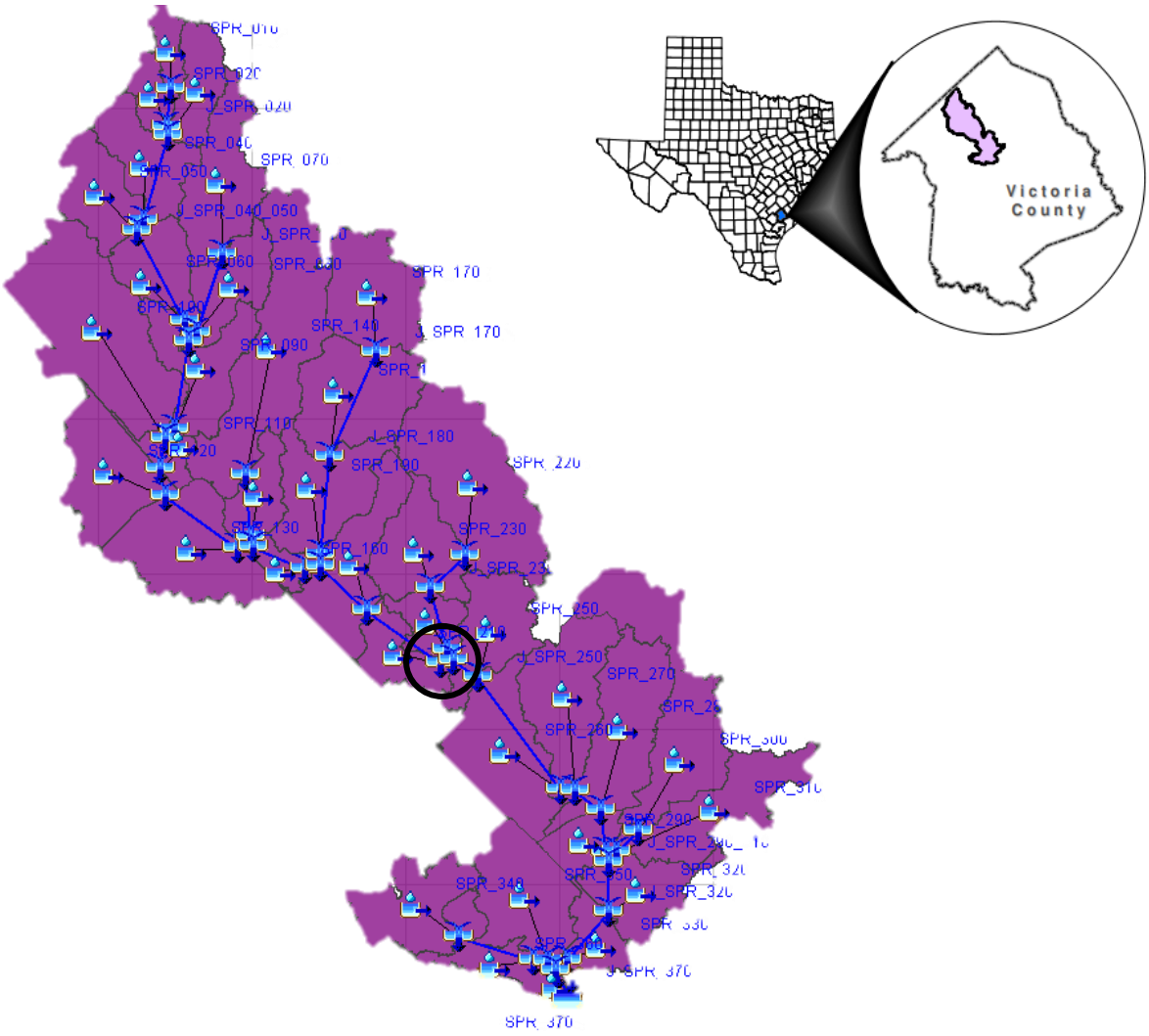


Figure 4: *HMS subbasins of Parsons Road*

Table 1: *HMS Flow Data*

	Total Outflow (IN)	Peak Outflow (CFS)	Total Outflow (IN)	Peak Outflow (CFS)	Total Outflow (IN)	Peak Outflow (CFS)	Total Outflow (IN)	Peak Outflow (CFS)	Total Outflow (IN)	Peak Outflow (CFS)
	2-YR		**5-YR**		**10-YR**		**25-YR**		**100-YR**	
J_SPR_210_240	0.97	1204.2	2.66	3400.7	4.11	5282.7	6.11	7538.5	10.40	12881.6
J_SPR_250	0.97	1260.4	2.66	3562.9	4.11	5548.9	6.11	7954.8	10.39	13260.3

Table 2: *Atlas 14 Frequency – Depth Table*

Frequency	2-yr	5-yr	10-yr	25-yr	50-yr	100-yr	250-yr	500-yr
5-min	0.53	0.684	0.784	0.918	1.02	1.12	1.22	1.34
15-min	1.13	1.37	1.57	1.83	2.04	2.24	2.43	2.67
60-min	2.12	2.57	2.94	3.45	3.83	4.21	4.21	5.15
2-hour	2.65	3.28	3.81	4.56	5.15	5.75	6.41	7.31
3-hour	2.96	3.72	4.37	5.31	6.06	6.85	7.71	8.91
6-hour	3.5	4.49	5.37	6.64	7.7	8.83	10.1	11.9
12-hour	4.02	5.24	6.36	8.01	9.4	10.9	12.6	15.1
24-hour	4.56	6.05	7.44	9.51	11.3	13.2	15.4	18.5

Hydraulic Modeling

The following is a summary of data sources, assumptions, and procedures used to create updated HEC-RAS models for the study area. Pre-project and post-project hydraulic analyses were performed along Spring Creek near Parsons Road in Victoria County. The steady-state HEC-RAS 1D model from the Guadalupe Interim Feasibility Study was updated and truncated to meet the scope of this project (see ***Figure 1***). Cross sections and terrain were updated using the latest TNRIS LiDAR topographic data (dated December, 2020). Manning's roughness values were not altered from those used in the original study.

Existing Condition Flood Risk

The existing structure consists of a two-span bridge and currently does not pass a 50% ACE (2-yr) event. Parsons Road was not surveyed as part of the Guadalupe Interim Feasibility Study. Therefore, survey grade GPS equipment was used to obtain top of road elevations, rail elevations, pier shots and upstream and downstream flowline elevations. This survey data was used to update the Parsons Road structure in the HEC-RAS model to establish existing conditions water surface profiles as shown in ***Figure 5***.

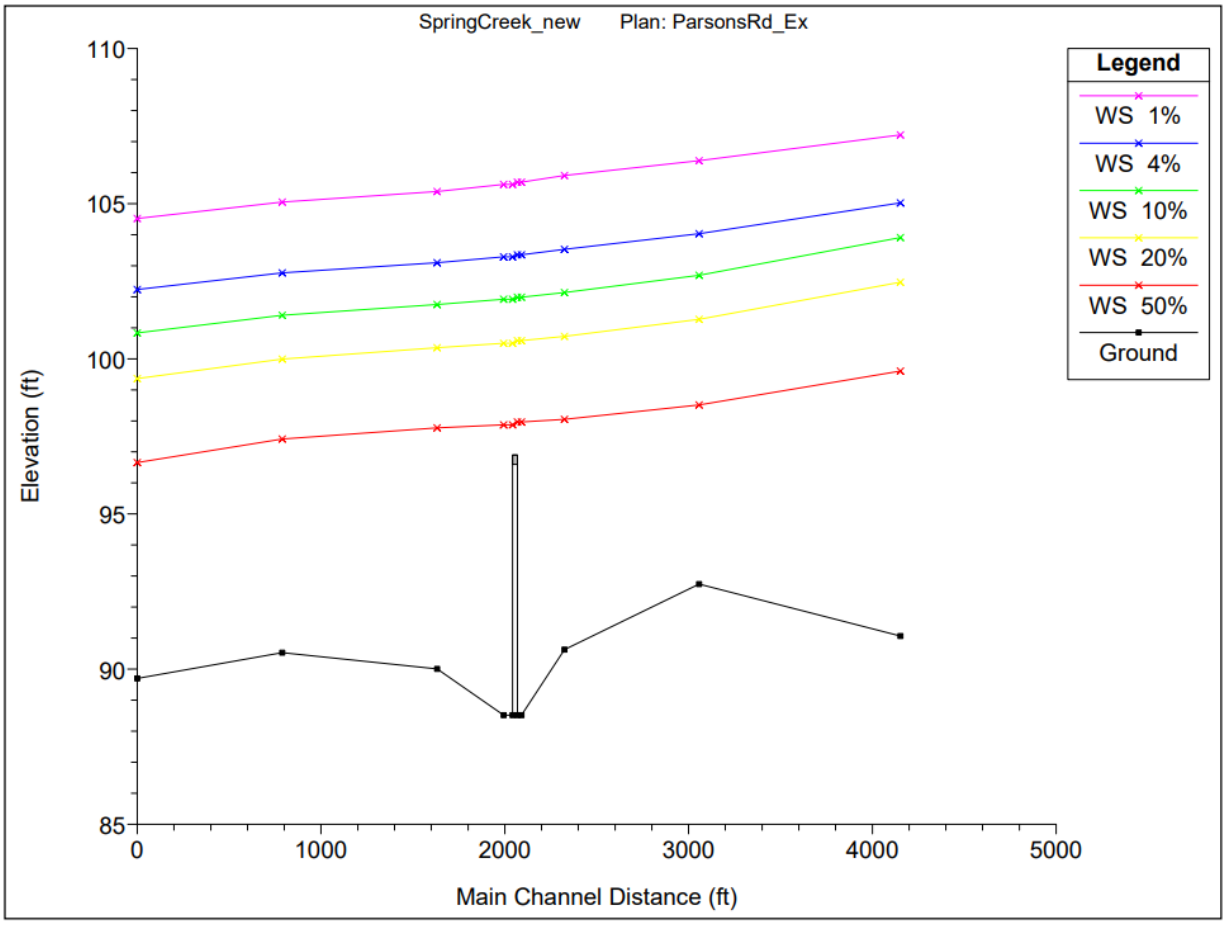


***Figure 5**: Profile View of Existing Conditions*

Proposed Flood Risk Reduction

An alternative analysis was performed to evaluate different culvert sizes and deck heights with the goal of reducing flooding over the low-water crossing. The following section describes the proposed project improvements and flood risk reduction benefits of the alternatives evaluated.

Alternative 1

Alternative 1 consists of 9 (12ft x 12ft) box culverts and the deck raised 3 ft from the existing deck. This alternative was designed to convey a 5-year flood frequency through the structure without overtopping. The results can be found in ***Table 3*** and ***Figure 6.***

***Table 3:** LWC Table for Alternative 1*

Flood Risk	5-year Event		100-Year Event	
	Pre-Project	Post-Project	Pre-Project	Post-Project
Roadway Overtopping Depth (in)	19	0	81	45
Overtopping Duration (hours)	18	0	31	23
Daily Traffic Count	1225			
Detour Length (min)	10	8	10	10
Structures at Risk	0	0	2	2

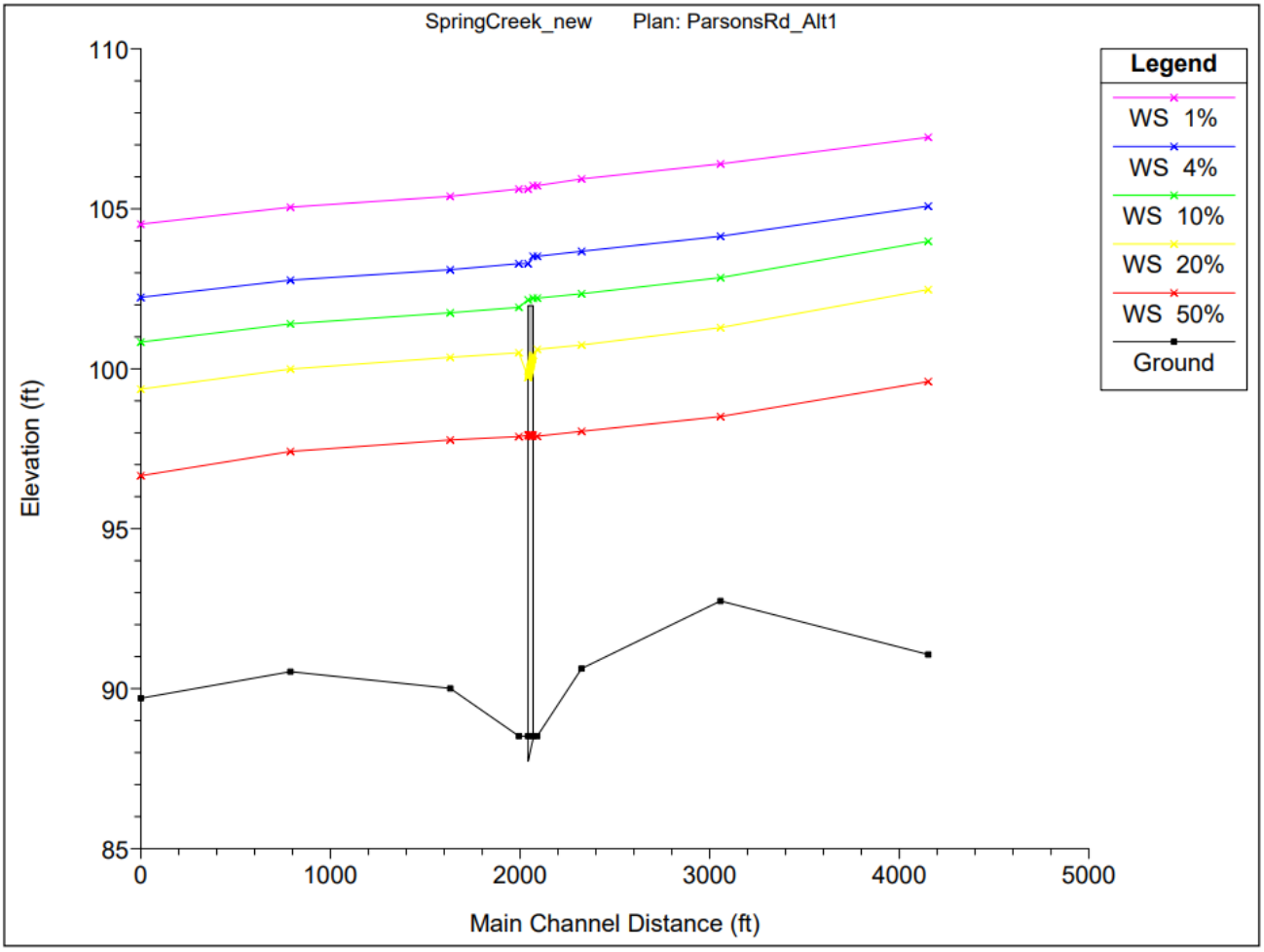


Figure 6: *Profile View of Alternative 1*

Alternative 2

Alternative 2 consists of 10 (12ft x 12ft) box culverts and the road raised 3.5 ft from the existing deck. This alternative was designed to convey a 10-year flood frequency through the structure without overtopping. The results can be found in ***Table 4*** and ***Figure 7***.

Table 4: *LWC Table for Alternative 2*

Flood Risk	10-year Event		100-Year Event	
	Pre-Project	Post-Project	Pre-Project	Post-Project
Roadway Overtopping Depth (in)	36	0	81	40
Overtopping Duration (hours)	21.25	0	31	22
Daily Traffic Count	1225			
Detour Length (min)	10	8	10	10
Structures at Risk	1	0	2	2

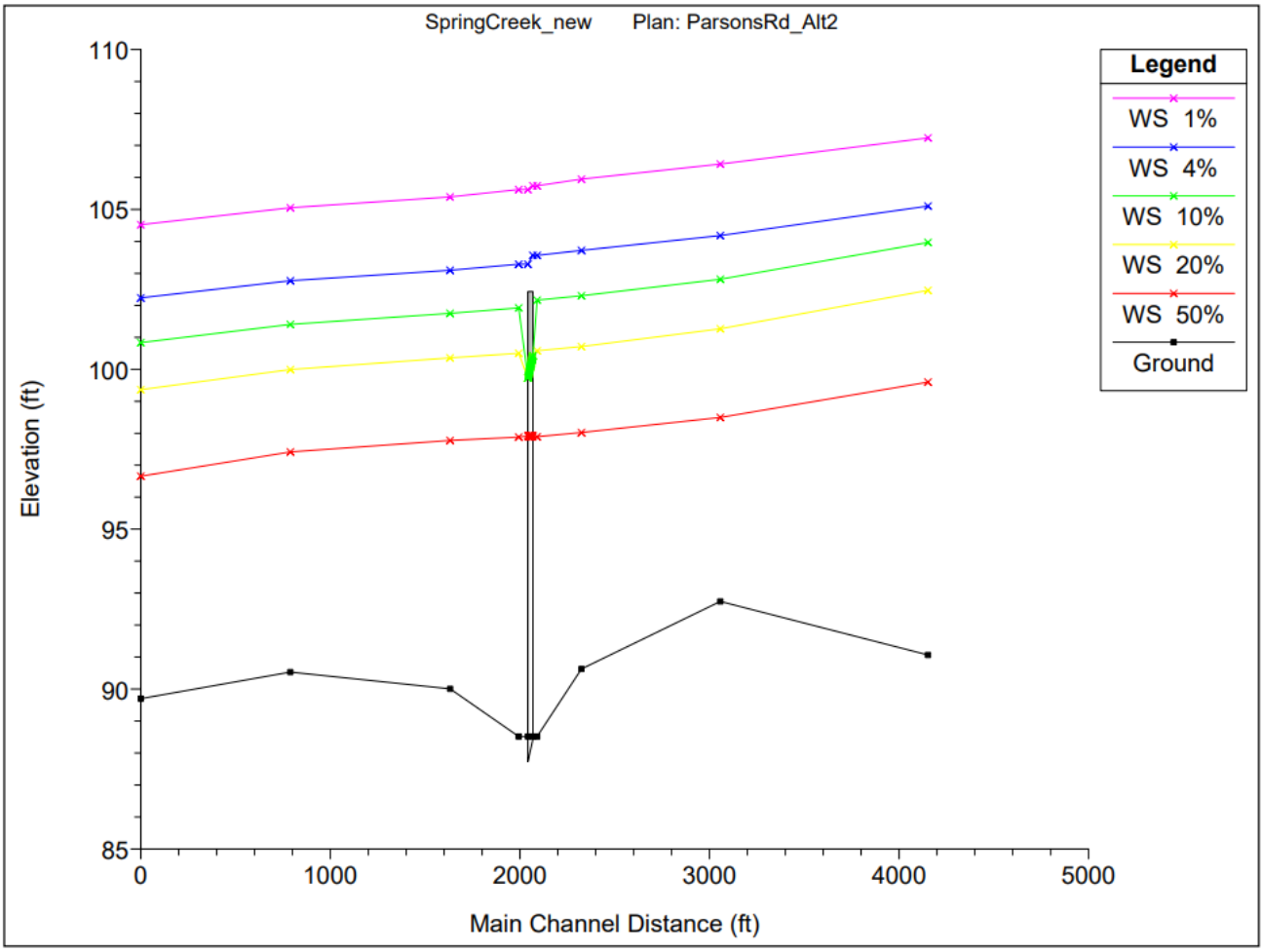


Figure 7: *Profile View of Alternative 2*

Alternative 3

Alternative 3 consists of 14 (12ft x 12ft) box culverts with the road raised 4.7 ft from the existing deck. This alternative was designed to pass a 25-year flood frequency. through the structure without overtopping. The results can be found in ***Table 5*** and ***Figure 8.***

Table 5: *LWC table for Alternative 3*

Flood Risk	25-year Event		100-Year Event	
	Pre-Project	Post-Project	Pre-Project	Post-Project
Roadway Overtopping Depth (in)	53	0	81	25
Overtopping Duration (hours)	24.6	0	31	19.2
Daily Traffic Count	1225			
Detour Length (min)	10	8	10	10
Structures at Risk	1	0	2	2

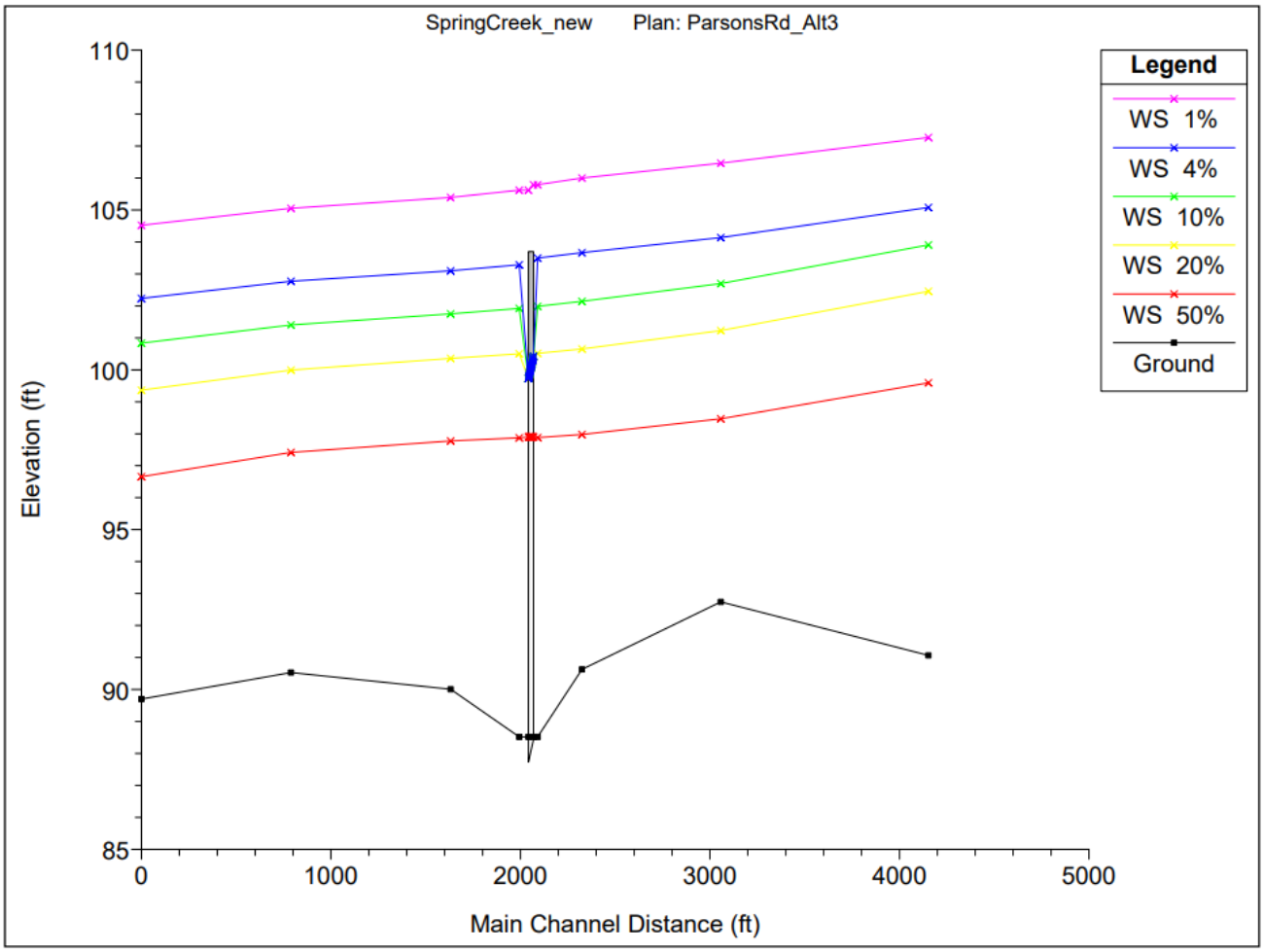


Figure 8: *Profile View of Alternative 3*

Summary

Table 6 gives a summary of all of the alternatives discussed, as well as the cost and benefit-cost-ratio of only adding signage, barricades, and maintaining the existing structure (Alternative 4). The recommendation is to implement Alternative 2 which consists of 10 (12ft x 12ft) box culverts that will be able to pass the 10% ACE (10-yr) event without overtopping. This includes increasing the bridge height by 3.5 feet from the existing deck. A detailed cost estimate of the recommended alternative is shown in ***Table 7***.

Table 6: *Summary of Alternatives*

Alternative	Description	Probable Cost	BCR
Alternative 1	Designed for a 20% ACE	$864,004	5.5
Alternative 2	Designed for a 10% ACE	$967,095	2.8
Alternative 3	Designed for a 4% ACE	$1,124,987	0.5
Alternative 4	Cost of warning signs, barriers, and maintaining existing structure	$65,824	0.4

Table 7: *Opinions of Probable Cost for Alternative 2*

TxDot Item No.	Description of Item	Probable Quantity	Unit	Unit Price	Cost
169-6003	Soil Retention Blankets (CL1) (TY D)	1115	SY	$ 2.50	$ 2,788
164-6023	CELL FBR MLCH SEED(PERM)(RURAL)(CLAY)	1115	SY	$ 0.73	$ 814
100-6001	Preparing ROW	2	AC	$ 17,851.73	$ 35,703
105-6026	Removing Stab Base & Asph Pav (13" - 18")	1330	SY	$ 6.50	$ 8,645
132-6005	EMBANKMENT (FINAL)(ORD COMP)(TY C)	1635	CY	$ 17.63	$ 28,825
496-6009	Remove Str (Bridge 0-99 ft length)	1	EA	$ 23,000.00	$ 23,000
462-6044	Concrete Box Culvert (12ft x 12ft)	286	LF	$ 1,100.00	$ 314,600
466-6144	Wingwall (FW-0) (HW=12ft)	4	EA	$ 18,000.00	$ 72,000
260-6007	Lime TRT (New Base) (6")	333	SY	$ 3.95	$ 1,315
247-6056	FL BS (CMP IN PLC)(TY D GR 4)(FNAL POS)	400	CY	$ 65.00	$ 26,000
340-6122	D-GR HMA(SQ) TY-D PG70-22	181	TON	$ 145.00	$ 26,245
450-6018	Rail (TY T631)	400	LF	$ 80.70	$ 32,280
502-6001	Barricades, Signs and Traffic Handling	1	MO	$ 4,500.00	$ 4,500
5052-6001	Barrier Gate	2	EA	$ 20,000.00	$ 40,000
636-6001	Aluminum Signs	4	EA	$ 35.00	$ 140
	Staff Gauge	2	EA	$ 500.00	$ 1,000
168-6001	Vegetation Watering	75	MG	$ 25.00	$ 1,875
	Temporary Erosion Control	1	LS	$ 25,000.00	$ 25,000
				SUBTOTAL	**$ 644,730**
				Mobilization (10%)	$ 64,473
				Engineering Fees (10%)	$ 64,473.0
				Contingency (30%)	$ 193,419
				TOTAL	**$ 967,095**

Post-project flood risk was evaluated for the recommended alternative in accordance with the *TWDB Technical Guidelines for Regional Flood Planning* to verify the project will not increase flood risk to surrounding properties during the 100-year event (1% annual chance event). The guidelines recommend "…that no rise in water surface elevation or discharge should be permissible and that the analysis extent must be vast enough to prove proposed project conditions are equal to or less than the existing conditions."

Based on the results of the hydraulic modeling shown above, the preliminary evaluation indicates that rises less than 0.05 feet may be occurring upstream of Parsons Road due to the proposed alternative. It is my professional opinion that these impacts can be resolved during the final design or be acceptable to the local sponsor as non-adverse impacts. As the recommended project is advanced, the impact analysis should be updated to reflect the final design and shall confirm no adverse impacts result from project implementation.

Sponsor Coordination and Feedback

The Technical Consultant shared the results of the study with the Sponsor and held a phone meeting on 04/13/2023 to discuss the results. The Sponsor agreed with the recommended alternative and indicated their support for the submittal of the FMP to the Regional Flood Planning Group for consideration and inclusion in the Amended Plan.

End of Memorandum

REGION 11 GUADALUPE
REGIONAL FLOOD PLANNING GROUP

TO: Chair Doug Miller
Guadalupe Regional Flood Planning Group

FROM: Daniel Harris, PE
Scheibe Consulting, LLC (TBPE Firm 13880)

SUBJECT: Task 12 Flood Management Evaluation

DATE: 6/14/2023

PROJECT: Comal County – River Road Low Water Crossing Improvement Project

STATE OF TEXAS
DANIEL LEE HARRIS
104646
LICENSED
PROFESSIONAL ENGINEER

The Guadalupe Regional Flood Planning Group directed the Technical Consultant to complete this Flood Management Evaluation (FME) to develop a potentially feasible Flood Mitigation Project (FMP) under Task 12 for inclusion in the Region 11 Guadalupe Amended Regional Flood Plan.

Background and Study Overview

This study includes an analysis of the low water crossing at River Road on Jacobs Creek in Comal County and a recommendation for an improved structure that will be able to pass at least the 10% ACE (10-yr) event without overtopping. The existing structure consists of two 24-inch CMP culverts that are silted in on the upstream side and currently does not pass a 2-year flood frequency. New hydrology and hydraulic models were created as the basis for this study and will utilize current Atlas 14 rainfall data, current LiDAR upstream and downstream of River Road, and previously collected field survey data. Alternatives to be considered will include the replacement of the existing culvert structure with a larger culvert structure, rerouting the existing road to protect the cypress trees, and impact analysis of repairing the existing structure. The analysis will also consider potential constraints and permitting issues. The study area is shown in ***Figure 1***.

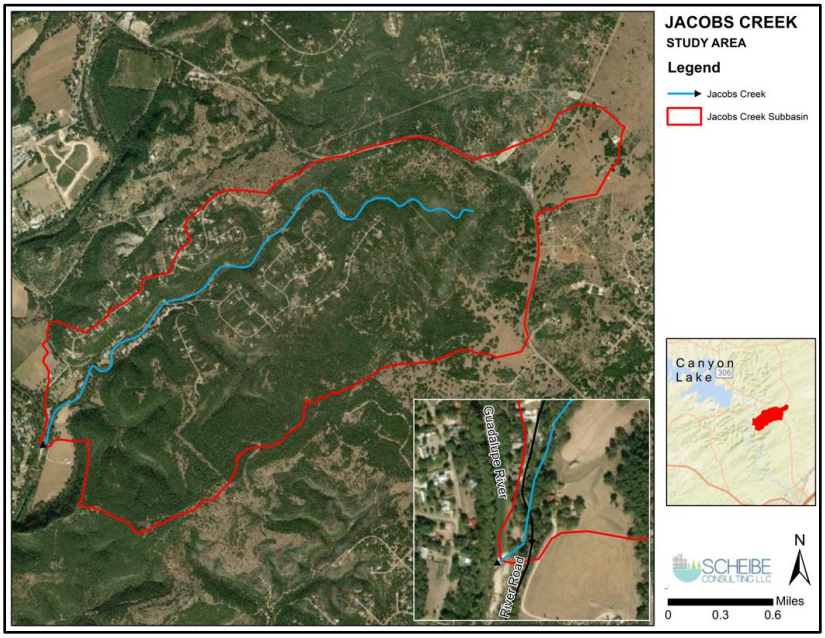


Figure 1: *Study Area*

Hydrologic and Hydraulic Analysis

The sections below provide a summary of the data and modeling analysis used and performed to identify existing flood risk and to evaluate potential mitigation alternatives. A georeferenced hydrologic analysis was performed using HEC-HMS (version 4.10) along with the ESRI ArcGIS software (version 10.8.2) for this project. In addition, a georeferenced hydraulic analysis was performed to evaluate impacts on the study area using a HEC-RAS model (version 6.3.1). Following is a detailed description of the assumptions made and the hydrologic and hydraulic analysis performed.

Data Collection and Site Visits

Field data was previously collected in 2016 and 2018, and represents elevation points for the roadway, natural ground, and stream flowline for the River Road crossing. Due to the ample amount of surveys and site photos for this stream crossing, it was determined that an additional field visit was not necessary. ***Figure 2*** and ***Figure 3*** show recent photos of the River Road low water crossing at Jacob's Creek.

Figure 2: *March 2018 Photo of River Road*

Figure 3: *June 2016 Post-flood Photo of River Road crossing*

Hydrologic Modeling

HEC- HMS was used to calculate peak flows for the study stream. The standard coordinate system used for the area is NAD 83 (1993) State Plane Coordinates, Texas South Central (Zone 4204) presented in US Survey Feet with a Vertical Datum set to North American Vertical Datum of 1988. The subbasin delineation for Jacobs Creek was developed using the terrain data from TNRIS (Texas Natural Resource Information System) and ArcMap 10.8.2 and can be seen in ***Figure 1***. Hydrologic parameters were developed using the NRCS (USDA Natural Resources Conservation Service) curve number loss method and SCS unit hydrograph transform method. ***Figures 4 and 5*** show the hydrologic soil groups and land uses used to develop hydrologic parameters. ***Table 1*** shows the base curve numbers and percent impervious cover associated with land uses used for the analysis. The final parameters for the Jacob Creek watershed utilized in the model are 78 base curve number with 3.44% impervious cover with a lag time of 164.7 minutes. ***Table 2*** provides the Atlas 14 rainfall depths used for the analysis, which were taken from the NOAA website for the River Road project location. ***Table 3*** contains the flows results from the HMS model utilized for the River Road analysis.

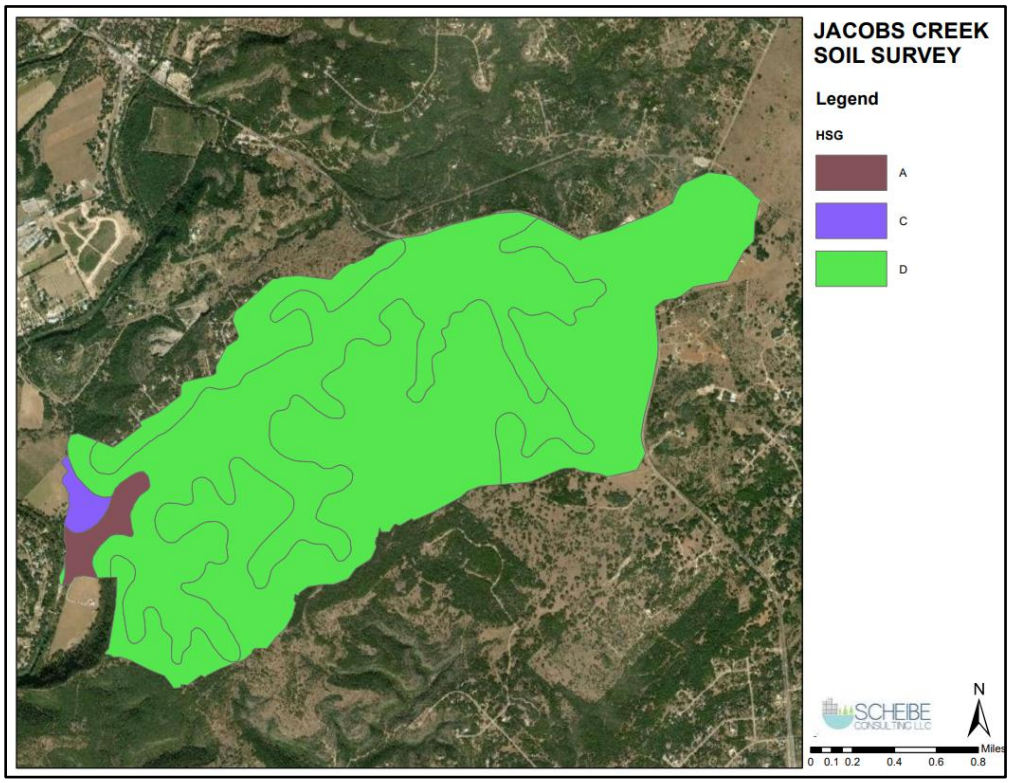


Figure 4: *Hydrologic Soil Group for Jacob Creek*

Table 1: *Base Curve Numbers*

Land Use	% I.C.	BASE CN ASSUMPTION			
		Soil Group A	Soil Group B	Soil Group C	Soil Group D
Ag Business	70%	49	69	79	84
Commercial	80%	49	69	79	84

Land Use	% I.C.	BASE CN ASSUMPTION			
		Soil Group A	Soil Group B	Soil Group C	Soil Group D
Forest	0	36	58	72	78
Institutional	40%	49	69	79	84
Light Industry	70%	49	69	79	84
Multi-Family	50%	49	69	79	84
Pasture	0	49	69	79	84
Recreation	5%	49	69	79	84
River/Stream	0	98	98	98	98
Rural Residential	10%	49	69	79	84
Sand/Bare	0	68	79	86	89
Shrubland	0	36	58	72	78
Single-Family Res.	40%	49	69	79	84
Transportation	90%	49	69	79	84

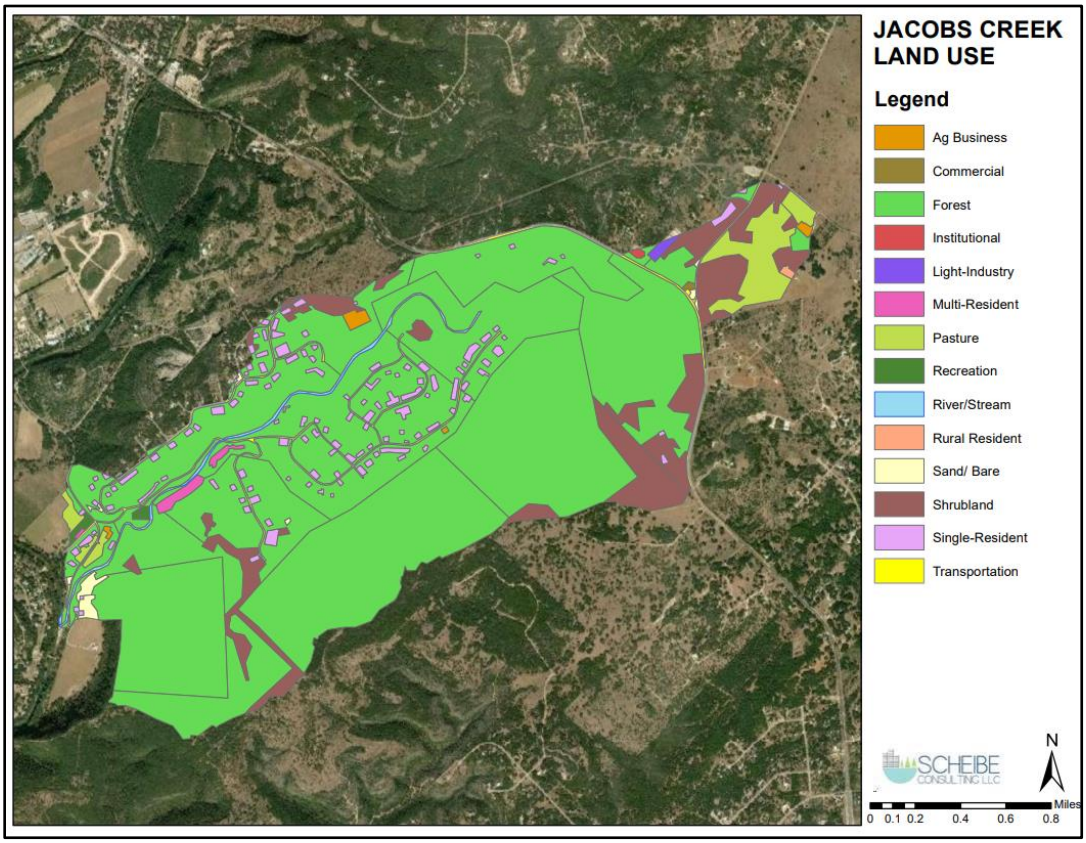


Figure 5*: Land use for Jacob Creek*

Table 2: *Atlas 14 Frequency - Depth Table*

Frequency	2-yr	5-yr	10-yr	25-yr	50-yr	100-yr	200-yr	500-yr
5-min	0.527	0.665	0.783	0.949	1.08	1.22	1.36	1.57
15-min	1.06	1.33	1.56	1.89	2.15	2.41	2.7	3.1
60-min	1.95	2.47	2.9	3.52	4	4.51	5.11	5.98
2-hour	2.41	3.1	3.73	4.66	5.43	6.3	7.29	8.77
3-hour	2.68	3.48	4.25	5.42	6.43	7.58	8.89	10.8
6-hour	3.14	4.15	5.15	6.7	8.07	9.66	11.5	14.2
12-hour	3.61	4.81	6	7.85	9.49	11.4	13.7	17.1
24-hour	4.11	5.51	6.89	9.03	10.9	13.1	15.7	19.7

Table 3: *Peak Discharge for Jacob's Creek*

Frequency	2-yr	5-yr	10-yr	25-yr	50-yr	100-yr	200-yr	500-yr
Peak Discharge (CFS)	956	1491	2027	2855	3570	4389	5330	6708

Hydraulic Modeling

Pre-project and post-project hydraulic analyses were performed along Jacobs Creek for River Road in Comal County. A new steady-state HEC-RAS 1-D model was developed to meet the scope of this project (***Figure 6***). Cross sections and terrain were created using the latest TNRIS LiDAR topographic data (dated December, 2020). The following is a summary of data sources, assumptions, and procedures used to create new HEC-RAS models for the study area.

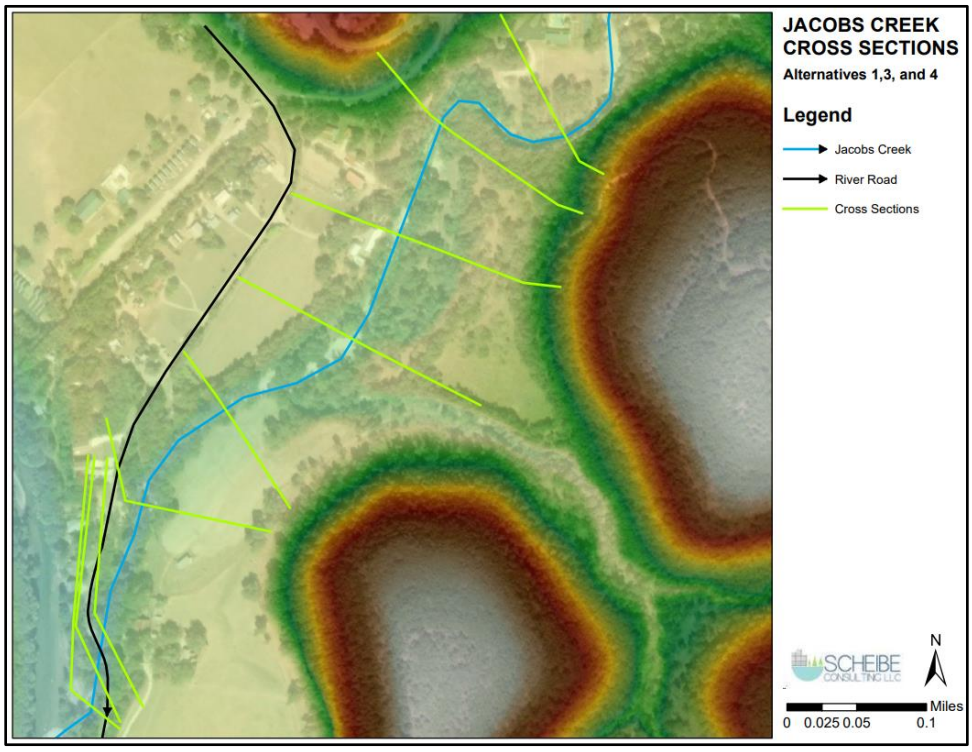


Figure 6: *Cross sections and terrain data for Jacob's Creek*

Existing Condition Flood Risk

The existing structure consists of two 24-inch CMP culverts that are silted in on the upstream side and currently does not pass a 2-year flood frequency. The existing survey data was used to input the River Road structure into the HEC-RAS model to establish existing conditions water surface profiles as shown in ***Figure 7.***

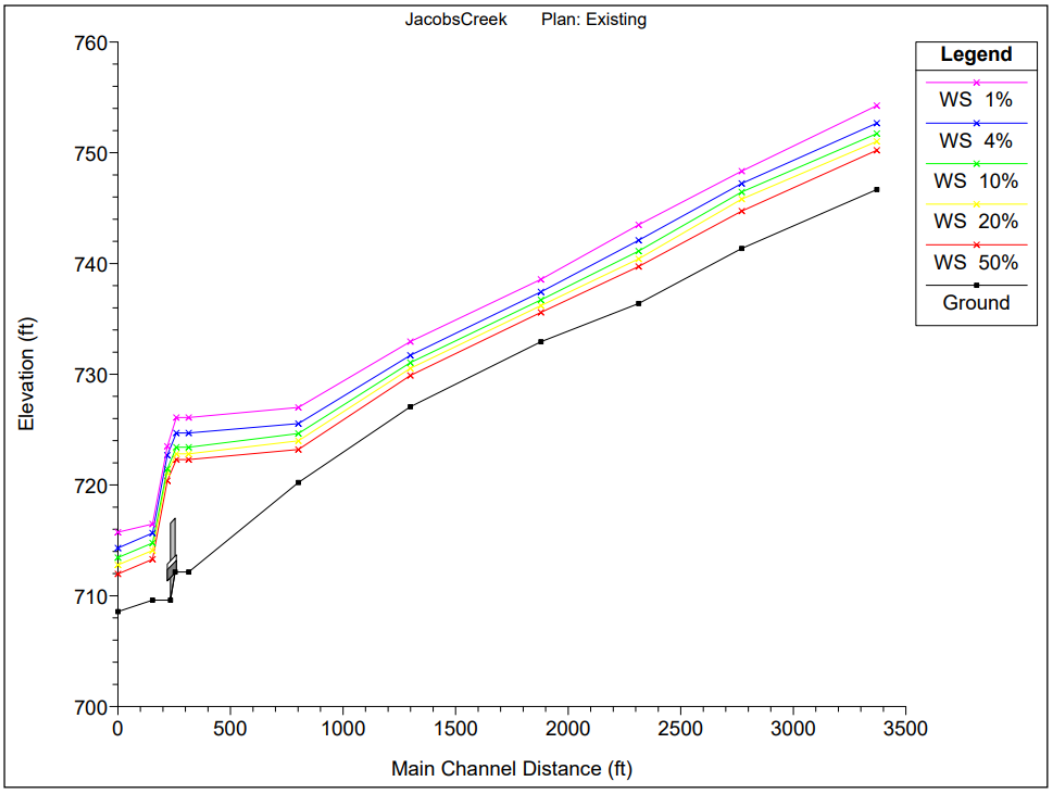


Figure 7: *Profile view of existing conditions*

Proposed Flood Risk Reduction

An alternative analysis was performed to evaluate different culvert sizes and deck heights with the goal of reducing flooding over the low-water crossing. The following section describes the proposed project improvements and flood risk reduction benefits of the alternatives evaluated.

Alternative 1

This alternative consists of five (8ft x 8ft) box culverts with the road deck raised an average of 4 ft. The road alignment remains the same as the current alignment and will require the removal of the large cypress trees just downstream of the road. This alternative was designed to convey a 25-year flood frequency through the structure without overtopping. The results can be found in ***Table 4*** and ***Figure 8***.

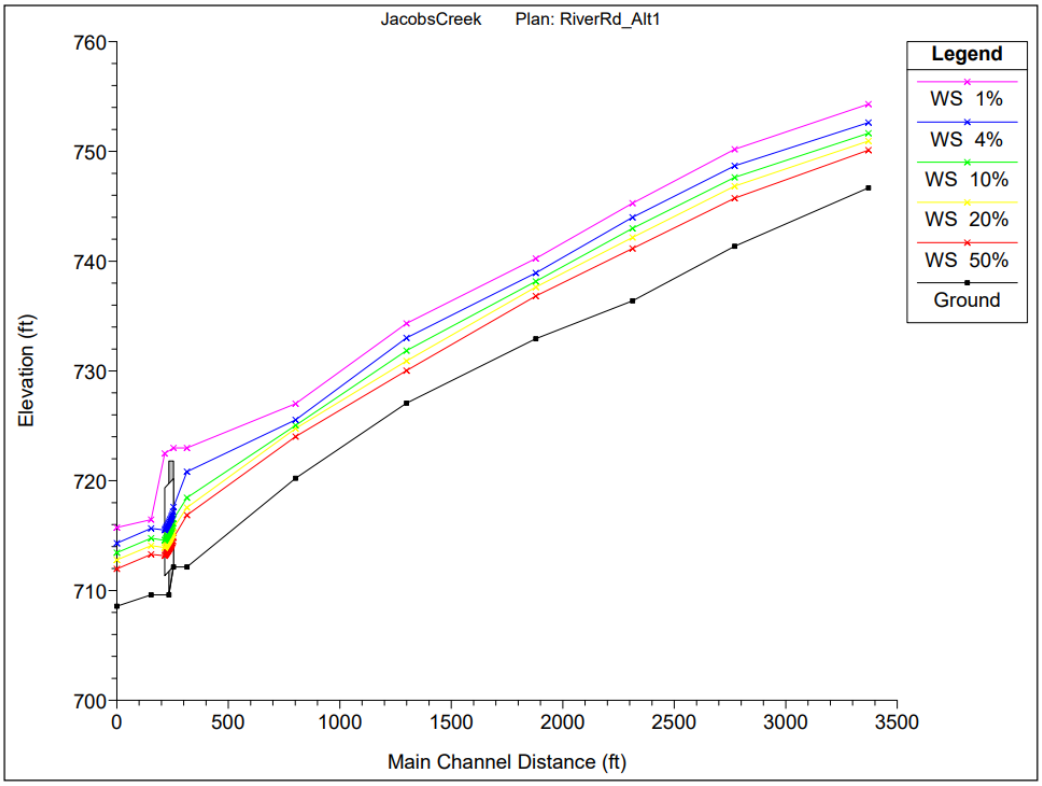


Figure 8: *Profile View of Alternative 1*

Table 4: LWC Table for Alternative 1

Flood Risk	25-year Storm		100-Year Storm	
	Pre-Project	Post-Project	Pre-Project	Post-Project
Roadway Overtopping Depth (in)	92.4	0	109.2	14.3
Overtopping Duration (hours)	20.5	0	24	4.2
Daily Traffic Count	1495			
Detour Length (min)	6	0	6	6
Structures at Risk	0	0	0	0

Alternative 2

Alternative 2 consists of six (9ft x 9ft) box culverts with a new "environmental" road alignment created to preserve the existing cypress trees (see ***Figure 9***). The new road alignment will have a deck elevation of 722.8 ft, approximately 4.8 ft above the existing deck elevation. This alternative was designed to convey a 25-year flood frequency through the structure without overtopping. The results can be found in ***Table 4*** and ***Figure 10***.

Figure 9: *Proposed "Environmental" Alignment and Cypress Tree Locations*

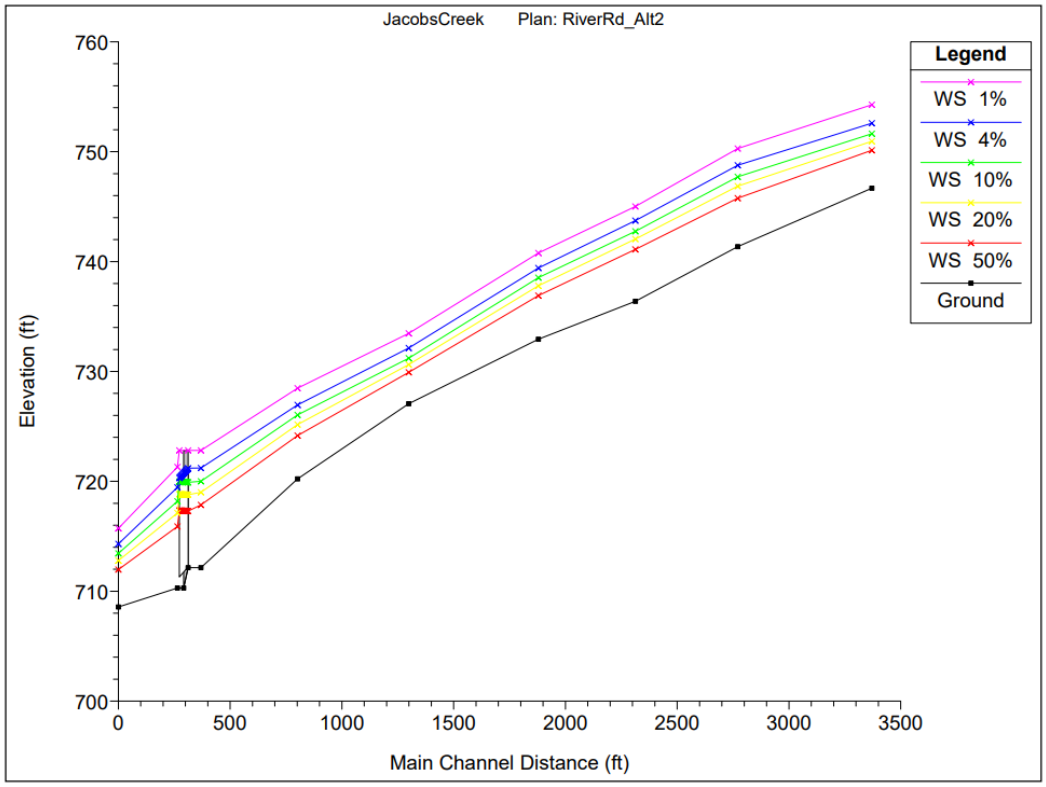


Figure 10: *Profile View of Alternative 2*

Table 5: *LWC Table for Alternative 2*

Flood Risk	25-year Storm		100-Year Storm	
	Pre-Project	Post-Project	Pre-Project	Post-Project
Roadway Overtopping Depth (in)	92.5	0	109.2	.3
Overtopping Duration (hours)	20.5	0	24	1.3
Daily Traffic Count	1495			
Detour Length (min)	6	0	6	6
Structures at Risk	0	0	0	0

Alternative 3

Alternative 3 consists of five (7ft x 7ft) box culverts with the road deck raised an average of 3 ft. The road alignment remains the same as the current alignment and will require the removal of the large cypress trees just downstream of the road. This alternative was designed to convey a 10-year flood frequency through the structure without overtopping. The results can be found in ***Table 6*** and ***Figure 11***.

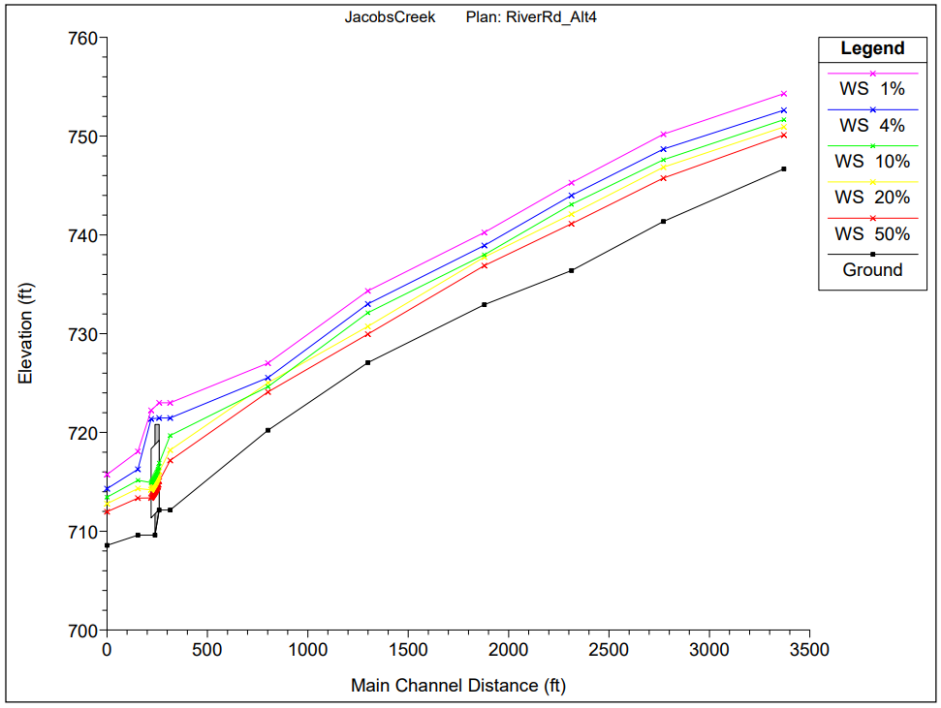


Figure 11: *Profile View of Alternative 3*

Table 6: *LWC Table for Alternative 3*

Flood Risk	10-year Storm		100-Year Storm	
	Pre-Project	Post-Project	Pre-Project	Post-Project
Roadway Overtopping Depth (in)	76.8	0	109.2	26.4
Overtopping Duration (hours)	17.3	0	24	6.8
Daily Traffic Count	1495			
Detour Length (min)	6	0	6	6
Structures at Risk	0	0	0	0

Alternative 4

Alternative 4 consists of five (7ft x 7ft) box culverts with a new "environmental" road alignment created to preserve the existing cypress trees (see ***Figure 9***). The new road will have a deck elevation of 720.8 ft, approximately 2.8 ft above the existing deck elevation. This alternative was designed to convey a 10-year flood frequency through the structure without overtopping. The results can be found in ***Table 7*** and ***Figure 12***.

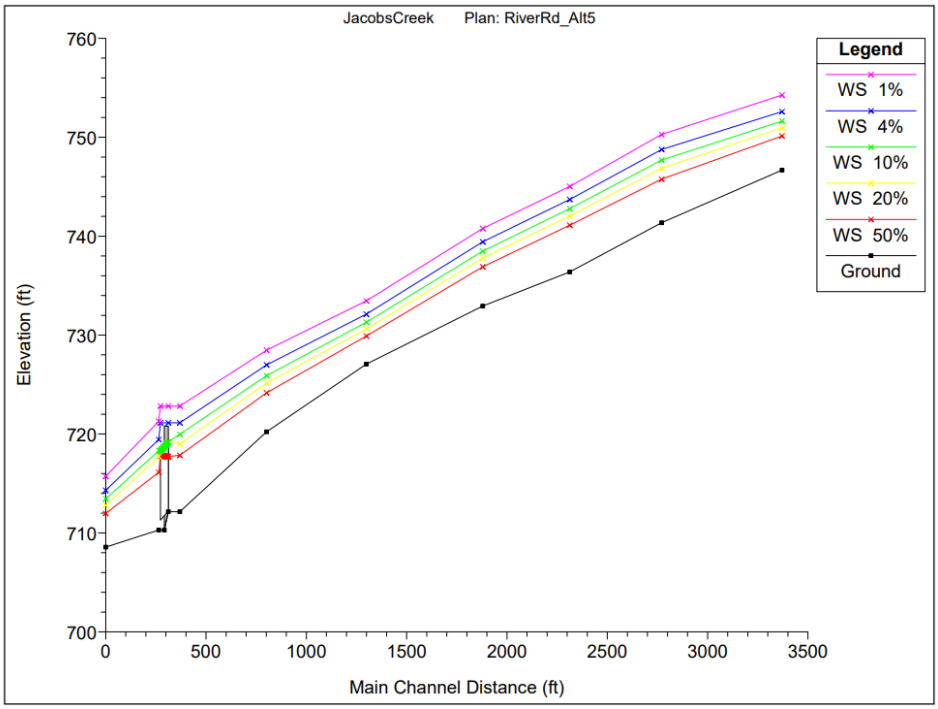


Figure 12: *Profile View of Alternative 4*

Table 7: *LWC Table for Alternative 4*

Flood Risk	10-year Storm		100-Year Storm	
	Pre-Project	Post-Project	Pre-Project	Post-Project
Roadway Overtopping Depth (in)	76.8	0	109.2	24.4
Overtopping Duration (hours)	17.3	0	24	6.5
Daily Traffic Count	1495			
Detour Length (min)	6	0	6	6
Structures at Risk	0	0	0	0

Summary

Table 8 gives a summary of all of the alternatives discussed, as well as the cost and benefit-cost ratio of only adding signage, barricades, and maintaining the existing road (Alternative 5). There is a recommendation to implement Alternative 4 which consists of five (7ft x 7ft) box culverts along the "environmental" alignment that will be able to pass the 10% ACE (10-yr) event without overtopping. The BCR analysis for this alternative indicates a benefit-cost ratio greater than 1 and will also avoid the issue of having to cut down the large cypress trees. However, it should be noted that this alternative is contingent on the acquisition of right-of-way from the adjacent property owner to the north of River Road. A detailed cost estimate of the recommended alternative can be found in ***Table 9.***

Table 8: *Summary of alternatives*

Alternative	Description	Cost	BCR
Alternative 1	Designed for a 4% ACE along original road alignment	$785,951	0.9
Alternative 2	Designed for a 4% ACE and realign road to protect Cypress trees	$1,343,297	0.6
Alternative 3	Designed for a 10% ACE along original road alignment	$660,249	2.7
Alternative 4	Designed for a 10% ACE and realign road to protect Cypress trees	$1,096,163	1.6
Alternative 5	Cost of warning signs, barriers, and maintaining existing structure	$183,896	0.02

Table 9: *Opinions of Probable Cost for Alternative 4*

TxDot Item No.	Description of Item	Probable Quantity	Unit	Unit Price	Cost
752-6007	Tree Removal (18" - 24" DIA)	3	EA	$ 1,000.00	$ 3,000
752-6006	Tree Removal (12" - 18" DIA)	4	EA	$ 800.00	$ 3,200
752-6005	Tree Removal (4"-12" DIA)	30	EA	$ 500.00	$ 15,000
1004-6001	Tree Protection	3	EA	$ 500.00	$ 1,500
752-6003	Brush Removal	1	MI	$ 3,000.00	$ 3,000
164-6021	CELL FBR MLCH SEED(PERM)(RURAL)(SANDY)	1700	SY	$ 0.55	$ 935
168-6001	Vegetation Watering	115	MG	$ 35.00	$ 4,025
169-6003	Soil Retention Blankets (CL1) (TY D)	1700	SY	$ 2.50	$ 4,250
100-6001	Preparing ROW	1.5	AC	$ 15,000.00	$ 22,500
132-6005	EMBANKMENT (FINAL)(ORD COMP)(TY C)	154	CY	$ 21.00	$ 3,234
110-6001	Excavation (Roadway)	2100	CY	$ 28.00	$ 58,800
105-6030	Remove Stab Base & Asph Pav (8" - 14")	1175	SY	$ 11.50	$ 13,513
496-6007	Remove Str (Pipe)	81	LF	$ 19.00	$ 1,539
462-6018	Concrete Box Culvert (7ft x 7ft)	200	LF	$ 1,100.00	$ 220,000
423-6004	Retaining Wall (CONC BLOCK)	2500	SF	$ 65.00	$ 162,500
260-6007	Lime TRT (New Base) (6")	1280	SY	$ 4.50	$ 5,760
247-6056	FL BS (CMP IN PLC)(TY D GR 4)(FNAL POS)	326	CY	$ 75.00	$ 24,450
340-6122	D-GR HMA(SQ) TY-D PG70-22	146	TON	$ 145.00	$ 21,170
466-6169	Wingwall (FW-S) (HW=8ft)	4	EA	$ 25,000.00	$ 100,000
450-6019	Rail (TY T631LS)	300	LF	$ 80.00	$ 24,000
502-6001	Barricades, Signs and Traffic Handling	1	MO	$ 4,500.00	$ 4,500
	Temporary Erosion Control	1	LS	$ 25,000.00	$ 25,000
	Land Acquisition	0.4	AC	$ 7,542.00	$ 3,017
				SUBTOTAL	**$ 724,892**
				Mobilization (10%)	$ 72,489
				Engineering Fees (10%)	$ 72,489.2
				Contingency (30%)	$ 217,468
				TOTAL	**$ 1,087,338**

Post-project flood risk was evaluated for the recommended alternative in accordance with the *TWDB Technical Guidelines for Regional Flood Planning* to verify the project will not increase flood risk to surrounding properties during the 100-year event (1% annual chance event). The guidelines recommend

"…that no rise in water surface elevation or discharge should be permissible and that the analysis extent must be vast enough to prove proposed project conditions are equal to or less than the existing conditions."

Based on the results of the hydraulic modeling shown above, the preliminary evaluation indicates that rises may be occurring just upstream and downstream of River Road due to the proposed alternative. It is my professional opinion that these impacts are either limited to the extent of the required right-of-way, can be resolved during final design, or be acceptable to the local sponsor as non-adverse impacts. As the recommended project is advanced, the impact analysis should be updated to reflect the final design and shall confirm no adverse impacts result from project implementation.

Sponsor Coordination and Feedback

The Technical Consultant shared the results of the study with the Sponsor and held a virtual meeting on 4/13/2023 to discuss the results. The Sponsor agreed with the recommended alternative and indicated their support for the submittal of the FMP to the Regional Flood Planning Group for consideration and inclusion in the Amended Plan.

End of Memorandum

REGION 11 GUADALUPE
REGIONAL FLOOD PLANNING GROUP

TO: Chair Doug Miller
Guadalupe Regional Flood Planning Group

FROM: Colin Slagle, PE, CFM
Doucet & Associates, Inc.
TPBE Firm No. F-3937

SUBJECT: Task 12 Flood Management Evaluation

DATE: 6/16/2023

PROJECT: City of San Marcos – McKie Street at Willow Springs Creek Improvements

The Guadalupe Regional Flood Planning Group directed the Technical Consultant to complete this Flood Management Evaluation (FME) to develop a potentially feasible Flood Mitigation Project (FMP) under Task 12 for inclusion in the Region 11 Guadalupe Amended Regional Flood Plan.

Background and Study Overview

The McKie Street culvert crossing of Willow Springs Creek is located just north of IH-35 on the South Side of San Marcos, Texas, as shown in **Figure 1**. The existing crossing consists of (2) 54" x 43" CMP culverts and a 4'x2' RCB and is overtopped in storms more frequent than the 50% annual chance (2-year) flood event. This crossing was identified as a significant flood problem area in the City's 2017 Comprehensive Watershed Master Plan and is included in the City's FY2021-2030 Ten Year CIP. The City wishes to reduce the frequency of overtopping by elevating the roadway and improvement flood conveyance with a bridge or culvert upgrade.

Per the preliminary DFIRM (48209C0481G) and FIS (48209CV001B) dated December 14, 2022, approximately 700 feet of McKie Street is located within the Zone AE SFHA at the Willow Springs Creek Crossing (Appendix A). Based on flood profiles included in the preliminary FIS, the road surface (approx. elevation 566 ft NAVD88) at the crossing is overtopped by approximately 3 feet in the 10% annual chance (10-year) flood event. The flood profiles also show that the crossing is subject to backwater flooding from the San Marcos River confluence located approximately 3,600 feet downstream (more than 7 feet above road surface in the 100-year storm event).

Figure 1: Study Location

Hydrologic and Hydraulic Analysis

The sections below provide a summary of the data and modeling analysis used and performed to identify existing flood risk and to evaluate potential mitigation alternatives.

Data Collection and Site Visits

The technical consultant obtained HEC-HMS, HEC-RAS, and Innovyze InfoWorks ICM 2D floodplain models of Willow Springs Creek from the City of San Marcos. While the HEC-HMS and HEC-RAS models developed in 2017 supporting the pending FEMA PMR of Willow Springs Creek did not include NOAA Atlas 14 precipitation data, a supplemental draft HEC-HMS model including Atlas 14 was also provided. The City indicated that the draft HEC-HMS model was considered best available data and would serve as the primary hydrologic model for this study. The ICM model included a detailed 2D analysis of the Purgatory Creek and Willow Springs Creek spills and diversions in the upper watershed; however, the City of San Marcos indicated that 1D HEC-RAS model would be the most appropriate hydraulic analysis tool for the purposes of this study.

A field measurement of the crossing was performed on 3/3/2023 to verify existing structures and make any necessary updates to the revised existing conditions model. Site photos are provided in **Figure 2** and **Figure 3** and a description of model adjustments is included in the hydraulics section of this report.

Hydrologic Modeling

The City of San Marcos has developed a HEC-HMS version 4.3 model of the Upper San Marcos River basin which includes NOAA Atlas 14 precipitation depths. This model is considered best available data and was used as the basis for this study. No modifications to the HEC-HMS model were made. **Table 1** provides the NOAA Atlas 14 peak discharge rates for Willow Creek. The City of San Marcos October 2020 Hydrology Report outlines the parameters and modeling techniques used to develop the Upper San Marcos River basin model.

Table 1: Willow Springs Creek Atlas 14 Peak Flows

HYDROLOGIC ELEMENT	DRAINAGE AREA (SQMI)	ATLAS 14 EXISTING WATERSHED CONDITIONS (CFS)					
		2YR	10YR	25YR	50YR	100YR	500YR
J_USM0790	0.49	300	670	860	1,020	1,200	1,630
J_USM0800	0.55	320	740	940	1,120	1,330	1,810
J_USM0810A	0.21	170	370	470	540	630	850
J_USM0810A_USM0810C	0.25	190	430	540	640	750	990
J_USM0820	0.26	180	440	550	650	770	1,020
J_USM0830A_USM0820	0.41	270	690	870	1,020	1,210	1,610
J_USM0800_USM0820	0.96	590	1,400	1,780	2,100	2,470	3,390
J_USM0830	1.05	620	1,500	1,910	2,260	2,670	3,670
J_USM0840	1.69	930	2,310	2,980	3,530	4,190	5,780
J_USM0850	2.27	1,130	2,880	3,750	4,480	5,320	7,430
J_USM0860	2.79	1,330	3,380	4,410	5,260	6,280	8,840
J_USM0970_USM0280	DIVERSION	490	1,490	1,930	2,720	4,700	10,400
J_USM0960_USM0970_DIV_USM028	3.53	1,190	3,160	4,040	4,750	5,660	11,510
J_USM0980	3.79	1,240	3,340	4,300	5,070	7,700	19,940
J_USM0990A	3.79	1,250	3,350	4,320	5,100	11,230	29,120
J_USM0990B	3.95	1,280	3,460	4,470	5,280	10,670	17,500
J_USM1000_DIV_USM0910	4.46	1,450	3,880	5,030	5,960	10,810	17,860
J_USM0770_USM1000	92.09	3,410	8,720	13,640	20,790	36,690	85,100
J_USM1010	92.86	3,580	9,020	14,170	20,830	36,720	85,240
J_USM1020	93.41	3,640	9,300	14,500	20,850	36,750	85,350
J_USM1020_USM1030	94.57	3,790	9,900	15,100	20,880	36,820	85,540
Outlet1	94.89	3,800	10,000	15,260	20,880	36,810	85,600

Hydraulic Modeling

The City of San Marcos has developed a 1D HEC-RAS version 4.1.0 floodplain model of Willow Springs Creek which includes the most recently available 2017 Central Texas LiDAR data. The technical consultant used the City's existing conditions model to develop a revised existing conditions model including the Atlas 14 computed 2-, 10-, 25-, 50-, 100-, and 500-year peak flows. The revised existing conditions model was also updated to use a more recent HEC-RAS software release, version 6.3.0.

The technical consultant performed a site visit on March 3, 2023, to confirm existing conditions and make any necessary corrections to the exiting conditions model. It was noted that the (2) 24" RCP culverts reflected in the City's existing conditions model had been replaced by a 4' x 2' RBC culvert. The revised existing conditions model was updated based on field measurements to reflect this modification. Manning's n values within the channel were also updated and a 90% sediment blockage was added to the left-most CMP culvert based on site observations. No other updates were made to the revised existing conditions HEC-RAS model.

Figure 2 – Site Photo: McKie Street Crossing Upstream Face

Figure 3 – Site Photo: McKie Street Crossing Downstream Face

Existing Condition Flood Risk

The McKie Street crossing is subject to riverine flooding from both Willow Springs Creek, with a contributing drainage area of approximately 4 square miles at the crossing, and the San Marcos River, which confluences with Willow Springs Creek approximately 3,600 feet downstream of the crossing. Per the preliminary DFIRM (48209C0481G) and FIS (48209CV001B) dated December 14, 2022, approximately 700 feet of McKie Street is located within the Zone AE SFHA at the Willow Springs Creek Crossing. Based on flood profiles included in the preliminary FIS, the road surface (approx. elevation 566 ft NAVD88) at the crossing is overtopped by approximately 3 feet in the 10% annual chance (10-year) flood event. The flood profiles also show that the crossing is subject to backwater flooding from the San Marcos River confluence located approximately 3,600 feet downstream (more than 7 feet above road surface in the 100-year storm event). There are dozens of homes and several businesses in the surrounding project area within the FEMA effective 1% and 0.2% ACE floodplains.

Proposed Flood Risk Reduction

The following section describes the proposed project improvements and flood risk reduction benefits of the alternatives evaluated. While many homes and structures are within the 100-year and more frequent floodplains in the project area, this project focuses on the improvement of level-of-service at the McKie Street crossing. Flood risk reduction for the homes and structures in this area would require a much larger-scale project and is not the intent of this project per project sponsor guidance.

The flood risk reduction analysis included analyzing multiple crossing improvement options to reduce roadway overtopping by raising the driving surface and increasing culvert/bridge conveyance. Multiple culvert and bridge options were analyzed as well as channel grading upstream and downstream of the crossing. The recommended alternative consists of (4) 8'x6' RCB culverts and approximately 450 lineal feet of channel improvements with a total excavation volume of 930 cubic yards. Channel improvements consist of widening the channel bottom to an average of 30 feet with banks graded at a 3:1 side slope. These channel improvements provide water surface reductions to offset the proposed roadway elevation being raised more than 3 feet from an elevation of 565.75' to 569'. The proposed improvements reduce the overtopping depths and durations during both frequent and less frequent storm events. **Table 2** summarizes the flood risk reduction provided by the proposed crossing improvement.

Table 2: Summary of Risk Reduction

Flood Risk	2-year Storm		10-year Storm		100-Year Storm	
	Pre-Project	Post-Project	Pre-Project	Post-Project	Pre-Project	Post-Project
Roadway Overtopping Depth (in)	36	0	66	28	130	90
Overtopping Duration (hours)	12	0	72	3	96	18
Daily Traffic Count	260	260	260	260	260	260
Detour Length (min)	<5	<5	<5	<5	<5	<5
Structures at Risk	n/a	n/a	n/a	n/a	n/a	n/a

Negative Impact Analysis

The post-project flood risk was evaluated in accordance with the *TWDB Technical Guidelines for Regional Flood Planning* to verify the project will not increase flood risk to surrounding properties during the 100-year event. The guidelines recommend "…that no rise in water surface elevation or discharge should be permissible and that the analysis extent must be vast enough to prove proposed project conditions are equal to or less than the existing conditions."

Based on the results of the hydraulic modeling shown in **Table 3**, the preliminary evaluation indicates that the proposed improvements result in reductions up to 0.14' in the 100-year water surface elevations throughout the project reach. Since no significant water surface reductions were realized in the 100-year storm event, potential hydrologic impacts associated with reduced riverine storage volume (routing) was deemed unnecessary. The Sponsor is aware that, as the project is advanced, the impact analysis should be updated to reflect final design and shall confirm no negative impacts result from project implementation.

Table 3: Willow Springs Creek Summary of Computed 100-year Water Surface Elevations Comparison

River Station	CoSM Existing Conditions	Revised Existing Conditions	Proposed Alternative	
	(2) 54" x 43" CMPs, (2) 24" RCPs	(2) 54" x 43" CMPs, (1) 4'x2' RCB	(4) 8'x6' RBC + US and DS Channel Grading	
	TOR ELEV: 565.75'	TOR ELEV: 565.75'	TOR: 569.00'	
	W.S. Elev (ft)	W.S. Elev (ft)	W.S. Elev (ft)	Difference (PROP-REVEX) (ft)
7170	581.62	581.65	581.65	0.00
7145 Ellis St.				
7102	580.31	580.65	580.63	-0.02
7018	580.24	580.60	580.58	-0.02
6767	579.79	580.33	580.31	-0.02
6492	578.92	580.07	580.04	-0.03
6211	578.39	579.93	579.89	-0.04
5857	578.11	579.86	579.82	-0.04
5646	577.87	579.64	579.60	-0.04
5540	577.83	579.63	579.59	-0.04
5504 Patton St.				
5479	577.09	579.64	579.60	-0.04
5337	576.99	579.52	579.48	-0.04
5006	576.66	579.45	579.41	-0.04
4701	576.04	578.84	578.77	-0.07
4598	576.19	578.95	578.89	-0.06
4560 Guadalupe St.				
4515	575.11	578.94	578.88	-0.06
4391	574.93	577.97	577.89	-0.08
4296	574.77	578.08	578.00	-0.08
4204	574.69	578.10	578.02	-0.08
4162 LBJ Dr.				
4114	574.43	578.05	578.01	-0.04
4019	573.56	576.46	576.35	-0.11
3825	573.54	576.47	576.44	-0.03
3752	573.44	576.51	576.49	-0.02
3698 McKie St.				
3642	573.67	576.66	576.53	-0.13
3381	572.91	576.46	576.32	-0.14
3150	572.38	576.23	576.23	0.00
3072	572.22	575.97	575.97	0.00
2992	571.56	575.01	575.01	0.00
2950 I35 SB Frontage				
2929	570.62	573.59	573.59	0.00

Opinion of Probable Cost

An opinion of probable total project costs was prepared and includes required elements identified in TWDB guidance documents such as construction costs, permitting, engineering, land acquisition (if needed), recurring

costs, and a contingency. The total opinion of total project costs for the recommended alternative is approximately $1,044,000. A detailed estimate is attached.

Project Constraints

The project area is located near the San Marcos River, which is an area known for its cultural and environmental richness and sensitivity. Environmental permitting will be required during final design including compliance with Clean Water Act Section 404, endangered species, archeological, and other regulations. The current proposed channel modifications are likely within the Jurisdictional Waters of the US below the Ordinary High Water Mark (OHWM) of Willow Springs Creek. Once the OHWM is delineated, the proposed channel improvements may need to be modified to reduce impacts the Waters of the US and required USACE permitting requirements.

There is a City of San Marcos wastewater line located along Willow Springs Creek that is within the proposed improvement area, which may need to be adjusted or relocated. Utility coordination will also be required during final design to relocated other public and franchise utilities within the project area.

Benefit Cost Analysis

The TWDB benefit-cost-analysis tool was used to generate a preliminary benefit-cost-ration (BCR) of 2.4. A copy of the BCA is attached.

Sponsor Coordination and Feedback

The Technical Consultant shared results of the study with the Sponsor on April 14, 2023, to discuss the recommended improvement alternative and analysis results. The Sponsor agreed with the recommended alternative and indicated their support for submittal of the FMP to the Regional Flood Planning Group for consideration and inclusion in the Amended Plan.

End of Memorandum

Attachments:

Opinion of Probable Project Cost

ENGINEER'S ESTIMATE OF PROBABLE CONSTRUCTION COST

Project Name: **City of San Marcos - McKie St Lower Water Crossing Improvements**

Type	Item	Unit	Unit Description	Quantity	Unit Price	Total	Quantity Description / Notes
Channel	Channel Preparation	AC		0.6	$25,000	$ 14,348	Includes clearing, grubbing, concrete removal, misc.
Channel	Excavation	CY		930	$35	$ 32,550	
Channel	Dry Rock Riprap (D50=24")	CY		533	$170	$ 90,667	Grade control structure or other erosion protection measures, assumed 1 at each upstream & downstream transition (3' deep x 100' long x top of bank width)
Channel	Temporary Access Routes & Ramps	STA	100' LF of Access Route Length	0	$5,000	$ -	Required if no other detour route is available
Box Culvert	Box Culvert (8' x 6')	LF	# Barrels x Length	168	$1,300.00	$ 218,400	See unit desciption
Box Culvert	Headwall & Wingwalls	LS	Per Crossing	1	$80,000	$ 80,000	Includes upstream and downstream headwalls and wingwalls; Based on 6' headwall height - add $20,000 per additional foot
Channel	Embankment	CY		366	$60	$ 21,960	
General	Misc. Roadway	SY	Repaving Surface Area	666	$150	$ 99,900	Include subgrade prep, base, HMAC pavement, striping, etc.
General	Cofferdams & Dewatering	LS	Per Crossing / Improvement Area	1	$15,000	$ 15,000	
General	Permanent Erosion Control & Revegetation	AC	Total Non-Paved Area	0.5	$5,000	$ 2,500	Includes topsoil, seedbed preparation, seeding, and turf reinforcement mats
General	Barricades, Signs, & Traffic Control	MO		4	$7,500	$ 30,000	Assume 4 months per stream crossing (culvert/bridge)
General	Utility Relocation	EA		2	$15,000	$ 30,000	Adjust as needed based on visibile manholes/utilities (storm drain, water, wastewater, etc.); assume none in rural areas
General	Temporary Erosion Controls	LS		-	3% of construction subtotal	$ 20,000	Includes temporary erosion control measures, tree protection, stabilized construction entrance, and SWPPP
General	Total Mobilization	LS		-	5% of construction subtotal	$ 32,000	
					Construction Subtotal (no Contingency) =	**$ 636,000**	
					Construction Subtotal (with 25% Contingency) =	**$ 795,000**	
General	ROW / Easement Acquisition	AC		0.5	$20,000	$ 10,000	Total channel improvement area + maintenance access routes + other ROW
General	Engineering, Permitting, Administrative	LS		-	30% of construction	$ 239,000	
					Project Total =	**$ 1,044,000**	

REGION 11 GUADALUPE
REGIONAL FLOOD PLANNING GROUP

TO: Chair Doug Miller
Guadalupe Regional Flood Planning Group)

FROM: Jay Scanlon, P.E., C.F.M
Freese and Nichols, Inc.
F-2144
10431 Morado Circle, Suite 200
Austin, TX 78759

SUBJECT: Task 12 Flood Management Evaluation

DATE: 6/15/2023

PROJECT: Guadalupe-Blanco River Authority – First Street Low Water Crossing

Jerome W. Scanlon, III P.E., CFM
Project Manager | Freese and Nichols, Inc. (Tasks 4, 5, 12)

The Guadalupe Regional Flood Planning Group directed the Technical Consultant to complete this Flood Management Evaluation (FME) to develop a potentially feasible Flood Mitigation Project (FMP) under Task 12 for inclusion in the Region 11 Guadalupe Amended Regional Flood Plan.

Background and Study Overview

Flooding, dangerous roadway conditions, and frequent roadway closures during most rain events have been reported at the First Street Low Water Crossing (LWC). Existing conditions consist of five-24" reinforced concrete pipes (RCP) providing a combined full flow capacity of 141 cubic feet per-second (CFS). The City of Kerrville's 2020 Stormwater Master Plan indicated the crossing currently passes about 2.5% of the 5-year frequency flood event.

Preliminary hydraulic models have been developed by Freese and Nichols, Inc. (FNI) utilizing FEMA effective hydrologic flows to assess the overtopping of the roadways and the potential for roadway improvements. During the iterative process, it was determined that the crossing would require a substantial bridge-class structure and significant upstream and downstream channel improvements to mitigate the rise in the floodway elevation.

The City of Kerrville's 2020 Stormwater Master Plan (SMP) proposed the implementation of a Flood Early Warning System (FEWS) at Fourth Street. This action was originally listed as an FMP that anticipated installation of the FEWS with no structural improvements; however, during the preparation of the Regional Flood Plan (RFP), the city indicated they would prefer to look at structural solutions. Based on the Sponsor request, the Regional Flood Planning Group (RFPG) recommended inclusion of a project planning study as FME 111000024.

The FME includes updating the FEMA flood hazard analysis and mapping with ATLAS 14 rainfall data and evaluation of mitigation alternatives. The FME also includes development of an evaluation of adverse impacts, quantification of flood risk reduction benefits, evaluation of opinion of probable construction cost (OPCC), a high-level evaluation of potential constraints, and development of a benefit-cost analyses in accordance with adopted FMP screening criteria.

Figure 1: Study Location

Hydrologic and Hydraulic Analysis

Performance of the existing conditions hydrologic and hydraulic analyses for this FME drew upon the following data:

- Terrain Data: 2011 TNRIS 1/16 USGS Quad DEM bare earth terrain data
- Soils Data: USDA-NRCS Soil Survey Divisions Soil Map for Kerr County.
- Land Use Data: 2011 National Land Cover Database (NLCD).
- Hydraulic Model: HEC-RAS 1D model for First Street was obtained from ARDURRA
- Hydrologic Model: HEC-HMS model for First Street was obtained from ARDURRA

Hydrologic Modeling

All initial hydrologic models were obtained during the data collection phase. The hydrologic analysis performed in the SMP primarily used rational peak flow analysis. For drainage areas less than 150 acres, rational method is used to determine peak flow contributed by the basin at the outlet. Rational method focuses on runoff coefficient, rainfall intensities, and drainage areas. Precipitation data was updated to reflect NOAA Atlas-14 rainfall for each respective storm within HEC-HMS for the Task 12 analysis.

- Modeling Software: HEC-HMS version 4.2.1
- Rainfall Data: NOAA Atlas-14, 24-hour duration (2-, 5-, 10-, 25-, 50-, 100-, and 500-year frequency storms)

Hydraulic Modeling

All hydraulic modeling was performed using HEC-RAS and consisted of 1D steady-state analysis. All models gathered during the data collection phase were updated to reflect Atlas-14 precipitation output from HEC-HMS for all respective frequency storms. Cross sections along the streamlines were placed to capture the geometry of the channel and stream characteristics and to capture data for hydraulically significant structures such as bridges, culverts, and roads. Further refinement of the model with field survey data is required to enhance the accuracy and to further define the extent of the flooding and corresponding benefits of the proposed improvements. Hydraulic model parameter estimations include Manning's roughness coefficient (n) values, contraction and expansion coefficients, and ineffective flow limits.

- Modeling Software: HEC-RAS version 5.0.5
- Hydrologic Data: See above.

Existing Condition Flood Risk

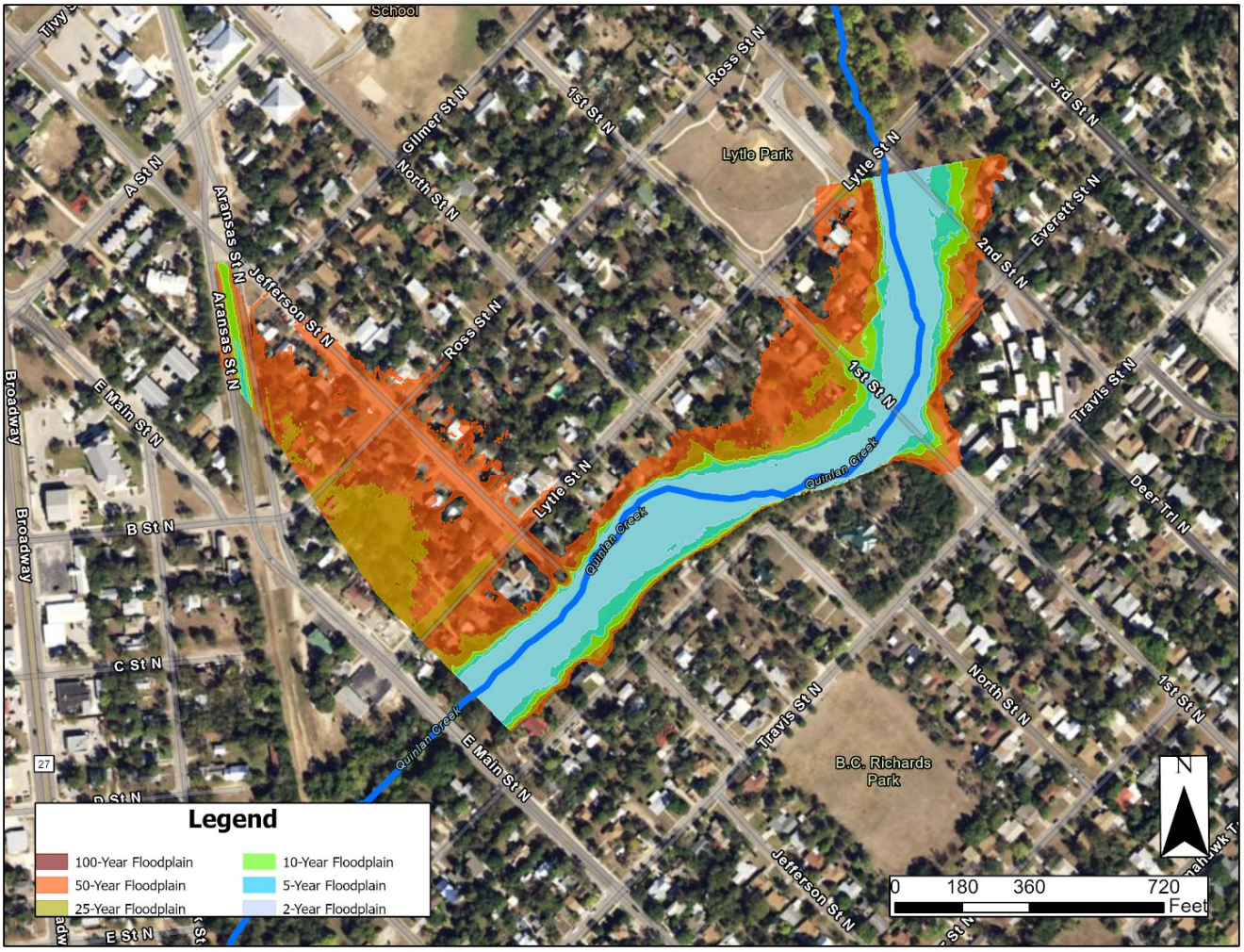
The existing structure on First Street over Quinlan Creek consists of 5-24" RCPs. The capacity of the existing culvert is approximately 141 cfs. Peak flow rates for the 2-year through 100-year storm events are shown in **Table 1**.

Table 1: Peak Flow Rates

Storm Event (YR)	*Flow Rate (cfs)*
2	1,727.60
5	3,348.10
10	5,100.60
25	7,864.30
50	10,301.40
100	13,014.70

The road elevation is approximately 1618 feet, which is lower than the 2-year storm maximum water surface elevation. Thus, the existing crossing provides less than 2-year level of service. The existing inundation map for each of the 2-, 5-, 10-, 25-, 50-, and 100-year frequency storms is presented in **Figure 2**. The results are only shown up to the 100-year frequency storm, as this event was selected to be the alternatives analysis design flood.

Figure 2: Existing Flood Risk



Proposed Flood Risk Reduction

The following section describes the proposed project improvements and flood risk reduction benefits of the alternatives evaluated.

Three alternatives were analyzed as potential projects to mitigate adverse impacts. Due to the frequent flooding in the area, alternatives to improve channel conveyance and increase the drainage capacity were considered. Initial results concluded that due to overtopping of the existing culvert structure, channel improvements alone do not increase the level of service for this crossing. Therefore, alternatives to raise the road elevation and provide additional conveyance (proposed box culvert) were considered. Alternative 2 consists of channel improvements and drainage improvements, including raising the road above the 10-year event. Alternative 3 builds upon the beforementioned alternative with the inclusion of a safety rail above the culvert crossing. Table 2 summarizes the proposed approvements.

Table 2 – Summary of Improvements

Improvement ID	Proposed Improvement		
	Channel Improvement	Drainage Improvement	Overtopping Event
Channel Modifications	100-foot wide bottom width, 3:1 side slopes	-	2-YR
Channel Modifications and Culvert Improvements	100-foot wide bottom width, 3:1 side slopes	6-foot road raise, 8-12' x 8' RCBs	25-YR
Channel Modifications, Culvert Improvements, and a Safety Rail	100-foot wide bottom width, 3:1 side slopes	6-foot road raise, 8-12' x 8' RCBs, safety rail	25-YR

Impact Analysis

The post-project flood risk was evaluated in accordance with the *TWDB Technical Guidelines for Regional Flood Planning* to verify the project will not increase flood risk to surrounding properties during the 100-year event (1% annual chance event). The guidelines recommend "…that no rise in water surface elevation or discharge should be permissible and that the analysis extent must be vast enough to prove proposed project conditions are equal to or less than the existing conditions."

Table 3 presents the results of the pre- and post- 100-year water surface elevations for the three alternatives. The recommended alternative consists of channel modifications, culvert improvements, and a safety rail. The areas of potential impacts for the 100-year frequency storm can be seen in **Figure 3**. The mitigation measures presented in **Table 3** include existing conditions and the three alternatives noted previously.

Table 3– Comparison of Pre- and Post-Project Water Surface Elevations

Cross Section	Existing Conditions	CM		CM+C		CM+C+R	
	WSEL	WSEL	Difference	WSEL	Difference	WSEL	Difference
2215	1631.90	1629.48	-2.46	1629.20	-2.74	1629.20	-2.74
2070	1631.10	1626.89	-4.17	1626.98	-4.08	1627.07	-3.99
1950	1630.00	1625.74	-4.27	1626.00	-4.01	1626.19	-3.82
1812	1629.60	1625.19	-4.45	1625.58	-4.06	1625.84	-3.80
1655	1628.60	1625.11	-3.50	1625.53	-3.08	1625.81	-2.80
1594	1628.80	1625.11	-3.73	1625.52	-3.32	1625.81	-3.03
1578	1629.10	1625.20	-3.89	1625.64	-3.45	1625.92	-3.17
1559	***First Street Culvert Crossing***						
1541	1628.80	1623.74	-5.08	1622.92	-5.90	1622.92	-5.90
1495	1628.40	1623.72	-4.67	1623.43	-4.96	1623.43	-4.96
1329	1627.70	1623.83	-3.84	1623.56	-4.11	1623.56	-4.11
1090	1623.40	1623.30	-0.14	1622.91	-0.53	1622.91	-0.53
929	1624.70	1623.56	-1.12	1623.21	-1.47	1623.21	-1.47
781	1624.40	1623.63	-0.76	1623.29	-1.10	1623.29	-1.10
476	1622.90	1623.09	0.22	1623.20	0.33	1623.20	0.33
206	1622.90	1622.90	0.00	1622.90	0.00	1622.90	0.00
58	1622.80	1622.81	0.00	1622.81	0.00	1622.81	0.00

Figure 3: Potential Impacts

Based on the results of the hydraulic modeling shown in **Table 3** and **Figure 3**, the preliminary evaluation indicates there are some minor impacts that include slight WSEL increases near the downstream end of the study reach. Based on engineering experience with similar projects that advanced from preliminary engineering to final design, and because the preliminary design is based on LiDAR vs detailed survey, it is my professional opinion that these impacts can be resolved during final design.

The Sponsor is aware that, as the project is advanced, the impact analysis should be updated to reflect final design and shall confirm no adverse hydraulic impacts result from project implementation.

Opinion of Probable Cost

An opinion of probable total project costs was prepared and includes required elements identified in TWDB guidance documents such as construction costs, permitting, engineering, land acquisition (if needed), recurring costs, and a contingency. The total OPCC for the recommended alternative is approximately $7,573,917. A detailed estimate is

provided as Attachment 2 and includes additional information regarding the costs associated with engineering design fees, construction management & inspection, and construction materials testing (CMT).

Project Constraints

The purpose of identifying constraints early is twofold. The first is to confirm there are no unusual obstacles to implementation that would make a project not feasible. The second is an effort to identify and capture total project costs to minimize cost increases and delays in implementation. Potential constraints include environmental permitting, utility conflicts and relocations, right-of-way acquisition, and constructability.

As noted above, the proposed alternatives consist of either channel modifications or a combination of channel modifications and a proposed culvert structure to mitigate potential increases in the 100-year water surface elevation. Because this is an existing crossing it is anticipated that the modifications would be eligible to be permitted under a U.S. Army Corps of Engineers (USACE) Nationwide Permit (NWP) 14 for linear transportation projects. NWPs have thresholds for maximum disturbances such as excavation and fill within Waters of the United States. If the thresholds are exceeded USACE may require public notification, mitigation, and potentially could require an individual permit. Preliminary channel modifications and mitigation are based on HEC-RAS cross-section data and LiDAR and therefore lack the type of detail that will be included in final design. Final design will include refinements to the alternative and models based on survey. It is recommended to include considerations such as natural channel design (benched-channel improvements, vegetation, etc.) in the development of the final mitigation design.

The project may require some localized utility adjustments to accommodate the design and construction of the roadway improvements but nothing that is atypical for this type of project. There is at least one driveway that will need to be adjusted to tie into the new road, but permanent land acquisition is not required. It will also be important during final design to consider temporary construction easements (TCEs) and contractors management of surface water and groundwater during construction.

Benefit Cost Analysis

The TWDB Benefit Cost Calculation tool was used to develop the Benefit Cost Analysis (BCA) and generate an estimate benefit cost ratio (BCR) for the low water crossing improvement. The average daily traffic count was sourced from the Texas Department of Transportation, System Support Branch's TPP District Traffic Database. Expected damages were calculated with recurrence intervals at the 5-, 10- and 100-year storm events. Overtopping Impact (duration) was assumed to be 12 hours per 1-ft of inundation. Using the TWDB tool, the estimated benefits over a 30-year project life are approximately $561,363, resulting in preliminary BCR of 0.10.

Sponsor Coordination and Feedback

The Technical Consultant shared results of the study with the Sponsor and held a virtual meeting to discuss the results. The Sponsor agreed with the recommended alternative (channel modifications, culvert improvements, and a safety rail) and indicated their support for submittal of the FMP to the Regional Flood Planning Group for consideration and inclusion in the Amended Plan.

End of Memorandum

Technical Memorandum Attachments

Attachments:

1. Opinion of Probable Construction Cost

ATTACHMENT 1:
OPINION OF PROBABLE CONSTRUCTION COST

FREESE AND NICHOLS

Innovative approaches
Practical results
Outstanding service

OPINION OF PROBABLE CONSTRUCTION COST

	First Street Low Water Crossing		4/20/2023
	Guadalupe-Blanco River Authority		1149
	PER		Jay Scanlon

Collin M. Reedy	Kevin Kiniry	GBA21362

1	MOBILIZATION (NTE 5% OF NEW CONSTRUCTION COSTS)	1	LS	$ 266,000.00	$ 266,000
2	CARE AND CONTROL OF WATER (NTE 2.5% OF NEW CONSTRUCTION COSTS)	1	LS	$ 133,000.00	$ 133,000
3	CLEARING AND GRUBBING	2	AC	$ 8,000.00	$ 16,000
4	STORMWATER POLLUTION PREVENTION PLAN	4400	LF	$ 10.00	$ 44,000
5	SITE RESTORATION (FINAL GRADING, TURF ESTABLISHMENT, CLEAN-UP)	1	AC	$ 10,340.00	$ 10,340
6	UTILITY COORDINATION	1	LS	$ 5,000.00	$ 5,000
7	TRAFFIC CONTROL PLAN	1	LS	$ 45,000.00	$ 45,000
8	REMOVAL AND DISPOSAL OF EXISTING ROADWAY PAVEMENT, ROADWAY SUBGRADE, CURB	18000	SY	$ 60.00	$ 1,080,000
9	6-INCH THICK REINFORCED CONCRETE ROADWAY PAVEMENT AND SUBGRADE	18000	SY	$ 125.00	$ 2,250,000
10	6-INCH REINFORCED CONCRETE CURB	950	LF	$ 55.00	$ 52,250
11	REMOVAL AND DISPOSAL OF EXISTING SANITARY SEWER PIPE	400	LF	$ 135.00	$ 54,000
12	PRECAST 6-FOOT SANITARY SEWER MANHOLE	2	EA	$ 22,000.00	$ 44,000
13	6-INCH SANITARY SEWER PIPE (PVC)	1500	LF	$ 120.00	$ 180,000
14	REMOVAL AND DISPOSAL OF CONCRETE HEADWALL STRUCTURE	70	CY	$ 600.00	$ 42,000
15	REMOVAL AND DISPOSAL OF 24-INCH REINFORCED CONCRETE PIPE	150	LF	$ 100.00	$ 15,000
16	PRECAST REINFORCED CONCRETE BOX (12' X 8')	240	LF	$ 1,500.00	$ 360,000
17	CONCRETE STRUCTURE (HEADWALL, WINGWALL, AND FOOTING)	2	EA	$ 233,050.00	$ 466,100
18	EXCAVATION AND OFF-SITE DISPOSAL	37225	CY	$ 20.00	$ 744,500
19	CONCRETE RIPRAP (12-INCH THICK LAYER)	270	SY	$ 70.00	$ 18,900
		SUBTOTAL			$ 5,826,090

OPINION OF PROBABLE CONSTRUCTION COSTS	**$ 7,573,917**
ENGINEERING DESIGN FEES (15% OF OPCC)	**$ 1,136,088**
CONSTRUCTION MANAGEMENT & INSPECTION, CONSTRUCTION MATERIALS TESTING (10% OF OPCC)	**$ 757,392**
PROJECT IMPLEMENTATION COST	**$ 9,467,396**

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

NOTES:

1 FNI OPCC classified as an AACE Class 4 Estimate with accuracy range or -20 to + 30.

2 FNI OPCC does not include costs associated with engineering fees, permits, surveying, etc.

REGION 11 GUADALUPE
REGIONAL FLOOD PLANNING GROUP

TO: Chair Doug Miller
Guadalupe Regional Flood Planning Group)

FROM: Jay Scanlon, P.E., C.F.M
Freese and Nichols, Inc.
F-2144
10431 Morado Circle, Suite 200
Austin, TX 78759

SUBJECT: Task 12 Flood Management Evaluation

DATE: 6/15/2023

PROJECT: Guadalupe-Blanco River Authority – Fourth Street Low Water Crossing

Jerome W. Scanlon, III P.E., CFM
Project Manager | Freese and Nichols, Inc. (Tasks 4, 5, 12)

The Guadalupe Regional Flood Planning Group directed the Technical Consultant to complete this Flood Management Evaluation (FME) to develop a potentially feasible Flood Mitigation Project (FMP) under Task 12 for inclusion in the Region 11 Guadalupe Amended Regional Flood Plan.

Background and Study Overview

Flooding, dangerous roadway conditions, and frequent roadway closures during most rain events have been reported at the Fourth Street Low Water Crossing (LWC). Existing conditions consists of two-24" reinforced concrete pipes (RCPs) providing a combined capacity of approximately 32 cubic feet per-second (CFS), which is roughly 1% of the 5-year frequency storm event. Preliminary hydraulic models have been developed by Freese and Nichols, Inc. (FNI) utilizing FEMA effective hydrologic flows to assess the overtopping of the roadways and the potential for roadway improvements to elevate the roadway above the 25-year or 50-year storm event. During the iterative process, it was determined that the crossing would require a substantial bridge-class structure and significant upstream and downstream channel improvements to mitigate the rise in the floodway elevation.

The City of Kerrville's 2020 Stormwater Master Plan (SMP) proposed the implementation of a Flood Early Warning System (FEWS) at Fourth Street. This action was originally listed as an FMP that anticipated installation of the FEWS with no structural improvements; however, during the preparation of the Regional Flood Plan (RFP), the City indicated they would prefer to look at structural solutions. Based on the Sponsor request, the RFP group recommended inclusion of a project planning study as FME 111000025.

This FME includes updating the FEMA flood hazard analysis and mapping with ATLAS 14 rainfall data and evaluation of mitigation alternatives. This FME also includes development of an evaluation of adverse impacts, quantification of flood risk reduction benefits, evaluation of opinion of probable construction cost (OPCC), a high-level evaluation of potential constraints, and performance of a benefit-cost analyses in accordance with adopted FME screening criteria.

Figure 1: Study Location

Hydrologic and Hydraulic Analysis

Performance of the existing conditions hydrologic and hydraulic analyses for this FME drew upon the following data:

- Terrain Data: 2011 TNRIS 1/16 USGS Quad DEM bare earth terrain data
- Soils Data: USDA-NRCS Soil Survey Divisions Soil Map for Kerr County.
- Land Use Data: 2011 National Land Cover Database (NLCD).
- Hydraulic Model: HEC-RAS 1D model for Fourth Street was obtained from ARDURRA
- Hydrologic Model: HEC-HMS model for Fourth Street was obtained from ARDURRA

Hydrologic Modeling

All initial hydrologic models were obtained during the data collection phase. The hydrologic analysis performed in the SMP primarily used rational peak flow analysis. For drainage areas less than 150 acres, rational method is used to determine peak flow contributed by the basin at the outlet. Rational method focuses on runoff coefficient, rainfall

intensities, and drainage areas. Precipitation data was updated to reflect NOAA Atlas-14 rainfall for each respective storm within HEC-HMS for the Task 12 analysis.

- Modeling Software: HEC-HMS version 4.2.1
- Rainfall Data: NOAA Atlas-14, 24-hour duration (2-, 5-, 10-, 25-, 50-, 100-, and 500-year frequency storms).

Hydraulic Modeling

All hydraulic modeling was performed using HEC-RAS and consisted of 1D steady-state analysis. All models gathered during the data collection phase were updated to reflect Atlas-14 precipitation output from HEC-HMS for all respective frequency storms. Cross sections along the streamlines were placed to capture the geometry of the channel and stream characteristics and to capture data for hydraulically significant structures such as bridges, culverts, and roads. Further refinement of the model with field survey data is required to enhance the accuracy and to further define the extent of the flooding and corresponding benefits of the proposed improvements. Hydraulic model parameter estimations include Manning's roughness coefficient (n) values, contraction and expansion coefficients, and ineffective flow limits.

- Modeling Software: HEC-RAS version 5.0.5
- Hydrologic Data: See above.

Existing Condition Flood Risk

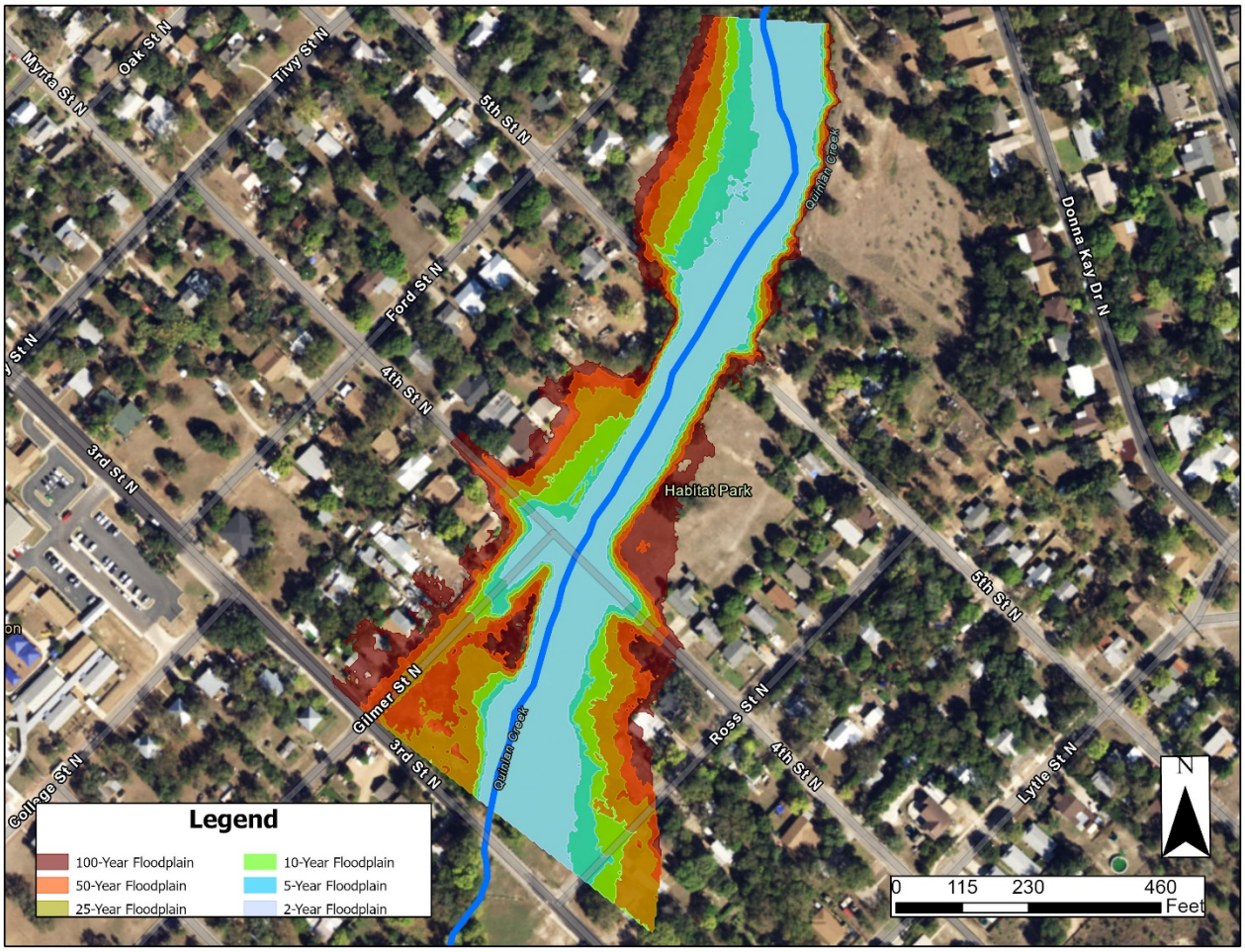
The existing structure on Fourth Street over Quinlan Creek consists of two-24" RCPs. The capacity of the existing culvert is approximately 32 cfs. Peak flow rates for the 2-year through 100-year storm events are shown in **Table 1**.

Table 1: Peak Flow Rates

Storm Event (YR)	*Flow Rate (cfs)*
2	3380.23
5	4287.10
10	5110.00
25	6950.00
50	8080.00
100	9350.00

The road elevation is approximately 1628.5 feet, which is lower than the maximum water surface elevation for the 1-year storm event. Thus, the existing cross section provides less than 1-year level of service. The existing inundation map for each of the 2-, 5-, 10-, 25-, 50-, and 100-year frequency storms is presented in **Figure 2**. The results are only shown up to the 100-year frequency storm, as this event was selected to be the alternatives analysis design flood.

Figure 2: Existing Flood Risk



Proposed Flood Risk Reduction

The following section describes the proposed project improvements and flood risk reduction benefits of the alternatives evaluated.

Three alternatives were analyzed as potential projects to mitigate adverse impacts. Due to the frequent flooding in the area, alternatives to improve channel conveyance and increase the drainage capacity were considered. Initial results (alternative CM) concluded that due to overtopping of the existing culvert structure, channel improvements alone do not increase the level of service for this crossing. Therefore, alternatives to raise the road elevation and provide additional conveyance (proposed box culvert) were considered. Alternative 2 (CM+C) consists of channel improvements and drainage improvements, including raising the road above the 5-year event. Alternative 3 (CM+C+R) builds upon the aforementioned alternative with the inclusion of a safety rail above the culvert crossing. Table 2 summarizes the proposed improvements.

Table 2-Summary of Improvements

Improvement ID	Proposed Improvement		
	Channel Improvement	Drainage Improvement	Overtopping Event
Channel Modifications (CM)	80-foot bottom width, 60-foot bottom width near culvert, side slopes 3:1	-	1-year
Channel Modification and Culvert (CM+C)	80-foot bottom width, 60-foot bottom width near culvert, side slopes 3:1	5.6-foot road raise, 7—12' x 8' RCBs	10-year
Channel Modifications and Culvert + Rail (CM+C+R)	80-foot bottom width, 60-foot bottom width near culvert, side slopes 3:1	5.6-foot road raise, 7—12' x 8' RCBs, 3-foot safety rail	10-year

Impact Analysis

The post-project flood risk was evaluated in accordance with the *TWDB Technical Guidelines for Regional Flood Planning* to verify the project will not increase flood risk to surrounding properties during the 100-year event (1% annual chance event). The guidelines recommend "…that no rise in water surface elevation or discharge should be permissible and that the analysis extent must be vast enough to prove proposed project conditions are equal to or less than the existing conditions."

Table 3 presents the results of the pre- and post- 100-year water surface elevations for the three alternatives. The recommended alternative consists of channel modifications, culvert improvements, and a safety rail. The areas of potential impacts for the 100-year frequency storm can be seen in **Figure 3**. The mitigation measures presented in **Table 3** include existing conditions and the three alternatives noted previously.

Table 3—Comparison of Pre- and Post-Project Water Surface Elevations

Cross Section	Existing Conditions	CM		CM+C		CM+C+R	
	WSEL	WSEL	Difference	WSEL	Difference	WSEL	Difference
1542	1642.29	1641.09	-1.20	1641.10	-1.19	1641.14	-1.15
1348	1641.91	1639.93	-1.98	1639.97	-1.94	1640.07	-1.84
1055	1641.46	1640.18	-1.28	1640.21	-1.25	1640.30	-1.16
846	1639.56	1639.07	-0.49	1639.11	-0.45	1639.24	-0.32
641	1638.97	1638.74	-0.23	1638.80	-0.17	1638.94	-0.03
540	1639.06	1638.76	-0.30	1638.82	-0.24	1638.97	-0.09
516	1639.51	1639.10	-0.41	1639.14	-0.37	1639.28	-0.23
490	***Fourth Street Culvert Crossing***						
477	1639.38	1638.99	-0.39	1639	-0.38	1639.00	-0.38
437	1639.07	1638.77	-0.30	1638.77	-0.30	1638.77	-0.30
283	1638.36	1638.32	-0.04	1638.33	-0.03	1638.33	-0.03
130	1638.64	1638.61	-0.03	1638.62	-0.02	1638.62	-0.02
28	1638.61	1638.61	0.00	1638.61	0.00	1638.61	0.00

Figure 3: Potential Impacts

Based on the results of the hydraulic modeling shown in **Table 3** and **Figure 3,** the preliminary evaluation confirms the project will not increase inundation beyond the public right-of-way or easements, or increase inundation of existing storm drainage networks, channels, or roadways beyond design capacity.

The Sponsor is aware that, as the project is advanced, the impact analysis should be updated to reflect final design and shall confirm no adverse hydraulic impacts result from project implementation.

Opinion of Probable Cost

An opinion of probable total project costs was prepared and includes required elements identified in TWDB guidance documents such as construction costs, permitting, engineering, land acquisition (if needed), recurring costs, and a contingency. The total opinion of total project costs for the recommended alternative is approximately $4,531,358. A detailed estimate is provided as Attachment 2 and includes additional information regarding the costs associated with engineering design fees, construction management & inspection, and construction materials testing (CMT).

Project Constraints

The purpose of identifying constraints early is twofold. The first is to confirm there are no unusual obstacles to implementation that would make a project not feasible. The second is an effort to identify and capture total project costs to minimize cost increases and delays in implementation. Potential constraints include environmental permitting, utility conflicts and relocations, right-of-way acquisition, and constructability.

As noted above, the proposed alternatives consist of either channel modifications or a combination of channel modifications and a proposed culvert structure to mitigate potential increases in the 100-year water surface elevation. Because this is an existing crossing it is anticipated that the modifications would be eligible to be permitted under a U.S. Army Corps of Engineers (USACE) Nationwide Permit (NWP) 14 for linear transportation projects. NWPs have thresholds for maximum disturbances such as excavation and fill within Waters of the United States. If the thresholds are exceeded USACE may require public notification, mitigation, and potentially could require an individual permit. Preliminary channel modifications and mitigation are based on HEC-RAS cross-section data and LiDAR and therefore lack the type of detail that will be included in final design. Final design will include refinements to the alternative and models based on survey. It is recommended to include considerations such as natural channel design (benched-channel improvements, vegetation, etc.) in the development of the final mitigation design.

The project may require some localized utility adjustments to accommodate the design and construction of the roadway improvements but nothing that is atypical for this type of project. There is at least one driveway that will need to be adjusted to tie into the new road, but permanent land acquisition is not required. It will also be important during final design to consider temporary construction easements (TCEs) and contractors management of surface water and groundwater during construction.

Benefit Cost Analysis

The TWDB Benefit Cost Calculation tool was used to develop the Benefit Cost Analysis (BCA) and generate an estimate benefit cost ratio (BCR) for the low water crossing improvement. The average daily traffic count was sourced from the Texas Department of Transportation, System Support Branch's TPP District Traffic Database. Expected damages were calculated with recurrence intervals at the 5-, 10- and 100-year storm events. Overtopping Impact (duration) was assumed to be 12 hours per 1-ft of inundation. Using the TWDB tool, the estimated benefits over a 30-year project life are approximately $479,890, resulting in preliminary BCR of 0.10.

Sponsor Coordination and Feedback

The Technical Consultant shared results of the study with the Sponsor and held a virtual meeting to discuss the results. The Sponsor agreed with the recommended alternative and indicated their support for submittal of the FMP to the Regional Flood Planning Group for consideration and inclusion in the Amended Plan.

End of Memorandum

Technical Memorandum Attachments

Attachments:

1. Opinion of Probable Construction Cost

ATTACHMENT 1:
OPINION OF PROBABLE CONSTRUCTION COST

FREESE AND NICHOLS

Innovative approaches
Practical results
Outstanding service

OPINION OF PROBABLE CONSTRUCTION COST

	Fourth Street Low Water Crossing		6/21/2023
	Guadalupe-Blanco River Authority		1149
	PER		Jay Scanlon

Collin M. Reedy	Kevin Kiniry	GBA21362

1	MOBILIZATION (NTE 5% OF NEW CONSTRUCTION COSTS)	1	LS	$ 157,000.00	$ 157,000
2	CARE AND CONTROL OF WATER (NTE 2.5% OF NEW CONSTRUCTION COSTS)	1	LS	$ 79,000.00	$ 79,000
3	CLEARING AND GRUBBING	1	AC	$ 8,000.00	$ 8,000
4	STORMWATER POLLUTION PREVENTION PLAN	3028	LF	$ 10.00	$ 30,280
5	SITE RESTORATION (FINAL GRADING, TURF ESTABLISHMENT, CLEAN-UP)	1	AC	$ 10,340.00	$ 10,340
6	UTILITY COORDINATION	1	LS	$ 5,000.00	$ 5,000
7	TRAFFIC CONTROL PLAN	1	LS	$ 45,000.00	$ 45,000
8	REMOVAL AND DISPOSAL OF EXISTING ROADWAY PAVEMENT, ROADWAY SUBGRADE, CURB	11232	SY	$ 60.00	$ 673,920
9	6-INCH THICK REINFORCED CONCRETE ROADWAY PAVEMENT AND SUBGRADE	11232	SY	$ 125.00	$ 1,404,000
10	6-INCH REINFORCED CONCRETE CURB	682	LF	$ 55.00	$ 37,510
11	REMOVAL AND DISPOSAL OF EXISTING SANITARY SEWER PIPE	100	LF	$ 135.00	$ 13,500
12	PRECAST 6-FOOT SANITARY SEWER MANHOLE	1	EA	$ 22,000.00	$ 22,000
13	6-INCH SANITARY SEWER PIPE (PVC)	100	LF	$ 120.00	$ 12,000
14	REMOVAL AND DISPOSAL OF EXISTING WATER LINE	400	LF	$ 22.00	$ 8,800
15	8-INCH SANITARY SEWER PIPE (PVC)	400	LF	$ 135.00	$ 54,000
16	REMOVAL AND DISPOSAL OF CONCRETE HEADWALL STRUCTURE	40	CY	$ 600.00	$ 24,000
17	REMOVAL AND DISPOSAL OF 24-INCH REINFORCED CONCRETE PIPE	100	LF	$ 100.00	$ 10,000
18	PRECAST REINFORCED CONCRETE BOX (12' X 8')	210	LF	$ 1,500.00	$ 315,000
19	CONCRETE STRUCTURE (HEADWALL, WINGWALL, AND FOOTING)	2	EA	$ 212,000.00	$ 424,000
20	EXCAVATION AND OFF-SITE DISPOSAL	9170	CY	$ 20.00	$ 183,400
21	CONCRETE RIPRAP (12-INCH THICK LAYER)	270	SY	$ 70.00	$ 18,900
		SUBTOTAL			$ 3,535,650

OPINION OF PROBABLE CONSTRUCTION COSTS	**$ 4,596,345**
ENGINEERING DESIGN FEES (15% OF OPCC)	**$ 689,452**
CONSTRUCTION MANAGEMENT & INSPECTION, CONSTRUCTION MATERIALS TESTING (10% OF OPCC)	**$ 106,070**
PROJECT IMPLEMENTATION COST	**$ 5,391,866**

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

NOTES:

1 FNI OPCC classified as an AACE Class 4 Estimate with accuracy range or -20 to + 30.

2 FNI OPCC does not include costs associated with engineering fees, permits, surveying, etc.

Appendix 10-A | Summary Memorandum of Pre-Planning Meeting August 4, 2021

Blanton & Associates, Inc.
ENVIRONMENTAL CONSULTING • PLANNING • PROJECT MANAGEMENT

Memorandum

To: Lauren Willis –Director of Regulatory & Customer Affairs, Guadalupe-Blanco River Authority
Jay Scanlon, PE, CFM, ENV SP – Project Manager, Freese & Nichols, Inc.
Adam Conner – Assistant Project Manager, Freese & Nichols, Inc.

From: Velma R. Danielson, Project Manager/Public Involvement Lead, Blanton & Associates
Alicia Reinmund-Martinez, Deputy Project Manager

Date: August 17, 2021

Re: **Summary Report – Guadalupe Regional Flood Planning Group Pre-Planning Public Meeting – August 4, 2021**

The Region 11 Guadalupe Regional Flood Planning Group (RFPG) held their second pre-planning public meeting on Wednesday, August 4, 2021 as an item on their regular monthly RFPG meeting agenda. The purpose of this agenda item was to solicit public input regarding suggestions and recommendations on the development of the Guadalupe Regional Flood Plan. Below is a summary of the meeting discussion related to this agenda item.

Meeting Attendance

There were 61 attendees, (16 RFPG members, seven elected officials, 32 members of the public, one Guadalupe-Blanco River Authority (GBRA) staff member and eight members of the consultant team assisting the Guadalupe RFPG with developing the 2023 Guadalupe Regional Flood Plan), at the August 4, 2021 Guadalupe RFPG Meeting. Sign-in sheets are included in **Appendix A**.

Pre-Planning Public Meeting Format

While the Guadalupe RFPG regular monthly meeting began at 4:02 p.m., the pre-planning public meeting agenda item began at approximately 5:20 p.m. Chairman Doug Miller reviewed the guidelines for those wanting to provide public comments. Chairman Miller also stated that RFPG members would not be addressing comments during the meeting as this was their opportunity to hear from the public. He then opened the meeting for public input. Eleven individuals spoke and provided comments, with one speaker submitting copies of emails and letters concerning flood planning and potential solutions. A matrix of the stakeholder and public comments received is found in **Appendix B,** and the emails and letters submitted are found in **Appendix C**. The meeting adjourned at 6:02 p.m.

If you have any questions, please let us know.

Appendix A

Sign-In Sheets

Region 11 Guadalupe Regional Flood Planning Group
Wednesday, August 4, 2021

Last Name	First Name	Organization	Email	Signature
Brzozowski	Patrick	Region 10 Liaison	pbrzozowski@lnra.org	
Buck	Ray	River Authorities	rbuck@ugra.org	
Christmas	Bobby	Electric Generating	bchristmas@gvec.org	
Conner	Adam	FNI	adam.conner@freese.com	
Danielson	Velma	Blanton	velma.danielson@blantonassociates.com	
Durden	Don	Public	don.durden@co.kendall.tx.us	
Fieseler	Ron	Water Districts	manager@blancogw.org	
Gill	Ken	Municipalities	kgill@victoriatx.gov	
Harris	Daniel	Scheibe Consulting		
Hegemier	Tom	Doucet & Associates	thegemier@doucetengineers.com	
Johnson	Natalie	TDEM	natalie.johnson@tdem.texas.gov	
Johnston	John	Counties	jjohnston@vctx.org	
Klumpp	Joel	TCEQ	joel.klumpp@tceq.texas.gov	
McCool	Jami	Texas Agriculture	Jami.McCool@TexasAgriculture.gov	
McDaniel	Joseph	Water Utilities	jjmcdaniel@aquaamerica.com	
Meitzen	Kimberly	Public	kmeitzen@txstate.edu	
Miller	Doug	Agricultural	doug@miller-miller.com	
Nash	Allen	TSSWCB	anash@tsswcb.texas.gov	
Pantalion	Joe	Municipalities	jpantalion@sanmarcostx.gov	
Parker	Beth	Flood Districts	bparker@dcdd1.com	
Peace	Annalisa	Environmental	annalisa@aquiferalliance.org	
Perkins	Brian	River Authorities	bperkins@gbra.org	Present
Reilly	Sue	TPWD	Sue.Reilly@TPWD.Texas.gov	
Robles	Kris	GLO	kris.robles.glo@recovery.texas.gov	
Ryan	Robert	Blanton	rryan@blantonassociates.com	
Scanlon	Jay	FNI	jay.scanlon@freese.com	
Scott	Suzanne	Region 12 Liaison	suzanne.scott@tnc.org	
Sethness	Doug	Flood Districts	dsethness@reagan.com	
Shell	Lon	Counties	lon.shell@co.hays.tx.us	Present
Stone	Kevin	Industries	kevin.stone@martinmarietta.com	
Villarreal	Gian	Small Business	GVILLARREAL@seagullpme.com	
White	Morgan	TWDB	morgan.white@twdb.texas.gov	

SIGN-IN SHEET – GENERAL PUBLIC
Region 11 Guadalupe Regional Flood Planning Group
August 4, 2021
Wimberley Community Center 14068 Ranch Rd 12, Wimberley, TX 78676

Name (Print)	Affiliation	Address, Email or Phone Number	How did you hear about the meeting? (Email, Social Media post, Website, other?)	Comment during the meeting? Yes or No
John Espinoza	City of San Marcos TFMA	512 393 8241 jespinoza@sanmarcostx.gov	Other	No
Ken Bennett	CenterPoint	KBENNETT4834@GMAIL.COM 830-456-5010	Email.	NO
Mike Jones	HAYS Co. OES	810 S. STAGECOACH TR. San Marcos Mike.Jones@co.hays.TX.US		NO
Dianne Wassenich individual	11 Tanglewood Tr San Marcos TX 78666		email facebook	yes
melissa Zavicke	Guadalupe Co.	2605 N. Guadalupe St FBO 303-8858	email	NO
Shelly Jackson	Guadalupe Co	"	email	No
GARY LOUIE	KENDALL	POB 905 COMFORT gary.a.louie@gmail	email	Yes
Virgil Maldonado	PEC	512-755-2446	Email	No
Kurt Backner	PEC	830-330-0655	Email	NO
* Dennis Engelke	Caldwell County	dennis.engelke@co.caldwell.tx.us	Email Added	no yes *
Nathan Glaiser	City of Wimberley	nglaiser@cityofwimberley.com	Email	No

SIGN-IN SHEET – GENERAL PUBLIC
Region 11 Guadalupe Regional Flood Planning Group
August 4, 2021
Wimberley Community Center 14068 Ranch Rd 12, Wimberley, TX 78676

Name (Print)	Affiliation	Address, Email or Phone Number	How did you hear about the meeting? (Email, Social Media post, Website, other?)	Comment during the meeting? Yes or No
Michael BOESE	City of Wimberley	mboese@cityofwimberley.com	Email invite	NO
Charlie Flatten	Hays Trinity GCD	gm@haysgroundwater.com		No
Eugenie Schieve	Rep. Zwiener	Eugenie.schieve@house.texas.gov	Email	NO
Joyce Yannuzzi	Sen. Campbell	joyce.yannuzzi@senate.texas.gov	email	No
Diana Gonzales	PEC	PO Box 1, Johnson City TX	email	NO
Blake Bedford	City of Buda	bbedford@ci.buda.tx.us	email	No
★ Jim Guin	TDEM	James.guin@tdem.texas.gov	Email Added	NO yes ★
Marcus Pacheco	Hays County	marcus.pacheco@hays.co.tx	email	NO
Bob Mayo	Landowner Cypress	robertmayo43@yahoo	Neibor	Yes
LINDA Bishop H4	Lake Gonzales	meme8@austin.rr.com		Yes
Delton Bishop	4			

SIGN-IN SHEET – GENERAL PUBLIC
Region 11 Guadalupe Regional Flood Planning Group

August 4, 2021

Wimberley Community Center 14068 Ranch Rd 12, Wimberley, TX 78676

Name (Print)	Affiliation	Address, Email or Phone Number	How did you hear about the meeting? (Email, Social Media post, Website, other?)	Comment during the meeting? Yes or No
Humberto Ruas	CRWA	huromas@crwa.com		
MICHAEL SHARP	CITY OF SEGUIN	108 E MOUNTAIN 78155		
David Dishman	Wimberley	103 Freedom Dr. Wimberley	Neighbor	
Sheila Stiles		422 Chinaberry ST Centerpoint TX 78010	FRIENDS	No

SIGN-IN SHEET – GENERAL PUBLIC

Region 11 Guadalupe Regional Flood Planning Group

August 4, 2021

Wimberley Community Center 14068 Ranch Rd 12, Wimberley, TX 78676

Name (Print)	Affiliation	Address, Email or Phone Number	How did you hear about the meeting? (Email, Social Media post, Website, other?)	Comment during the meeting? Yes or No
* Kari Potter		428 China St. 830-285-2654 Center Point, TX kari.potter94@yahoo.com	~~Added~~ Anneliese Peace	yes NO *
Eric VAN Grassbeek	Hays CO.		e-mail	NO
Ray Don Tilley	WVWA	125 Augusta Dr 78676	email	No
Jonathan Letz	New County			yes

SIGN-IN SHEET – GENERAL PUBLIC
Region 11 Guadalupe Regional Flood Planning Group

August 4, 2021

Wimberley Community Center 14068 Ranch Rd 12, Wimberley, TX 78676

Name (Print)	Affiliation	Address, Email or Phone Number	How did you hear about the meeting? (Email, Social Media post, Website, other?)	Comment during the meeting? Yes or No
KURT SOLIS	COMFORT FLOOD PLAIN COALITION CITIZEN	KURTSOLIS@OUTLOOK.COM	EMAIL	
Christina Lopez	Plum Creek Watershed	clopez@plumcreekwatershed.org	email	no

SIGN-IN SHEET – ELECTED OFFICIALS
Region 11 Guadalupe Regional Flood Planning Group

August 4, 2021

Wimberley Community Center 14068 Ranch Rd 12, Wimberley, TX 78676

Name (Print)	Representing	Address, Email or Phone Number	How did you hear about the meeting? (Email, Social Media post, Website, other?)	Comment during the meeting? Yes or No
Drew Engelke	Guadalupe County	drew.engelke@co.guadalupe.tx.us	email	N
Jen Crownover	Comal County	jencrownover@mycomalcounty.com	Email	N
Anita Collins	Hays Co	anita.collins@co.hays.tx.us	"	N
Co. Judge Ruben Becerra	"	judge.becerra@co.hays.tx.us	"	N
Mark Gleason	City of San Marcos	mgleason@sanmarcostx.gov	email	N

SIGN-IN SHEET – ELECTED OFFICIALS
Region 11 Guadalupe Regional Flood Planning Group

August 4, 2021

Wimberley Community Center 14068 Ranch Rd 12, Wimberley, TX 78676

Name (Print)	Representing	Address, Email or Phone Number	How did you hear about the meeting? (Email, Social Media post, Website, other?)	Comment during the meeting? Yes or No
Christine Byrne	COW Place 3	place3@cityofwimberley.com	email	NO
Joyce Yannuzi	Sen. Campbell			

Appendix B

Matrix – Stakeholder/Public Comment

NAME/AFFILIATION	STAKEHOLDER/PUBLIC COMMENTS
Dianne Wassenich/ Individual	• Mrs. Wassenich is a resident of San Marcos. She indicated that she was very interested and concerned about recreational development within floodplain. • She noted that during future flooding events, debris from these developments could potentially become a "battering ram" downstream. • Mrs. Wassenich also emphasized that land conservation measures, especially of riparian areas and in the 100-year flood plain, need to be implemented. • She suggested that these lands should be bought, and that funding for this measure should be the highest priority. • Mrs. Wassenich also suggested that land at higher elevations should be open and undeveloped. • Mrs. Wassenich stated that the City of San Marcos did a "sensible" thing by increasing the elevation at which development can occur and changing the floodplain elevation from 1ft to 2ft. • She would like the floodplain raised from 1ft to 2ft elsewhere. • Lastly, Mrs. Wassenich emphasized the importance of purchasing land.
Gary Louie/Individual	• Mr. Gary Louie is a resident of Comfort, Texas. • Mr. Louie noted that the funding for an early warning system is of importance. • Mr. Louie provided several letters to the RFPG regarding an early warning system and concern for loss of life, and he stated that the funding of an early warning system is affordable and timely. • Mr. Louie also stated that restrictors and retention devices will result in less property damage and provide some long-term economic benefits. • Mr. Louie would like to ensure that any projects keep the downstream in mind.

NAME/AFFILIATION	STAKEHOLDER/PUBLIC COMMENTS
Bob Mayo/ Individual	• Mr. Bob Mayo is a resident of Comfort. • Mr. Mayo was interested to know how much funding is available for these projects. • Mr. Mayo also mentioned that people have been getting drinking water out of Cypress Creek. • He noted that development on the land between the Cypress Creek and the river is not possible and suggested turning the area in to a lake. • Mr. Mayo also cited a concern over the pumping of water to the cities. • Mr. Mayo asked if desalination studies have been completed. • Mr. Mayo would like to keep farmland in consideration during flood planning.
Linda Bishop/ Individual	• Mrs. Linda Bishop, a landowner on Lake Gonzales, expressed concern regarding a non-responsive gate on the dam. • She stated that the gates were up and down throughout the day of August 4th. • Mrs. Bishop also noted that a news service came to her property to report on the issues at the dam. • Mrs. Bishop also expressed concern over the homes in Gonzales and Cuero that were destroyed and is afraid that will happen to her property. • She stated that as of August 3rd, both gates were down at the Lake Gonzales Dam. • Mrs. Bishop stated that "those dams need to be in place for the next flood. Now there is no H-5, and no dam for Lake Gonzales." • Mrs. Bishop noted that she is afraid Lake Gonzales will be drained like Lake Dunlap. • Mrs. Bishop wanted to clarify that she did not contact the news service to come to her property.

NAME/AFFILIATION	STAKEHOLDER/PUBLIC COMMENTS
Sara Dishman/ Individual and former City of Wimberley Councilmember	• Mrs. Sara Dishman stated that she is a Hays County resident and a former City of Wimberley Councilmember. • Mrs. Dishman noted that rock wall structures with stairs have been built along the river to create easy access to the river. • Mrs. Dishman emphasized that this development was dangerous. • Mrs. Dishman stated that she was present during the flood in 2015. She noted that six years have passed, and people have forgotten. • Mrs. Dishman commented that current officials are not making flood planning a priority. • Mrs. Dishman emphasized the importance of disseminating information to local governments, and said that communication is lacking, and that city elected officials are not aware of flooding issues. • She then cited the lack of communication has led to local governments not enforcing rules, which would have prevented the development of the rock walls along the river. • Mrs. Dishman wanted construction activities along the river to be better enforced and regulated. • Mrs. Dishman wanted to ensure that municipalities have the information needed so that the rules don't change when the people in charge change. • Mrs. Dishman wanted rule enforcement to be more consistent from the City of Wimberley and believed there is a gap in communication between the City of Wimberley and the citizens.
Commissioner Jonathan Letz/ Kerr County	• Commissioner Letz noted that Kerr County is part of five river basins, making it difficult to plan for. He encouraged that there should be direct communication with county judges and mayors. • Commissioner Letz stated that conservation priorities will have a huge impact on water quality and runoff. • Commissioner Letz noted that he would like to take into consideration conservation efforts, partner with NRCS, and keep water quality in mind. • Commissioner Letz also noted that RV parks need to be looked at. • Commissioner Letz notified the RFPG that Kerr County will be submitting three flood planning projects, and he wanted to know how to do that and what the deadline for submission was. • He also stated that there will be two joint projects from Kendall/Kerr counties that will be submitted to the RFPG.

NAME/AFFILIATION	STAKEHOLDER/PUBLIC COMMENTS
Dennis Engelke/ Caldwell County staff	• Mr. Engelke stated that Caldwell County has been identified as a natural disaster county many times. • Mr. Engelke stated that flood planning will take a collaborative effort. He wanted to work collaboratively with this RFPG. • He encouraged county officials to get involved in the flood planning process. • Mr. Engelke noted that Caldwell County has applied for a grant to develop a (flood) management plan and has utilized existing resources. • He suggested that others take advantage of the existing resources, such as TWDB grants. • Mr. Engelke also noted that Caldwell County is involved in a buy-out program to turn previously flooded properties into green space. • Mr. Engelke wanted to encourage local governments to work together to solve this problem and thanked the RFPG for being an available collaborative resource. • Mr. Engelke also made note of the growth in Caldwell County.
Raymond Slade/Individual	• Mr. Slade submitted his comments through the Guadalupe RFPG Virtual Public Meeting website. He requested that the following comments be read to the RFPG: "As a hydrologist my studies have included the Guadalupe River. I published a report about flood peaks on the river. The study documents that annual peaks have increased 38 % for the river at Spring Branch. Because of this the 100-year flood plain as published is too low. This is because the flood plain is based on historic data but does not represent increased floods. I was in contact with NOAA about Atlas 14 which represents the current floodplain. They agree with me about this problem but do not have the authority to include increased floods in the creation of the current Guadalupe River floodplains. Any questions about this can be sent to me."
Kari Potter/Individual	• Mrs. Potter was concerned about proposed high density developments in eastern Kerr County near the Guadalupe River. • She expressed concern that these developments and their impervious cover will have runoff that will go directly into the Guadalupe River and potentially impact drinking water downstream She noted that there will be 300 houses and RV lots. • Mrs. Potter commented that high density developments could be an issue and was concerned about their environmental impact.

NAME/AFFILIATION	STAKEHOLDER/PUBLIC COMMENTS
Mark Gleason/ City of San Marcos Councilmember	• Mr. Gleason stated that he was acting on his own behalf. His property was flooded twice in 2015. • He mentioned that the Blanco River doesn't have any flood control measures and wanted to know if there have been any studies completed. • Mr. Gleason stated that "we should be looking at this (flood planning) regionally." • Mr. Gleason wanted the group to look at the Blanco River. He noted that the Blanco River has thousands of structures built within the floodplain that can't be bought out. • He emphasized that there is a need to implement projects for the Blanco.
Jim Huen/Texas Division of Emergency Management	• Mr. Huen is the Region 6 floodplain coordinator. He mentioned that he can offer help with hazard mitigation grants.

Appendix C

Emails and letters submitted to RFPG on August 4, 2021

Beth Bourland
#10 High Street Road
Comfort, Texas 78013
bethbourland@hotmail.com

August 4, 2021

Via email

Don Durden,
Kendall County Commissioner Precinct 4
201 E. San Antonio Ave.
Boerne, TX 78006
don.durden@co.kendall.tx.us

Dear Don,

I have lived in Comfort for 36 years. My husbands' family has lived here since the early late 1900s. Our interest in flood management planning arises from both personal observation and historic understanding of the confluence of the Guadalupe River and Cypress Creek. We applaud comprehensive floodplain management strategies that consider structural and nonstructural programs on both waterways.

We support state and local flood mitigation plans that can reduce disaster losses and break the cycle of disaster damage, reconstruction, and repeated damage. Measures that arise from this work will save lives and advance community endorsed initiatives such as capital improvements, economic development, environmental quality, and riparian preservation.

Stream monitoring and early warning notification systems for flash flooding on Cypress Creek would be relatively low-cost and life saving measures that would allow residents and emergency services to respond quickly and appropriately. We consider this to be a priority.

Given that increased development along the Cypress Creek is occurring and will continue to escalate, stream monitoring will also allow us to better understand the impact of growth on the nature of flooding and quality of the water source.

Flood control on the Guadalupe River is also critical to the community. Of particular concern are the effects of high magnitude, low frequency flooding that damages the bedrock channel stream of the river. The effects of gravel deposits over time in the base flow channel chokes effective drainage at meanders and tributaries such as the point of confluence of the Guadalupe River and Cypress Creek. This increases the threat of flooding in the community and forces flood water to scour the natural riparian functions of the banks on both water ways.

Structural methods such as retention ponds or levees, and diversion channels along the Guadalupe River and the Cypress Creek, where feasible, would provide an opportunity to control rising water more effectively reducing damage to properties. Integrating retention and detention measures into developments, using floodplains for green space or parks that will hold and spread out water during floods could be beneficial. Such measures provide improved safety of all downstream communities, offer a chance to develop alternative water sources for residents of the area or enhance recreational options.

Thank you for the opportunity to address the Guadalupe Region 11 Flood Planning Group through this letter and your volunteer service on the committee.

Sincerely,

Beth Bourland

Commissioner Durden, 3 August 2021

I am writing as an individual stakeholder and as an interested party of the Comfort Floodplain Coalition to voice my support for stream monitoring stations & early high water/flood warning systems in and around Comfort and upstream on the Cypress and Guadalupe stream/river systems. As you are aware, in our community Cypress Creek has no flow or height monitoring installations, resulting in deadly surprises, giving emergency services little to no warning to evacuate residents, close roads and save lives. Early warning and stream monitoring may be considered small, but it can be very effective at saving lives and providing important historical data to improve future decision making.

At the same time, I believe no flood mitigation project In the Guadalupe River Basin (GRB) should be disregarded because of cost. The various projects underway and the execution of a GRB Flood Master Plan will be critical to all entities in the GRB, especially Kendall County. Easier said than done because of the many jurisdictions involved.

For our community, I believe an early warning system is our closest "alligator to the boat" and the most cost-effective item of the many other projects, such as retention dams, that may take years or even decades to implement.

Sincerely,
Craig McDonald
409 Broadway
Comfort, TX

GARY A. LOUIE

P.O. Box 905 * 126 Idlewilde Blvd * Comfort, TX 78013
281-221-0132 * gary.a.louie@gmail.com

August 4, 2021

Doug Miller, Chair
Guadalupe Regional Flood Planning Group #11

cc: Kendall County Commissioner Don Durden

Chairman Miller and Planning Group,

Even though my wife and I do not live directly in the floodplain or floodway of the Guadalupe River or associated tributaries, we are quite concerned about the safety, security, and general economic impact of flooding along the watershed in Comfort.

I appreciate that issues of drainage, retention, and flooding can be complicated and expensive. The heavy rain events during the past few months have brought to light how quickly streams and tributaries can fill, causing dangerous situations for residents and travelers, especially at low water crossings.

My first suggestion for the Planning Group is to consider **funding of an Early Warning System** to protect lives. My understanding is that a system of this nature is affordable and can be implemented in at reasonable time frame.

Longer term, I hope that the Planning Group will **invest in flood control measures** that eventually will help control problems downstream. Thoughtful development of restrictors and retention devices both save lives and protect property, but have the added benefits of creating much needed water supplies as well as economic benefits for the region and state.

Your efforts to address flooding is much appreciated,

Gary A. Louie

Guadalupe Regional Planning Group
August 2, 2021

Dear Committee Members:

As property owners in Comfort, Texas, and more specifically, property owners affected by potential flooding of Cypress Creek, my wife and I encourage the committee to seriously support all efforts to mitigate flooding of this waterway. Our property is located at 228 Broadway Street.

Due to the history of flooding on Cypress Creek, structural mitigation projects are definitely the most advantageous actions to be taken to alleviate this problem. Such projects can potentially reduce the flooding itself, while also providing additional fresh water supply for the Comfort area. Such structural mitigation could go far to prevent loss of life and property damage.

Additionally, the installation of stream monitoring stations and early warning systems on Cypress Creek will provide emergency services time to warn and evacuate those residents living nearby. My wife's mother and step-father were evacuated on two separate occasions from this property when Cypress Creek flooded during night time hours.

Based upon historical events, the Cypress Creek area should be a prime candidate to receive funds to finance drainage, flood mitigation, and flood control projects along this waterway.

Sincerely,

William G. Miears

William G. Miears

Kathryn B. Miears

Kathryn B. Miears

don.durden@co.kendall.tx.us

From: Marcy Downey Dunn <marcyrdowney@yahoo.com>
Sent: Saturday, July 24, 2021 7:57 AM
To: don.durden@co.kendall.tx.us
Subject: Flood planning meeting

Don, please push for a complete and safe flood resolution. I have lived on the Guadalupe river since I was 8 years old and have dealt with it's flooding for years, I'm 72 now. For the protection of our homes, animals, human life, our businesses...we must improve things!
Thanks you for all your hard work and dedication to our community needs.

Marcy and Neil Dunn

don.durden@co.kendall.tx.us

From: Steve Spence <saspence@hctc.net>
Sent: Sunday, July 25, 2021 9:02 AM
To: don.durden@co.kendall.tx.us
Subject: Ref: Flood protection in the Comfort area

Dear Commissioner Durden,

Many thanks for your continued efforts to promote flood mitigation and early warning systems in the elevations above Comfort. The recent establishment of the Guadalupe Regional Flood Planning Group give us a great opportunity to present our ideas and eventually get the appropriate funding to relieve property damage and loss of life as the result of flooding on the Guadalupe River and Cypress Creek.

I suggest the first order of business would be to install automated early warning systems which can be done at minimal expense then followed by structural solutions such as off channel reservoirs, aquifer storage and recharge wells, and aquifer recharge dams.

During heavy rains the Highway 27 bridge across Cypress Creek always gets blocked by dead trees creating a dam that backs up water into the nearby homes and businesses. An effort should be made to clear out the creek bed (with the consent of the landowners) for some distance, say a quarter of a mile, upstream of the bridge.

Thanks again for your help.

Steve Spence

don.durden@co.kendall.tx.us

From: ctrono@gmail.com
Sent: Monday, July 26, 2021 11:30 AM
To: don.durden@co.kendall.tx.us
Subject: Region 11 Flood Planning Group

Dear Commissioner Durden:

I am writing to urge the Regional Planning Group 11 to address the flooding issues, lack of early warning and need for surface water supply in the Comfort area, especially relating to Cypress Creek.

Specific items I urge the Group to consider include the following:

- To prevent loss of life and property, structural mitigation is the preferred type of project, especially when constructed in such a way that the structure not only reduces flooding, but also adds a new fresh water supply and potential recreational benefits.
- To prevent loss of life only, stream monitoring stations & early warning systems are essential and very cost effective. Large tributaries, such as the Cypress Creek, have no flow or height monitoring installations, resulting in deadly surprises, giving emergency services little to no warning to evacuate residents, close roads and save lives. These devices will also provide historical data to better understand flooding in Texas.
- Cost benefit calculations must take into account flood impact mitigation/protection in downstream communities all the way to the coast, as well as any benefits related to increased fresh water supply, quality of life and recreational implications. Reducing flooding in Comfort reduces flooding dangers in Sisterdale, Bergheim, Spring Branch, Canyon Lake, San Marcos, etc., and those benefits should be taken into account.
- Taking water supply into account is essential and will show that many structural flood mitigation projects are economically feasible due to the multiple positive effects of said structures. You cannot ignore the water supply benefits when areas such as Western Kendall County are forecast to suffer severe water shortages over the next 40 years, according to the 2010 Regional Water and Wastewater Study conducted by AECOM.
- No minimum project should be disregarded. Early warning and stream monitoring may be inexpensive and considered small, but it is very effective at saving lives and providing important historical data to improve decision making in the future.

Thank you for your time and consideration of these suggestions and issues.
Regards,
Carol & Ruben Trono
160 Antler Falls Run
Comfort Texas 78013

July 25th, 2021

Maria C. Villanueva
618 Water St.
Comfort, Texas

Alfredo and Yolanda Arizola
612 Water St.
Comfort, Texas

To Regional Planning
Group 11.

First, we would like to extend our appreciation with the volunteers, who in their efforts, are committed to the general management of problem solving, strategizing and striving for improvements dealing with pre and post flood consequences.

We are aware of the negative impacts with flooding in our community and have directly experienced the destruction of our homes on Water Street, Broadway and surrounding neighborhoods, which caused displacement and loss of property. The loss of loved ones, although indirectly, had a deeper impact that was traumatic for all of us in the years past. The experience of hesitation, fear and facing an indecisive state of mind during impending floods has been emotionally overwhelming for many residents. In the past and present we rely on communication from local news-worthy channels, community fire departments, networking and other resources of information focusing on current weather conditions, flood warnings, etc. Those of us living in the flood zone areas rely on the senses of past experiences and can determine a more rapid direction of thought, however, they must still follow direction from local emergency organizations and responders connected with the community.

In 2016, Comfort, Texas experienced a flash flood event that completely overwhelmed the community, without warning, no communication of evacuation within flood zone, no efforts in providing barriers, no visible signs of responders going door to door reaching out to evacuate, as in the past. We all know how devastating it is to succumb to these forces of nature beyond our control.

Regarding "who" should be responsible in providing flood warning systems is still uncertain to most of us. We truly believe that Education should be an important variable in allowing influences on all opinions, setting clear lines of responsibility, coordinating flood information that dispenses heightened awareness within the local flood zone community. Our families have been to Town meetings when topics are introduced for the purpose of communication or Q & A's involving community input. Comfort flood zone residents would have a better outcome and be more effective in understanding the strategies and preparing ahead with group meetings such as Comfort Floodplain Coalition provides. This group is a new avenue for our family and will certainly take the opportunity to be more proactive in the involvement and information it provides.

Our opinion...We need a more reliable flood warning system along with better flood preparedness measures so that people in this community can take action that further minimizes flood destruction of life and property. Too many years have passed in the attempts of minimizing flood impacts. Why are the creek beds and rivers still without sensors, devices and dams that could minimize the flow of flood waters and send out alerts? We understand the funding issues, budgets and constraints along with all the Regional and State involvement; however, the frustration lies within those who can make decisive action plans. We need greater clarity on responsibility for issuing effective flood warnings.

Thank you for the opportunity in hearing our sincere opinions and thoughts relating to Flood issues at hand.

Respectfully,

Yolanda Arizola

Yolanda Arizola

Alfredo V. Arizola

Alfredo Arizola

Maria C. Villanueva

Maria C. Villanueva

August 1st, 2021

Emmanuel Flatten
417 Water St.
Comfort, Texas

To Regional Planning Group 11:

Thank you for your efforts to improve Texans' safety and security by addressing the significant flood dangers along the Guadalupe River and major tributaries. To achieve such ends, I believe stream monitoring, early warning and structural flood mitigation are necessary on the Cypress Creek, upstream of Comfort, Texas.

In 2016, a flash flood on the Cypress Creek surprised residents sleeping in their beds and emergency responders alike. With no warning, everyone was caught off guard, resulting in the death of a young woman. Her car was swept away less than thirty feet from my property line. A small memorial near my home reminds me of her family's loss daily. Had flow monitoring and early warning been in place, their tragic loss may have been avoided. Had structural mitigation been in place, the waters might never have reached homes in the first place.

I implore you to prioritize projects near the community of Comfort, and take the following into account:

Prevent loss of life by implementing stream monitoring stations & early warning systems, which are essential and very cost effective. Large tributaries, such as the Cypress Creek, have no flow or height monitoring installations, resulting in deadly surprises, giving emergency services little to no warning to evacuate residents, close roads and save lives. These devices will also provide data to better understand flooding in Texas.

Prevent loss of life and property by implementing structural flood mitigation. Cost benefit calculations should consider flood protection in downstream communities all the way to the coast, as well as any benefits related to increased fresh water supply, quality of life and recreation. Peak flow reduction in Comfort reduces flood dangers in Sisterdale, Bergheim, Spring Branch, Canyon Lake, etc.

Structural flood mitigation projects are economically feasible when the multiple positive effects are considered. The potential increase to water supply should not be ignored when areas such as Western Kendall County are forecast to suffer a 50% water supply shortfall by 2040, according to the 2010 Regional Water and Wastewater Study conducted by AECOM.

Thank you for the opportunity to make our voices heard and for working toward the betterment of Texan lives.

Sincerely,

Emmanuel Flatten

3 August 2021

To: Region 11 Flood Planning Group, Meeting 8/4/2021, Wimberly TX

Subject: Proposition 8 legislation, "The constitutional amendment providing for the creation of the flood infrastructure fund to assist in the financing of drainage, flood mitigation, and flood control projects."

My spouse and I are long-time residents of Kendall County, residing in Comfort near the confluence of the Guadalupe River and Cypress Creek. Our residence/property is on Cypress Creek (highway 27 bridge). I am also a 'grassroots' member of the Comfort Floodplain Coalition (CFC) which, since its inception in 2011, has been seeking ways to mitigate flooding in the greater Comfort area, which as you know is subject to significant flooding events resulting in property damage and most importantly, loss of lives.

To that end I offer some feedback/comments as requested by the organizers of this Region 11 Planning Group:

Structural mitigation, e.g. upstream dam(s), retention ponds (in Kerr County) is the preferred type of project, especially when constructed in such a way that the structure not only reduces flooding, but also adds a new fresh water supply and potential recreational benefits.

To prevent/minimize loss of life, stream monitoring stations & early warning systems are essential and very cost effective. Large tributaries, such as Cypress Creek, have no flow or height monitoring installations, resulting in deadly surprises, giving emergency services little to no warning to evacuate residents, close roads, etc. No minimum project should be disregarded. Early warning and stream monitoring may be relatively inexpensive, but it is very effective at saving lives.

As well, reducing flooding in Comfort reduces downstream flooding/dangers in Sisterdale, Bergheim, Spring Branch, Canyon Lake, San Marcos, etc.

These measurement systems/devices will also provide historical data to better understand flooding in Texas.

Upstream structural flood mitigation projects will concurrently enhance the water supply and benefits areas of Western Kendall County which are forecast to suffer severe water shortages over the next 40 years (according to the 2010 Regional Water and Wastewater Study conducted by AECOM).

I trust that the above comments are of considered value to the Region 11 Flood Planning group work efforts.

Sincerely,

Kurt Solis
4 Country Lane
Comfort, Texas 78013
(832) 489-6236

Amy Sinclair
Comfort, TX 78013

August 1, 2021

Regional Planning Group 11:

I appreciate your efforts to address flooding issues affecting communities along the Guadalupe River. Living on Cypress Creek for 17 years, I've experienced two significant floods and can attest to the need for reliable early warning systems in our area. Every time we have substantial rainfall, I suffer anxiety knowing there is no flood protection whatsoever, and I might receive no warning before the floodwaters enter my bedroom.

As I'm sure you're aware, Comfort's population has been growing faster than our local water supply can keep up with, which is another major concern in our area. Building a dual-purpose flood mitigation / water retention structure upstream of Comfort would benefit our community in multiple ways. I urge you to investigate every possible means to implement such a structure.

Thank you again for your attention to these important steps toward a safer future.

Sincerely,

Amy Sinclair

Appendix 10-B | Guadalupe RFPG Stakeholder Survey Form

Guadalupe Regional Flood Plan Survey

Introduction

Tell us about yourself and your community.

The deadline to provide input for this planning cycle is Thursday, September 30, 2021. Comments provided after September 30, 2021 will be considered in the next planning cycle.

Contact Information (Optional)

Email Address

Phone Number

1. Which of the following best describes you?

- ◯ I am the floodplain manager for a community participating in the National Flood Insurance Program.
- ◯ I am a public-sector employee with flood-related responsibilities.
- ◯ I am an elected or appointed official with flood-related responsibilities.
- ◯ I am a person interested in the regional flood planning process.
- ◯ Other (describe)

Guadalupe Regional Flood Plan Survey

Introduction

Tell us about yourself and your community.

2. What type of entity do you represent?

- [ ] Myself/General Public
- [ ] County
- [ ] Municipality
- [ ] Industrial Interests
- [ ] Agricultural Interests
- [ ] Environmental Interests
- [ ] Small Business Interests
- [ ] Other (please specify)
- [ ] Electrical Utilities
- [ ] Water Utilities
- [ ] Water Districts
- [ ] River Authorities
- [ ] Flood Districts
- [ ] State/Federal

3. What is the name of your entity?

4. What is your job title?

5. In which county is your entity located?

- [ ] Bandera
- [ ] Bastrop
- [ ] Blanco
- [ ] Caldwell
- [ ] Calhoun
- [ ] Comal
- [ ] DeWitt
- [ ] Fayette
- [ ] Gillespie
- [ ] Goliad
- [ ] Gonzales
- [ ] Guadalupe
- [ ] Hays
- [ ] Karnes
- [ ] Kendall
- [ ] Kerr
- [ ] Lavaca
- [ ] Real
- [ ] Refugio
- [ ] Travis
- [ ] Victoria
- [ ] Wilson
- [ ] Van Zandt

6. In which city is your entity located?

- ◯ Belmont
- ◯ Blanco
- ◯ Canyon Lake
- ◯ Center Point
- ◯ Comfort
- ◯ Cost
- ◯ Cuero
- ◯ Fentress
- ◯ Flatonia
- ◯ Geronimo
- ◯ Gonzales
- ◯ Hochheim
- ◯ Hunt
- ◯ Ingram
- ◯ Kendalia
- ◯ Kerrville
- ◯ Kingsbury
- ◯ Kyle
- ◯ Lockhart
- ◯ Luling
- ◯ Martindale
- ◯ McQueeney
- ◯ Monthalia
- ◯ Mountain City
- ◯ New Braunfels
- ◯ Niederwald
- ◯ Nixon
- ◯ Nolte
- ◯ Prairie Lea
- ◯ San Marcos
- ◯ Schertz
- ◯ Seguin
- ◯ Sisterdale
- ◯ Smiley
- ◯ Spring Branch
- ◯ Stairtown
- ◯ Uhland
- ◯ Victoria
- ◯ Waelder
- ◯ Wimberley
- ◯ Woodcreek
- ◯ Yorktown
- ◯ Zipp
- ◯ Other (please specify)

7. Are you aware of any other jurisdiction beyond cities and counties with flood-related responsibilities in your area, such as drainage districts, levee districts, flood control districts, etc.?

- ◯ Yes
- ◯ No

8. If yes, please provide the name of the entity, the name of the contact person, contact information for that entity.

Guadalupe Regional Flood Plan Survey

Inventory

The Regional Flood Plan will develop an inventory of natural features and major flood infrastructure within the region. The following section will help us identify and evaluate key features in your community.

9. Does your entity maintain GIS datasets or other digital inventories for any of the following natural features in your jurisdiction? Select all that apply.

If so, please provide this information by utilizing the Upload Data engagement tool at VPM Station 9 to provide any supporting data and documentation.

- [ ] Rivers, creeks, tributaries, and functioning floodplains
- [ ] Wetlands
- [ ] Sinkholes
- [ ] Alluvial fans
- [ ] Vegetated dunes
- [ ] No digital inventory of natural features
- [ ] This has already been provided to GLO
- [ ] Other (please specify)

10. Does your entity maintain GIS datasets or other digital inventories of the following constructed features in your jurisdiction? Select all that apply.

If so, please provide this information by utilizing the Upload Data engagement tool at VPM Station 9 to provide any supporting data and documentation.

- [ ] Levees
- [ ] Sea barriers, walls and revetments
- [ ] Tidal barriers and gates
- [ ] Stormwater tunnels
- [ ] Stormwater canals
- [ ] Flood protection dams
- [ ] Detention/retention ponds
- [ ] Weirs
- [ ] Storm drain systems
- [ ] No digital inventory of constructed features
- [ ] This has already been provided to GLO
- [ ] Other (please specify)

11. If available, provide a link to the location of the data on your entity's website.

12. What percentage of the following infrastructure or natural features within your jurisdiction would you consider <u>non-functional</u>?

Non-functional: The infrastructure is not providing its intended or design level of service.

	N/A	0%	25%	75%	100%
Stormwater tunnels	○	○	○	○	○
Stormwater canals	○	○	○	○	○
Flood protection dams	○	○	○	○	○
Weirs	○	○	○	○	○
Storm drain systems	○	○	○	○	○
Levees	○	○	○	○	○
Sea barriers, walls, revetments	○	○	○	○	○
Tidal barriers and gates	○	○	○	○	○
Rivers, creeks, tributaries, and functioning floodplains	○	○	○	○	○
Wetlands	○	○	○	○	○
Sink holes	○	○	○	○	○
Alluvial fans	○	○	○	○	○
Vegetated dunes	○	○	○	○	○

13a. What are the reasons that man-made infrastructure is <u>non-functional</u>?

Please indicate the reason the infrastructure is non-functional.

	N/A	Inadequate standards during original design/construction	Inherited from others	Impacts from development	Inadequate budget to construct proper system	Lack of maintainance
Stormwater tunnels	☐	☐	☐	☐	☐	☐
Stormwater canals	☐	☐	☐	☐	☐	☐
Flood protection dams	☐	☐	☐	☐	☐	☐
Weirs	☐	☐	☐	☐	☐	☐
Storm drain systems	☐	☐	☐	☐	☐	☐
Levees	☐	☐	☐	☐	☐	☐
Sea barriers, walls, revetments	☐	☐	☐	☐	☐	☐
Tidal barriers and gates	☐	☐	☐	☐	☐	☐
Rivers, creeks, tributaries, and functioning floodplains	☐	☐	☐	☐	☐	☐
Wetlands	☐	☐	☐	☐	☐	☐
Sink holes	☐	☐	☐	☐	☐	☐
Alluvial fans	☐	☐	☐	☐	☐	☐
Vegetated dunes	☐	☐	☐	☐	☐	☐

13b. What are the main reasons that natural features in your area have not retained potential flood-related functions (e.g. conveyance, drainage, infiltration, retention, storage, erosion control)?

	N/A	Development impacts	Sedimentation	Erosion	Debris accumulation	Damage from flood or other natural event	Lack of management or maintainance	Invasive species
Stormwater tunnels	☐	☐	☐	☐	☐	☐	☐	☐
Stormwater canals	☐	☐	☐	☐	☐	☐	☐	☐
Flood protection dams	☐	☐	☐	☐	☐	☐	☐	☐
Weirs	☐	☐	☐	☐	☐	☐	☐	☐
Storm drain systems	☐	☐	☐	☐	☐	☐	☐	☐
Levees	☐	☐	☐	☐	☐	☐	☐	☐
Sea barriers, walls, revetments	☐	☐	☐	☐	☐	☐	☐	☐
Tidal barriers and gates	☐	☐	☐	☐	☐	☐	☐	☐
Rivers, creeks, tributaries, and functioning floodplains	☐	☐	☐	☐	☐	☐	☐	☐
Wetlands	☐	☐	☐	☐	☐	☐	☐	☐
Sink holes	☐	☐	☐	☐	☐	☐	☐	☐
Alluvial fans	☐	☐	☐	☐	☐	☐	☐	☐
Vegetated dunes	☐	☐	☐	☐	☐	☐	☐	☐

14. What percentage of the following infrastructure or natural feature within your jurisdiction would you consider deficient?

Deficient: The infrastructure or natural feature is in poor structural or non-structural condition and needs replacement, restoration, or rehabilitation.

	N/A	0%	25%	75%	100%
Stormwater tunnels	◯	◯	◯	◯	◯
Stormwater canals	◯	◯	◯	◯	◯
Flood protection dams	◯	◯	◯	◯	◯
Weirs	◯	◯	◯	◯	◯
Storm drain systems	◯	◯	◯	◯	◯
Levees	◯	◯	◯	◯	◯
Sea barriers, walls, revetments	◯	◯	◯	◯	◯
Tidal barriers and gates	◯	◯	◯	◯	◯
Rivers, creeks, tributaries, and functioning floodplains	◯	◯	◯	◯	◯
Wetlands	◯	◯	◯	◯	◯
Sink holes	◯	◯	◯	◯	◯
Alluvial fans	◯	◯	◯	◯	◯
Vegetated dunes	◯	◯	◯	◯	◯

15a. What are the main reasons that man-made infrastructure is deficient?

Please indicate the reason the infrastructure is deficient.

	N/A	Lack of adequate standards during original construction	Infrastructure has reached its useful life	Impacts from development	Damage from flood or other natural event	Inadequate budget to maintain system
Stormwater tunnels	☐	☐	☐	☐	☐	☐
Stormwater canals	☐	☐	☐	☐	☐	☐
Flood protection dams	☐	☐	☐	☐	☐	☐
Weirs	☐	☐	☐	☐	☐	☐
Storm drain systems	☐	☐	☐	☐	☐	☐
Levees	☐	☐	☐	☐	☐	☐
Sea barriers, walls, revetments	☐	☐	☐	☐	☐	☐
Tidal barriers and gates	☐	☐	☐	☐	☐	☐
Rivers, creeks, tributaries, and functioning floodplains	☐	☐	☐	☐	☐	☐
Wetlands	☐	☐	☐	☐	☐	☐
Sink holes	☐	☐	☐	☐	☐	☐
Alluvial fans	☐	☐	☐	☐	☐	☐
Vegetated dunes	☐	☐	☐	☐	☐	☐

15b. What is the main reason natural features in your area have not retained potential flood-related functions?

	N/A	Development impacts	Sedimentation	Erosion	Debris accumulation	Damage from flood or other natural event	Lack of management or maintainance	Invasive species
Stormwater tunnels	☐	☐	☐	☐	☐	☐	☐	☐
Stormwater canals	☐	☐	☐	☐	☐	☐	☐	☐
Flood protection dams	☐	☐	☐	☐	☐	☐	☐	☐
Weirs	☐	☐	☐	☐	☐	☐	☐	☐
Storm drain systems	☐	☐	☐	☐	☐	☐	☐	☐
Levees	☐	☐	☐	☐	☐	☐	☐	☐
Sea barriers, walls, revetments	☐	☐	☐	☐	☐	☐	☐	☐
Tidal barriers and gates	☐	☐	☐	☐	☐	☐	☐	☐
Rivers, creeks, tributaries, and functioning floodplains	☐	☐	☐	☐	☐	☐	☐	☐
Wetlands	☐	☐	☐	☐	☐	☐	☐	☐
Sink holes	☐	☐	☐	☐	☐	☐	☐	☐
Alluvial fans	☐	☐	☐	☐	☐	☐	☐	☐
Vegetated dunes	☐	☐	☐	☐	☐	☐	☐	☐

Guadalupe Regional Flood Plan Survey

Flood Prone Areas

The Regional Flood Plan will identify flood hazards and vulnerability in the region. The following section will help us identify who and what might be harmed by flooding in your community.

16. Provide a list of historical flood events that have affected your jurisdiction. Please provide as much information as possible, such as the date(s), specific location(s) (if appropriate), newspaper articles, the financial value damages (if known).

Identify areas on the Interactive Comment Map, and/or upload historical information through the Upload Data page.

Guadalupe Regional Flood Plan Survey

Floodplain Management

The Regional Flood Plan will consider how current floodplain management practices and regulations impact flood risks. The following section will help us evaluate these practices and identify specific flood mitigation and management goals appropriate for this region.

17. Does your community participate in the following programs?

Select all that apply.

- [ ] National Flood Insurance Program (NFIP)
- [ ] Community Rating System (CRS)
- [ ] Do not participate but interested in National Flood Insurance Program (NFIP)
- [ ] Do not participate but interested in Community Rating System (CRS)
- [ ] I don’t know
- [ ] Do not participate in either program and not currently interested (Please Describe)

Describe here

18. Does your community participate in the following floodplain management activities?

Select all that apply.

- [ ] Development review/regulation
- [ ] Floodplain or drainage capital projects
- [ ] Local assistance with home elevation
- [ ] Acquisition of repetitive loss properties
- [ ] Flood risk communication campaigns and public outreach
- [ ] Flood warning systems (Examples: flashers or staff gages)
- [ ] Emergency alert systems
- [ ] Priority evacuation areas
- [ ] Identification of vulnerable populations
- [ ] Programmed operations & maintenance
- [ ] Reactive maintenance following complaints or damages after a storm
- [ ] Programmed inspection/repair/rehab
- [ ] Asset inventory and comprehensive condition assessments
- [ ] Ordinance enforcement
- [ ] None of the above
- [ ] Other (please specify)

19. Development standards

- [ ] Floodplain ordinance
- [ ] Drainage ordinance
- [ ] Stormwater management ordinances
- [ ] Building standards for flood proofing and flood protection
- [ ] Consideration for fully developed or future conditions land use
- [ ] Zoning/land use regulations
- [ ] None of the above
- [ ] Other (please specify)

20. Infrastructure engineering design standards or Drainage Criteria Manual

- [ ] Roadway
- [ ] Crossings (bridges and culverts)
- [ ] Storm drainage systems
- [ ] Detention facilities
- [ ] Dams
- [ ] Levees/Floodwalls
- [ ] None of the above
- [ ] Other (please specify)

21. Higher standards

- [ ] Freeboard
- [ ] Detention policy
- [ ] Fill restrictions
- [ ] Other (please specify)
- [ ] None of the above

22. What future conditions scenarios are required to be evaluated for flood protection projects in your jurisdiction?

Please provide this information by utilizing the Upload Data engagement tool at VPM Station 9 to provide any supporting data and documentation.

- [ ] Existing development
- [ ] Projected development over a future time horizon
- [ ] Fully developed areas
- [ ] 0.2% ACE or 500-year Floodplain as proxy
- [ ] We do not use future conditions considerations for flood projection projects
- [ ] Other (please specify)

23. Identify the resources your jurisdiction uses to predict future land use and development.

Please provide this information by utilizing the Upload Data engagement tool at VPM Station 9 to provide any supporting data and documentation.

- [ ] TX Demographic Center Population Projections
- [ ] Future Land Use Plan from Comprehensive Plan
- [ ] Annexation Plans
- [ ] Utility CCNs
- [ ] Public Improvement Districts
- [ ] Texas Enterprise Zones
- [ ] Transportation Plans
- [ ] None of the above
- [ ] Other (please specify)

24. Which of the following best describes how your community enforces its Floodplain Management practices?

Select one.

- ( ) We actively enforce the entire floodplain management ordinance, perform many inspections throughout construction process, issue fines, violations, and Section 1316s where appropriate, and enforce substantial damage and substantial improvement.
- ( ) We enforce much of the ordinance, perform limited inspections and are limited in issuance of fines and violations.
- ( ) We provide permitting of development in the floodplain, may not perform inspections, may not issue fines or violations.
- ( ) We do not currently enforce floodplain management regulations.

Additional comments on enforcement:
The Regional Flood Plan Group (RFPG) will consider recommending or adopting consistent minimum standards across the entire region. "Recommended" standards would not require the communities to adopt the minimum standards to have projects included in the Regional Flood Plan and to be eligible for funding. "Adopted" standards would require the communities to adopt the minimum standards to have projects included in the Regional Flood Plan and to be eligible for funding. Recommended and Adopted standards can consider the unique needs of urban vs. rural, geographic needs, or other subregions defined by the RFPG.

25. Should the Regional Flood Planning Group (RFPG) "recommend" consistent minimum flood risk management standards across the entire Region?

These standards would be considered regional best practices, but would not be required to be adopted by local communities to participate in the Plan and be eligible for funding.

- ◯ Yes
- ◯ No

Please describe

26. What are some minimum flood risk management standards the Regional Flood Planning Group (RFPG) should consider *recommending*?

Select all that apply.

- ☐ Participation in the NFIP or equivalent standards
- ☐ Regulate development in the FEMA floodplain or other floodplain designation identified by the RFPG
- ☐ Establish higher standards for development or freeboard (additional feet above) known floodplain (Examples: Future Conditions BFE (base flood elevation), feet above existing BFE, 0.2% ACE (500-year floodplain) BFE, feet above street or curb
- ☐ Establish infrastructure protection standards, minimum design criteria for buildings, critical facilities (hospitals, schools, fire stations, etc.), roadways, drainage infrastructure (culverts, bridges, storm drain, detention facilities, dams, or levees), property acquisition, and open space
- ☐ The RFPG should not recommend minimum flood risk management standards
- ☐ Other (please specify)

27. Should the Regional Flood Planning Group (RFPG) "adopt" consistent minimum flood risk management standards across the entire Region?

These standards would be required to be adopted by local communities to participate in the Plan and be eligible for funding.

- ◯ Yes
- ◯ No

Please describe

28. What are some minimum flood risk management standards the Regional Flood Planning Group (RFPG) should consider *adopting*?

- [ ] Participation in the NFIP or equivalent standards
- [ ] Regulate development in the FEMA floodplain or other floodplain designation identified by the RFPG
- [ ] Establish higher standards for development or freeboard (additional feet above) known floodplain (Examples: Future Conditions BFE (base flood elevation), feet above existing BFE, 0.2% ACE (500-year floodplain) BFE, feet above street or curb
- [ ] Establish infrastructure protection standards, minimum design criteria for buildings, critical facilities (hospitals, schools, fire station, etc.), roadways, drainage infrastructure (culverts, bridges, storm rain, detention facilities, dams, or levees), property acquisition, and open space
- [ ] The RFPG should not adopt minimum flood risk management standards.
- [ ] Other (please specify)

29. Please provide any additional thoughts on minimum flood risk management standards for the Regional Flood Planning Group (RFPG) to consider.

30. What are the top 3 priorities the Regional Flood Planning Group (RFPG) should include in the establishment of regional goals?

Select up to 3

- [ ] Implement protective standards and policies
- [ ] Identify and communicate flood risk
- [ ] Quantify potential reduction in risk to life and property
- [ ] Restore failing/aging infrastructure
- [ ] Implement flood warning and response mechanisms
- [ ] Provide or enhance inter-jurisdictional cooperation
- [ ] Other (please specify)

31. Are there any certain areas within the region that have especially unique circumstances that warrant their own sub-regional goals?

For example, the RFPGs may wish to consider the unique needs of coastal vs. inland, urban vs. rural areas, areas with detailed vs. approximate floodplain mapping and modeling, or upsteam vs. downstream areas.

- ◯ Yes
- ◯ No

Please describe

32. Do you have any suggestions in the categories of Legislative, Regulatory/Administrative, or Revenue Generation that could help the region in the areas of floodplain management, flood mitigation planning, and mitigation, and/or reducing flooding impacts to life and property?

Legislative	
Regulatory/ Administrative	
Revenue Generation	

Guadalupe Regional Flood Plan Survey

Flood Planning

The Regional Flood Plan will identify potential study needs and potentially feasible flood management strategies and projects. The following section will help us incorporate the needs of your community.

33. What types of local and regional flood planning information does your jurisdiction have?

Check all that apply and utilize the Upload Data engagement tool at VPM Station 9 to provide any supporting data and documentation.

- [ ] Hazard Mitigation Plan
- [ ] Master Drainage Plans/Stormwater Drainage Plans
- [ ] Flood Protection Plans
- [ ] Flood Studies/Flood Risk Assessments
- [ ] Watershed Plans
- [ ] CRS Plans
- [ ] Floodplain Management Plan
- [ ] Flood risk screening tools
- [ ] Models, including hydrology, hydraulics or any available screening level models
- [ ] None of the above

34. What additional relevant planning documents or information does your jurisdiction have?

Check all that apply and utilize the Upload Data engagement tool at VPM Station 9 to provide any supporting data and documentation.

- [ ] Flood disaster reports
- [ ] Coastal resiliency master plans
- [ ] Transportation plans
- [ ] Substantial Damage Estimation (SDE) forms
- [ ] Emergency Action Plans (flood-related portions)
- [ ] Other information relevant to the RFPG
- [ ] None of the above

35. Are there priority areas in your community with no inundation maps or detailed studies that could benefit from a flood study? If yes, please describe the reason for the need.

Please use the Interactive Comment Map to identify specific areas.

- [ ] No or limited inundation maps
- [ ] Outdated maps in need of updates study
- [ ] Need maps to identify flooding for urban areas, low lying areas, and/or streets
- [ ] No areas in need of study

36. Is there funding in your community for the necessary flood studies?

- [ ] No funding identified
- [ ] Partial local funding available
- [ ] Full funding identified
- [ ] Full funding secured
- [ ] Other (please specify)

37. Have grants or loans been secured for all or a portion of this funding?

- ◯ Yes
- ◯ No

If yes, please describe

38. Identify the resources your jurisdiction uses to identify how physical changes to the land might affect future flood risk.

Please provide this information by utilizing the Upload Data engagement tool at VPM Station 9 to provide any supporting data and documentation.

- [ ] Subsidence studies
- [ ] Studies on geomorphic changes
- [ ] Sea level rise studies
- [ ] Watershed studies with future conditions analysis
- [ ] Analysis of sedimentation of flood control structures
- [ ] None of the above
- [ ] Other (please specify)

39. What has your jurisdiction done to address flooding concerns?

- [ ] Nothing yet
- [ ] Upgraded existing drainage infrastructure
- [ ] Performed existing drainage system maintainence
- [ ] Constructed new drainage systems
- [ ] Performed project identification and planning activities
- [ ] Wetland/floodplain/open space restoration/preservation
- [ ] Performed more detailed analyses of areas to identify the source of the flooding
- [ ] Implemented and enforced drainage design criteria/floodplain management policies
- [ ] Other (please specify)

40. What, if any, major infrastructure or flood mitigation projects are currently under development?

Select all of the projects that apply. If so, provide this information by utilizing the Upload Data engagement tool at VPM Station 9 to provide any supporting data and documentation.

- [ ] Levees
- [ ] Stormwater canals
- [ ] Sea barriers, walls and revetments
- [ ] Flood protection dams
- [ ] Tidal barriers and gates
- [ ] Weirs
- [ ] Stormwater tunnels
- [ ] Storm drain systems
- [ ] Other (please specify)

41. What is the current status of the major infrastructure or flood mitigation projects currently under development?

Describe the project location(s) using the Interactive Comment Map. Please utilize the Upload Data engagement tool at VPM Station 9 to provide any supporting data and documentation.

- [ ] Project identified
- [ ] Project in Preliminary Design
- [ ] Project in conceptual planning phase
- [ ] Project in Final Design
- [ ] Project in feasibility analysis phase
- [ ] Project in Construction
- [ ] Other (please specify)

42. Is there funding in your community for the necessary engineering evaluations and/or design and construction of proposed flood mitigation projects?

Select one.

- ◯ No funding identified
- ◯ Partial funding available
- ◯ Full funding identified
- ◯ Full funding secured
- ◯ Other (please specify)

43. Have grants or loans been secured for all or a portion of this funding?

- ◯ Yes
- ◯ No
- ◯ N/A

44. Are there non-structural flood mitigation projects in your community with funding needs? If so, what level of funding is there in your community for these projects?

- ☐ No non-structural flood mitigation projects are needed in my community
- ☐ There is a need to identify non-structural flood mitigation projects in my community
- ☐ Projects are identified with no funding identified
- ☐ Other (please specify)
- ☐ Projects are identified with partial funding available
- ☐ Projects are identified with full funding secured

Guadalupe Regional Flood Plan Survey

Funding

Flood studies (evaluations), management strategies, and projects identified in the Regional Flood Plan will be eligible for TWDB funding through grants and loans. The following section will help us understand the current funding mechanisms in your community and identity the proposed role of State financing.

45. Which of the following describes your local funding sources for flood management activites?

Select all that apply.

- [ ] General Fund
- [ ] Bond Program
- [ ] Stormwater utility or Drainage fee
- [ ] Special Tax Districts
- [ ] Impact Fees
- [ ] Permitting Fees
- [ ] Ad Valorem Tax
- [ ] I don't know
- [ ] No current dedicated funding but interested
- [ ] We do not have a local funding source for flood management activities
- [ ] Other (please specify)

46. Have you ever applied for Federal or State grants or loan programs?

If yes, please select which ones below.

- [ ] Flood Infrastructure Fund (FIF) [TWDB]
- [ ] Building Resilient Infrastructure and Communities Program (BRIC) [FEMA]
- [ ] Hazard Mitigation Grant Program (HMGP) [FEMA, TDEM]
- [ ] Pre-Disaster Mitigation (PDM) [FEMA, TDEM]
- [ ] U.S. Department of Agriculture - Natural Resources Conservation Service (NRCS)
- [ ] Community Development Block Grant-Disaster Recovery (CDBG-DR) [HUD, GLO]
- [ ] U.S. Army Corps of Engineers Small Continuing Authorities Program (USACE CAP)
- [ ] Cooperating Technical Partners Program (CTP) [TWDB]
- [ ] State Water Implementation Fund for Texas (SWIFT) [TWDB]
- [ ] Flood Protection Planning Grant [TWDB]
- [ ] Texas Water Development Fund (DFund) [TWDB]
- [ ] Clear Water State Revolving Fund (CWSRF) [TWDB]
- [ ] I don't know
- [ ] Other (please specify)

47. If you have not considered applying for Federal or State grant/loan programs, please state main reasons below.

Guadalupe Regional Flood Plan Survey

Flood Response

The Regional Flood Plan will document the existing flood response preparations in the region. The following section will help us understand the practices your community uses for emergency response.

48. Select the flood response measures your jurisdiction uses for emergency reponse:

Select all that apply.

- [ ] Public Emergency Alert System (i.e. reverse 911)
- [ ] Flood warning signs
- [ ] Flood warning signs with flashing lights
- [ ] Flood gauges
- [ ] Rain/stream gauges with alerts
- [ ] Public-facing website
- [ ] Portable/temporary traffic message boards
- [ ] Other (please specify)
- [ ] Flood forecasting tool
- [ ] Crew(s) set up barricades or close gates
- [ ] Automatic low water crossing gates
- [ ] Outdoow siren/message speaker system
- [ ] Swift water rescue team
- [ ] Cameras
- [ ] None of the above

49. If your jurisdiction plans to implement changes or additions to the emergency response system over the next five years, select the measures that you anticipate implementing:

Select all that apply.

- Public Emergency Alert System (i.e. reverse 911)
- Flood warning signs
- Flood warning signs with flashing lights
- Flood gauges
- Rain/stream gauges with alerts
- Public-facing website
- Portable/temporary traffic message boards
- Other (please specify)
- Flood forecasting tool
- Crew(s) set up barricades or close gates
- Automatic low water crossing gates
- Outdoow siren/message speaker system
- Swift water rescue team
- Cameras
- None of the above

50. Does your community have staff dedicated to flood response activities during emergency situations?

- ◯ No
- ◯ Yes (Please describe)

51. Are the staff embedded within the emergency operations center (or similar centralized location) during the event?

- ◯ No
- ◯ Yes (Please describe)

52. Indicate the entities with whom you coordinate actions related to flood events (preparation, response, recovery, and cleanup).

Select all that apply.

	Before	During	After	N/A
Flood Control District				
City				
County				
USACE				
TxDOT				
NOAA/NWS				
Local dam owner/operator				
Local levee owner/operator				
TDEM				
Ag Extension Agents				
Brush/bulk debris contractor (on-call)				
Consultant engineer (on-call)				
Local or regional assistance through existing MOUs				

53. Any suggestions/recommendations to improve flood response?

Appendix 10-C | Public Comments

C.1 – Public Comments at Pre-Planning Meeting (August 4, 2021)

C.2 – Public Comments at Regular RFPG Meetings

C.3 – Compilation of Comment Tracking Matrices provided at Regular RFPG Meetings

Appendix C.1

Public Comments During Pre-Planning Public Meeting (August 4, 2021) and Virtual Public Meeting Room/ Interactive Comment Map (Aug 4 – 18, 2021)

Commenter Name	Commenter Affiliation	Nature of Comment	Method of Comment
Dianne Wassenich	Individual	Would like consideration of recreation activities in the floodplain. Would like to see the buying of land in the riparian area. To promote land conservation. Would like to see the Flood Plain elevation changed from 1ft to 2ft. The City of San Marcos took this approach	In - person
Gary Louie	Kendal	Emphasized loss of life and property; Provided letters from community; Would like consideration of funding for an early warning system; Would like to ensure that any projects keep the downstream in mind	In - person
Bob Mayo	Individual	Mentioned several projects for drinking water supply; Asked if Desalination studies have been done; Would like to keep farmland in consideration when flood planning	In - person
Linda Bishop	Individual	Would like to see the repair of the Lake Gonzales dam; Emphasized the importance of the Lake	In - person
Sara Dishman	City of Wimberley	Would like for construction activities along the river to be better enforced; Would like the enforcing of rules to be more consistent from the City of Wimberley; Believes there is a gap in	In - person

		communication between the City of Wimberley and the citizens	
Commissioner Jonathan Letz	Kerr County	Mentioned the struggles with Kerr County being in multiple watersheds; Would like to see Mayors and County Judges participating since these entities will need to apply for funding; Would like to take into consideration conservation efforts, partner with NRCS and keep water quality in mind; Would like to consider the RV Parks along the river; Kerr County would be submitting 3 projects and 2 joint projects from Kendall/Kerr County would be submitted to the RFPG.	In - person
Kari Potter	Individual	Would like to keep in mind the effect of high-density Developments and the additional impervious cover	In - person
Dennis Engelke	Caldwell County	Mentioned that Caldwell County has had multiple natural disasters from flood, fire and COVID-19; Would like for County, City and Local entities to stay involved and would like to ensure that this is a collaborative effort; Spoke of the growth in Caldwell County	In - person
Mark Gleason	San Marcos City Council	Mentioned that he was flooded twice in 2015; Mentioned that the Blanco River doesn't have any flood control and would like to know if there have been any studies done; Thanked the committee for their service	In - person

Jim Guin	TDEM	Introduced himself and informed the group that he is the individual that will be applying for hazard mitigation grants	In - person
Raymond Slade	Hydrogeologist	He shared information from published reports about flood peaks on the river at Spring Branch. He expressed concerns about the historic flood data not accurately representing the current flood plain.	VPM online
Tatjana Walker	Public Citizen	He shared opinions on recommended priorities for flood control which included increase in open space and park lands, development regulations in the flood plain, regulatory authority for counties, and protection of karst features.	VPM online
Holly Veselka	Public Citizen	She shared opinions on recommended natured based mitigation strategies. She also recommended priorities for flood control which included increase in open space and park lands, development regulations in the flood plain, regulatory authority for counties, and protection of karst features.	VPM online
Steven Fonville	Public Citizen	He shared concerns regarding the level of development currently allowed in floodway designated areas on the banks of the San Marcos River in Guadalupe Co.	VPM online
Shannon Curtice	Public Citizen	She shared recommendations on nature based solutions and watershed protection strategies.	VPM online

Eric Telford	Public Citizen	He expressed concerns over the floodplain designation on his property.	VPM online
Laurie Moyer	City of San Marcos	Identified multiple flood drainage channels and impacted roadways areas.	Interactive Comment Map
Thomas Manes	Public Citizen	Identified a flood drainage channel on the map.	Interactive Comment Map
Neil Rose	City of New Braunfels	Provided GIS data	Interactive Comment Map

Appendix C.2

Table C.2 Public Comments Made During Regular Guadalupe RFPG Meetings

Commenter Name	Commenter Affiliation	Nature of Comment	Date of Regular Meeting
TBD	*TBD*	*TBD*	*TBD*
Ben Eldredge	Cibolo Center for Conservation	Would like the RFPG to consider the importance of natural infrastructure, such as riparian areas	March 30, 2022
Ben Eldredge	Cibolo Center for Conservation and Cow Creek GCD	Mentioned the importance of natural infrastructure, especially within the recharge zone.	February 9, 2022
Ben Eldredge	Cibolo Center for Conservation	Spoke about the San Antonio RFPG and Dr. Dorman's work with the City of Boerne on stormwater ordinances. The San Antonio RFPG has suggested recommendations/ordinances based on the work done for the City of Boerne. The recommendations were created to improve stormwater quality for cities. Region 11 "would be interested in Dr. Dorman presenting at the February meeting".	December 1, 2022
Alan Montemayor	Chairman of the Alamo Group of the Sierra Club	Spoke of green infrastructure/nature base solutions being made a priority. Mr. Montemayor provided a letter.	November 3, 2021

Virginia Conde	Executive Director of the San Marcos River Foundation	Two comments. Comment 1: Since the majority of the San Marcos River is not within the city limits, floodplain management falls to the county, which has had issues with grazing practices. It would be nice for counties to have more jurisdiction with regards to management. Comment 2: There are many break away structures within the floodplain, which has led to objects such as picnic tables ending up in the river during flood events.	November 3, 2021
Michael Pieprzica	N/A	Comment 1: Questions about flood planning process, rules, and recommendations. Comment 2: Has experience in the San Antonio area/Bexar County flood control district. Mentioned that frequently flooded soils area important variables, and talked about the money San Antonio has spent removing homes from the floodplain. Asked about any assistance that can help reviewers of subdivisions. Hopes that Region 11 can learn from San Antonio. Comment 3: mentioned the importance of natural methods for treating/controlling flood waters. Comment 4: Mentioned development upstream of a quarry and resulting flooding. Wants Region 11 to consider regional effects. Comment 5: Spoke about detention ponds and soil types for future developments.	September 8, 2021

N/A	N/A	*No public comments were provided at the Regular RFPG Meetings occurring November 4, 2021 – June 30, 2021.*	November 4, 2021 – June 30, 2021

Appendix C.3

Compilation of Comment Tracking Matrices provided at Regular RFPG Meetings

Insert pdf of All Comment Tracking Matrices here.

Guadalupe Regional Flood Plan
Public Comment Tracking Matrix
Comments Received Via comments@guadaluperfpg.org

July 14, 2021 – August 4, 2021

Date	Name/Affiliation	Comment/Question	Assigned to GBRA/FNI Team Member and Response
8/4/21	Raymond Slade	Requested his comment that follows be shared with the RFPG at the 8/4/21 meeting: As a hydrologist my studies have included the Guadalupe River. I published a report about flood peaks on the river. The study documents that annual peaks have increased 38 % for the river at Spring Branch. Because of this the 100-year flood plain as published is too low. This is because the flood plain is based on historic data but does not represent increased floods. I was in contact with NOAA about Atlas 14 which represents the current floodplain. They agree with me about this problem but do not have the authority to include increased floods in the creation of the current Guadalupe River floodplains. Any questions about this can be sent to me.	Assigned to: B&A Response: Comment read before the RFPG on 8/4/21.
8/4/21	James Blakey/ Councilmember District 6/ New Braunfels, TX	Are both meetings open to the public tonight?	Assigned to: FNI Response: Yes
7/30/21	Charlie Hastings/Kerr County	Can I join 8/4/21 meeting via zoom or other?	Assigned to: B&A

Guadalupe Regional Flood Plan
Public Comment Tracking Matrix
Comments Received Via comments@guadaluperfpg.org

July 14, 2021 – August 4, 2021

Date	Name/Affiliation	Comment/Question	Assigned to GBRA/FNI Team Member and Response
			Response: No Zoom capability and provided the VPM link for 8/4/21 – 8/18/21 VPM.
7/30/21	Virginia Condie/San Marcos River Foundation	Is there a Zoom link to the 8/4/21 meeting?	Assigned to: B&A Response: No Zoom capability and provided the VPM link for 8/4/21 – 8/18/21 VPM.
7/29/21	Tracy Denton/ Fayette Electric Cooperative	We are located in La Grange, Texas. I do not think this affects our area. Please remove.	Assigned to: B&A Response: Thank you for your email. We will remove from our email list. (Note: Email address removed).
7/29/21	James Blakey/ Councilmember District 6/ New Braunfels, TX	Thank you for reminder email about the 8/4/21 meeting. I will try to attend.	Assigned to: B&A Response: Thank you for email response, and we look forward to seeing him at the meeting.
7/26/21	David Pipes	As someone who has been trained in riparian corridors we try to protect the native and natural habitat within the first 200 feet from the river. This transition zone is critical to protect river banks from erosion. When at all possible encourage developers or landowners to protect the banks.	Assigned to: FNI Response: FNI responded on 8/6/21.
7/15/21	Dianne Wassenich/San Marcos River Foundation	Could not find list of public hearings that may have been referenced in other emails from L. Wills or on Facebook. This list is not on the website for flood planning. Did	Assigned to: B&A Response: Clarification request regarding email question.

Guadalupe Regional Flood Plan
Public Comment Tracking Matrix
Comments Received Via comments@guadaluperfpg.org

July 14, 2021 – August 4, 2021

Date	Name/Affiliation	Comment/Question	Assigned to GBRA/FNI Team Member and Response
		these dates get sent out to the public and/or members on your email list?	
7/14/21	Jimmy Harless/ Floodplain Administrator Gonzales County	Will there be another RFPG meeting a little closer to the lower Guadalupe River basin?	Assigned to: FNI Response: The Guadalupe RFPG intends to host a meeting in the lower Guadalupe River basin; has initiated the planning for a meeting in Victoria and could explore potential of hosting a meetings in Gonzales as well. The RFPG monthly meetings are generally held in Seguin at the Guadalupe-Blanco River Authority and all planning group meetings have opportunities for public input.

Guadalupe Regional Flood Plan
Public Comment Tracking Matrix
Comments Received Via comments@guadaluperfpg.org

August 5, 2021 – September 8, 2021

Date	Name/Affiliation	Comment/Question	Assigned to GBRA/FNI Team Member and Response
9/3/2021	Dan Gibson	I am unable to attend in person or remotely due to the heavy workload in my office. We are having to decline any meetings that are not direction related to our core functions at this time. DAN GIBSON, AICP City Planner	Assigned to: Response:
9/1/2021	Lance Kyle	Dear GRFPG- I got your contact info from Annalisa Peace at the GEAA. I've got two questions: 1) Can the GRFPG provide state or federal aid to fix the stormwater time bomb in the Cascade Caverns Watershed in Boerne, Texas? 2) Can the GRFPG arrange funding to purchase critical recharge areas in Kendall County like the Pfeiffer Tract which are being threatened by development? Please see attached. Thanks. Lance Kyle | LinkedIn (703) 785-7953 **Attached two pdfs (Boerne Flood History and Pfeiffer's Water Cave) and an	Assigned to: FNI Response: The Guadalupe RFPG appreciates your interest in the flood planning process, and was happy that your analysis of the frequency of major flood events agrees with ours. We will present to the next planning group meeting. Guadalupe RFPG cannot provide/arrange funding, only tasked with estimating the funding required to implement Flood Management Strategies and Flood Management Projects. Your proposals can be considered for inclusion in the plan, which would make them eligible for some TWDB funding. A member of our team will reach out to arrange a chance

Guadalupe Regional Flood Plan
Public Comment Tracking Matrix
Comments Received Via comments@guadaluperfpg.org

August 5, 2021 – September 8, 2021

Date	Name/Affiliation	Comment/Question	Assigned to GBRA/FNI Team Member and Response
		aerial image of the Cascade Caverns Watershed.	to visit and gather additional information.
8/18/2021	Marjorie Lucey	Hi! I recently started getting your newsletter and I think it is great! It is a true service to those of us who care about the environment. I have a complaint about TXDOT. I never realized how bad for the environment they are. When they were trying to push through the changes to Wurzbach Pkway the plan involved the destruction of the mature trees along the parkway. I was appalled! At a time when the western US is experiencing horrendous fires it really hit home what they wanted to do! Not to mention I live right off of Wurzbach! We cannot let private and public entities destroy our mature trees! We have to stop the destruction of our planet and slowing TXDOT is a step in the right direction.	Assigned to: B&A Response: The Guadalupe Regional Flood Planning Group appreciates your interest in the regional flood planning process. Thank you for these comments and input.
8/16/2021	Elizabeth (Lisa) Arceneaux, P.E., CISEC, CPESC/City of San Marcos	Hi Lauren, You know me and how I'm a big proponent of using green infrastructure to protect our streams from receiving too much volume, and also stormwater with pollutant loading. So I would like to	Assigned to: B&A Response: From Alicia- The RFPG appreciates your interest in the regional flood planning process. Thank you for taking the time to provide us with these comments and input

Guadalupe Regional Flood Plan
Public Comment Tracking Matrix
Comments Received Via comments@guadaluperfpg.org

August 5, 2021 – September 8, 2021

Date	Name/Affiliation	Comment/Question	Assigned to GBRA/FNI Team Member and Response
		include lots of options for green infrastructure in the plan to filter, infiltrate and detain storm water runoff. Here are some other suggestions that I think would help with inland flooding in cities like San Marcos: 1. Purchase flood-prone lands for parks and open space- make the parks infiltration areas that also provide recreational space and connected by trails. 2. Place more stringent building rules and regulations within the flood way and floodplain- do not allow exceptions to the rules like many land development codes do. 3. Give more power to the counties to regulate things like break-away structures and activities in the floodplain and flood way 4. Allow lots to be stormwater management lots by building the structure on pier and beam or elevated and allowing the stormwater to flow under the house. Allows stormwater to spread out over a larger area of lot when it rains	Added email address to stakeholder list.

Guadalupe Regional Flood Plan
Public Comment Tracking Matrix
Comments Received Via comments@guadaluperfpg.org

August 5, 2021 – September 8, 2021

Date	Name/Affiliation	Comment/Question	Assigned to GBRA/FNI Team Member and Response
		5. Increase protection of karst recharge features in the Guadalupe River basin 6. Add more green infrastructure and low impact development in urbanized areas through permeable pavement, cisterns, rain gardens, and green roofs. Incentivize these projects for funding with lower qualifying percentage of the total project (5% instead of 30%) and increasing the amount subsidized to 80-100% for up to $500,000 or some other maximum deemed reasonable. 7. Require 2D flood modeling with the NOAA Atlas 14 updated rainfall runoff predictions for the entire watershed basin 8. Include future development and land cover change scenarios that come with population growth in the modeling. 9. Fund 100% Green Infrastructure Master Plans and Green Infrastructure Implementation Plans for those cities that have a Watershed Protection Department 10. Incentivize projects with higher subsidy that have triple bottom line benefits: environment, economic, equity.	

Guadalupe Regional Flood Plan
Public Comment Tracking Matrix
Comments Received Via comments@guadaluperfpg.org

August 5, 2021 – September 8, 2021

Date	Name/Affiliation	Comment/Question	Assigned to GBRA/FNI Team Member and Response
		We have a great project that is being discussed but not committed to by city staff in San Marcos called the Green Alley Initiative that would convert 2.5 acres of underutilized downtown alleys into permeable paved alleys that are activated for public use and environmental benefit. The FIF would be a great option that the San Marcos City Council could consider to help get this off of the conceptual phase and into a preliminary engineering report. The options mentioned above could really benefit this kind of project and show the potential of activating alleys in this manner to store large volumes of stormwater (up to 475,000 gallons per rain event) while giving the downtown area a real boost in appearance and social function. This green infrastructure could alleviate the grey infrastructure by holding rainfall and reducing the height of the peak flow reaching the grey infrastructure piping. The end result is cleaner water to the river, and not having to upsize the grey infrastructure, plus economic benefit to downtown. I hope you all can consider	

Guadalupe Regional Flood Plan
Public Comment Tracking Matrix
Comments Received Via comments@guadaluperfpg.org

August 5, 2021 – September 8, 2021

Date	Name/Affiliation	Comment/Question	Assigned to GBRA/FNI Team Member and Response
		some of these options for the plan. Thanks!	
8/16/2021	Melissa Reynolds/ First Assistant City Engineer of New Braunfels	Jay, Our team uploaded low water crossings, MS4, historic flood closures, and drainage as both shapefiles and in a database format. The map upload was a bit confusing for municipal data so we also included some contact information. We have a great deal of data available for open download on our webpage which is how GLO retrieved most of it. We are open to meeting (Teams works well for us) if that would hep facilitate any other data needed by the RFPG. Please let me know if we can be of further assistance.	Assigned to: FNI Response: From Jay Scanlon – Recognition that the data had been received, and that a teams meeting would be scheduled to discuss data and ways to improve the upload function in the interactive tool.
8/7/21	Shirley Solis/ Greater Comfort Area Chamber of Commerce	Please add my email address to your mailing list.	Assigned to: B&A Response: Added email address to stakeholder list.
8/7/21	Margaret Gomez/Travis County	Referred the RFPG to Shawn.snyder@traviscountyyx.gov since she is up with all our records on flooding	Assigned to: B&A *Response: Pending. Added Ms. Snyder to contact list.*

Guadalupe Regional Flood Plan
Public Comment Tracking Matrix
Comments Received Via comments@guadaluperfpg.org

August 5, 2021 – September 8, 2021

Date	Name/Affiliation	Comment/Question	Assigned to GBRA/FNI Team Member and Response
		in my precinct as well as wherever it happens in Travis County. Continues to have interest in addressing flooding and process.	

Guadalupe Regional Flood Planning Group - Public Comment Tracking Matrix

For Public Meeting October 6, 2021

Comments received September 9, 2021 – September 24, 2021

Comments Received Via comments@guadaluperfpg.org

Date Comment Received	Name/Affiliation of Commenter	Comment/Question	Respondent and Response Date
9/16/2021	Commissioner Jonathan Letz Kerr County	To: FNI Project Team Re: Data Submission Adam, I sent in the questionnaire. At the public meeting in Seguin, I mentioned again that Kerr County had five projects we would like to submit. One on these projects was presented to the board. I was under the impression that projects were to be submitted by 8/31/2021. We never heard what to submit or in what format. Kerr County will likely be the sponsor for any flood mitigation project in the county. Kerr County Commissioners Court does not have a seat on the flood planning board. Therefore, it is critical that that we be kept in the loop outside meetings. To date no consultant for the planning group has contacted anyone at our county level. This is becoming a concern. Thanks, Jonathan Letz	Respondent: FNI Staff (Adam) Response Date: 9/17/21
9/16/2021	Raymond Buck Jr. General Manager Upper Guadalupe River Authority	To: FNI Project Team Re: Data Submission Adam, I spoke with Commissioner Letz today about materials he was going to submit to the consultants. I understand he did not receive a reply to his email query on how to do so. I hope he can still submit and copied him on this email so you can reply directly. Thanks for taking care of this.	Respondent: FNI Staff (Adam) Response Date: 9/17/21

		Ray	
9/12/2021	James 'JP' Fancher, DDS, PhD General Public	To: Region 11 Regional Flood Planning Group Re: Meeting 8 September 2021 Thank you for the opportunity to observe this regularly scheduled meeting. I hope to be able to observe and participate in all meetings in the future. My wife and I live on the banks of the San Marcos River in Guadalupe County across the stream from Martindale. We both have a great interest in issues concerning local and regional water management, flood plain and land management. I reviewed the online presentations in August. I added comments and also completed the online survey. I appreciate the time and effort that this working group is committed to completing in the next many months. It appeared to me that this group is still in the early stages of forming and developing a consensus to carry out the mandates and create deliverables. I was particularly glad to hear that the general purpose of this working group is to develop ideas and plans for action, not just recommendations for concrete projects. It is also my understanding that this group has no approval authority for projects but is a regional voice to gather information for further coordination. I have many ideas to share with you as this group progresses. The first is to consider that water management is much more than planning for floods. It also involves conserving a key resource that is in high demand 24/7 throughout this region and the entire state. I urge you to keep in mind that aquifer protection must work hand-in-hand with flood management. Retaining water for daily use as a key community resource is part of the solution to flood management. Please consider such innovations as swell and berm construction throughout the savannah, woodlands, and developed areas that make up the majority of this region's landscape; an innovation that will slow the runoff of water and charge the aquifer systems. I look forward to the next meeting when it is scheduled.	Respondent: Blanton & Associate Staff (Vanessa) Response Date: 9/14/21
9/9/2021	Ken Gill County of Victoria	Provided documents relating to Victoria County's Storm Drainage Master Plan (including pdf maps) and Drainage Criteria Manual. link to the Spring Creek Study for Victoria County	Respondent: Blanton & Associate Staff (Vanessa) Response Date: 9/14/21

Guadalupe Regional Flood Planning Group - Public Comment Tracking Matrix

For Public Meeting October 6, 2021

Comments received September 9, 2021 – September 24, 2021

Comments Received Via comments@guadaluperfpg.org

9/9/2021	John Johnston County of Victoria	Provided a link to the Spring Creek Study for Victoria County	Respondent: Blanton & Associate Staff (Vanessa) Response Date: 9/14/21
9/9/2021	John Johnston County of Victoria	Provided map kmz dataset related to flood impact resources used by the City and County during a forecasted flood of the Guadalupe river.	Respondent: Blanton & Associate Staff (Vanessa) Response Date: 9/14/21

Guadalupe Regional Flood Planning Group - Public Comment Tracking Matrix

For Public Meeting November 3, 2021

Comments received September 25, 2021 – October 25, 2021

Comments Received Via comments@guadaluperfpg.org

Date Comment Received	Name/Affiliation of Commenter	Comment/Question	Respondent and Response Date
10/20/2021	Elizabeth Yakubik Public Citizen	**From:** Elizabeth Yakubik **Sent:** Wednesday, October 20, 2021 7:43 AM **To:** Guadalupe Regional Flood Planning Group <comments@guadaluperfpg.org> **Subject:** Re: Thank you for Your Comments in the Region 11 Interactive Map! Yes, I'm available to talk next week. Would Monday at 10:30am work for you? I'll try to gather pictures and videos of flood events in my neighborhood as well, if that would be helpful! **On Mon, Oct 18, 2021, 4:57 PM Guadalupe Regional Flood Planning Group <comments@guadaluperfpg.org> wrote:** Good evening Ms. Yakubik. We have reviewed all map comments and yours is one that we've flagged to incorporate into the Guadalupe Flood Plan. Thank you for making us aware of this flood risk that our preliminary map did not capture. Are you available sometime this week or next, so that a member of our Technical Consultant team can talk with you to identify specific areas of flooding that you have witnessed? It could be between 8:00 AM and 5:00 PM or after 5:00 PM if you'd prefer, we just ask that you be in front of a computer with Internet connection, so that we can interactively view the areas that experienced flooding in October 2015. Please be assured that this modification to Region 11's flood hazard area will not change the regulatory floodplain. We are simply using citizen science to see where additional data might improve flood risk, health and safety. Thank you.	Respondent: FNI Staff (Adam) Response Date: 10/20/21 Call on: 10/25/2021

Guadalupe Regional Flood Planning Group - Public Comment Tracking Matrix

For Public Meeting November 3, 2021

Comments received September 25, 2021 – October 25, 2021

Comments Received Via comments@guadaluperfpg.org

10/15/2021	Lance Kyle Public Citizen	**From:** LB Kyle **Sent:** Friday, October 15, 2021 4:53 PM **To:** Guadalupe Regional Flood Planning Group <comments@guadaluperfpg.org> **Subject:** Re: Guadalupe Regional Flood Plan Group (GRFPG) Is there a video of the last GRFPG meeting? Lance Kyle | LinkedIn (703) 785-7953	Respondent: B&A Staff (Vanessa) Response Date: 10/16/21
10/13/2021	Sherry Walden Comfort Floodplain Coalition	**From:** Sherry Walden **Sent:** Wednesday, October 13, 2021 11:40 AM **To:** Lauren Willis <lwillis@gbra.org>; Sundancecsc Info <info@sundancecsc.com> **Subject:** Fw: Region 11 Guadalupe Regional Flood Planning - project list +Emmanuel "Mani" Flatten (info@sundancecsc.com) Mani is the spokesperson for the Comfort Floodplain Coalition, a grass roots, volunteer group formed to consolidate our efforts. Thank you Lauren! You are correct, you made clear the group did not have a list of projects yet -- I mis-typed when I sent my reminder email. Last Friday, I asked about the input process, specifically where were the 11 letters our group had submitted as we didn't see any comments for Kendall county via the interactive tool. You clarified they were in meeting notes and the team was organizing that information manually. I asked how they are tracking it and what visibility do we have? You offered to send me the list ... that is what I was expecting, a work-in-progress list of requirements and comments. Did I misunderstand? Thanks! sherry	Respondent: GBRA Staff (Lauren) Response Date: 10/13/21
10/12/2021	Sherry Walden Comfort Floodplain Coalition	**From:** Sherry Walden **Sent:** Tuesday, October 12, 2021 8:07 AM **To:** Lauren Willis <lwillis@gbra.org> **Subject:** Region 11 Guadalupe Regional Flood Planning - project list	Respondent: GBRA Staff (Lauren) Response Date: 10/13/21

		Hi Lauren, when you get a chance, please reply to this email with the list of projects for Region 11 GRFP. Thank you!! Sherry Walden (281) 910-3620	
10/7/2021	Joyce Yannuzzi Office of State Senator Donna Campbell M.D.	**From:** Joyce Yannuzzi **Sent:** Thursday, October 7, 2021 3:19 PM **To:** Guadalupe Regional Flood Planning Group <comments@guadaluperfpg.org> **Subject:** RE: Upcoming October 6th Public Meeting of Guadalupe Regional Flood Planning Group Good afternoon - I was hoping to make yesterday's meeting and my afternoon got away from me. Please keep me on the email for future meetings. Thank you! Warm regards- **Joyce Yannuzzi** District Director State Senator Donna Campbell, M.D. Texas Senate District 25 District Office: (830)-626-0065	Respondent: B&A Staff (Vanessa) Response Date: 10/7/21
10/2/2021	Tara Thompson Public Citizen	**From:** Tara Thomason **Sent:** Saturday, October 2, 2021 11:21 PM **To:** Guadalupe Regional Flood Planning Group <comments@guadaluperfpg.org> **Subject:** Meetings	Respondent: B&A Staff (Vanessa) Response Date: 10/4/21

		How can you possibly expect responsible public participation in a meeting held at 2:00 in the afternoon while the majority of homeowners in the region are working to pay for their homes that are affected by these floods? It would be greatly appreciated if these meetings were held after 5:00 or on weekends, so those of us who work can attend.	
9/30/21	Laurie Moyer City of San Marcos	**From:** Moyer, Laurie **Sent:** Thursday, September 30, 2021 5:01 PM **To:** Lauren Willis <lwillis@gbra.org> **Cc:** Pantalion, Joe **Subject:** RE: [EXTERNAL] Region 11 Guadalupe RFPG Meeting Materials Lauren: I was reviewing the packet material for next weeks meeting. Included in the backup were comments received for August/Sept. I was wondering if this reflected the information for the data collection as requested by Sept 3rd? I provided on-line mapping comments and we also uploaded shape files of proposed projects. I just want to make sure these were received as it appeared there was documentation submitted from NB & Victoria using the comments email. Thanks! Laurie A Moyer, P.E.	Respondent: GBRA Staff (Lauren) Response Date: 9/30/21 Respondent: FNI Staff (Jay) Response Date: 10/1/21

Guadalupe Regional Flood Planning Group - Public Comment Tracking Matrix

For Public Meeting December 1, 2021

Comments received October 26, 2021 – November 19, 2021

Comments Received Via comments@guadaluperfpg.org or via lwillis@gbra.org

Date Comment Received	Name/Affiliation of Commenter	Comment/Question	Respondent and Response Date
11/15/2021	Virginia Condie San Marcos River Foundation	**See attached photo series enclosed with commenter's email.** **From:** Virginia Condie <virginia@sanmarcosriver.org> **Sent:** Monday, November 15, 2021 2:49 PM **To:** Lauren Willis <lwillis@gbra.org> **Subject:** Fwd: Son's blue River video of rising water 12,000 cfs Hello Lauren! I'm sorry it took so long to send you the documentation about the debris issues we are having along the floodplain and flood way on the San Marcos River. I am going to forward you several emails with my photos, but this first one will show you approximately where the water was at 12,000 cfs on the San Marcos River. This is by no means a large flood on this river and you can see how high the water got. My next emails will show you 1) A normal water level at Son's Blue River in Prairie Lea on the San Marcos River 2) The items they normally have on their gravel bar 3) The items that were located in the flood waters 4) Some of the items that floated downstream in the small flood. My hope is that the flood board can help the counties prevent some of these issues for both the health of the river and the downstream neighbors. The potential for loss of life is concerning, along with the risk to the structural integrity of the downstream bridges due to the added materials in the river during high water. Please let me know if there is anything else you need from me or any of the downstream landowners. Thank you! -Virginia	Respondent: GBRA Staff (Lauren) Response Date: 11/16/21

11/10/2021	Bill Barker, Great Springs Project	**See attached letter enclosed with commenter's email.** **From:** Bill Barker <barker@greatspringsproject.org> **Sent:** Wednesday, November 10, 2021 3:22 PM **To:** Lauren Willis <lwillis@gbra.org> **Subject:** Great Springs Project (GSP) and the current Texas State Flood Planning effort. Ms. Willis, Please find attached a letter from the Great Springs Project regarding collaboration with the Region 11 Regional Flood Planning. Please let me know if you have any questions. Thank you for your attention to this matter. Bill Barker	Respondent: GBRA Staff (Lauren) Response Date: 11/11/21
11/6/2021	Doug Sethness, Flood Planning Group Member	From: Doug Sethness dsethness@reagan.com Sent: Saturday, November 6, 2021 10:30 AM To: Guadalupe Regional Flood Planning Group <comments@guadaluperfpg.org> Cc: Lauren Willis lwillis@gbra.org ; 'Jay Scanlon' JWS@freese.com ; Velma Danielson velma.danielson@blantonassociates.com ; 'Morgan White' Morgan.White@twdb.texas.gov Subject: RE: Follow up Answers to Questions from November 3 RFPG Meeting With reference to the question on the definition of LWC: 1. Is "overtopping" defined? For example, is it any amount of water across the travel way? 2. Where roads are used to channel water to a drainage location, is a road considered flooded with any amount of water across the travel way, whether from a 10-year event or less? I believe there needs to be some defining of terms to differentiate the typical LWC which would be commonly thought of as an at-grade dip in a road intended to allow	Respondent: FNI Staff (Jay) Response Date: 11/16/21

		passage of water over the roadway running across a recognized "stream" bed in rain events instead of building a bridge. There are also roads (mostly county and FMs) with curbs where water gets trapped and also areas where the road gets flooded from ponding water, both of which cause accidents but these areas are typically not thought of as low water crossings. Is the data we are using differentiating between these different "road flooding" conditions?	
11/3/2021	Alan Montemayor Alamo Group of Sierra Club	Written Public Comment Received at Nov 3rd Flood Planning Group Public Meeting**.** **See attached written comments.**	Respondent: GBRA Staff (Lauren) Response Date: 11/3/21

Guadalupe Regional Flood Planning Group - Public Comment Tracking Matrix

For Public Meeting February 9, 2022

Comments received November 20, 2021 – February 1, 2022

Comments Received Via comments@guadaluperfpg.org or via lwillis@gbra.org

Date Comment Received	Name/Affiliation of Commenter	Comment/Question	Respondent and Response Date
12/7/21	Rick Tobolka Kendall County	**From:** Rick Tobolka <rtobolka@co.kendall.tx.us> **Sent:** Tuesday, December 7, 2021 4:40 PM **To:** Jay Scanlon <JWS@freese.com> **Subject:** Cypress Creek Feasibility Study Mr. Scanlon, Thank you for returning my call. Kendall County wishes to propose a project consisting of a feasibility study on Cypress Creek and North Creek (tributaries of the Guadalupe River). I believe the study would be classified as a FME. Possibly a future FMP depending on the benefit cost analysis. The proposed study is substantially situated in Kerr County. Kendall County has coordinated with Kerr County Commissioner, Pct. #3, Jonathan Letz pertaining to the proposed study. Commissioner Letz supports the feasibility study. I have attached a proposed scope and location map of the proposed project. Kendall County planned to move forward with the feasibility study in the next 12 months. Please let me know if you have any questions or comments or need additional information. Thank you for your consideration, Richard Tobolka, P.E. 201 East San Antonio Avenue, Suite 101 Boerne, Texas 78006 830-331-8250	Respondent: FNI (Jay) Response Date: 12/7/21

Guadalupe Regional Flood Planning Group - Public Comment Tracking Matrix

For Public Meeting February 9, 2022

Comments received November 20, 2021 – February 1, 2022

Comments Received Via comments@guadaluperfpg.org or via lwillis@gbra.org

11/20/21 to 12/1/21	Voting Members, Non-Voting Members and Public	The following individuals provided written comments to the technical consultant on the draft technical memorandum: <u>Voting Members</u> • 11/23/21 Brian Perkins – GBRA • 11/29/21 Annalisa Peace – Great Edwards Aquifer Alliance • 11/30/21 Ken Gill – City of Victoria • 12/1/21 Gian Villarreal – WEAT/Seagull PME • 12/1/21 Joe Pantalion – City of San Marcos <u>Non-Voting Member</u> • 12/7/21 Don Durden – Kendall County <u>Public</u> • None	Respondent: FNI (Jay) Response Dates: 11/20 to 12/1

Guadalupe Regional Flood Planning Group (RFPG) - Public Comment Tracking Matrix

For RFPG Public Meeting March 30, 2022

Comments received February 2, 2022 – March 22, 2022

Comments Received Via comments@guadaluperfpg.org or via lwillis@gbra.org

Date Comment Received	Name/Affiliation of Commenter	Comment/Question	Respondent and Response Date
3/16/22	JP Fancher Private Citizen	**SEE ATTACHED ARTICLE IN BACKUP MATERIALS** **From:** jpfancher@earthlink.net <jpfancher@earthlink.net> **Sent:** Wednesday, March 16, 2022 10:59 AM **To:** Sarah Weber <sweber@doucetengineers.com> **Subject:** RE: Guadalupe Regional Flood Planning Group--Requesting Your Feedback Howdy! Today's SA Express-News has a lead article on conservation efforts around the region of Camp Bullis that is important to this group. The boundaries discussed border on the Guadalupe region, and the efforts to encourage rainwater retention by berms and other means throughout the region are very important. Please pass on to all involved! The article starts on Page 1. Thanks! *JP Fancher* *paradox out*	Respondent: Doucet Engineers (Sarah) Response Date: 3/16/22
3/6/22	JP Fancher Private Citizen	**From:** jpfancher@earthlink.net <jpfancher@earthlink.net> **Sent:** Sunday, March 6, 2022 9:35 AM **To:** Sarah Weber <sweber@doucetengineers.com> **Subject:** RE: Guadalupe Regional Flood Planning Group--Requesting Your Feedback Howdy! I do not represent a governmental, public, or business entity that can give specific feedback to the planning group document. However, my views as a private citizen who lives on a water way reflects public concerns in the planning process. A key concept that is on the dance floor is simply that historic floods are the result of heavy rains in unpopulated areas of the Guadalupe regions, largely open ranch/farming land that has never been included in the planning process. Water runs off into the natural drainage conduits that are thousands of years old. There is now rampant development, especially in these natural drainage plains. Getting a	Respondent: Doucet Engineers (Sarah) Response Date: 3/7/22

		piece of the hill country is a goal of real estate development in this region, as fast as possible before regulations can shift the burden of responsible planning. Rainfall that lands in and around Blanco and Johnson City flows into the river basins and drops ~1000 ft of elevation as it rushes through the exploding communities along the I-35 corridor. Most of the actions planned are aimed at protecting these communities, not preventing the spread of flood risk. We have a double entendre of water management: #1 not enough potable water due to over pumping of our aquifers and periodic drought and #2 Poor to non-existent flood planning, especially in the rural areas and overdeveloped basins. Somehow these problems can be married to some common solutions; slowing and retaining rainwater to mitigate flooding and increase availability of potable water at the same time. This will be a lot less expensive than massive ditch and concrete projects and buyouts. Unfortunately, I see none of these concepts in the planning document. I attended several meetings last fall, and I will attempt to attend meetings in the future to monitor progress in this planning group. So far I simply have seen very little substantial progress in public. I hope there is more to come! *JP Fancher, DDS, PhD* *210-896-8575* *345 Buie Lane* *Guadalupe County, TX 78655* *paradox out*	
3/6/22	Lisa Arceneaux EA Environmental Consulting	**From:** Lisa Arceneaux <lisa@eaenvironmental.net> **Sent:** Sunday, March 6, 2022 11:34 AM **To:** Sarah Weber <sweber@doucetengineers.com> **Cc:** 'Moyer, Laurie' <lmoyer@sanmarcostx.gov>; 'Sarah Simpson' <ssimpson@color-space.com>; 'Navarro, Aspen' <aspennavarro@txstate.edu> **Subject:** RE: Guadalupe Regional Flood Planning Group Requesting Your Feedback Hi Sarah,	Respondent: Doucet Engineers (Sarah) Response Date: 3/7/22

		It was great talking to you last week about your understanding of the list being compiled for the Guadalupe Regional Flood Planning Group. I mentioned an initiative here in San Marcos that is vetting through a pilot scale test that is in process to build in 2023. The concept is to activate San Marcos Alleys using permeable pavers as a baseline to improve storage of rain events that cause localized flooding (24-hour 2-5 year return frequency). Sarah Simpson, Aspen Navarro and myself were the primary contributors to the voluntarily prepared initiative (they are cc'ed here). Kissing Alley (https://downtownsmtx.squarespace.com/kissing-alley) in San Marcos is the pilot scale project and the larger vision is called The San Marcos Green Alley Initiative (https://www.color-space.com/the-san-marcos-green-alley-initiative). If fully implemented the alley network with permeable pavers could capture, slow down, clean and slowly release up to 500,000 gallons of rainfall and runoff each rain event. By using stormwater mitigation funding, the downtown area could realize economic vitality, and improvements to pedestrian mobility all while managing/mitigating localized flooding. A win-win project that would be a good example for the TWDB to support and others communities to consider. It may be too soon to add this initiative, but if you need projects, it could be perfect timing. The city of course will want to chime in to say if they want it include now or not. I'm including Laurie Moyer, P.E. on this e-mail to comment, and for my part, I'm just providing the link (above). I would love to meet up with you when you get the Doucet office set up on Corporate Drive and we can walk through Kissing Alley and see the vision of the initiative together. Plus answer questions. Thank you! Lisa Arceneaux, P.E., CISEC, CPESC ***512-644-1927 (cell)***	
2/28/22	Sydney Beckner Hill Country Alliance	**SEE ATTACHED LETTER IN BACKUP MATERIALS** **From:** Sydney Beckner <Sydney@hillcountryalliance.org> **Sent:** Monday, February 28, 2022 1:45 PM **To:** Lauren Willis <lwillis@gbra.org>	Respondent: GBRA (Lauren) Response Date: 2/28/22

		Cc: Annalisa Peace <annalisa@aquiferalliance.org>; Daniel Oppenheimer <Daniel@hillcountryalliance.org>; suzanne.scott@TNC.ORG; manager@blancogw.org; lon.shell@co.hays.tx.us **Subject:** RFPG 11 Comments Hi Lauren, You'll find attached the Hill Country Alliance's comments to the Regional Flood Planning Group 11. We really appreciate the opportunity to provide comments and the work this group does to create a comprehensive flood plan for the Guadalupe River Basin planning area. I'm happy to answer any questions you may have. Gratefully, Sydney **Sydney Beckner** Water Program Manager **Hill Country Alliance** | P.O. Box 151675 | Austin, TX 78715 (cell) 903-238-3179 | sydney@hillcountryalliance.org | she/her	
2/8/22 to 2/11/22	Voting Members, Non-Voting Members and Public	The following individuals provided written comments to the technical consultant on the draft technical memorandum #2: <u>Voting Members</u> • 2/11/22 John Espinoza /Joe Pantalion – City of San Marcos • 2/8/22 Brian Perkins – GBRA <u>Non-Voting Member</u> • None <u>Public</u> • None	Respondent: FNI (Jay) Response Dates: 2/2/22 to 2/14/22

Guadalupe Regional Flood Planning Group (RFPG) - Public Comment Tracking Matrix

For RFPG Public Meeting May 10, 2022

Comments received March 23, 2022 – May 2, 2022

Comments Received Via comments@guadaluperfpg.org or via lwillis@gbra.org

Date Comment Received	Name/Affiliation of Commenter	Comment/Question	Respondent and Response Date
4/1/22	Karen Brennan Private Citizen	**From:** kbrennan@hhep.com **Sent:** Friday, April 1, 2022 2:38 PM **To:** comments@guadaluperfpg.org Comment: City of New Braunfels - Notice of Public Hearing 740 & 750 Rusk. SUP22-073 requested rezoning from R2 to SUP to allow 440 plus RV park and event center on Guadalupe waterfront approximately 50% is floodway and 50% is 100 year flood zone. Please join us in opposition to this SUP. Public Hearing before Planning Commission Tuesday April 5, 2022 @ 6 pm. This development would be in district 5 Jason Hurta, phone - (830) 221-4659 then press option 4 Email - jhurta@nbtexas.org	Respondent: Lauren Response Date: 4/1/2022
4/1/22 to 4/18/22	Voting Members, Non-Voting Members and Public	The following individuals provided written comments to Draft Chapter 1: <u>Voting Members</u> • 4/17/22 Gian Villarreal – Seagull PME • 4/15/22 Brian Perkins – Guadalupe-Blanco River Authority • 4/14/22 Raymond Buck/ Tara Bushnoe – Upper Guadalupe River Authority • 4/14/22 Joe Pantalion/John Espinoza – City of San Marcos • 4/14/22 Steven Fonville – Martindale Water Supply Corporation <u>Non-Voting Member</u> • 4/15 Sue Reilly – Texas Parks and Wildlife Department <u>Public</u> • None	Respondent: FNI Response Dates: 4/1/22 to 4/18/22

Guadalupe Regional Flood Planning Group (RFPG) - Public Comment Tracking Matrix

For RFPG Public Meeting June 1, 2022

Comments received May 3, 2022 – May 26, 2022

Comments Received Via comments@guadaluperfpg.org or via lwillis@gbra.org

Date Comment Received	Name/Affiliation of Commenter	Comment/Question	Respondent and Response Date
5/18/22	Virginia Parker	**SEE ATTACHMENT IN BACKUP** **From:** Virginia Parker <virginia@sanmarcosriver.org> **Sent:** Wednesday, May 18, 2022 1:03 PM **To:** Lauren Willis <lwillis@gbra.org> **Subject:** Updated SMRF Flood Group Project proposals Hello Lauren! Based on my conversation with Freese and Nichols last week I wanted to update the projects SMRF is putting forward. Since a few of the "projects" I proposed were actually tactics, I'd like to put them forth here in the email so that they are recorded. 1) Coordinate with other flood groups to propose legislation that allows counties the ability to be more protective with regards to flood mitigation and water quality. (An example of this would be to allow counties the opportunity to prevent breakaway structures in the floodplain.) 2) Require all commercial outfitters to properly store equipment (such as busses, tubes, tents, pop-up tents, picnic tables, kayaks, trailers, hammocks and stands, coolers, etc) out of the floodplain during non-working hours. 3) Require commercial outfitters to bring equipment (listed above) out of the floodplain during major rain events, and fine operators if this does not occur. 4) Collaborate with Texas Parks and Wildlife Dept, or another state agency, to create a policy that allows 30 foot wide access points to the river, and restricts mechanical grazing of the riparian zone within 100 feet of the river elsewhere. Create a maximum number of access points per property (such as 2 per every 0.5 mile of river frontage) in order to properly protect the riparian zone to mitigate flood impacts due to sheetflow runoff. 5) Create a list of appropriate nature-based solutions along streams and rivers, and allocate funding for these processes in order to mitigate flood impacts before it occurs. -Virginia Thank you! Executive Director, San Marcos River Foundation P.O. Box 1393, San Marcos, TX 78667, 210-860-4575	Respondent: Lauren (GBRA) Response Date: 5/18/2022

Guadalupe Regional Flood Planning Group (RFPG) - Public Comment Tracking Matrix

For RFPG Public Meeting June 29, 2022

Comments received May 27, 2022 – June 22, 2022

Comments Received Via comments@guadaluperfpg.org or via lwillis@gbra.org

Date Comment Received	Name/Affiliation of Commenter	Comment/Question	Respondent and Response Date
6/8/2022	Frank Davis Hill Country Conservancy	**From:** Frank Davis <frank@hillcountryconservancy.org> **Sent:** Wednesday, June 8, 2022 4:48 PM **To:** Lauren Willis <lwillis@gbra.org> **Cc:** Virginia Condie (virginia@sanmarcosriver.org) <virginia@sanmarcosriver.org> **Subject:** Application for funding: Edwards Aquifer Recharge Conservation Easement Hello, Please accept this application for funding a critical conservation project in the Edwards Aquifer Recharge Zone, in San Marcos. Details follow. Project Sponsor: Hill Country Conservancy Project Name: Wootan Recharge Conservation Property Hays County CAD: R16076 Property Description: A0287 ISAAC LOWE SURVEY, TRACT 5, ACRES 84.49 Project Description: Funding to assist with the acquisition of a conservation easement on the Wootan property, which sits over the Edwards Aquifer Recharge Zone. This property is in downtown San Marcos and adjacent to a pending conservation project on 1,068 acres of critical recharge land, and in close proximity to numerous residential subdivisions which greatly jeopardize the health of the Aquifer and local watersheds. Protection of the Wootan property is imperative to intercept rainfall, and reduce erosive sheet flow runoff, thus mitigating future floods in San Marcos. The conservation easement would be drafted in accordance with strict limits on increased impervious cover to protect the area in perpetuity. Estimated Property Value: (30K/acre) $2,534,700 Estimated Easement Value: (60% of Property Value) $1,520,820 Estimated Project Cost: (50% of Easement Value plus transaction expenses) $860,410 Flood Mitigation Benefits: Recharge to the Edwards Aquifer, Edwards Aquifer Water Supply Protection, Rainwater Infiltration, Wildlife Corridor Protection, Flood Mitigation. Thank you for your consideration, Frank	Respondent: Lauren (GBRA) Response Date: 6/9/2022

		Frank H. Davis Chief Conservation Officer www.hillcountryconservancy.org Cell: 512-947-3920 Mail: PO Box 163125 Austin, TX 78716-3125 	
5/31/22	Lyda Creus Molanphy Great Springs Project	**SEE ATTACHMENT** **From:** Lyda Creus Molanphy <lyda@greatspringsproject.org> **Sent:** Tuesday, May 31, 2022 3:43 PM **To:** Lauren Willis <lwillis@gbra.org> **Subject:** Great Springs Project submission of FME for Region 11 Good afternoon Lauren, Attached please find a Flood Management Evaluation (FME) proposal to the Region 11 Guadalupe Flood Planning Group. We understand proposals are due today but may be updated in the coming weeks should that be necessary. We appreciate consideration of this FME and look forward to next steps. Please advise if we need to provide any additional information. Thank you, Lyda	Respondent: Lauren (GBRA) Response Date: 5/31/2022

Guadalupe Regional Flood Planning Group (RFPG)
Public Comment Tracking Matrix
Comments Received Via comments@guadaluperfpg.org
Comments received December 7, 2022 – June 16, 2023

Date Comment Received	Name/Affiliation of Commenter	Comment/Question	Respondent and Response Date
01/05/23	Danielle Goshen/ National Wildlife Federation	Thank you for this update and pointing out where to find the responses. I just wanted to note that we have in our records, below, that we submitted on October 7th which is what we saw posted as the deadline for comments. However, the responses from the region indicate that our comments were received after the deadline for some reason – was October 7th not the deadline? It's not a big deal, but just wanted to point out!	Respondent: Adam Conner Response Date: 01/05/23
02/28/23	Councilwoman Daniela Parsley/District 5 Kyle, TX	Is this meeting being rescheduled?	Respondent: Adam Conner Response Date: 02/08/23
03/13/23	Unknown	"I want to gather some information about Low Water Crossing in Texas States. About their hazards that may have for humans and also how to warn them and their problem in transportation and the solutions also If you have any information or project reports around this issue, please tell me about it."	Respondent: No contact information available to respond Response Date: NA
04/26/23	Lawrence Spradley/ City Council, Councilmember District 4	Thank you for the invitation. Please send me more information regarding this meeting. I plan to attend in person.	No response needed.
04/29/23	Joyce Yannuzzi/District Director Texas State Senator Donna Campbell, M.D. Senate District 25	Good afternoon, I was planning to attend this meeting but will be in Austin instead. Will plan to make the next one.	No response needed.
05/03/23	Steven Sucher/Mayor, City of Gonzales	Gonzales mayor Steve Sucher plans to attend as a courtesy and to observe.	No response needed.

TWDB Comment No.	Public Comment No.	Task No.	Type of Comment	Level 1 or 2	Description	Response
N/A	11f	N/A	Public	N/A	Comment from Arsum Pathak and Danielle Goshen (NWF): 2. Incorporate minimum floodplain management standards such as NFIP participation and enforceable building code standards for Municipalities Region 11 did not incorporate any floodplain management standards into its draft plan. Minimum floodplain management standards can be adopted by the region, which local entities must adopt before a FME, FMS, or FMP is included under the Regional Flood Plan, and therefore eligible for funding under FIF. Region 11 stated that it wanted the first planning cycle to be as inclusive as possible, and therefore opted out of adopting any minimum floodplain management standards. We encourage Region 11 to consider NFIP participation as a minimum floodplain management standard. In the Guadalupe FPR, 96.8% of eligible municipalities and 100% of eligible counties participate in the National Flood Insurance Program (NFIP). Participation in the NFIP requires participants to "adopt a floodplain management ordinance and to designate a floodplain administrator who is responsible for understanding and interpreting local floodplain management regulations and reviewing them for compliance with NFIP standards." Since floodplain management ordinances and designation of a floodplain administrator are essential to proper flood planning at the local level, requiring the remaining municipalities to participate in the NFIP seems like an appropriate baseline, before entities can potentially receive funding for flood mitigation projects. Texas Floodplain Management Association (TFMA) developed a guide for communities to implement higher floodplain management standards which reduce flood damage and the overall impacts of floods.	This appears to be a potential regulatory requirement. The RFPG made the decision not to include mandatory higher standards this planning cycle, but it may be considered during the next cycle. Please note that NFIP participation is required for communities that are seeking future Flood Infrastructure Funds. In addition the RFPG recommend the State consider adoption of higher standards (8.1.2), and provide incentives for local governments to participate in the FEMA Community Rating system (8.2.7).
N/A	11g	N/A	Public	N/A	Comment from Arsum Pathak and Danielle Goshen (NWF): 3. Refine Assessment and Identification of Flood Mitigation Needs Critical facilities in particular need additional attention when assessing and identifying flood mitigation needs. Certain critical facilities pose higher risk to surrounding communities during flooding, such as superfund sites and refineries. We recommend that the Region include in its weighted approach risks based on the number of industrial facilities that pose environmental justice risks to neighboring and fenceline communities. If facilities are identified that are within floodplains and are not adequately protected, the region should propose legislative, administrative, and regulatory recommendations to better ensure facilities do not pose a risk to neighboring communities during flooding.	Due to time constraints, Legislative Recommendations will be considered by the RFPG for the Final Regional Flood Plan (January 2023), so these could be considered during the 2023 Legislative Session. New Administrative and Regulatory Recommendations will be considered by the RFPG for the Amended Plan. The RFPG will consider changes to the risk assessment in the next planning cycle and may consider including additional recommendations

TWDB Comment No.	Public Comment No.	Task No.	Type of Comment	Level 1 or 2	Description	Response
N/A	11h	N/A	Public	N/A	Comment from Arsum Pathak and Danielle Goshen (NWF): 4. Increase public participation and outreach through virtual options and translation services The Regional Flood Planning process is intended to be a bottom-up approach that continuously seeks and incorporates feedback from the public. While the plan details a list of outreach activities (Chapter 10, p. 10-23), the information might not reach all members of the community. To ensure an equitable plan, we recommend promoting outreach events with equity-based organizations, community leaders from underrepresented and marginalized communities and using a combination of in-person and virtual activities to combat broadband connectivity challenges. Region 11 can also work to increase public participation and input by providing virtual options for its meetings. These virtual options are especially important, given the geographic scope of the Region's jurisdiction. Further, Spanish translation of materials and use of translation services during public meetings can increase accessibility for the public. The Guadalupe Regional Flood Plan Comment Map provides an opportunity for community members to share their flood concerns, however, the Draft Plan does not include any information on how these comments are incorporated in the flood risk maps. These citizen science type of data collection is an efficient approach to quantify flood risks that are outside of top-down models and including	RFPG may consider this for future meetings. Page 2-4 provides a description of the process used to collect comments and data using the Comment Map, and summarizes the findings and extent of edits to the floodplain derived from those comments.
N/A	11i	N/A	Public	N/A	Comment from Arsum Pathak and Danielle Goshen (NWF): 5. Refine the determination of "no negative impact" to include no impact to natural infrastructure; As it stands, the concept of proving a particular FMP causes "no negative impact" is limited and typically means that a project will "not increase flood risk to surrounding properties (upstream or downstream)." Further, "analysis must be based on best available data and be sufficiently detailed to demonstrate that the post-project flood hazard is no greater than the existing (pre-project) flood hazard." Communities however, as the Region notes, have different thresholds for defining what level of impact is adverse, while the Technical Guidelines and Rules governing state flood planning require 5 specific criteria to be met to establish no negative flood impact. Unfortunately, the Board's criteria to determine no negative flood impact does not adequately consider the impact a FMP may have on functioning floodplains and fails to consider the resiliency they provide. Region 11, along with the TWDB should expand the determination of "no negative	Due to time constraints, Legislative Recommendations will be considered by the RFPG for the Final Regional Flood Plan (January 2023), so these could be considered during the 2023 Legislative Session. New Administrative and Regulatory Recommendations will be considered by the RFPG for the Amended Regional Flood Plan. Appears to be Administrative and will be considered for the Amended Regional Flood Plan or next Planning Cycle.
N/A	12a	N/A	Public	N/A	Comment from Marty Kelly (TPWD, sent after deadline for comments): 1. Please include Texas Parks and Wildlife Department (TPWD) in the list of acronyms.	TPWD was added to the list of acronyms.

TWDB Comment No.	Public Comment No.	Task No.	Type of Comment	Level 1 or 2	Description	Response
N/A	12b	N/A	Public	N/A	Comment from Marty Kelly (TPWD, sent after deadline for comments): 2. The Guadalupe RFPG recommended 127 flood studies (evaluations), 32 flood projects, and 5 regional flood strategies for funding. Regarding the Flood Management Evaluations, Plans, and Strategies (FMXs, all together) chosen for recommendation, TPWD would like to encourage all the FMX proponents to consider stream crossing designs that allow for sediment transport and passage of aquatic organisms and do not impound water. Basically, designs that are invisible to the creek. This includes bridges that span the creek where possible or culverted crossings designed with the culvert(s) in the active channel area lower than those in the floodplain benches so that the flow in the channel is not overly spread out. The central/low-flow culvert(s) should be large enough to handle a 1.5-year flow without backing up water. The bottoms of these lower culverts should be set at least a foot below grade (i.e. recessed) to allow natural substrate to cover the culvert bottom and to allow for aquatic organism passage. These lower, recessed culverts should be installed in the thalweg or deepest part of the channel and be aligned with the low flow channel (Clarkin et al., 2006).	This comment has been documented in the appendix of the Final Flood Plan.
N/A	12c	N/A	Public	N/A	Comment from Marty Kelly (TPWD, sent after deadline for comments): 3. Texas Conservation Action Plan (TCAP) is a guiding document for conservation in the state of Texas, with the goals of realizing conservation benefits, preventing species listings, and preserving our natural heritage for future generations. Species of Greatest Conservation Need (SGCN) include numerous aquatic species such as fish, freshwater mussels, and salamanders. The TCAP handbook (Texas Parks and Wildlife Department, 2012) includes six types of priority habitats, three of which are aquatic: water resources; riparian and floodplains; and caves and karst. Issues affecting these environments include environmental flows, impoundments and dam operations, and water quality issues (including stormwater runoff). The Guadalupe RFPG plan aligns with many of the goals in the TCAP in its assessment of the importance of undisturbed landscape features such as karst features, floodplains, and wetlands.	This comment has been documented in the appendix of the Final Flood Plan.
N/A	12d	N/A	Public	N/A	Comment from Marty Kelly (TPWD, sent after deadline for comments): 4. The proposed FMXs include numerous infrastructure projects that may affect the aquatic habitats that are prioritized in the TCAP. For example, the removal of low-water crossings can benefit rare species such as mussels and fish if the crossing is replaced with a bridge or culvert that does not form a barrier to species movement (see comment 2). Conversely, building dams and channelizing streams can adversely affect aquatic habitats and species. As such, TPWD requests that a technical committee be formed to review FMXs. An Environmental Review Technical Committee could provide input on avoiding impacts to rare species and habitats, ensuring that the projects align with the TCAP. An environmental review at early stages of projects can benefit the project later at the permitting stage as well.	This comment has been documented in the appendix of the Final Flood Plan. RFPG may consider this for future planning cycles; however, it is important to note that the Sponsors are responsible for developing and implementing projects (including environmental reviews and permitting). As such, the RFPG would need to determine if this falls within its authority prior to initiating action.
N/A	12e	N/A	Public	N/A	Comment from Marty Kelly (TPWD, sent after deadline for comments): 5. If environmental issues that would be a hurdle to permitting are recognized and addressed in advance of the permit application. TPWD is working to prevent the need for a federal listing of rare species and has found that working in collaboration with developers can minimize impacts to rare species and habitats.	This comment has been documented in the appendix of the Final Flood Plan.

TWDB Comment No.	Public Comment No.	Task No.	Type of Comment	Level 1 or 2	Description	Response
N/A	12f	N/A	Public	N/A	Comment from Marty Kelly (TPWD, sent after deadline for comments): 6. The draft report's legislative recommendation 8.1.10 for additional funding for conservation easements along streams and in floodplains is especially beneficial for Texas wildlife and plants, including SGCNs. The administrative and regulatory recommendations include many nature-based solutions for flood control that will benefit wildlife, fish, and plants. TPWD supports these recommendations and appreciates their inclusion in the plan.	This comment has been documented in the appendix of the Final Flood Plan.
N/A	12g	N/A	Public	N/A	Comment from Marty Kelly (TPWD, sent after deadline for comments): 7. The Draft Guadalupe Flood Plan includes a number of channel improvement projects which may include widening, deepening, and straightening streams. Channelization and over-widening of streams slows flow, which increases deposition of sediment, decreases fish habitat, increases water temperatures, and can result in channel erosion. Streams in good condition naturally reach bank-full and start spilling onto the floodplain during a 1.5 to 2-year flood event. Widening and deepening a stream channel to force it to contain the 100-year flow negatively impacts the adjacent water table and riparian area and has geomorphic effects upstream and downstream of the modification. If channelization is necessary, constructing a two-stage channel with a low-flow channel and a floodplain allows for the continued transport of sediment, habitat for aquatic wildlife, and can reduce maintenance (Rosgen 1996). TPWD encourages the RFPG to protect existing streams, riparian areas, and floodplains.	This comment has been documented in the appendix of the Final Flood Plan.
N/A	12h	N/A	Public	N/A	Comment from Marty Kelly (TPWD, sent after deadline for comments): 8. Based on the document cross-reference supplied by Texas Water Development Board in April 2021, it appears that Task 4B is meant to go in Chapter 5 rather than Chapter 4.	No response needed - TWDB did not provide comments on suggested changes to the organization of the Draft Plan.

TWDB Comment No.	Public Comment No.	Task No.	Type of Comment	Level 1 or 2	Description	Response
N/A	13	N/A	Public	N/A	Comment from Marisa Bruno and Cliff Kaplan (HCA, sent after deadline for comments): Nature-based strategies for flood mitigation tend to be highly effective and less costly than construction-based solutions, while providing additional benefits to local communities and natural systems. For instance, smart floodplain protection policies are not only cost-effective and impactful strategies for flood mitigation, but they also tend to provide the additional benefits of improving aquifer recharge and expanding healthy recreational opportunities for nearby communities and visitors. As such, we strongly recommend the implementation of nature-based solutions to flood mitigation whenever possible. Our partners at the Greater Edwards Aquifer Alliance have written comprehensive recommendations for how we might advance nature-based solutions and protect natural infrastructure through the flood planning process. Their recommendations fully capture our own views on Region 11's Draft Regional Flood Plan, and we endorse them completely. Those recommendations are attached: Recommendations Broad and specific recommendations have been collected across the state from RFPG committee members and collaborators, including: 1. increased use and funding for Nature Based Solutions that appropriately weights projects that offer i.social and environmental benefits, ii.reduced environmental impact, iii.cost avoidance for infrastructure replacement, for example https://mediaspace.du.edu/media/David+Skuodas+- +Seeing+the+Forest+and+the+Trees/1_g90zp1xz iv. future flood prevention while also creating resiliency to recover after a natural disaster b. Increased number of trainings and workshops on the use and cost benefit analysis of Nature Based Solutions. c. Improve the modeling software to include soil absorption, geologic porosity, plant interception,	See response to GEAA comments (#76 above)

TWDB Comment No.	Public Comment No.	Task No.	Type of Comment	Level 1 or 2	Description	Response
N/A	14	N/A	Public	N/A	Comment from Tara Bushnoe (UGRA & R11 RFPG Member, sent after deadline for comments): ES-1: It says, "The Upper Guadalupe River Authority has also constructed several impoundments in the upper basin". We did construct Nimitz dam and then sold that to the City of Kerrville, but that is the only on river impoundment we constructed. I think this sentence was added in reference to a comment we made on chapter 1 mentioning that there are four small impoundments in Kerr County. UGRA did not construct all of these. Could the sentence be changed to "There are also several smaller impoundments in the upper basin as well." Section (Page) 1-3: Same comment as above. Consider changing last sentence to: "There are also several smaller impoundments in the upper basin that have an impact on flood storage as well." Section (Page) 1-52: I know we made the comment on chapter 1 to add the last sentence, but it sounds like those are on channel dams instead of the small water and sediment control basins that are on dry draws. Consider changing to: Many of the remaining dams in the Guadalupe River Basin are NRCS regional flood control structures and water and sediment control basins constructed by UGRA based on the NRCS model for regional flood control structures.	Wording in the executive summary and Chapter 1 was revised.

Public and State Agency Comments on Final Flood Plan and RFPG Responses

TWDB Comment No.	SOW Task No.	Task Name	Item Type	Ex C Item	Ex D Table No.	Ex D feature class	Level 1	Level 2	RFPG Response
1	1	Entities	GIS feature class		1	Entities	***There appear to be invalid entries for the 'ACTIVE' field. Please populate these fields for all entries using only values on the Exhibit D Table 1 list of valid entries (Yes, No).		NULLs were used based on TWDB's comments on the draft regional flood plan, "Please leave NULL to represent either "not applicable" or "unknown"" for this feature class. We believe no changes are needed. Please confirm.
2	1	Existing Infrastructure	GIS feature class		6	ExFldInfraLn	There appear to be invalid entries for the 'INFRA_TYPE' field. Please populate these fields for all entries using only values on the Exhibit D Table 6 list of valid entries. Valid entries for 'INFRA_TYPE' are River, Tributary, Levee, Sea Barrier, Sea Wall, Revetment, Tidal barrier, Tidal Gate, Stormwater Tunnel, Stormwater Canal, Dam, Weir, Storm Drain System, Other.		Updated field with valid entries.
3	1	Existing Infrastructure	GIS feature class		7	ExFldInfraPt	The required field 'DESCR' appears to be blank for several entries. Please populate.		Populated with descriptions.
4	2A	Existing Hazard	GIS feature class		9	ExFldHazard	The entries for EXHAZ_ID do not appear to match the required format of 2-digit region number plus 10 additional digits. Please use the specified format for all ID fields.		Updated to match required format.
5	2A	Existing Exposure	Table	Table 3			Roadway Stream Crossings in Unknown% annual risk is 0 in the geodatabase as opposed to 4 in the Exhibit C Table 3. Please reconcile.		We cross-checked and confirmed that the total was 4 in the geodatabase, Exhibit C excel table, and Exhibit C appendix printed table. We believe no changes are needed. Please confirm.
6	2A	Existing Exposure +	GIS feature class		14	ExFldExpAll	Roadway Stream Crossings in Unknown% annual risk is 0 in the geodatabase as opposed to 4 in the Exhibit C Table 3. Please reconcile.		We cross-checked and confirmed that the total was 4 in the geodatabase, Exhibit C excel table, and Exhibit C appendix printed table. We believe no changes are needed. Please confirm.
7	2A	Existing Exposure +	GIS feature class		14	ExFldExpAll		Critical infrastructure such as 'EMS' and 'Police' appear to be missing, Please review and reconcile as appropriate.	We will review and revise in the Amended Plan, as necessary.
8	2A	Model Coverage	GIS feature class		N/A	ModelCoverage	Please format IDs using proper format. Please reconcile.		Updated to match required format.
9	2A	Model Coverage	GIS feature class		N/A	ModelCoverage	Model ID 110000026 appears to be missing from ModelCoverage feature class.		We did not recieve a model from the Sponsor for this action, only a Preliminary Engineering Report. This ID has been deleted from the Model Coverage feature class.
10	2A	Model Coverage	GIS feature class		N/A	ModelCoverage	FMP IDs appear to be used in place of Model IDs in the ModelCoverage feature class. Please reconcile.		Updated to match required format.
11	2A	Model Coverage	GIS feature class		N/A	ModelCoverage		Several models appear to have mismatched names between TDIS and ModelCoverage feature class. No models appear to have been uploaded to TDIS. Please reconcile.	We intend to upload models to TDIS by April 30, 2023, per communication with TWDB Flood Planning Data Team.
12	2B	Future Hazard	GIS feature class		15	FutFldHazard	The entries for FUTHAZ_ID do not appear to match the required format of 2-digit region number plus 10 additional digits. Please use the specified format for all ID fields.		Updated to match required format.
13	2B	Future Hazard	GIS feature class		15	FutFldHazard	There are 6 Hazards with AREA-SQMI equal to 0. Please review and reconcile as appropriate.		Polygons with 0 area were removed from feature class.
14	2B	Future Exposure +	GIS feature class		19	FutFldExpAll		Critical infrastructure such as 'EMS' and 'Police' appear to be missing, Please review and reconcile as appropriate.	We will review and revise in the Amended Plan, as necessary.
15	3A	Floodplain Management	GIS feature class		20	ExFpMp	There appear to be invalid entries for the 'LEV_ENFRC' and 'LEV_FPMP' fields. Please populate these fields for all entries using only values on the Exhibit D Table 20 list of valid entries. Valid entries for 'LEV_ENFRC' are High, Moderate, Low, None, Unknown. Valid entries for 'LEV_FPMP' are Strong, Moderate, Low, None, Unknown.		Updated field with valid entries.

TWDB Comment No.	SOW Task No.	Task Name	Item Type	Ex C Item	Ex D Table No.	Ex D feature class	Level 1	Level 2	RFPG Response
16	4B	FMP	GIS feature class		25	FMP_Haz Post	The entries for POSTHAZ_ID do not appear to match the required format of 2-digit region number plus 6 additional digits. Please use the specified format for all ID fields.		Updated to match required format.
17	5	FME Recs	Table	Table 15			The cumulative estimated population at flood risk is 345,001 in the geodatabase as opposed to 492,684 in the Exhibit C Table 15. Please reconcile.		The value in the geodatabase is correct. Exhibit C Tables 12 and 15 were updated.
18	5	FME Recs	GIS feature class		23	FME	The cumulative estimated population at flood risk is 345,001 in the geodatabase as opposed to 492,684 in the Exhibit C Table 15. Please reconcile.		The value in the geodatabase is correct. Exhibit C Tables 12 and 15 were updated.
19	5	FMP Recs	Table	Table 16			Cumulative estimated population with 1% annual chance flood risk is 76,173 in the geodatabase as opposed to 71,077 in the Exhibit C Table 16. Please reconcile.		The value in the geodatabase is correct. Exhibit C Tables 13 and 16 were updated.
20	5	FMP Recs	Table	Table 16			Cumulative estimated farm & ranch land with 1% annual chance flood risk is 233,994 acres in the geodatabase as opposed to 0 acres in the Exhibit C Table 16. Please reconcile.		The value in the geodatabase is correct. Exhibit C Tables 13 and 16 were updated.
21	5	FMP Recs	GIS feature class		24	FMP	Cumulative Estimated Population at 100-year flood risk is 76,173 in the geodatabase as opposed to 71,077 in the Exhibit C Table 24. Please reconcile.		The value in the geodatabase is correct. Exhibit C Tables 13 and 16 were updated.
22	5	FMP Recs	GIS feature class		24	FMP	Cumulative Estimated farm & ranch land at 100-year flood risk (acres) is 233,994 in the geodatabase as opposed to 0 in the Exhibit C Table 24. Please reconcile.		The value in the geodatabase is correct. Exhibit C Tables 13 and 16 were updated.
23	5	FMP Recs	GIS feature class		24	FMP		Cumulative Estimated Project Cost ($) is 155,561,000 in the geodatabase as opposed to 155,543,000 in the Exhibit C Table 24. Please reconcile.	We will review and revise in the Amended Plan, as necessary.
24	5	FMP Recs	GIS feature class		24	FMP		FMP_ID 113000060 has a higher total population at 1% flood risk than the max of day and night populations. Please reconcile.	We will review and revise in the Amended Plan, as necessary.
25	5	FMP Details	GDB	3.10.C		3.11.3 [FMP_Details]	The cumulative traffic count for LWCs is 1,066,892 in the FMP feature class as opposed to 0 in FMP_Details. Please reconcile.		This has been fixed in the FMP Details geodatabase table. There appears to be an error in this column of the FMP Details spreadsheet that does not allow for general text to be entered.
26	5	FMP Details	GDB	3.10.C		3.11.3 [FMP_Details]	Twenty projects appear to have population discrepancies between the FMP feature class and in FMP_Details. Please reconcile.		The value in the geodatabase is correct. Project details spreadsheet and geodatabase table was updated.
27	5	FMP Recs	Table				Please include a table or a reference to it in the body of the report, listing each recommended FMP, how no negative impact was determined, either via a model, a study or engineering judgement, listing of the model name and unique model ID, study name, or engineering judgement description and submit the associated model. We acknowledge that Appendix 2-C includes this information in multiple tables.		The following reference is included in Page 5-14 of the report, "A list of associated models and engineering studies that support the evaluation of no negative impacts is presented in Appendix 2-C." We have revised the appendix table to conform with TWDB template provided.
28	5	FMS Recs	Table	Table 17			Cumulative estimated population with 1% annual chance flood risk is 313,190 in the geodatabase as opposed to 445,095 in the Exhibit C Table 17. Please reconcile.		The value in the geodatabase is correct. Exhibit C Table 14 was updated. This value does not appear in Exhibit C Table 17.
29	5	FMS Recs	Table	Table 17			Cumulative estimated farm & ranch land with 1% annual chance flood risk is 1,801,257 acres in the geodatabase as opposed to 169 in the Exhibit C Table 17. Please reconcile.		The value in the geodatabase is correct. Exhibit C Table 14 was updated. This value does not appear in Exhibit C Table 17.
30	5	FMS Recs	Table	Table 17			Cumulative Estimated farm & ranch land removed from 1% annual chance risk is 0 acres in the geodatabase as opposed to 1,801,257 in the Exhibit C Table 17. Please reconcile.		The value in the geodatabase is correct. Exhibit C Table 14 was updated. This value does not appear in Exhibit C Table 17.
31	5	FMS Recs	Table	Table 17				The cumulative residential structures with 1% annual chance flood risk is 94,390 in the geodatabase as opposed to 92,235 in the Exhibit C Table 17. Please reconcile.	The value in the geodatabase is correct. Exhibit C Table 14 was updated. This value does not appear in Exhibit C Table 17.
32	5	FMS Recs	GIS feature class		26	FMS	Cumulative estimated population with 1% annual chance flood risk is 313,190 in the geodatabase as opposed to 445,095 in the Exhibit C Table 17. Please reconcile.		The value in the geodatabase is correct. Exhibit C Table 14 was updated. This value does not appear in Exhibit C Table 17.

TWDB Comment No.	SOW Task No.	Task Name	Item Type	Ex C Item	Ex D Table No.	Ex D feature class	Level 1	Level 2	RFPG Response
33	5	FMS Recs	GIS feature class		26	FMS	Cumulative estimated farm & ranch land with 1% annual chance flood risk is 1,801,257 acres in the geodatabase as opposed to 169 in the Exhibit C Table 17. Please reconcile.		The value in the geodatabase is correct. Exhibit C Table 14 was updated. This value does not appear in Exhibit C Table 17.
34	5	FMS Recs	GIS feature class		26	FMS	Cumulative Estimated farm & ranch land removed from 1% annual chance risk is 0 acres in the geodatabase as opposed to 1,801,257 in the Exhibit C Table 17. Please reconcile.		The value in the geodatabase is correct. Exhibit C Table 14 was updated. This value does not appear in Exhibit C Table 17.
35	5	FMS Recs	GIS feature class		26	FMS		The cumulative residential structures with 1% annual chance flood risk is 94,390 in the geodatabase as opposed to 92,235 in the Exhibit C Table 17. Please reconcile.	The value in the geodatabase is correct. Exhibit C Table 14 was updated. This value does not appear in Exhibit C Table 17.
36	8	Policy Recs	Text	Section 2.8				Chapter 8 appears to include the following recommendations that were not in the Region 11 Draft Regional Flood Plan: Legislative Recommendations IDs 8.1.9, 8.1.10, and 8.1.11; and Administrative Recommendations ID 8.2.13. Please confirm that these recommendations were added as a result of public comments received.	We confirm that these were added as a result of public comments received.
37	All	Accessibility			Section 2.2			Figures alternative text and other elements alternative text failed in accessibility check. Please consider adding alternative text as appropriate.	We will review and revise in the Amended Plan, as necessary.
38	All	Accessibility			Section 2.2		We noted 37 failures when reviewing the PDF submittal with the Adobe Acrobat accessibility full check. At a minimum, please ensure that the following document properties are satisfied. PDF documents must have a very good document title, the primary language must be set to English, and the primary view must be set to document title. PDFs must also be tagged documents.		We remedied major accessibility issues noted, with a focus on the written plan document Volume 1 and the minimum list provided in the TWDB comment. Given the short turnaround timeframe and problems incurred in Appendices with the auto-tagging function, we were not able to address all issues in this resubmittal. Please advise if additional adjustments are required for approval. We plan to continue to make adjustments in the Amended Plan documents, including troubleshooting various ways of exporting files from ArcGIS and Excel to fix tagging issues.

Appendix 10-F | Public Involvement Plan

REGION 11 GUADALUPE REGIONAL FLOOD PLANNING GROUP – PUBLIC INVOLVEMENT PLAN

Prepared for the Guadalupe Regional Flood Planning Group

Prepared by Freese and Nichols, Inc.

FREESE AND NICHOLS

Blanton & Associates, Inc.

ENVIRONMENTAL CONSULTING • PLANNING • PROJECT MANAGEMENT

TWDB Contract No. 2101792496

September 2021

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1.0 INTRODUCTION

The Freese and Nichols, Inc. Team (FNI Team) was retained by the Guadalupe-Blanco River Authority (GBRA), on behalf of the Region 11 Guadalupe Regional Flood Planning Group (RFPG), to develop the 2023 Guadalupe Regional Flood Plan (the Project) through a transparent process where public input and participation is welcomed and encouraged. GBRA is the project sponsor. As part of this process, the Texas Water Code (TWC) Section 16.062 and Title 31 Texas Administrative Code (TAC) Chapter 361 require public notice and input opportunities. GBRA is responsible for ensuring all public notice and participation activities are carried out as required by the TWC and 31 TAC. The FNI Team prepared this Public Involvement Plan (PIP) for the RFPG to supplement those legally required efforts with opportunities to encourage and obtain meaningful public and stakeholder input throughout the planning process. As a member of the FNI Team, Blanton & Associates, Inc. (B&A) will provide support in implementation of this PIP.

1.1 Background

In 2019, the Texas Legislature created and funded the first-ever regional and state flood planning process in response to historic flooding and the need for flood planning. The regional flood plans are to be delivered to the Texas Water Development Board (TWDB) by January 10, 2023, and then every five years thereafter. The state flood plan will be adopted by September 1, 2024, and then every five years thereafter. The planning process is intended to be a "bottom up" approach with the regional flood plans informed by the local communities. The planning process is also intended to be a transparent process with opportunities for public input. The objectives of the regional flood plans (RFPs) are to: 1) document existing flood infrastructure and preparedness; 2) identify current and future flood risk and hazard; 3) develop flood mitigation/management goals; 4) identify and evaluate flood management strategies and mitigation projects; and 5) evaluate benefits/impacts to the water supply, environment, and economics. Through this process administered by the TWDB, the state designated 15 flood planning area regions, including the Region 11 Guadalupe Flood Planning Region (see **Figure 1**). The planning area boundaries for each region are based upon watersheds (e.g., river basins) rather than political boundaries. The Project study area extends from the Hill Country in Real and Kerr counties in the northern part of the river basin, southeastward to the Texas Coast in Calhoun County (See **Figure 2**).

The flood planning process for Region 11 is administered by GBRA and led by a committee of volunteer members, or the RFPG. The RFPG is composed of 15 members, with one member representing each of the following interests: general public, agriculture, small business, industries, environmental, electric generating utility, water utility, flood districts, and water districts; and two members representing each of the following interests: municipalities, counties, and river authorities. The members represent the interests of organizations throughout the Guadalupe River Basin. The RFPG meetings are held monthly.

1.2 Public Involvement Summary

Public involvement and participation are critical to the success of the regional flood planning process. The *Regional Flood Planning Public Notification Quick Reference* (**Attachment A)** was prepared by the TWDB and identifies all of the TWC and 31 TAC requirements for public notice and public comment.

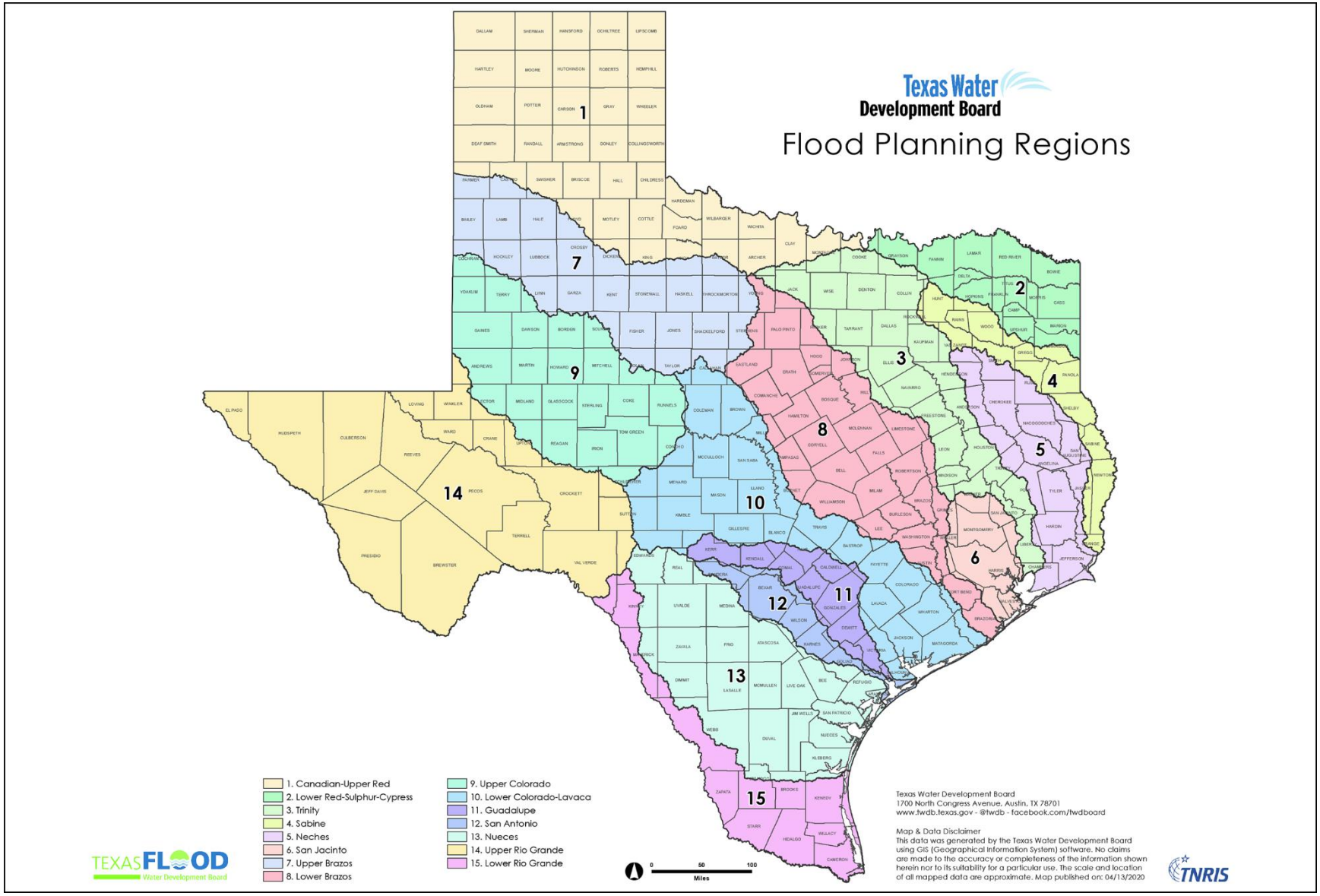

Figure 1. Fifteen Flood Planning Regions in Texas

Source: TWDB 2020 https://data.tnris.org/894ad055-a134-470a-a133-55f0818aaceb/assets/7452fc9b-4848-4630-88b2-1476123a9680-FPR_8.5x11.pdf

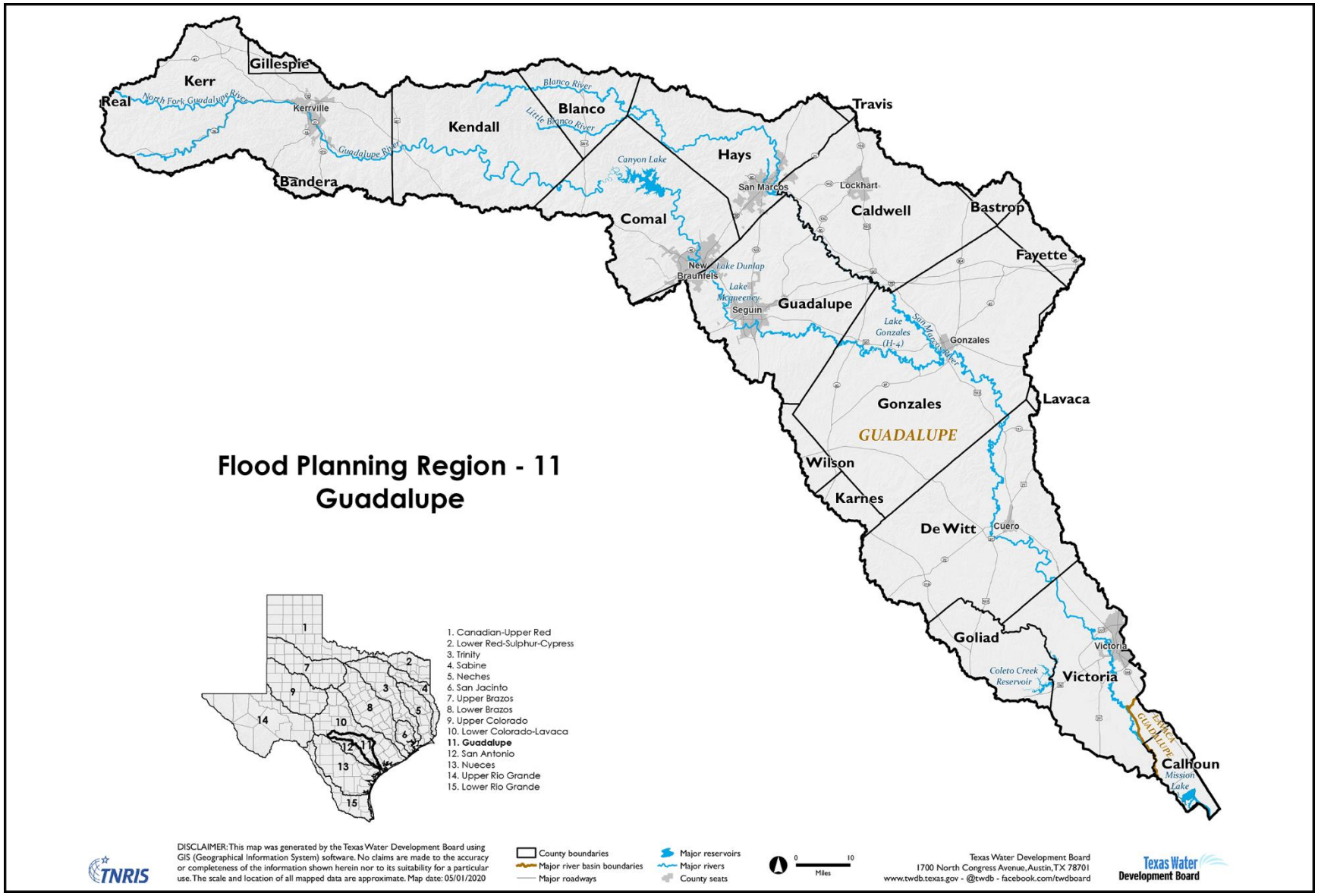

Figure 2. Region 11 Guadalupe Flood Planning Region
Source: TWDB 2020 https://data.tnris.org/894ad055-a134-470a-a133-55f0818aaceb/assets/35b2e2ad-4c5b-4df6-8f0f-8528f17af542-FPR_11_Guadalupe_8.5x11.pdf

As mentioned previously, all legal notice requirements are being met by the GBRA[1]. In addition, the RFPG has expressed a desire to encourage public input and comment in a manner that exceeds the requirements in the TWC and 31 TAC. Towards this end, the FNI Team will implement the following strategies:

- Develop an extensive public and stakeholder contact list;
- Develop and implement an interactive map tool to place on the RFPG website to gather information about flood prone areas and existing flood management efforts through the use of forms and surveys;
- Identify and evaluate opportunities to enhance available information on the RFPG website;
- Use social media accounts to post messages about upcoming RFPG meetings and activities;
- Develop and implement a virtual public meeting tool to supplement the in-person RFPG meetings, as applicable; and
- Review and report on all public comments received through either the RFPG website.

Each of these strategies are discussed in detail below in **Section 3.0**.

2.0 PUBLIC AND STAKEHOLDER INVOLVEMENT STRATEGIES

The public and stakeholder involvement will emphasize two-way communication between the public and stakeholders and the RFPG. The RFPG will strive to maintain proactive communication and information dissemination during the planning process so the public and stakeholders are informed and know where to find information or who to speak with should they have any information, comments, questions, or concerns.

Through this PIP, the public and stakeholders will be informed and provided opportunities to express their views, opinions, and concerns, and to share data and information relevant to the flood planning process. This PIP provides an outline of proposed public and stakeholder involvement throughout the planning process. A general list of RFPG, GBRA and FNI Team roles and responsibilities is included as **Attachment B.** A public and stakeholder involvement schedule for each meeting or hearing, as discussed below, will be refined throughout the process. This PIP will be implemented through the strategies and activities described below, which are intended to provide a broad range of opportunities to reinforce public and stakeholder engagement and participation. Adhering to COVID-19 safety protocols for these meetings will be encouraged.

2.1 Public and Stakeholder Contact List

So as not to duplicate efforts with the Texas General Land Office (GLO) regional flood study that includes the Guadalupe River Basin, the FNI Team will prepare a public and stakeholder contact list by starting with

[1] This PIP does not address efforts to comply with the legal requirements for notices in the TWC and the TAC, nor the FNI Team's efforts to draft Chapter 10 of the RFP related to documenting and responding to all comments received during the 60-day public comment period required by TWC §16.062(f) - (g) and 31 TAC §361.21(h)(3).

the list compiled by the GLO. Consistent contacts (e.g., county judges, mayors, etc.) with those included in the GLO study area counties will be added to the list for those counties outside of the GLO study area (e.g., Bandera, Blanco, Gillespie, Hays, Kendall, Kerr, Real, and Wilson counties). The team will also review the list for contact categories that may need to be added (e.g., legislators).

To date, the list includes approximately 400 contacts and reflects the following public and stakeholder contact categories:

- Legislators – Governor, Lieutenant Governor, Speaker of the House of Representatives, Senators, and Representatives.
- County Judges and County Commissioners
- Mayors, City Councilmembers, and City Administrators/Managers
- County Floodplain Administrators
- Emergency Management staff
- County Engineers
- County Public Works Directors
- City Public Works Directors
- Fire Chiefs
- River Authorities
- Groundwater Conservation Districts
- Regional Water Planning Group members
- Environmental Organizations

This list will continue to be updated as the Project proceeds and more of the public and stakeholders become aware of the RFPG's efforts and request to be added to the list. This extensive list will be used to carry out the public outreach activities noted below for RFPG meetings.

2.2 Interactive Mapping Tool and Surveys

The FNI Team will create an interactive tool consisting of a map of the Guadalupe River basin. The map will be accompanied by either 1) a form for the public to complete to add their comments and information regarding flood prone areas and flood strategies or projects in their communities: or 2) a survey for agency representatives to complete providing more detailed information about flood risks and projects in their communities. The interactive tool will be linked on the RFPG website and will be "live" for the duration of the Project. Information uploaded to the interactive tool beyond a date to be determined by the FNI Team will not be considered for the 2023 Regional Flood Plan and will be stored for use in the next regional flood planning cycle.

2.3 GBRA Website Information

In addition to the interactive tool to be linked to the Region 11 Guadalupe Regional Flood Plan website, the FNI Team will also look for opportunities to supplement information on the website with information or announcements that will help to inform the public and stakeholders. These include posting a summary announcement of upcoming RFPG meetings and the Project schedule to provide the public and stakeholders information on project progress and opportunities for participation.

2.4 Social Media

The FNI Team will work with GBRA staff to create posts for project social media accounts that are established by GBRA. The FNI Team will submit drafts of the posts to GBRA staff at least ten days before each meeting so that GBRA staff can review and approve the drafts and then post them at least seven days before the event.

2.5 Virtual Public Meeting Format

One of the strategies for this PIP is to support certain in-person RFPG public meetings by enabling participation across the entire Project area through a Virtual Public Meeting (VPM) format. The FNI Team, at the direction of the RFPG, will present the RFPG in-person meeting content (Project information) in a "virtual meeting room" with information stations located throughout the room. At the start of the meeting, meeting attendees (e.g., elected officials, agency representatives, members of the public, etc.) will enter the meeting on-line at the "sign-in" station, where they will be asked to sign in to record their attendance. They will be greeted by a narrator who will guide them through the virtual meeting room and provide information regarding the meeting content (e.g., presentations, display boards, videos, etc.) presented at each station. The meeting attendees will move through the meeting content at their own pace, including re-visiting stations as needed. The final station will provide an opportunity for meeting attendees to post questions or comments. The meeting content can be made available in Spanish or other languages, if requested. This meeting option will go "live" as close to the in-person meeting time as possible and will remain active for two weeks after the date of the in-person meeting.

2.6 Public Comment Tracking, Response, and Reporting

The FNI Team will develop a system for receiving and reviewing all public and stakeholder comments received through either the RFPG website or during a RFPG meeting, responding to each comment, and providing monthly reports to the RFPG of comments and responses. A system for providing a written update to the RFPG and a complete summary of all comments received will be developed.

3.0 GUADALUPE REGIONAL FLOOD PLANNING GROUP MEETINGS

3.1 Monthly Meetings

Awareness of RFPG monthly meetings, which will typically be held on the first Wednesday of every month at GBRA's offices, is critical to encouraging and obtaining public and stakeholder input and support, and

the meetings provide an understandable and convenient means to comment and ask questions. The public and stakeholders will be notified of the opportunity to visit the RFPG's website (http://guadaluperfpg.org/Meetings.aspx) for specific dates, times and locations of all meetings.

To supplement the seven-day meeting notices required by the TWC and 31 TAC and to promote awareness, the FNI Team may perform the following tasks:

Seven days in advance of the meeting:

- Send an email meeting announcement to those on the public and stakeholder distribution list;
- Send an email to the councils of governments that cover some portion of Region 11 to request they post the announcement on their websites;
- Send an email to the San Antonio River Authority, as the South Central Texas Regional Water Planning Group (Region L) Administrator, to request that they post the announcement of the upcoming meeting on the Region L website, and send a copy of the announcement to their Region L members;
- Send an email to the Lower Colorado River Authority, as the Region 10 Lower Colorado River Basin RFPG (Region 10) Sponsor and the San Antonio River Authority as the Region 12 San Antonio River Basin RFPG (Region 12) Sponsor to request that they post the announcement of the upcoming meeting on their websites, and send a copy of the announcement to their RFPG members;
- Send meeting announcement text to GBRA for both the Region 11 RFPG and the GBRA websites; and
- Draft social media post text for GBRA to post on their social media accounts and distribute the message to the RFPG members for them to post on their accounts.

The FNI Team may prepare draft email announcements listed above for each monthly meeting. The team will submit each announcement to GBRA staff for review prior to their notice deadline. The announcements will include information about the meeting, a link to the Region 11 website, and an email address for submitting comments or questions, as applicable. After GBRA staff has approved each announcement, the team will work with GBRA staff to distribute the email announcements. Requests to receive announcements by USPS mail, if any, will be handled accordingly.

3.2 Supplemental Support for Pre-Planning Public Meetings and Other Required Meetings

Texas Water Code §16.062(d), and 31 TAC §§361.12(a)(4) and 361.21(h)(2)(A) require the RFPG to hold two or more pre-planning public meetings to obtain input from the public regarding suggestions and recommendations as to issues, provisions, projects, and strategies to be considered for inclusion during the flood planning cycle and the regional flood plan.

In addition to the pre-planning public meetings, the TWDB's *Technical Guidelines for Regional Flood Planning,* the TWC and/or 31 TAC require the RFPG to obtain public input on: 1) identified flood risk in the region and developed a map summarizing the risk; 2) flood mitigation and floodplain management goals

as they relate to existing flood risk per the TWC; 3) a process for identifying potential flood management evaluations (FMEs) and potentially feasible flood management strategies (FMSs) and flood management projects (FMPs); 4) the final RFP; 5) amendments to the RFP; and 6) changes to the RFPG membership.

To supplement the 14-day meeting notices required by the TWC and 31 TAC, to promote awareness of these public meetings, and to help encourage public and stakeholder participation and input, the FNI Team may perform the following tasks:

21 days in advance of the meeting:

- Send an email meeting announcement to those on the public and stakeholder distribution list;

Seven days in advance of the meeting

- Send a reminder email meeting announcement to those on the public and stakeholder distribution list;
- Send an email to the councils of governments that cover some portion of Region 11 to request they post the announcement on their websites;
- Send an email to the San Antonio River Authority, as the South Central Texas Regional Water Planning Group (Region L) Administrator, to request that they post the announcement of the upcoming meeting on the Region L website, and send a copy of the announcement to their Region L members;
- Send an email to the Lower Colorado River Authority, as the Region 10 Lower Colorado River Basin RFPG (Region 10) Sponsor and the San Antonio River Authority as the Region 12 San Antonio River Basin RFPG (Region 12) Sponsor to request that they post the announcement of the upcoming meeting on their websites, and send a copy of the announcement to their RFPG members;
- Send meeting announcement text to GBRA for both the Region 11 RFPG and the GBRA websites; and
- Draft social media post text for GBRA to post on their social media accounts and distribute the message to the RFPG members for them to post on their accounts.

Three days in advance of the meeting

- Send text to GBRA staff to incorporate into media advisories announcing upcoming meeting.

The FNI Team may prepare draft email announcements listed above for each pre-planning public meeting. The team will submit each announcement to GBRA staff for review prior to their notice deadline. The announcements will include information about the meeting, a link to the RFPG website, and an email address for submitting comments or questions, as applicable. After GBRA staff has approved each announcement, the team will work with GBRA staff to distribute the email announcements. Requests to receive announcements by USPS mail, if any, will be handled accordingly.

A general checklist of action items to be completed and RFPG, GBRA and FNI Team roles and responsibilities are included as **Attachment B.** The meeting facilities will be selected and reserved by GBRA staff, in close coordination with the RFPG. GBRA will attempt to identify facilities that provide adequate capacity, ample parking, and ample room/space to disseminate information, and ideally, the meeting facilities will be located within the Project study area. The team will endeavor to secure meeting facilities that are free of charge.

These meetings will be conducted so that attending stakeholders and the public can listen to the information being presented and view the presentation by the FNI Team. The team may distribute informational materials, such as Project-related handouts, and may present Project exhibits/display boards, etc. Informed and easily identifiable FNI Team members will register attendees, address questions and comments, and guide attendees through the public meeting process at the in-person meetings. These meetings will be convened in-person to take place after business hours and may be supplemented by a VPM format.[2] The RFPG will determine when the meetings will go "live." During the two-week VPM comment period, the public and stakeholders will be able to view the same information that was reviewed during the in-person meeting and will be able to leave comments or add their contact information in the virtual meeting room for the Project. After the two-week comment period, the virtual public meeting room information will remain accessible through the RFPG website so people can view the information; however, adding comments or contact information will not be possible after the end of the comment period. The virtual public meeting room information will be available for educational purposes only after the two-week comment period closes (see discussion above in **Section 2.5**).

The virtual public meeting room information will encourage the public and stakeholders to use the interactive map tool (discussed above in **Section 2.2**) to enter comments and sign up to receive information through a link to the RFPG website.

3.3 Draft Regional Flood Plan Public Meeting

Texas Water Code §16.062(f) - (g) and 31 TAC §361.21(h)(3) require the RFPG to hold one or more public meetings to obtain input from the public on the draft RFP. To supplement the 30-day meeting notice and the 60-day public comment period required by the TWC and 31 TAC, to promote awareness of the public meeting(s), and to help encourage public and stakeholder participation and input, the FNI Team may perform the following tasks:

Seven days in advance of the 30-day meeting notice and the beginning of the 60-day public comment period:

- Send an email announcement to those on the public and stakeholder distribution list;

[2]This VPM supplement will need to be reviewed with TWDB staff to determine if a virtual meeting option is possible and what meeting notice requirements will apply.

Seven days in advance of the meeting:

- Send a reminder email meeting announcement to those on the public and stakeholder distribution list;
- Send an email to the councils of governments that cover some portion of Region 11 to request that they post the announcement on their websites;
- Send an email to the San Antonio River Authority, as the South Central Texas Regional Water Planning Group (Region L) Administrator, to request that they post the announcement of the upcoming meeting on the Region L website, and send a copy of the announcement to their Region L members;
- Send an email to the Lower Colorado River Authority, as the Region 10 Lower Colorado River Basin RFPG (Region 10) Sponsor and the San Antonio River Authority as the Region 12 San Antonio River Basin RFPG (Region 12) Sponsor to request that they post the announcement of the upcoming meeting on their websites, and send a copy of the announcement to their RFPG members;
- Send meeting announcement text to GBRA for both the Region 11 RFPG and the GBRA websites; and
- Draft social media post text for GBRA to post on their social media accounts and distribute the message to the RFPG members for them to post on their accounts.

Three days in advance of the meeting:

- Send text to GBRA staff to incorporate into media advisories announcing upcoming meeting.

The FNI Team may prepare draft email announcements listed above for the public meeting. The team will submit each announcement to GBRA staff for review prior to their notice deadline. The announcements will include information about the meeting, a link to the draft RFP on the RFPG website, and an email address for submitting comments or questions, as applicable. After GBRA staff has approved each announcement, the team will work with GBRA staff to distribute the email announcements. Requests to receive announcements by USPS mail, if any, will be handled accordingly.

This plan presumes at least one in-person meeting will be held for this purpose after hours. A general checklist of action items to be completed and RFPG, GBRA and FNI Team roles and responsibilities are included as **Attachment B.** The meeting facility will be selected and reserved by GBRA staff, in close coordination with the RFPG.

The public meeting will be conducted so that attending stakeholders and the public can listen to the information being presented and view the presentation by the FNI Team. The team may distribute informational materials, such as Project-related handouts, and may present Project exhibits/display boards, etc. Informed and easily identifiable FNI Team members will register attendees, address questions and comments, and guide attendees through the public meeting process at the in-person meeting.

The in-person meeting may also be supplemented by a virtual public meeting.[3] The virtual public meeting will be made available to access so the "meeting room" content is accessible for the entire 60-day public comment period. During the comment period, the public and stakeholders will be able to view the same information that was reviewed during the in-person meeting and will be able to leave comments or add their contact information in the virtual meeting room.

4.0 CONCLUSION

Flood planning for the Guadalupe River Basin is a transparent, public process where public and stakeholder participation is welcome and encouraged. It is the intent of the RFPG that the public and stakeholders understand that their insight is valuable and with it, the RFPG will be better able to address the flood needs of all communities in the Guadalupe River Basin, and to help identify potential funding for these much-needed projects.

The outreach activities included in this PIP for the Project will allow the public and stakeholders to be informed about the Project and will encourage their interaction with the RFPG, GBRA, and the FNI Team. Overall, implementation of this PIP is intended to increase awareness of the regional flood planning process and allow any interested parties to play a role in the development of the 2023 Guadalupe Regional Flood Plan.

[3]This virtual public meeting supplement will need to be reviewed with TWDB staff to determine if a virtual meeting option is possible and what meeting notice requirements will apply.

Attachment A

TWDB *Regional Flood Planning Public Notification Quick Reference*

Regional Flood Planning Public Notification Quick Reference*

Note: Consult 31 Texas Administrative Code (TAC) Chapters 361 and 362 and Texas Open Meetings Act for details.

Texas Water Development Board

Public Notifications		TAC Rule	Regional Flood Planning Group (RFPG) Action													
			Regular RFPG meetings	RFPG committee, subcommittee, and subgoup meetings	Requesting funds from the Board	Amendments to the RFP scope of work or budget	Submitting established deliverables to the Board or EA including technical memorandums	Selecting RFPG members to fill voting and non-voting position vacancies	Pre-planning public meetings to obtain input on development of the next RFP	Determining flood mitigation and floodplain management goals	Approving process for identifying potential FMEs and potentially feasible FMSs and FMPs	Adoption of the final RFP	Amendments to RFPs	Changing the number of and representation make-up of RFPG membership	First meeting at which the planning group will take public input related to the RFPG's draft RFP	Subsequent meetings at which the planning group will take public input related to the RFPG's draft RFP
Meeting Notice Requirements																
OPEN MEETINGS & PUBLIC INFORMATION ACTS	Each RFPG and any committee or subcommittee of an RFPG are subject to Chapters 551 [Open Meetings Act] and 552 [Public Information Act], Government Code.	361.21(a)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
MINIMUM NOTICE (calendar days)	**7 days prior to the meeting**	361.21(h)(1)	✓	✓	✓	✓	✓	✓								✓
	14 days prior to the meeting	361.21(h)(2)							✓	✓	✓	✓	✓	✓		
	30 days prior to the meeting	361.21(h)(3)													✓	
CONTENT TO INCLUDE	Date, time, and location of the public meeting or hearing; Summary of the proposed action to be taken; The name, telephone number, email, and address of a RFPG contact to whom questions or requests for additional information may be submitted; A statement of how and when comments will be received from the members and public.	361.21(g)(1-4)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Information on how the public may submit comments	361.21(h)(3)(E)													✓	✓
	Summary of the regional flood plan	361.21(h)(3)(D)													✓	✓
ENTITIES TO NOTIFY	All voting and non-voting RFPG members	361.21(f)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Any person or entity who has requested notice of RFPG activities	361.21(f)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	All adjacent RFPGs	361.21(h)(3)(C)													✓	✓
WHERE TO POST	On the website of the RFPG	361.21(g)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Texas Secretary of State website	361.21(g)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Other Rule Requirements																
WRITTEN COMMENT PERIOD (calendar days)**	14 days prior to the meeting	361.21(h)(2)							✓	✓	✓	✓	✓	✓		
	30 days prior to and 30 days following the meeting	361.21(h)(3)													✓	
MEETING MATERIALS POSTING (calendar days)	3 days prior to and 7 days following the meeting	361.21(h)(2)	✓	✓	✓	✓	✓	✓								✓
	7 days prior and 14 days following the meeting	361.21(h)(2)							✓	✓	✓	✓	✓	✓		
DOCUMENT PROVISION	The draft plan must be made available for public inspection online and a hard copy of the draft plan must be made available for public inspection in at least three publicly accessible locations within the region for at least 30 days prior to the first meeting and 30 days following the first meeting.	361.21(h)(3)(A,F)													✓	

***IMPORTANT NOTES**

All meetings of subsets of the RFPG that constitute a quorum of the RFPG must be noticed appropriately.
The best reference material for RFPG members to ensure that they are in compliance with notice requirements is the Texas Attorney General Office "Open Meetings Handbook 2020" available at: https://www.texasattorneygeneral.gov/sites/default/files/files/divisions/open-government/openmeetings_hb.pdf
The Attorney General's Open Records Division maintains an Open Government Hotline to answer questions regarding open government laws. The Hotline can be reached at (877) 673-6839 (OPENTEX).
To the extent an action by the RFPG could qualify under more than one row of this matrix (for instance, a regular meeting), the stricter notice requirements should be used.
RFPGs may provide notice for various actions in a single notice. However, a document providing notice for multiple actions should describe all actions individually.
RFPGs shall also provide additional region-specific public notice, if any, in accordance with their decision under §361.11(d)(6), including provision of print notices, if applicable.
**RFPGs must provide a means by which it will accept written public comment prior to and after all meetings. Specific timelines prescribed by rule are noted in this section.

UPDATED DECEMBER 2020

Attachment B

List of RFPG, GBRA and FNI Team Roles and Responsibilities

Attachment B

List of RFPG, GBRA and FNI Team Roles and Responsibilities

Tasks	Notes/Questions	Lead	Deadline	Comments
Region 11: Public meeting - Insert date___ at insert location _____				
Notification & Location				
Venue	Confirm reservation.	GBRA		
Gather Stakeholder mailing list		B&A		
Develop Legally Required Notice (comply with notification requirements)	B&A to provide input. 31 TAC 361.21 (g)(1-4)	GBRA		
Translate Legally Required Notice	TBD			
Publish Legally Required Notice	31 TAC 361.21(h)(2) and 31 TAC 361.21 (h)(3) requires 14 days prior to pre-planning meeting and 30 days prior to public input meetings.	GBRA		
Draft Email Announcement		B&A		
Email Announcement to Stakeholders	21 days (pre-planning meeting) or 37 days (input on draft plan meeting) in advance	B&A		
Identify key stakeholders to post announcement at their office and website		B&A		
Draft Reminder Email Announcement		B&A		
Email Reminder Announcement	7 days in advance	B&A		
Draft Media Advisory		GBRA		
Draft Social Media Posts		B&A		
Social Media blast		GBRA and flood planning group members		
Post Meeting Materials	31 TAC 361.21(h)(2) requires to post meeting materials 7 days prior and 14 days following the meeting. Also, post media advisory	GBRA and FNI		
Meeting Materials				
Draft sign-in sheets (public, elected officials, media)		B&A		
Sign-in sheets for Public		B&A		
Sign-in sheets for Elected Officials		B&A		
Sign-in sheets for Media		B&A		
Draft Interactive Tool Questionnaire (English)		FNI and B&A		
Hard Copy of Interactive Tool Questionnaire - English		FNI and B&A		
Draft Interactive Tool Questionnaire (Spanish)	TBD			

Attachment B

List of RFPG, GBRA and FNI Team Roles and Responsibilities

Tasks	Notes/Questions	Lead	Deadline	Comments
Hard Copy of Interactive Tool Questionnaire - Spanish	TBD			
Name Tags (if needed)				
Door Signs (if needed)		B&A		
Draft script for Doug Miller	live and virtual	B&A		
Doug Miller Video	Virtual room	B&A		
Draft Presentation		FNI		
Presentation	live and virtual	FNI		
Draft Welcome Board		FNI and GBRA		
Welcome Board	live and virtual	FNI and GBRA		
Darft Map Display Board		B&A		
Map Display Board	live and virtual	FNI and B&A		
Hard Copy of Presentation	for planning group members. Jay to talk to Lauren	GBRA		
Website Postings	B&A to develop the content.	GBRA		
Handouts		GBRA		
Pre Meeting Room Setup				
Tables		All		
Chairs		All		
Computer		FNI		
Back-up Computer		B&A		
Projectors	Need to confirm			
Back-up Projector		FNI		
Projector Cables	Need to confirm			
Power Extension Cords		FNI		
Clicker		FNI		
Microphones (Sound System)	Need to confirm			
Easels	how many?	B&A		
Pens		B&A		
Laptops for Web Tool Stations (2)	Confirm with F&N	B&A		
Internet Hotspot	Need to confirm			
During Meeting				
Help at Sign In Tables and Distribute Handouts		B&A		
Facilitate Discussion	Coordinate with Doug Miller and GBRA.	GBRA		
Develop Meeting Facilitation Guidelines for Doug Miller	Need to confirm with GBRA.	B&A		
Note Taking		B&A		
Take Photos		GBRA and B&A		

Attachment B

List of RFPG, GBRA and FNI Team Roles and Responsibilities

Tasks	Notes/Questions	Lead	Deadline	Comments
Audio Recording for note taking purposes		B&A		
COVID-19 Protocol (if required by venues)				
Masks	Masks should be provided at sign-in desk with hand sanitizers.	B&A		
Hand Sanitzers		B&A		
6ft Social Distance Tape Markers	B&A will bring if necessary.	B&A		
Disinfectant Wipes		B&A		
Virtual Meeting (360 room) live August 3	*Virtual room will be left online for educational purposes after the two week comment period.*			
Exhibits (same as in-person)	B&A would like materials 30-45 days prior to going live.	B&A		
Electronic Comment/Survey form	Comment period will be open for two weeks after the last in-person meeting	B&A		
Electronic Sign-in form		B&A		
Interactive Comment Map		B&A		
Post Planning and Input Meetings and Virtual Meeting				
Compile Meeting Notes		B&A		
Compile Attendee List		B&A		
Gather Comments provided in-person and electronically		B&A		
Provide Meeting Summary		B&A		