Appendix A. Tables

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TABLE 1. Existing Infrastructure

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Table 2. Summary of Proposed or Ongoing Flood Mitigation Projects

Existing Project ID	RFPG No.	RFPG Name	Project Name	Description	Counties	HUC8s	HUC12s	Watersheds	Project Status	Project Cost	Source of Funding	Dedicated Funding for Construction	Expected Year of Completi	Anticipated Benefit
12000001	12	San Antonio	TXDOT ROAD PROJECTS - BRIDGE REPLACEMENT	TXDOT_ID: 155201011	Karnes	12100303	121003030404	12000023	Ongoing	932474	TXDOT	Y	2022	BRIDGE REPLACEMENT
12000002	12	San Antonio	TXDOT ROAD PROJECTS - BRIDGE REPLACEMENT	TXDOT_ID: 142201009	Karnes	12100303	121003030304	12000041	Ongoing	1326780	TXDOT	Y	2021	BRIDGE REPLACEMENT
12000003	12	San Antonio	TXDOT ROAD PROJECTS - BRIDGE REPLACEMENT	TXDOT_ID: 099102013	Karnes	12100303	121003030205	12000034	Proposed	402500	TXDOT	Y		BRIDGE REPLACEMENT
12000004	12	San Antonio	TXDOT ROAD PROJECTS - BRIDGE REPLACEMENT	TXDOT_ID: 008802062	Goliad	12100303	121003030604	12000049	Proposed	17550000	TXDOT	Y		BRIDGE REPLACEMENT
12000005	12	San Antonio	TXDOT ROAD PROJECTS - CONVERT NON-FREEWAY	TXDOT_ID: 025304138	Bexar	12100301,12100304	121003010103,121003040104	12000005,12000064	Ongoing	187918000	TXDOT	Y	2022	CONVERT NON-FREEWAY
12000006	12	San Antonio	TXDOT ROAD PROJECTS - CONVERT NON-FREEWAY	TXDOT_ID: 002407059	Bexar	12100302	121003020504,121003020502,121003020503,121003020505	12000106,12000107,12000108,12000109	Proposed	110000000	TXDOT	Y		CONVERT NON-FREEWAY
12000007	12	San Antonio	TXDOT ROAD PROJECTS - CONSTRUCT NEW ROAD	TXDOT_ID: 025304146	Bexar	12100301	121003010103	12000005	Ongoing	179542000	TXDOT	Y	2021	CONSTRUCT NEW ROAD
12000008	12	San Antonio	TXDOT ROAD PROJECTS - CONVERT NON-FREEWAY	TXDOT_ID: 245203111	Bexar	12100304	121003040205,121003040206	12000071,12000072	Proposed	300000000	TXDOT	Y		CONVERT NON-FREEWAY
12000009	12	San Antonio	TXDOT ROAD PROJECTS - CONSTRUCT FRONTAGE ROADS	TXDOT_ID: 051602030	Goliad	12100303	121003030507,121003030604	12000046,12000049	Ongoing	11249500	TXDOT	Y	2021	CONSTRUCT FRONTAGE ROADS
12000010	12	San Antonio	TXDOT ROAD PROJECTS - CONVERT NON-FREEWAY	TXDOT_ID: 245203112	Bexar	12100304	121003040202,121003040205	12000069,12000071	Proposed	45888900	TXDOT	Y		CONVERT NON-FREEWAY
12000011	12	San Antonio	TXDOT ROAD PROJECTS - CONSTRUCT FRONTAGE ROADS	TXDOT_ID: 189001046	Bexar	12100301,12100304	121003010106,121003040205	12000007,12000071	Ongoing	14631400	TXDOT	Y	2021	CONSTRUCT FRONTAGE ROADS
12000012	12	San Antonio	TXDOT ROAD PROJECTS - BRIDGE REPLACEMENT	TXDOT_ID: 001608039	Bexar	12100301	121003010105	12000002	Proposed	6694600	TXDOT	Y		BRIDGE REPLACEMENT
12000013	12	San Antonio	TXDOT ROAD PROJECTS - BRIDGE REPLACEMENT	TXDOT_ID: 112101022	Karnes	12100303	121003030402	12000021	Proposed	1490600	TXDOT	Y		BRIDGE REPLACEMENT
12000014	12	San Antonio	TXDOT ROAD PROJECTS - BRIDGE REPLACEMENT	TXDOT_ID: 100902018	Wilson	12100304	121003040402	12000065	Proposed	2029110	TXDOT	Y		BRIDGE REPLACEMENT
12000015	12	San Antonio	TXDOT ROAD PROJECTS - BRIDGE REPLACEMENT	TXDOT_ID: 094302012	De Witt	12100303	121003030601	12000047	Proposed	600000	TXDOT	Y		BRIDGE REPLACEMENT
12000016	12	San Antonio	TXDOT ROAD PROJECTS - BRIDGE REPLACEMENT	TXDOT_ID: 014304072	Wilson	12100304	121003040401	12000060	Proposed	1776500	TXDOT	Y		BRIDGE REPLACEMENT
12000017	12	San Antonio	City Wide - Drainage Improvements Project	City of Seadrift: Drainage Improvement Project	Calhoun	12100403	121004030200	12000074	Proposed	4850939	TX GLO	Y		INCREASE CITY'S RESILIENCE
12000018	12	San Antonio	Drainage System Improvements Project	Calhoun County: Heron Slough Drainage System Improvements Project	Calhoun	12100403	121004030200	12000074	Proposed	11305233	TX GLO	Y		INCREASE DRAINAGE RESILIENCE
12000019	12	San Antonio	City Wide - Drainage and Stormwater Management Plan	City of Marion: Citywide Water and Wastewater Improvements	Guadalupe	12100304	121003040203	12000067	Proposed	9946170	TX GLO	Y		IMPROVE WATER AND WASTEWATER
12000020	12	San Antonio	City Wide - Wastewater Improvements	City of Seadrift: Facilitate proper functioning of critical wastewater-system components	Calhoun	12100403	121004030200	12000074	Proposed	1536580	TX GLO	Y		FACILITATES FUNCTIONING OF CRITICAL STORMWATER SYSTEMS
12000021	12	San Antonio	Seeling Channel Phase 3	COSA_SAPNo_ID: 23-01635	Bexar	12100301	121003010202	12000010	Ongoing	19968900	COSA	Y	2022	IMPROVES DRAINAGE
12000022	12	San Antonio	Barbara Drive Drainage Phase 2	COSA_SAPNo_ID: 23-01623	Bexar	12100301	121003010201	12000008	Ongoing	9665700	COSA	Y	2023	IMPROVES DRAINAGE
12000023	12	San Antonio	San Pedro Creek	COSA_SAPNo_ID: 23-01634	Bexar	12100301	121003010202	12000010	Ongoing	14600000	COSA	Y	2021	IMPROVES DRAINAGE
12000024	12	San Antonio	TXDOT ROAD PROJECTS - CONSTRUCT NEW ROAD	TXDOT_ID: 354404002	Bexar	12100302	121003020503	12000108	Proposed	12572400	TXDOT	Y		CONSTRUCT NEW ROAD
12000025	12	San Antonio	TXDOT ROAD PROJECTS - CONSTRUCT NEW ROAD	TXDOT_ID: 354403002	Medina,Bexar	12100302	121003020307	12000075	Proposed	4009000	TXDOT	Y		CONSTRUCT NEW ROAD

Table 2. Summary of Proposed or Ongoing Flood Mitigation Projects

Existing Project ID	RFPG No.	RFPG Name	Project Name	Description	Counties	HUC8s	HUC12s	Watersheds	Project Status	Project Cost	Source of Funding	Dedicated Funding for Construction	Expected Year of Completi	Anticipated Benefit
12000026	12	San Antonio	TXDOT ROAD PROJECTS - BRIDGE REPLACEMENT	TXDOT_ID: 015503037	Goliad	12100303	121003030603	12000050	Ongoing	3587100	TXDOT	Y	2021	BRIDGE REPLACEMENT
12000027	12	San Antonio	TXDOT ROAD PROJECTS - CONVERT NON-FREEWAY	TXDOT_ID: 002408138	Bexar	12100302	121003020405,121003020504	12000104,12000106	Proposed	10000000	TXDOT	Y		CONVERT NON-FREEWAY
12000028	12	San Antonio	TXDOT ROAD PROJECTS - BRIDGE MAINTENANCE	TXDOT_ID: 010005001	Karnes	12100303	121003030204,121003030202	12000027,12000030	Proposed	394860	TXDOT	Y		BRIDGE MAINTENANCE
12000029	12	San Antonio	County Wide - Flood Planning/Prevention Study	Karnes County Wide Flood Planning/Prevention Study	Atascosa,De Witt,Wilson,Goliad,Karnes	12100204,12100303,12100304,12100202,12100406,12110110,12110111		12000014,12000016,12000019,12000020,12000021,12000022,12000023,12000024,12000025,12000026,12000027,12000030,12000034,12000037,12000040,12000041,12000042,12000043,12000045,12000052,12000057,12000070	Ongoing	618750	TWDB FIF	Y	2020	FLOOD PLANNING / PREVENTION
12000030	12	San Antonio	County Wide - Hazard Mitigation Improvements Project	Refugio County Hazard Mitigation Improvements Project	Aransas,Refugio,Calhoun,Goliad,Victoria	12100303,12100404,12100406,12100405	121003030607,121003030606,121003030608,121004040000,121004060305,121004050304,121004050301,121004050303,121004050302,121004050101,121004050102	12000015,12000018,12000051,12000073	Proposed	6910130	TX GLO	Y		HAZARD MITIGATION IMPROVEMENT
12000031	12	San Antonio	City Wide - Water and Wastewater Improvements	City of Goliad: Wastewater Treatment System Improvements Project	Goliad	12100303	121003030604,121003030603	12000049,12000050	Proposed	93535536	TX GLO	Y		IMPROVE WASTEWATER TREATMENT
12000034	12	San Antonio	County Wide - Street Improvements	Aransas County: Improvement to Streets	Aransas,Refugio,Calhoun	12100404,12100403,12100405	121004040000,121004030200,121004050400,121004050304,121004050307,121004050303,121004050302,121004050102	12000073,12000074	Proposed	53860300	TX GLO	Y		IMPROVEMENT TO STREETS DAMAGED BY FLOODING
12000035	12	San Antonio	County Wide - Storm water conveyances and reducing the impact of future flooding,	Calhoun County: Facilitating proper storm water conveyances and reducing the impact of future flooding, and ensuring emergecy response systems are fully operational during emergency siutations	Aransas,Refugio,Calhoun,Victoria	12100204,12100303,12100402,12100404,12100403,12100405	121002040404,121003030608,121004020500,121004040000,121004030200,121004030100,121004030300,121004050400	12000051,12000073,12000074	Proposed	5936550	TX GLO	Y		FACILITATES STORMWATER CONVEYANCE
12000036	12	San Antonio	County Wide - Buyouts of storm-affected properties	Goliad County: Buyouts of storm-affected properties - approximately 6 homes	De Witt,Refugio,Goliad,Victoria,Karnes	12100204,12100303,12100406,12100405		12000017,12000018,12000025,12000026,12000042,12000043,12000044,12000045,12000046,12000047,12000048,12000049,12000050	Proposed	1583330	TX GLO	Y		BUYOUT OF STORM-AFFECTED PROPERTIES
12000037	12	San Antonio	City Wide - Drainage Improvements Project	City of Goliad: Improve drainage and stormwater infrastructure	Goliad	12100303	121003030604,121003030603	12000049,12000050	Proposed	477108	TX GLO	Y		IMPROVES DRAINAGE
12000038	12	San Antonio	County Wide - Drainage Improvements	Karnes County Improve drainage and stormwater infrastructure	Atascosa,De Witt,Wilson,Goliad,Karnes	12100204,12100303,12100304,12100202,12100406,12110110,12110111		12000014,12000016,12000019,12000020,12000021,12000022,12000023,12000024,12000025,12000026,12000027,12000030,12000034,12000037,12000040,12000041,12000042,12000043,12000045,12000052,12000057,12000070	Proposed	74177	TX GLO	Y		IMPROVES DRAINAGE
12000039	12	San Antonio	County Wide - Buyouts of storm-affected properties	Karnes County Buyouts of storm-affected properties - approximately 12 homes	Atascosa,De Witt,Wilson,Goliad,Karnes	12100204,12100303,12100304,12100202,12100406,12110110,12110111		12000014,12000016,12000019,12000020,12000021,12000022,12000023,12000024,12000025,12000026,12000027,12000030,12000034,12000037,12000040,12000041,12000042,12000043,12000045,12000052,12000057,12000070	Proposed	1725610	TX GLO	Y		BUYOUT OF STORM-AFFECTED PROPERTIES
12000040	12	San Antonio	County Wide - Drainage Improvements Project	Facilitating proper storm water conveyance and reducing the impact of future flooding	De Witt,Refugio,Calhoun,Goliad,Victoria	12100204,12100303,12100402,12100403	121002040205,121002040305,121002040403,121002040304,121002040404,121003030607,121003030605,121003030606,121003030608,121004030100	12000015,12000017,12000018,12000051	Proposed	3515650	TX GLO	Y		FACILITATES STORMWATER CONVEYANCE
12000041	12	San Antonio	Eisenhauer/Northwood-Devonshire Area Ph1	COSA_SAPNo_ID: 23-01628	Bexar	12100301	121003010105	12000002	Ongoing	9462630	COSA	Y	2022	IMPROVES DRAINAGE
12000042	12	San Antonio	Auldine Dr & Burr Oak Dr(Alley - Outfall)	COSA_SAPNo_ID: 23-01622	Bexar	12100301	121003010201	12000008	Ongoing	4355740	COSA	Y	2021	IMPROVES DRAINAGE
12000043	12	San Antonio	Port San Antonio	COSA_SAPNo_ID: 23-01633	Bexar	12100302	121003020406	12000105	Ongoing	28700300	COSA	Y	2022	IMPROVES DRAINAGE
12000044	12	San Antonio	Cedarhurst Dr Area(Dumont to Eaglerock)	COSA_SAPNo_ID: 23-01627	Bexar	12100302	121003020504	12000106	Ongoing	10133600	COSA	Y	2021	STORM DRAINAGE CONSTRUCTION
12000045	12	San Antonio	West Military Drive & Westmar Drive Area	COSA_SAPNo_ID: 23-01639	Bexar	12100302	121003020405	12000104	Ongoing	13637600	COSA	Y	2022	IMPROVES DRAINAGE
12000046	12	San Antonio	Vance Jackson Road Low-Water Crossings	COSA_SAPNo_ID: 23-01638	Bexar	12100301	121003010201	12000008	Ongoing	8103650	COSA	Y	2022	IMPROVE LOW WATER CROSSING
12000047	12	San Antonio	Lake Medina Dam Modifications	Modify the Lake Medina Dam to address safety issues. Install and test post-tension anchors in the abutment sections of the dam.	Medina,Bandera	12100302	121003020303,121003020304,121003020305	12000098,12000099,12000100	Ongoing	4000000	TWDB DFUND	Y		IMPROVES STABILITY OF DAM
12000048	12	San Antonio	City Wide - Drainage Improvements	Bandera City. City-side drainage improvements. Riparian improvements on the Medina River.	Bandera	12100302	121003020203,121003020204	12000088,12000089	Proposed	2430000	TWDB FIF	Y		MITIGATE DAMAGES AND CITY MAINTENANCE ACTIVITIES CAUSED BY FLOOD EVENTS
12000049	12	San Antonio	Marcelinas Study	Marcelinas Study	Wilson,Karnes	12100303,12100304,12110110		12000014,12000016,12000019,12000020,12000022,12000027,12000028,12000030,12000031,12000033,12000034,12000035,12000036,12000037,12000041,12000052,12000053,12000057,12000060,12000065	Proposed		TX GLO	Y		Unknown
12000050	12	San Antonio	San Antonio Bay	San Antonio Bay	Aransas,Calhoun	12100402,12100404,12100403,12100405	121004020500,121004040000,121004030200,121004030100,121004030300,121004050400	12000073,12000074	Proposed		TX GLO	Y		Unknown

Table 3. Existing Condition Flood Risk Summary Table

	RFPG No.	RFPG Name	County	Area in Flood Planning Region (sqmi)	1% Annual Chance Flood Risk									
					Area in Floodplain (sqmi)	Number of Structures in Floodplain	Residential Structures in Floodplain	Population (daytime)	Population (nightime)	Population	Roadway Crossings (#)	Roadways Segments (miles)	Agricultural Areas (sqmi)	Critical Facilities (#)
1	12	San Antonio	Aransas	36.932	12.217	0	0	0	0	0	0	7.477	0.016	0
2	12	San Antonio	Atascosa	15.844	0.962	57	51	32	95	95	1	2.205	0.045	0
3	12	San Antonio	Bandera	526.418	47.944	938	565	788	1027	1027	79	61.398	1.105	3
4	12	San Antonio	Bexar	1220.295	148.206	11261	8308	52003	31084	52003	992	353.048	10.087	99
5	12	San Antonio	Calhoun	146.459	99.621	949	699	332	647	647	3	14.475	1.002	2
6	12	San Antonio	Comal	97.295	10.877	363	269	817	426	817	24	15.022	0.503	34
7	12	San Antonio	De Witt	77.455	10.927	22	6	3	8	8	15	6.976	0.483	0
8	12	San Antonio	Goliad	337.047	91.113	177	62	102	204	204	55	30.113	12.497	0
9	12	San Antonio	Guadalupe	172.968	33.497	2239	1768	8128	5336	8128	86	65.287	4.876	42
10	12	San Antonio	Karnes	596.240	120.558	336	161	195	422	422	97	58.800	22.649	0
11	12	San Antonio	Kendall	127.762	6.970	628	398	1812	1650	1812	32	12.465	0.067	5
12	12	San Antonio	Kerr	59.833	1.267	20	8	6	17	17	4	1.053	0.034	0
13	12	San Antonio	Medina	195.694	23.166	478	299	401	550	550	55	20.457	5.024	3
14	12	San Antonio	Refugio	98.006	37.193	163	67	101	166	166	15	10.128	2.712	1
15	12	San Antonio	Victoria	43.156	26.582	30	11	9	19	19	8	5.101	1.858	1
16	12	San Antonio	Wilson	658.237	129.100	1462	1020	1449	1823	1823	104	89.064	16.790	13
Total				4409.64	800.20	19123	13692	66178	43474	67738	1570	753.07	79.75	203

Table 3. Existing Condition Flood Risk Summary Table

	RFPG No.	RFPG Name	County	Area in Flood Planning Region (sqmi)	0.2% Annual Chance Flood Risk									
					Area in Floodplain (sqmi)	Number of Structures in Floodplain	Residential Structures in Floodplain	Population (daytime)	Population (nightime)	Population	Roadway Crossings (#)	Roadways Segments (miles)	Agricultural Areas (sqmi)	Critical Facilities (#)
1	12	San Antonio	Aransas	36.932	5.574	0	0	0	0	0	0	5.592	0.017	0
2	12	San Antonio	Atascosa	15.844	0.000	0	0	0	0	0	0	0.000	0.000	0
3	12	San Antonio	Bandera	526.418	10.705	663	290	551	637	637	4	20.348	0.179	4
4	12	San Antonio	Bexar	1220.295	9.328	2347	1895	7839	5583	7839	35	44.710	1.762	9
5	12	San Antonio	Calhoun	146.459	25.328	604	457	338	316	338	1	18.604	0.785	2
6	12	San Antonio	Comal	97.295	2.121	286	238	665	323	665	4	4.639	0.097	0
7	12	San Antonio	De Witt	77.455	1.556	25	8	3	9	9	2	1.412	0.077	0
8	12	San Antonio	Goliad	337.047	11.125	110	33	56	130	130	3	8.297	1.297	0
9	12	San Antonio	Guadalupe	172.968	4.080	1570	1355	8080	5882	8080	5	20.323	0.765	3
10	12	San Antonio	Karnes	596.240	17.822	227	94	123	172	172	10	27.294	3.222	0
11	12	San Antonio	Kendall	127.762	0.826	333	208	2510	707	2510	0	4.626	0.027	5
12	12	San Antonio	Kerr	59.833	0.348	14	2	0	6	6	0	0.239	0.006	0
13	12	San Antonio	Medina	195.694	8.525	751	553	1603	1104	1603	4	20.828	4.217	5
14	12	San Antonio	Refugio	98.006	1.894	16	2	8	22	22	0	2.096	0.444	0
15	12	San Antonio	Victoria	43.156	0.998	7	3	1	2	2	0	0.557	0.048	0
16	12	San Antonio	Wilson	658.237	24.111	580	381	370	799	799	6	34.763	5.197	3
Total				4409.64	124.34	7533	5519	22147	15692	22812	74	214.33	18.14	31

Table 3. Existing Condition Flood Risk Summary Table

	RFPG No.	RFPG Name	County	Area in Flood Planning Region (sqmi)	Possible Flood Prone Areas								Average SVI of features in floodplain or flood prone areas
					Area (sqmi)	Number of Structures in Flood Prone Area	Residential Structures in in Flood Prone Area	Population	Roadway Crossings (#)	Roadways Segments (miles)	Agricultural Areas (sqmi)	Critical Facilities (#)	
1	12	San Antonio	Aransas	36.932	0.000	0	0	0	0	0.000	0.000	0	0.474
2	12	San Antonio	Atascosa	15.844	0.000	0	0	0	0	0.000	0.000	0	0.750
3	12	San Antonio	Bandera	526.418	0.000	0	0	0	0	0.017	0.000	0	0.417
4	12	San Antonio	Bexar	1220.295	0.000	0	0	0	0	0.000	0.000	0	0.534
5	12	San Antonio	Calhoun	146.459	0.000	0	0	0	0	0.000	0.000	0	0.788
6	12	San Antonio	Comal	97.295	0.000	0	0	0	0	0.000	0.000	0	0.159
7	12	San Antonio	De Witt	77.455	0.000	0	0	0	0	0.000	0.000	0	0.412
8	12	San Antonio	Goliad	337.047	0.000	0	0	0	0	0.000	0.000	0	0.595
9	12	San Antonio	Guadalupe	172.968	0.000	0	0	0	0	0.000	0.000	0	0.309
10	12	San Antonio	Karnes	596.240	0.000	0	0	0	0	0.000	0.000	0	0.464
11	12	San Antonio	Kendall	127.762	0.054	10	8	26	0	1.159	0.000	0	0.327
12	12	San Antonio	Kerr	59.833	0.000	0	0	0	0	0.000	0.000	0	0.550
13	12	San Antonio	Medina	195.694	0.000	0	0	0	0	0.000	0.000	0	0.391
14	12	San Antonio	Refugio	98.006	0.000	0	0	0	0	0.000	0.000	0	0.628
15	12	San Antonio	Victoria	43.156	0.000	0	0	0	0	0.000	0.000	0	0.439
16	12	San Antonio	Wilson	658.237	0.000	0	0	0	0	0.000	0.000	0	0.480
Total				4409.64	0.05	10	8	26	0	1.18	0.00	0	

Table 5: Future Condition Flood Risk Summary Table

	RFPG No.	RFPG Name	County	Area in Flood Planning Region (sqmi)	1% Annual Chance Flood Risk									
					Area in Floodplain (sqmi)	Number of Structures in Floodplain	Residential Structures in Floodplain	Population (daytime)	Population (nighttime)	Population	Roadway Crossings (#)	Roadways Segments (miles)	Agricultural Areas (sqmi)	Critical Facilities (#)
1	12	San Antonio	Aransas	36.932	17.791	0	0	0	0	0	0	13.069	0.033	0
2	12	San Antonio	Atascosa	15.844	0.962	57	51	32	95	95	1	2.205	0.045	0
3	12	San Antonio	Bandera	526.418	58.648	1601	855	1339	1664	1664	83	81.746	1.284	7
4	12	San Antonio	Bexar	1220.295	157.539	13608	10203	59842	36667	59842	1026	397.758	11.849	108
5	12	San Antonio	Calhoun	146.459	124.950	1553	1156	670	963	963	4	33.078	1.787	4
6	12	San Antonio	Comal	97.295	13.000	649	507	1482	749	1482	28	19.661	0.600	34
7	12	San Antonio	De Witt	77.455	12.484	47	14	6	17	17	17	8.388	0.560	0
8	12	San Antonio	Goliad	337.047	102.239	287	95	158	334	334	58	38.410	13.794	0
9	12	San Antonio	Guadalupe	172.968	37.577	3809	3123	16208	11218	16208	91	85.629	5.640	45
10	12	San Antonio	Karnes	596.240	138.381	563	255	318	594	594	107	86.113	25.871	0
11	12	San Antonio	Kendall	127.762	7.798	961	606	4322	2357	4322	32	17.109	0.093	10
12	12	San Antonio	Kerr	59.833	1.615	34	10	6	23	23	4	1.292	0.039	0
13	12	San Antonio	Medina	195.694	31.692	1229	852	2004	1654	2004	59	41.284	9.241	8
14	12	San Antonio	Refugio	98.006	39.090	179	69	109	188	188	15	12.255	3.156	1
15	12	San Antonio	Victoria	43.156	27.580	37	14	10	21	21	8	5.658	1.906	1
16	12	San Antonio	Wilson	658.237	153.218	2042	1401	1819	2622	2622	110	123.846	21.987	16
Total				4409.64	924.57	26656	19211	88325	59166	90379	1643	967.50	97.89	234

Table 5: Future Condition Flood Risk Summary Table

	RFPG No.	RFPG Name	County	Area in Flood Planning Region (sqmi)	0.2% Annual Chance Flood Risk									
					Area in Floodplain (sqmi)	Number of Structures in Floodplain	Residential Structures in Floodplain	Population (daytime)	Population (nightime)	Population	Roadway Crossings (#)	Roadways Segments (miles)	Agricultural Areas (sqmi)	Critical Facilities (#)
1	12	San Antonio	Aransas	36.932	1.059	0	0	0	0	0	0	2.897	0.003	0
2	12	San Antonio	Atascosa	15.844	0.232	22	19	9	30	30	0	0.472	0.012	0
3	12	San Antonio	Bandera	526.418	15.181	1095	631	938	1363	1363	7	22.146	0.098	5
4	12	San Antonio	Bexar	1220.295	43.917	22277	19061	94501	74892	94501	360	237.517	2.056	151
5	12	San Antonio	Calhoun	146.459	2.335	121	104	11	49	49	2	8.941	0.111	0
6	12	San Antonio	Comal	97.295	2.660	441	382	980	797	980	6	9.525	0.055	1
7	12	San Antonio	De Witt	77.455	4.341	44	12	5	18	18	2	9.799	0.242	0
8	12	San Antonio	Goliad	337.047	25.613	263	114	434	400	434	6	40.699	1.106	3
9	12	San Antonio	Guadalupe	172.968	10.807	1483	1251	4468	4033	4468	7	37.138	1.644	10
10	12	San Antonio	Karnes	596.240	34.492	471	204	408	416	416	21	80.011	3.441	0
11	12	San Antonio	Kendall	127.762	3.025	536	391	1612	1868	1868	11	6.922	0.016	3
12	12	San Antonio	Kerr	59.833	0.899	47	19	5	19	19	0	0.832	0.008	0
13	12	San Antonio	Medina	195.694	3.988	285	171	288	413	413	4	7.419	0.522	1
14	12	San Antonio	Refugio	98.006	4.722	78	27	234	130	234	3	20.397	0.722	3
15	12	San Antonio	Victoria	43.156	1.968	22	12	6	25	25	1	4.586	0.119	0
16	12	San Antonio	Wilson	658.237	44.082	1666	1229	1941	2478	2478	23	115.094	2.928	8
Total				4409.64	199.32	28851	23627	105840	86931	107296	453	604.40	13.08	185

Table 5: Future Condition Flood Risk Summary Table

	RFPG No.	RFPG Name	County	Area in Flood Planning Region (sqmi)	Possible Flood Prone Areas								Average SVI of features in floodplain or flood prone areas
					Area (sqmi)	Number of Structures in Flood Prone Area	Residential Structures in in Flood Prone Area	Population	Roadway Crossings (#)	Roadways Segments (miles)	Agricultural Areas (sqmi)	Critical Facilities (#)	
1	12	San Antonio	Aransas	36.932	0.000	0	0	0	0	0.000	0.000	0	0.474
2	12	San Antonio	Atascosa	15.844	0.000	0	0	0	0	0.000	0.000	0	0.748
3	12	San Antonio	Bandera	526.418	0.000	0	0	0	0	0.017	0.000	0	0.405
4	12	San Antonio	Bexar	1220.295	0.000	0	0	0	0	0.000	0.000	0	0.520
5	12	San Antonio	Calhoun	146.459	0.000	0	0	0	0	0.000	0.000	0	0.788
6	12	San Antonio	Comal	97.295	0.000	0	0	0	0	0.000	0.000	0	0.158
7	12	San Antonio	De Witt	77.455	0.000	0	0	0	0	0.000	0.000	0	0.412
8	12	San Antonio	Goliad	337.047	0.000	0	0	0	0	0.000	0.000	0	0.593
9	12	San Antonio	Guadalupe	172.968	0.000	0	0	0	0	0.000	0.000	0	0.290
10	12	San Antonio	Karnes	596.240	0.000	0	0	0	0	0.000	0.000	0	0.463
11	12	San Antonio	Kendall	127.762	0.054	10	8	26	0	1.159	0.000	0	0.317
12	12	San Antonio	Kerr	59.833	0.000	0	0	0	0	0.000	0.000	0	0.553
13	12	San Antonio	Medina	195.694	0.000	0	0	0	0	0.000	0.000	0	0.394
14	12	San Antonio	Refugio	98.006	0.000	0	0	0	0	0.000	0.000	0	0.626
15	12	San Antonio	Victoria	43.156	0.000	0	0	0	0	0.000	0.000	0	0.439
16	12	San Antonio	Wilson	658.237	0.000	0	0	0	0	0.000	0.000	0	0.479
Total				4409.64	0.05	10	8	26	0	1.18	0.00	0	

Table 6. Existing Floodplain Management Practices

Entity	Type	Entity ID	Floodplain Management Regulations (Yes/ No/ Unknown)A	Adopted minimum regulations pursuant to Texas Water Code Section 16.3145? (Yes/ No)A	NFIP Participant (Yes/ No)A,D	Higher Standards Adopted (Yes/ No)B	Floodplain Management Practices (Strong/Moderate/ Low/None)B	Level of Enforcement of Practices (High/ Moderate/ Low/ None)B,C	Existing Stormwater or Drainage Fee (Yes/ No)B	Web Link to Entity Regulations
Medina	County	00000005	Yes	Yes	Yes	Yes	Strong	High		medinacountytexas.org
Bexar	County	00000007	Yes	Yes	Yes	Yes	Strong	Moderate		Not Available online
Guadalupe	County	00000010	Yes	Yes	Yes	Yes	Strong			
Bandera	County	00000011	Yes	Yes	Yes	Yes	Moderate	Moderate		www.banderacounty.org
Comal	County	00000014	Yes	Yes	Yes	Yes	Moderate	High	No	https://cceo.org/flood/documents/Flood_Damage_Prevention_Order.pdf
Kendall	County	00000017	Yes	Yes	Yes	Yes	Moderate	High		
Kerr	County	00000022	Yes	Yes	Yes	Yes	Moderate	Moderate	No	https://www.co.kerr.tx.us/engineer/Flood_Damage_Prevention_Order_37967_02.24.2020.pdf
Aransas	County	00000083	Yes	Yes	Yes	Yes	Moderate	Moderate		https://www.aransascountytx.gov/main/docs/ordinances/OAmended%20Aransas%20County%20Floodplain%20Management%20Watershed%20Protection%20Order%20O-23-2019.pdf
Refugio	County	00000084	Yes	Yes	Yes	No	Low	Low		
Calhoun	County	00000088	Yes	Yes	Yes	Yes	Moderate	None		
Goliad	County	00000090	Yes	Yes	Yes	No	Low	None		
Victoria	County	00000094	Yes	Yes	Yes	No	Low	None		
Karnes	County	00000095	Yes	Yes	Yes	No	Moderate	Moderate		None
Atascosa	County	00000096	Yes	Yes	Yes	Yes	Moderate	None		
De Witt	County	00000099	Yes	Yes	Yes	No	Low	None		
Wilson	County	00000100	Yes	Yes	Yes	Yes	Moderate	Moderate	No	Flood_Order_Final_10272010.pdf
Nordheim	Municipality	00002402	No	No	No	No	None	None		
Fair Oaks Ranch	Municipality	12002436	Yes	Yes	Yes	Yes	Moderate	None		
Alamo Heights	Municipality	12002437	Yes	Yes	Yes	Yes	Moderate	None		
Balcones Heights	Municipality	12002438	Yes	Yes	Yes	No	Low	None		
Castle Hills	Municipality	12002439	Yes	Yes	Yes	Yes	Moderate	None		
China Grove	Municipality	12002440	Yes	Yes	Yes	Yes	Moderate	None		
Converse	Municipality	12002441	Yes	Yes	Yes	No	Low	None		
Elmendorf	Municipality	12002442	Yes	Yes	Yes	No	Low	High	No	https://library.municode.com/tx/elmendorf/codes/code_of_ordinances
Terrell Hills	Municipality	12002475	Yes	Yes	Yes	No	Low	None		
Windcrest	Municipality	12002476	Yes	Yes	Yes	Yes	Moderate	None		
Grey Forest	Municipality	12002506	Yes	Yes	Yes	No	Low	None		
Hill Country Village	Municipality	12002507	Yes	Yes	Yes	No	Low	None		
Hollywood Park	Municipality	12002508	Yes	Yes	Yes	No	Low	None		
Kirby	Municipality	12002510	Yes	Yes	Yes	No	Low	None		
Leon Valley	Municipality	12002511	Yes	Yes	Yes	Yes	Moderate	None		
Live Oak	Municipality	12002512	Yes	Yes	Yes	Yes	Strong	None		
Cibolo	Municipality	00002615	Yes	Yes	Yes	No	Low	None		
Bulverde	Municipality	00002669	Yes	Yes	Yes	Yes	Moderate	None		
New Braunfels	Municipality	00002670	Yes	Yes	Yes	Yes	Strong	None		
Schertz	Municipality	00002671	Yes	Yes	Yes	Yes	Moderate	None		
Karnes City	Municipality	12002756	Yes	Yes	Yes	No	Low	None		
Runge	Municipality	12002757	Yes	Yes	Yes	No	Low	None		
Boerne	Municipality	12002855	Yes	Yes	Yes	Yes	Moderate	None		
Olmos Park	Municipality	12002889	Yes	Yes	Yes	No	Low	None		
Floresville	Municipality	12002925	Yes	Yes	Yes	Yes	Moderate	None		
LaCoste	Municipality	12002954	Yes	Yes	Yes	Yes	Moderate	None		
Marion	Municipality	12002966	Yes	Yes	Yes	No	Low	None		
Universal City	Municipality	12002967	Yes	Yes	Yes	Yes	Moderate	None		
New Berlin	Municipality	00002973	Yes	Yes	Yes	No	Low	None		
Falls City	Municipality	12002974	Yes	Yes	Yes	No	Low	None		
Kenedy	Municipality	12002975	Yes	Yes	Yes	Yes	Moderate	None		
Goliad	Municipality	12002986	Yes	Yes	Yes	No	Low	None		
Shavano Park	Municipality	12003000	Yes	Yes	Yes	Yes	Moderate	None		
Helotes	Municipality	12003002	Yes	Yes	Yes	Yes	Moderate	None		

Table 6. Existing Floodplain Management Practices

Entity	Type	Entity ID	Floodplain Management Regulations (Yes/ No/ Unknown)A	Adopted minimum regulations pursuant to Texas Water Code Section 16.3145? (Yes/ No)A	NFIP Participant (Yes/ No)A,D	Higher Standards Adopted (Yes/ No)B	Floodplain Management Practices (Strong/Moderate/ Low/None)B	Level of Enforcement of Practices (High/ Moderate/ Low/ None)B,C	Existing Stormwater or Drainage Fee (Yes/ No)B	Web Link to Entity Regulations
Somerset	Municipality	12003003	Yes	Yes	Yes	No	Low	None		
St. Hedwig	Municipality	12003004	Yes	Yes	Yes	No	Low	None		
Austwell	Municipality	12003103	Yes	Yes	Yes	No	Low	None		
Seadrift	Municipality	12003175	Yes	Yes	Yes	Yes	Moderate	None		
La Vernia	Municipality	12003180	Yes	Yes	Yes	Yes	Moderate	None		
Poth	Municipality	12003181	Yes	Yes	Yes	No	Low	None		
Stockdale	Municipality	12003182	Yes	Yes	Yes	No	Low	None		
Sandy Oaks	Municipality	12003220	No	No	No	No	None	None	No	
Garden Ridge	Municipality	00003235	Yes	Yes	Yes	No	Low	None		
Selma	Municipality	12003258	Yes	Yes	Yes	No	Low	None		
Santa Clara	Municipality	00003276	Yes	Yes	Yes	No	Low	None		
Von Ormy	Municipality	12003318	Yes	Yes	Yes	No	Low	Moderate	Yes	
San Antonio	Municipality	12003327	Yes	Yes	Yes	Yes	Strong	High	No	
Castroville	Municipality	12003377	Yes	Yes	Yes	Yes	Moderate	None		
Bandera	Municipality	12003414	Yes	Yes	Yes	Yes	Moderate	Moderate		
San Antonio River Authority	River Authority	00000282	Unknown	No	No	No	None	None		
Nueces River Authority	River Authority	00000290	Unknown	No	No	No	None	None		
Guadalupe-Blanco River Authority	River Authority	00000291	Unknown	No	No	No	None	None		
Upper Guadalupe River Authority	River Authority	00000297	Unknown	No	No	No	None	None		
Bexar-Medina-Atascosa Counties WCID 1	River Authority	00000299	Unknown	No	No	No	None	None		
Bandera County River Authority	Other	00000339	Unknown	No	No	No	None	None		
Alamo Area Council of Governments	Other	00000255	Unknown	No	No	No	None	None		
Coastal Bend Council of Governments	Other	00000260	Unknown	No	No	No	None	None		
Golden Crescent Regional Planning Commission	Other	00000264	Unknown	No	No	No	None	None		
Canyon Regional Water Authority	Other	00000392	Unknown	No	No	No	None	None		
Falcon Point WCID 1	Other	12000480	Unknown	No	No	No	None	None		
Escondido Watershed District	Other	00000519	Unknown	No	No	No	None	None		
Hondo Creek Watershed Improvement District	Other	00000526	Unknown	No	No	No	None	None		
West Side Calhoun County Navigation District	Other	00000538	Unknown	No	No	No	None	None		
Medina County WCID 1	Other	12000546	Unknown	No	No	No	None	None		
Victoria County Navigation District	Other	00000588	Unknown	No	No	No	None	None		
Wilson County FWSD 1 of Wilson County Texas	Other	12000592	Unknown	No	No	No	None	None		
Westside 211 Special Improvement District	Other	12000648	Unknown	No	No	No	None	None		
Refugio County WCID 2	Other	00000714	Unknown	No	No	No	None	None		
rosswinds at South Lake Special Improvement Distri	Other	12000731	Unknown	No	No	No	None	None		
Refugio County Navigation District	Other	00000758	Unknown	No	No	No	None	None		
Green Valley SUD	Other	00000821	Unknown	No	No	No	None	None		
Medina County FWSD 1	Other	12000874	Unknown	No	No	No	None	None		
Kendall County WCID 2	Other	00000936	Unknown	No	No	No	None	None		
Kendall County WCID 2A	Other	12000937	Unknown	No	No	No	None	None		
bolo Canyon Conservation and Improvement Distric	Other	12000959	Unknown	No	No	No	None	None		
Ecleto Creek Watershed District	Other	00001006	Unknown	No	No	No	None	None		
Refugio County WCID 1	Other	12001057	Unknown	No	No	No	None	None		
La Salle WCID 1-A	Other	12001130	Unknown	No	No	No	None	None		
La Salle WCID 1-B	Other	12001132	Unknown	No	No	No	None	None		
Lerin Hills MUD	Other	12001324	Unknown	No	No	No	None	None		
San Antonio MUD 1	Other	12001484	Unknown	No	No	No	None	None		
Cibolo Creek Municipal Authority	Other	00001485	Unknown	No	No	No	None	None		
Bexar County WCID 10	Other	12001486	Unknown	No	No	No	None	None		
Flying L PUD	Other	12001520	Unknown	No	No	No	None	None		
Bandera County FWSD 1	Other	12001521	Unknown	No	No	No	None	None		
Northeast Medina County WCID 1	Other	12001530	Unknown	No	No	No	None	None		
Johnson Ranch MUD	Other	12001578	Unknown	No	No	No	None	None		

Table 6. Existing Floodplain Management Practices

Entity	Type	Entity ID	Floodplain Management Regulations (Yes/ No/ Unknown)A	Adopted minimum regulations pursuant to Texas Water Code Section 16.3145? (Yes/ No)A	NFIP Participant (Yes/ No)A,D	Higher Standards Adopted (Yes/ No)B	Floodplain Management Practices (Strong/Moderate/ Low/None)B	Level of Enforcement of Practices (High/ Moderate/ Low/ None)B,C	Existing Stormwater or Drainage Fee (Yes/ No)B	Web Link to Entity Regulations
East Central SUD	Other	12001595	Unknown	No	No	No	None	None		
Refugio County Drainage District 1	Other	00001608	Unknown	No	No	No	None	None		
Espada Development District	Other	12001650	Unknown	No	No	No	None	None		
Port O'Connor MUD	Other	00001672	Unknown	No	No	No	None	None		
Comal County WCID 6	Other	00002121	Unknown	No	No	No	None	None		
Kendall County WCID 4	Other	12002226	Unknown	No	No	No	None	None		
Kendall County WCID 3	Other	12002367	Unknown	No	No	No	None	None		

A At a minimum, the RFPGs must list all counties, cities and districts in the region with flood related authority in the region and identify whether entity they have any established floodplain management practices.

B This field may be left blank during the 1st planning cycle. However, RFPGs are strongly encouraged to provide this information when applicable and available.

C The following may serve as a guide for evaluating enforcement:

high – actively enforces the entire ordinance, performs many inspections throughout construction process, issues fines, violations, and Section 1316s where appropriate, and enforces substantial damage and substantial improvement;
moderate – enforces much of the ordinance, performs limited inspections and is limited in issuance of fines and violations;
low – provides permitting of development in the floodplain, may not perform inspections, may not issue fines or violations;
none – does not enforce floodplain management regulations.

D Communities Participating in the National Flood Program- Texas, FEMA Community Status Book Report, May 15, 2021. FEMA NFIP Participation Book – TX 5-15-21.pdf

Table 11. Regional Flood Plan Flood Mitigation and Floodplain Management Goals

Goal ID	RFPG No.	RFPG Name	Goal	Term of Goal	Target Year	Applicable To	Residual Risk	How will the Goal be Measured	Overarching Goal(s)	Associated Goal IDs
12000001	12	San Antonio	Track and document existing public outreach and education activities that improve awareness of flood hazards and benefits of flood planning, including nature based solutions, in the region and ensure there are at least 6 additional occurrences per year.	Short Term (10 year)	2033	Entire RFPG		Establishing a baseline and ensure a minimum number of occurrences.	Education and Outreach	
12000002	12	San Antonio	Increase to 12 per year and maintain and increase public outreach and education activities to improve awareness of flood hazards and benefits of flood planning including nature based solutions in the region.	Long Term (30 year)	2053	Entire RFPG		Number of activities.	Education and Outreach	
12000003	12	San Antonio	Increase the proficiency of stakeholders and floodplain managers across the region through training from Region 12 entities, TFMA, ASFPM and FEMA and provide certificates of completion. Improve 50% of FPM knowledge of nature based solutions, floodplain preservation, and cost/benefit of traditional structural solutions.	Short Term (10 year)	2033	Entire RFPG		Number of trainings reaching FPMs.	Education and Outreach	
12000004	12	San Antonio	Increase the proficiency of stakeholders and floodplain managers across the region through training from Region 12 entities, TFMA, ASFPM and FEMA and provide certificates of completion. Improve 100% of FPM knowledge of nature based solutions, floodplain preservation, and cost/benefit of traditional structural solutions.	Long Term (30 year)	2053	Entire RFPG		Number of trainings reaching FPMs.	Education and Outreach	
12000005	12	San Antonio	Support the development of a regionally coordinated warning and emergency response program that can detect the flood threat and provide timely warning of impending flood danger to reduce flood deaths and high water rescues across the region.	Short Term (10 year)	2033	Entire RFPG		Increase the number of NFIP communities by 25%.	Flood Warning and Readiness	12000009
12000006	12	San Antonio	Expand the development of a regionally coordinated warning and emergency response program that can detect the flood threat and provide timely warning of impending flood danger to reduce flood deaths and high water rescues across the region.	Long Term (30 year)	2053	Entire RFPG		Increase the number of NFIP communities too 100%.	Flood Warning and Readiness	12000010
12000007	12	San Antonio	Increase the number of flood gauges (rainfall, stream, reservoir, etc.) in the region to provide localized information to emergency responders, and storage and accessibility of data to agencies by 25% of existing or at minimum 10.	Short Term (10 year)	2033	Entire RFPG		Establish a baseline and increase the number of gages by 25% over 2022.	Flood Warning and Readiness	12000009
12000008	12	San Antonio	Increase the number of flood gauges (rainfall, stream, reservoir, etc.) in the region to provide localized information to emergency responders, and storage and accessibility of data to agencies by 50% of existing.	Long Term (30 year)	2053	Entire RFPG		Increase the number of gages by 50% over 2022.	Flood Warning and Readiness	12000010
12000009	12	San Antonio	Increase the number of entities that communicate real time flood warnings to the public. Leverage mobile phone navigation apps to provide real time rerouting for the public.	Short Term (10 year)	2033	Entire RFPG		Increase by 40% of the NFIP communities.	Flood Warning and Readiness	12000007
12000010	12	San Antonio	Increase the number of entities that communicate real time flood warnings to the public. Leverage mobile phone navigation apps to provide real time rerouting for the public.	Long Term (30 year)	2053	Entire RFPG		Increase to 100% of the NFIP communities.	Flood Warning and Readiness	12000008

Table 11. Regional Flood Plan Flood Mitigation and Floodplain Management Goals

Goal ID	RFPG No.	RFPG Name	Goal	Term of Goal	Target Year	Applicable To	Residual Risk	How will the Goal be Measured	Overarching Goal(s)	Associated Goal IDs
12000011	12	San Antonio	Establish a baseline and increase the number of NFIP communities which utilize Atlas 14 (Volume 11) or best available data from NOAA revised rainfall data as part of revisions to design criteria and flood prevention regulations by 50% percent. (region specific)	Short Term (10 year)	2033	Entire RFPG		Percentage of entities in the region.	Flood Studies and Analysis	
12000012	12	San Antonio	Increase the number of NFIP communities which utilize/adopt Atlas 14 (Volume 11) or best available data from NOAA revised rainfall data as part of revisions to design criteria and flood prevention regulations by 100%. (region specific)	Long Term (30 year)	2053	Entire RFPG		Percentage of entities in the region.	Flood Studies and Analysis	
12000013	12	San Antonio	Decrease the number of Zone X by 30% and increase the number of entities that conduct detailed studies to update their local flood risk by 25%.	Short Term (10 year)	2033	Entire RFPG		Percentage of entities in the region.	Flood Studies and Analysis	
12000014	12	San Antonio	Increase the number of entities that conduct detailed studies to update their local flood risk to 100%.	Long Term (30 year)	2053	Entire RFPG		Percentage of entities in the region.	Flood Studies and Analysis	
12000015	12	San Antonio	Decrease the average age of FEMA Flood Insurance Rate Maps (NFHL/FIRMs/FIS) to less than 10 years.	Short Term (10 year)	2033	Entire RFPG		100% of maps.	Flood Studies and Analysis	
12000016	12	San Antonio	Establish a baseline number of existing studies and process for analyzing watersheds to identify existing Natural Flood Mitigation Features (NFMF) such as headwaters, buffers, and conservation easements.	Short Term (10 year)	2033	Entire RFPG		Establishing a baseline/ process and increasing the number of entities that use the process.	Flood Studies and Analysis	
12000017	12	San Antonio	Increase the number of participating Community Rating System (CRS) entities in the FPR by 5.	Short Term (10 year)	2033	Entire RFPG		Number of entities in the region.	Flood Prevention	12000018
12000018	12	San Antonio	Increase the number of participating entities within Community Rating System (CRS) in the FPR by 100% or improve their rating.	Long Term (30 year)	2053	Entire RFPG		Percentage of entities in the region.	Flood Prevention	12000017
12000019	12	San Antonio	Increase the number of entities which regulate to the 1% annual chance future conditions floodplains as part of new development and redevelopment by 10%.	Short Term (10 year)	2033	Entire RFPG		Percentage of entities in the region.	Flood Prevention	
12000020	12	San Antonio	Increase the number of entities which regulate to the 1% annual chance future conditions floodplains as part of new development and redevelopment by 50%.	Long Term (30 year)	2053	Entire RFPG		Percentage of entities in the region.	Flood Prevention	

Table 11. Regional Flood Plan Flood Mitigation and Floodplain Management Goals

Goal ID	RFPG No.	RFPG Name	Goal	Term of Goal	Target Year	Applicable To	Residual Risk	How will the Goal be Measured	Overarching Goal(s)	Associated Goal IDs
12000021	12	San Antonio	Increase the number of entities above the established baseline that have adopted a holistic watershed approach using existing Natural Flood Mitigation Features (NFMF) such as headwaters, buffers, and conservation easements for flood risk reduction as a basis for comprehensive subdivision regulations.	Short Term (10 year)	2033	Entire RFPG		Number of entities in the region.	Flood Prevention	12000016
12000022	12	San Antonio	Establish a baseline and increase the number of acres of publicly protected open space by 10 % as part of land conservation and acquisitions to reduce future impacts of flooding.	Short Term (10 year)	2033	Entire RFPG		Establish a baseline and increase the number of protected acres.	Non-Structural Flood Infrastructure Projects	12000016
12000023	12	San Antonio	Increase the number of restored acres of publicly protected open space land in the region.	Long Term (30 year)	2053	Entire RFPG		Number of restored acres.	Non-Structural Flood Infrastructure Projects	12000016
12000024	12	San Antonio	Reduce the number of NFIP repetitive-loss properties in the FPR by 25%.	Short Term (10 year)	2033	Entire RFPG		Percentage of entities in the region.	Non-Structural Flood Infrastructure Projects	
12000025	12	San Antonio	Reduce the number of NFIP repetitive-loss properties in the FPR by 75%.	Long Term (30 year)	2053	Entire RFPG		Percentage of entities in the region.	Non-Structural Flood Infrastructure Projects	
12000026	12	San Antonio	Reduce the number of existing (2022) residential properties in the future 1% annual chance floodplain by 10%.	Short Term (10 year)	2033	Entire RFPG		Number of residential properties.	Structural and Non-structural Flood Infrastructure Projects	
12000027	12	San Antonio	Reduce the number of existing (2022) residential properties in the future 1% annual chance floodplain by 50%.	Long Term (30 year)	2053	Entire RFPG		Number of residential properties.	Structural and Non-structural Flood Infrastructure Projects	
12000028	12	San Antonio	Reduce the number of vulnerable critical facilities located within the existing and future 1% annual chance (100-year) floodplain by 50%.	Short Term (10 year)	2033	Entire RFPG		Number of vulnerable critical facilities.	Structural Flood Infrastructure Projects	
12000029	12	San Antonio	Reduce the number of vulnerable critical facilities located within the existing and future 1% annual chance (100-year) floodplain by 100%.	Long Term (30 year)	2053	Entire RFPG		Number of vulnerable critical facilities.	Structural Flood Infrastructure Projects	

Table 11. Regional Flood Plan Flood Mitigation and Floodplain Management Goals

Goal ID	RFPG No.	RFPG Name	Goal	Term of Goal	Target Year	Applicable To	Residual Risk	How will the Goal be Measured	Overarching Goal(s)	Associated Goal IDs
12000030	12	San Antonio	Identify the eligible top 50 vulnerable roadway segments and low water crossings located within the existing and future 1% annual chance (100-year) floodplain.	Short Term (10 year)	2033	Entire RFPG		Number of entities in the region.	Structural Flood Infrastructure Projects	
12000031	12	San Antonio	Eliminate or mitigate the eligible top 50 vulnerable roadway segments and low water crossings located within the existing and future 1% annual chance (100-year) floodplain.	Long Term (30 year)	2053	Entire RFPG		Number of entities in the region.	Structural Flood Infrastructure Projects	
12000032	12	San Antonio	Increase the number of structural projects by 10% that include a NBS or Green Infrastructure (GI) component.	Short Term (10 year)	2033	Entire RFPG		Number of structural projects with NBS component.	Structural Flood Infrastructure Projects	
12000033	12	San Antonio	Increase the number of structural projects by 50% that include a NBS or Green Infrastructure (GI) component.	Long Term (30 year)	2053	Entire RFPG		Number of structural projects with NBS components.	Structural Flood Infrastructure Projects	

Table 12. Potential Flood Management Evaluations Identified by RFPG

FME ID	RFPG No.	RFPG Name	FME Name	Description	Associated Goals	Counties	HUC8s	HUC12s	Watersheds	Study Type	FME Area (sqmi)	Flood Risk Type	Sponsor	Entities with Oversight	Emergency Need	Estimated Study Cost	Potential Funding Sources	Estimated number of structures at flood risk	Habitable structures at flood risk	Estimated Population at flood risk	Critical facilities at flood risk (#)	Number of low water crossings at flood risk (#)	Estimated number of road closures (#)	Estimated length of roads at flood risk (Miles)	Estimated active farm & ranch land at flood risk (acres)	Existing or Anticipated Models (year)	Existing or Anticipated Maps (year)	RFPG Recommendation (Y/N)	Reason for Recommendation
121000001	12	San Antonio	Study the San Antonio River, Ojo de Agua Creek and its tributaries	Install steam gauges and develop a study to identify solutions to flooding. Implement engineering findings to reduce and mitigate risks.	12000007,12000011,12000013,12000014	Karnes	12100303	121003030306,121003030404	12000016,12000023	Project Planning	1.18	Riverine, Urban,	12002757	00000095,00000255,00000282,00001006,12002757	No	250000		4	3	14	0	0	4	0.117	1.16386998			Y	Halff Identification Process
121000002	12	San Antonio	7820 Rolling Acres Trail	Low water crossing. Road closure gate is deployed at this crossing during large storm events.	12000033	Kendall	12100304	121003040103	12000063	Project Planning	0		12002436	00000017,00000255,00000291,12002436	No	290210.563		0	0	0	0	0	0	0	0			Y	Halff Identification Process
121000003	12	San Antonio	7900 Fair Oaks Parkway	Analysis needed to confirm no adverse impacts on the solution that was implemented.	12000011,12000013,12000014	Bexar	12100304	121003040103	12000063	Project Planning	0		12002436	00000007,00000255,00000282,12002436	No	60281.6523		0	0	0	0	0	0	0	0			Y	Halff Identification Process
121000004	12	San Antonio	Ammann Road Low Water Crossing	Low water crossing runs over the street due to insufficient culverts that pass under Ammann Road. Replacing the current road with an elevated concrete bridge above the flood stage.	12000033	Kendall	12100304	121003040103	12000063	Project Planning	0		12002436	00000017,00000255,00000291	No	213657.5		0	0	0	0	0	0	0	0			Y	Halff Identification Process
121000005	12	San Antonio	7420 Rolling Acres Trail Low Water Crossing	Low Water crossing moves toward home on Meadow Creek Trail. Road Closure gate is deployed at this crossing during large storm events.	12000033	Kendall	12100304	121003040103	12000063	Project Planning	0	Riverine,	12002436	00000017,00000255,00000291,12002436	No	733169.938		1	0	11	0	0	0	0	0			Y	Halff Identification Process
121000006	12	San Antonio	8402 Battle Intense Low Water Crossing	Battle intense is often shut down in large rain events. Debris collects and damages this low water crossing	12000011,12000013,12000014	Bexar	12100304	121003040103	12000063	Project Planning	0	Riverine,	12002436	00000007,00000255,00000282,12002436	No	1105087		0	1	0	0	0	0	0	0			Y	Halff Identification Process
121000007	12	San Antonio	Battle Intense LWC Flow-activated Sensors	Add flow-activated sensors and automated drop-down arms to close off a road when the water has surpassed the road.	12000005	Bexar,Comal	12100304	121003040103	12000063	Project Planning	0	Riverine,	12002436	00000007,00000014,00000255,00000282,00000291,12002436	Yes	179792.25		0	0	0	0	1	1	0.25999999	0.03092			Y	Halff Identification Process
121000008	12	San Antonio	Rolling Acres Trail LWC Flow-activated Sensors	Add flow-activated sensors and automated drop-down arms to close off a road when the water has surpassed the road.	12000005	Kendall	12100304	121003040103	12000063	Project Planning	0.01	Riverine,	12002436	00000017,00000255,00000291,12002436	No	359584.5		0	0	0	0	0	2	0.28999999	0			Y	Halff Identification Process
121000012	12	San Antonio	Damage Center 1 (Stockdale Creek)	Stockdale Creek Stream Restoration with a natural channel design	12000029,12000030	Wilson	12100304	121003040401	12000060	Project Planning	0.02	Riverine,	12003182	00000100,00000255,00000282,12003182	Yes	3569335		0	0	0	0	3	4	0.13	0.105281			Y	Halff Identification Process
121000013	12	San Antonio	Karnes County Damage Centers Karnes A	Multiple structures at risk Within San Antonio River at US 181	12000011,12000013,12000014	Karnes	12100303	121003030202	12000030	Project Planning	0	Riverine,	12002974	00000095,00000255,00000282,12002974	No	4243043		0	0	0	0	0	1	0.03	0			Y	Halff Identification Process
121000015	12	San Antonio	Master Drainage Plan	A detailed drainage study of the city of Selma	12000011,12000013,12000014	Bexar,Guadalupe,Comal	12100304	121003040201,121003040202	12000066,12000069	Watershed Planning	5.02	Riverine, Urban,	12003258	00000007,00000010,00000014,00000255,00000282,00000291,00001485,12002512,00002671,12002967,12003258,12003327	Yes	577600		102	71	752	0	0	22	5.34000015	13.0146999			Y	Halff Identification Process
121000016	12	San Antonio	Antonio Drive Drainage Improvements	Bridge at Los Reyes Creek and Antonio Dr	12000029,12000030,12000033	Bexar	12100302	121003020404	12000103	Project Planning	0	Riverine,	12003002	00000007,00000255,00000282,12003002	No	150000		0	0	0	0	0	1	0.03	0			Y	Halff Identification Process
121000017	12	San Antonio	French Creek at Guilbeau Road NWWC	A basic trapezoidal channel with side slopes of 3:1, representing an earthen channel	12000029	Bexar	12100302	121003020402	12000078	Project Planning	0.1	Riverine,	12003327	00000007,00000255,00000282,12003327	No	3823238.5		27	26	234	0	0	5	0.63999999	0			Y	Halff Identification Process
121000018	12	San Antonio	Huebner Creek Flood Control Project Segment 1	The channel will be widened to 50" in front of Raymond Rimkus Park (6440 Evers Road) and then widened more from the park to the bridge.	12000029,12000030,12000033	Bexar	12100302	121003020405	12000104	Project Planning	0.07	Riverine,	12002511	00000007,00000255,00000282,12002511	Yes	22471310		12	5	28	1	0	3	0.09	0			Y	Halff Identification Process
121000019	12	San Antonio	DC19: Salado Creek Tributary B	Improvement on IH 10 culvert crossing to reduce peak flood stages upstream of IH 10 channel improvements downstream of IH 10 to prevent peak flood stage increase	12000029	Bexar	12100301	121003010105	12000002	Project Planning	0.06	Riverine,	12003327	00000007,00000255,00000282,12003327	No	5336253.5		65	65	172	0	0	8	0.92000002	0			Y	Halff Identification Process
121000020	12	San Antonio	LWC#41 Vance Jackson 200ft south of Scenic	Low Water Crossing needs Bridge/Culvert Improvements with possible advanced warning signals. Associated street reconstruction to include curbs, sidewalks, and driveway approaches be incorporated into the project.	12000029,12000033	Bexar	12100301	121003010201	12000008	Project Planning	0.01		12003327	00000007,00000255,00000282,12003327	Yes	283546		0	0	0	0	1	0	0	0			Y	Halff Identification Process
121000021	12	San Antonio	LWC 112.1 Pvt Rd. 300' North of Marbcah Rd.	Project consists of channel improvements and an outfall to Slick Creek to alleviate street flooding. Channel improvements include installing 10x4 MBC along the channel to improve flow at this portion of Slick Creek.	12000029	Bexar	12100302	121003020405	12000104	Project Planning	0.1		12003327	00000007,00000255,00000282,12003327	Yes	100000		0	0	0	0	3	0	0	0			Y	Halff Identification Process
121000022	12	San Antonio	LWC 100, Blakeley Area Drainage Improvement	This option consists of upsizing the Blakeley crossing to (3) 6'x3' RCB and providing a 7' bottom width concrete trap channel with 3:1 side slopes upstream of the crossing.	12000029	Bexar	12100301	121003010105	12000002	Project Planning	0	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	269346.063		5	5	8	0	1	1	0.051	0			Y	Halff Identification Process
121000023	12	San Antonio	LWC157 New Sulphur Springs Rd – East of Beck Rd	The proposed project will install 4-10' x 9' MBC at the LWC and reconstruct the portion of New Sulphur Springs Rd. affected by the culvert installation. The proposed street reconstruction will not include sidewalks or curbs.	12000029	Bexar	12100301	121003010302	12000009	Project Planning	0.01	Riverine,	12003327	00000007,00000255,00000282,00000392,12001595,12003327	Yes	340796.625		0	0	0	0	3	1	0.066	0.051726			Y	Halff Identification Process
121000024	12	San Antonio	LWC#156 New Sulphur Springs Rd – btwn S. Foster & Gardner	The proposed project will replace the existing culvert system with a bridge approximately 1500' in length. The proposed bridge will span two streams at this location	12000029	Bexar	12100301	121003010302	12000009	Project Planning	0.01	Riverine,	12003327	00000007,00000255,00000282,00000392,12001595,12003327	Yes	2290161.25		0	0	0	0	1	1	0.09	0			Y	Halff Identification Process
121000025	12	San Antonio	LWC #159.1 Southton Rd	The proposed project will replace the existing culvert system with a bridge approximately 1500' in length.	12000029	Bexar	12100301	121003010204	12000013	Project Planning	0.01	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	963772.063		0	0	0	0	1	1	0.033	0			Y	Halff Identification Process
121000026	12	San Antonio	LWC #34 Sleepy Hollow @ Sunburst	This project requires the placement culverts or a bridge to eliminate a low water crossing . Street Reconstruction includes driveway approaches, curbs, and sidewalks as required.	12000029,12000033	Bexar	12100301	121003010201	12000008	Project Planning	0.02	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	938002.688		1	1	2	0	1	2	0.13	0			Y	Halff Identification Process
121000027	12	San Antonio	Damage Center 43-Olmos Creek Middle Reach near DeZavala	The depth of flooding for the 100-year event ranges between 0.10 and 3.82 feet, therefore, buyouts do not appear to be a practical solution	12000025	Bexar	12100301	121003010201	12000008	Project Planning	0.26	Riverine,	12003327	00000007,00000255,00000282,12003000	No	8878636		9	9	18	0	0	1	0.073	0			Y	Halff Identification Process
121000028	12	San Antonio	Damage Center 4- Apache Creek	Majority of the flooding is caused by the undersized culverts downstream of West Woodlawn, providing addition of box culverts will provide adequate capacity to the existing storm drain system	12000029	Bexar	12100301	121003010202	12000010	Project Planning	0.14	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	8787565		116	115	366	0	1	11	1.15999997	0			Y	Halff Identification Process
121000029	12	San Antonio	Apache Creek & Elmendorf Lake Dam	The Elmendorf Lake Dam area is prone to flooding and will require an extensive drainage project to mitigate the floodplain. A Preliminary Engineering Report (PER) will need to be provided to assess a feasible solution	12000013	Bexar	12100301	121003010202	12000010	Watershed Planning	0.61	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	350000		470	410	1568	2	0	41	6.48000002	0.92471099			Y	Halff Identification Process
121000030	12	San Antonio	Cibolo Creek Tributary 19 Mapping Improvements	Alternative Anylsis and Project recommendation	12000011,12000013,12000014	Comal	12100304	121003040105,121003040104	12000061,12000064	Project Planning	0.82	Riverine,	00002669	00000014,00000255,00000291,00002121,00002669	No	100000		6	6	4	0	0	1	0.13	0			Y	Halff Identification Process
121000031	12	San Antonio	Indian Creek Mapping Improvements	Alternative Anylsis and Project recommendation	12000011,12000013,12000014	Comal	12100201,12100304	121003040104,121002010404,121002010401	12000064	Project Planning	13.08	Riverine,	00002669	00000014,00000255,00000291,00002669	Yes	100000		33	18	41	5	0	7	1	58.6540985			Y	Halff Identification Process
121000032	12	San Antonio	Inventory of residences in floodplain	Identify residential structures that are located in flood zones or high hazard areas and develop plan and implement a program for floodproofing or acquistion.	12000011,12000013,12000014	Karnes	12100303	121003030204,121003030202	12000027,12000030	Project Planning	0.91	Riverine, Urban,	12002974	00000095,00000255,00000282,12002974	No	50000		37	19	53	0	0	15	0.94999999	31.6249008			Y	Halff Identification Process
121000033	12	San Antonio	Update flood information and policies	Identify and compile information on flood hazard areas and residential property in flood zones, establish and implement a volunteer acquisition / elevation program based on FEMA protocol in association with SARA studies, and review permitting	12000021,12000022	Karnes	12100303	121003030401,121003030402,121003030403,121003030205,121003030206	12000020,12000021,12000022,12000034,12000037	Project Planning	2.31	Riverine,	00000095	00000095,00000255,00000282,00000519,12002756	No	100000		6	5	159	0	0	5	0.14	0.89692903			Y	HDR Identification Process
121000034	12	San Antonio	Inventory of residences in floodplain	Identify residential structures that are located in flood zones or high hazard areas and develop plan and implement a program for floodproofing or acquistion.	12000011,12000013,12000014	Karnes	12100303	121003030402	12000021	Project Planning	3.67	Riverine, Urban,	12002975	00000095,00000255,00000282,00000519,12002975	No	50000		42	24	59	0	0	21	0.43000001	13.1052999			Y	Halff Identification Process

Table 12. Potential Flood Management Evaluations Identified by RFPG

FME ID	RFPG No.	RFPG Name	FME Name	Description	Associated Goals	Counties	HUC8s	HUC12s	Watersheds	Study Type	FME Area (sqmi)	Flood Risk Type	Sponsor	Entities with Oversight	Emergency Need	Estimated Study Cost	Potential Funding Sources	Estimated number of structures at flood risk	Habitable structures at flood risk	Estimated Population at flood risk	Critical facilities at flood risk (#)	Number of low water crossings at flood risk (#)	Estimated number of road closures (#)	Estimated length of roads at flood risk (Miles)	Estimated active farm & ranch land at flood risk (acres)	Existing or Anticipated Models (year)	Existing or Anticipated Maps (year)	RFPG Recommendation (Y/N)	Reason for Recommendation
121000035	12	San Antonio	Mitigate local flooding in identified problem areas	Identify problem flooding areas and implement a program to reduce loaclized flooding	12000011,12000013,12000014	Wilson	12100303	121003030204,121003030105	12000027,12000035	Project Planning	3.18	Riverine, Urban,	12003181	00000100,00000255,00000282,12003181	No	5000		69	50	100	0	6	25	1.54999995	11.5829			Y	Halff Identification Process
121000036	12	San Antonio	Develop and implement a Stormwater Management Plan for Stockdale Creek	Stockdale Creek, sa tributary of Clinton Branch which flows into Cibolo Creek, does not have sufficient capacity to contain floodwater as it flows through the center of Stockdale. The railroad on the east side of town used to act as a levee, but when it	12000013,12000014	Wilson	12100304	121003040401	12000060	Project Planning	1.68	Riverine, Urban,	12003182	00000100,00000255,00000282,12003182	No	1203488.63		73	44	102	0	7	22	1.75	3.18080997			Y	Halff Identification Process
121000037	12	San Antonio	Update flood information and policies	Identify and compile information on flood hazard areas and residential property in flood zones, establish and implement a volunteer acquisition / elevation program based on FEMA protocol in association with SARA studies, and review permitting process bas	12000021,12000022	Karnes	12100303	121003030204,121003030202	12000027,12000030	Project Planning	0.91	Riverine, Urban,	12002974	00000095,00000255,00000282,12002974	No	100000		38	19	53	0	0	15	0.94999999	31.6249008			Y	HDR Identification Process
121000038	12	San Antonio	Inventory of residences in floodplain	Identify residential structures that are located in flood zones or high hazard areas and develop plan and implement a program for floodproofing or acquistion.	12000011,12000013,12000014	Karnes	12100303	121003030401,121003030402,121003030403,121003030205 12100303	12000020,12000021,12000022,12000034,12000037	Project Planning	2.31	Riverine,	00000095	00000095,00000255,00000282,00000519,12002756	No	50000		6	5	159	0	0	5	0.14	0.89692903			Y	Halff Identification Process
121000039	12	San Antonio	Update flood information and policies	Identify and compile information on flood hazard areas and residential property in flood zones, establish and implement a volunteer acquisition / elevation program based on FEMA protocol in association with SARA studies, and review permitting process bas	12000021,12000022	Karnes	12100303	121003030306,121003030404	12000016,12000023	Project Planning	1.18	Riverine, Urban,	12002757	00000095,00000255,00000282,00001006,12002757	No	100000		4	1	14	0	0	4	0.116908	1.16386998			Y	HDR Identification Process
121000040	12	San Antonio	Install early warning systems	Conduct a feasibility study that evaluates the coverage area, property ownership and availability, power requirements, telemetry requirements, technology, cost, and other local considerations. Based on study findings, install an emergency warning systems	12000013,12000014	Wilson	12100303	121003030204,121003030105	12000027,12000035	Project Planning	3.18	Riverine, Urban,	12003181	00000100,00000255,00000282,12003181	No	100000		69	50	100	0	6	25	1.54999995	11.5829			Y	Halff Identification Process
121000041	12	San Antonio	Drainage Study Marcelinas Creek and its major tributary	Marcelinas Creek has a floodplain that runs through the center of the city. Install stream gauges and identify alternatives to mitigate flooding. Implement study findings.	12000005	Wilson	12100303	121003030204,121003030105	12000027,12000035	Project Planning	3.18	Riverine, Urban,	12003181	00000100,00000255,00000282,12003181	No	250726.813		69	50	100	0	6	25	1.54999995	11.5829			Y	Halff Identification Process
121000043	12	San Antonio	Drainage improvements to wastewater treatment plants	A drainage improvement was completed in 2018 with 2016 disaster relief funding. Internal plumbing was buried and the size of the weir box was increased. Funding and improvements are still needed to connect 2 and 3 and cross CR401 to increase discharge ca	12000029,12000030,12000033	Wilson	12100304	121003040401	12000060	Preparedness	1.68	Riverine, Urban,	12003182	00000100,00000255,00000282,12003182	Yes	852325.813		73	44	102	0	7	22	1.75	3.18080997			Y	Halff Identification Process
121000044	12	San Antonio	New Bridges on 6th and 8th Streets	New construction of waterway bridges on 6th and 8th Streets crossing Stockdale Creek. Lift elevation profile of the two bridges that provide access to critical facilities and services within the city as well as access from the City to the surrounding reg	12000029,12000030	Wilson	12100304	121003040401	12000060	Project Planning	1.68	Riverine, Urban,	12003182	00000100,00000255,00000282,12003182	Yes	651453.625		73	44	102	0	7	22	1.75	3.18080997			Y	Halff Identification Process
121000045	12	San Antonio	Detention/Retention pond on school property	Install a Detention/Retention pond and reservoir to store excess stormwater on school property along Fordtran Street	12000029,12000030	Wilson	12100304	121003040401	12000060	Project Planning	1.68	Riverine, Urban,	12003182	00000100,00000255,00000282,12003182	Yes	1604360.88		73	44	102	0	7	22	1.75	3.18080997			Y	Halff Identification Process
121000046	12	San Antonio	7840 Silver Spur Trail	Runoff collects from the northside of the city and passes this point before passing under Keeneland then to the Cibolo Creek Post Oak Creek low water crossing.	12000033	Kendall	12100304	121003040103	12000063	Project Planning	0		12002436	00000017,00000255,00000291,12002436	No	295351.406		0	0	0	0	0	0	0	0			Y	Halff Identification Process
121000047	12	San Antonio	8410 Noble Lark Dr	Regrade channel and install erosin control measures, repair the eroded foundation of the culvert headwall	12000029,12000030	Bexar	12100304	121003040103	12000063	Project Planning	0		12002436	00000007,00000255,00000282,12002436	No	165561.984		0	0	0	0	0	0	0	0			Y	Halff Identification Process
121000048	12	San Antonio	D/O Center A (Old Pearsall road at Medio Creek)	Old Pearsall Rd overtopping at Medio Creek Bridge and backwater conditions created from RailRoad Bridge DS Old pearsall rd	12000011,12000013,12000014	Bexar	12100302	121003020504	12000106	Project Planning	0.04	Riverine,	12003327	00000007,00000255,00000282,12003327	No	1959013.75		0	0	0	0	0	1	0.11	0			Y	Halff Identification Process
121000049	12	San Antonio	Damage Center 1 Project2A – Improved crossing at U.S. Highway 181	Creek crossing improvements on HWY 181. Ponding upstream to an elevation that inundates adjacent homes.	12000029,12000030	Wilson	12100303	121003030204	12000027	Project Planning	0	Riverine,	12003181	00000100,00000255,00000282,12003181	No	1928034.75		0	0	0	0	0	1	0.02	0			Y	Halff Identification Process
121000052	12	San Antonio	Damage Center 2 (South Tributary to Stockdale Creek)	Detention South Tributary to Stockdale Creek near the eastern city limit	12000029,12000030	Wilson	12100304	121003040401	12000060	Project Planning	0.03	Riverine,	12003182	00000100,00000255,00000282,12003182	No	660768.063		0	0	0	0	0	0	0	0.085733			Y	Halff Identification Process
121000053	12	San Antonio	Parrigin Road Drainage Improvements	Parrigin Road low water crossing at Helotes Creek Tributary A floods frequently, limiting access for nearby residences	12000011,12000013,12000014	Bexar	12100302	121003020404	12000103	Project Planning	0	Riverine,	12003002	00000007,00000255,00000282,12003002	No	295579.531		0	0	0	0	0	1	0.02	0			Y	Halff Identification Process
121000054	12	San Antonio	Detailed Study of Unnamed Trib 3 to Helotes Creek	Detailed hydrologic and hydraulic study is needed to determine appropriate drainage improvements.	12000011,12000013,12000014	Bexar	12100302	121003020404	12000103	Watershed Planning	0.02	Riverine,	12003002	00000007,00000255,00000282,12003327	Yes	40000		0	0	0	0	1	0	0	0			Y	Halff Identification Process
121000055	12	San Antonio	Detailed Study of Culebra Creek Trib C	Three low water crossings of Culebra Creek Tributary C, Beverly Hill Drive, Doheny at FM 1560, and FM 1560. A detailed hydrologic and hydraulic study is needed to determine appropriate drainage improvements	12000011,12000013,12000014	Bexar	12100302	121003020403	12000102	Watershed Planning	0.15	Riverine,	12003002	00000007,00000255,00000282,12003002	Yes	65000		0	0	0	0	1	3	0.28	0			Y	Halff Identification Process
121000056	12	San Antonio	Inventory of residences in floodplain	Identify residential structures that are located in flood zones or high hazard areas and develop plan and implement a program for floodproofing or acquistion.	12000011,12000013,12000014	Karnes	12100303	121003030306,121003030404	12000016,12000023	Project Planning	1.18	Riverine, Urban,	12002757	00000095,00000255,00000282,00001006,12002757	No	50000		4	3	14	0	0	4	0.117	1.16386998			Y	Halff Identification Process
121000057	12	San Antonio	French Creek RSWF	An on-channel RSWF provides approximately 150 acre-feet of storag	12000029	Bexar	12100302	121003020402	12000078	Project Planning	0.03	Riverine,	12003327	00000007,00000255,00000282,12003327	No	5975658.5		4	0	11	0	0	1	0.25	0			Y	Halff Identification Process
121000058	12	San Antonio	Culebra Creek Tributary A at Tezel Road Enhanced Conveyance	Increasing the flow area by widening the channel and increasing its side slope	12000029	Bexar	12100302	121003020404	12000103	Project Planning	0.18	Riverine,	12003327	00000007,00000255,00000282,12003327	No	3729220		99	99	344	0	0	19	0.88999999	0			Y	Halff Identification Process
121000059	12	San Antonio	Helotes Creek at Bandera Road Enhanced Conveyance	Channel modifications were designed as a basic trapezoidal channel with side slopes of 3:1.	12000029	Bexar	12100302	121003020404	12000103	Project Planning	0.18	Riverine,	12003327	00000007,00000255,00000282,12003002	No	907127.188		29	16	43	0	0	7	1.34000003	0			Y	Halff Identification Process
121000060	12	San Antonio	Helotes Creek RSWF	An off-channel RSWF provides approximately 3330 acres-ft oof storage.	12000029	Bexar	12100302	121003020404	12000103	Project Planning	0.42	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	5173548		28	16	141	0	2	5	0.57999998	0			Y	Halff Identification Process
121000061	12	San Antonio	Hubner Creek Flood Protection Barier	This project includes proposed Flood Protection Barrier between Ingram Road and Culebra Road	12000029	Bexar	12100302	121003020402,121003020404,121003020405	12000078,12000103,12000104	Project Planning	0.57	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	22480288		115	101	1059	0	1	10	1.86000001	1.12100005			Y	Halff Identification Process
121000062	12	San Antonio	Damage Center 5-Salado Creek Trib F	Approximately 4,487 feet of channel improvements as well as constructing two inline reservoirs.	12000029	Bexar	12100301	121003010104	12000004	Project Planning	0.96	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	7617754		54	27	243	0	3	9	1.23000002	0.73798299			Y	Halff Identification Process
121000063	12	San Antonio	Damage Center 3-Lorence Creek	Approximately 10,000 feet of channel improvement. The proposed drainage improvements reduces the occurrence of structural flooding in several areas along the banks of the creek.	12000029	Bexar	12100301	121003010103	12000005	Project Planning	0.72	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	2473246.75		65	59	181	0	2	16	0.61000001	0.222395			Y	Halff Identification Process
121000064	12	San Antonio	DC13/14: Walzem Creek	A proposed combination of regional detention and channel improvement to reduce flooding on Walzem Creek.	12000029	Bexar	12100301	121003010105	12000002	Project Planning	0.18	Riverine,	12003327	00000007,00000255,00000282,12001486,12002476,12003327	Yes	2034307.88		66	45	361	0	2	13	1.10000002	0			Y	Halff Identification Process

Table 12. Potential Flood Management Evaluations Identified by RFPG

FME ID	RFPG No.	RFPG Name	FME Name	Description	Associated Goals	Counties	HUC8s	HUC12s	Watersheds	Study Type	FME Area (sqmi)	Flood Risk Type	Sponsor	Entities with Oversight	Emergency Need	Estimated Study Cost	Potential Funding Sources	Estimated number of structures at flood risk	Habitable structures at flood risk	Estimated Population at flood risk	Critical facilities at flood risk (#)	Number of low water crossings at flood risk (#)	Estimated number of road closures (#)	Estimated length of roads at flood risk (Miles)	Estimated active farm & ranch land at flood risk (acres)	Existing or Anticipated Models (year)	Existing or Anticipated Maps (year)	RFPG Recommendation (Y/N)	Reason for Recommendation
121000065	12	San Antonio	Damage Center 2- Martinez Creek	The downstream culvert system creates a backwater which will continue to affect properties near the inlet of that structure. Improved channelization and culvert/bridge replacement and voluntary property acquisition	12000029	Bexar	12100301	121003010202	12000010	Project Planning	0.24	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	12459064		165	163	491	0	0	25	3.4000001	0			Y	Halff Identification Process
121000068	12	San Antonio	Normoyle Ditch - Alt 1	Channel improvements are proposed from the Six Mile Creek outfall up to approximately 200 feet upstream of New Laredo Hwy. The project area was limited to the area south of Kelly AFB as the majority of habitable structures area	12000029,12000033	Bexar	12100302	121003020406	12000105	Project Planning	0.37		12003327	00000007,00000255,00000282,00000392,12003327	No	150000		0	0	0	0	0	0	0	0			Y	Halff Identification Process
121000069	12	San Antonio	LWC 42 Dreamland south of RR Xing	The project will consist of proposed Bridge crossing with +/- 6300 LF of total channel grading upstream and downstream and excavating to eliminate a low water crossing. Street reconstruction includes driveway approaches, curbs, and sidewalks as required	12000029,12000033	Bexar	12100301	121003010201	12000008	Project Planning	0.14	Riverine,	12003327	00000007,00000255,00000282,00000392,12002439,12003327	Yes	770000		17	17	44	0	1	6	0.5	0			Y	Halff Identification Process
121000070	12	San Antonio	LWC No 113-116 and Associated Channel Improvements	This project proposes to upgrade LWC 115 & 116 and construct an underground storm system on Military to tie into the existing earthen channel. The underground system will consist of 10' curb inlets, 6'x3' box culverts, 24"-42" (RCP),outfall structures	12000029	Bexar	12100302	121003020405	12000104	Project Planning	0.04		12003327	00000007,00000255,00000282,12003327	Yes	917273.938		0	0	0	0	3	0	0	0			Y	Halff Identification Process
121000071	12	San Antonio	LWC# 91 Weidner 500 ft N of Schertz	Construct a bridge on Weidner Rd. to pass a 100 yr storm to replace LWC# 91, to include curbs and sidewalks. This project will require channel excavation. This LWC is not within a FEMA floodplain.	12000029,12000033	Bexar	12100301	121003010104	12000004	Project Planning	0.01		12003327	00000007,00000255,00000282,12003327	No	699298.938		0	0	0	0	0	0	0	0			Y	Halff Identification Process
121000072	12	San Antonio	LWC #15 Copperhill Between Parkstone & Happy Hollow	Low Water Crossing #15 has approximately 128 acres of storm water that is conveyed through this crossing. This project proposes to construct an underground drainage system to assist in the conveyance of runoff crossing through this section	12000029	Bexar	12100301	121003010103	12000005	Project Planning	0		12003327	00000007,00000255,00000282,12003327	Yes	238773.328		0	0	0	0	1	0	0	0			Y	Halff Identification Process
121000073	12	San Antonio	LWC #13 West Ave. @ Interpark	Since approximately 2006, residents have complained about flooding within a low point on West Ave. Approximately 173 acres drains through this area. This project will construct an underground drainage system with an earthen channel	12000029	Bexar	12100301	121003010102	12000001	Project Planning	0		12003327	00000007,00000255,00000282,12003327	Yes	1374680		0	0	0	0	1	0	0	0			Y	Halff Identification Process
121000074	12	San Antonio	New Sulphur Springs – East of Lodi Rd	This project will install a cross arm/barricade at the LWC. Construction of a bridge or culvertinstallation	12000029,12000033	Bexar	12100301	121003010302	12000009	Project Planning	0.03	Riverine,	12003327	00000007,00000255,00000282,00000392,12003327	Yes	430557.781		3	3	12	0	1	1	0.098	0			Y	Halff Identification Process
121000075	12	San Antonio	LWC #71 Danville and Overbrook	This project requires the replacement of existing low water crossing on Danville with an upgraded culvert (2-10'X10' MBC) or bridge to eliminate a low water crossing with some channel modifications upstream and downstream of the crossing	12000029,12000033	Bexar	12100301	121003010202	12000010	Project Planning	0.01	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	2890500		0	0	0	0	1	2	0.15000001	0			Y	Halff Identification Process
121000076	12	San Antonio	LWC#72 Spencer Lane, east of Balcones Rd.	During a rain storm event, storm water runoff from the East Woodlawn Ditch overtops the road. This project proposes the construction of a culvert crossing to include an associated energy dissipation system, headwall, and outfall structures.	12000029	Bexar	12100301	121003010202	12000010	Project Planning	0	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	487969.594		0	0	0	0	1	1	0.07	0			Y	Halff Identification Process
121000077	12	San Antonio	Mahncke Park Outfall	To convey the 100-yr ultimate development and relieve the current backwater conditions. This project proposes drainage improvement to watershed SA4.To reduce clogging and increase effciency.	12000029	Bexar	12100301	121003010201	12000008	Watershed Planning	0.08	Riverine,	12003327	00000007,00000255,00000282,12003327	No	1526935.63		16	14	53	0	0	5	0.23999999	0			Y	Halff Identification Process
121000079	12	San Antonio	Damage Center 40-San Antonio River DS Reach near Roosevelt	Three lots have 100-year flood depths greater than 2 feet and were therefore not considered for flood-proofing. Due to its location between parks,it appears reasonable to be buyout the flooed properties and continue the park	12000025	Bexar	12100301	121003010203	12000011	Project Planning	0.31	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	250000		73	52	892	0	1	9	0.94999999	0			Y	Halff Identification Process
121000081	12	San Antonio	Damage Center 38-Olmos Creek Lower Reach Near Montview	Flooding occurs on the left overbank and begins just upstream of Montview. A total of 10 lots are impacted by the 100-year storm event and the depth of flooding ranges between 0.10 and 0.15 feet.Flood depths are less than 0.5 feet; therefore	12000029	Bexar	12100301	121003010201	12000008	Project Planning	0.05	Riverine,	12003327	00000007,00000255,00000282,00000392,12003327	No	250000		8	8	51	0	0	3	0.389	0			Y	Halff Identification Process
121000082	12	San Antonio	Damage Center 3-Zarzamora Creek	The proposed earthen channel would begin upstream of the pedestrian bridge and end approximately 780 feet downstream of Ingram Road	12000029	Bexar	12100301	121003010202	12000010	Project Planning	0.55	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	32730102		62	60	223	1	1	21	1.89999998	0.067383			Y	Halff Identification Process
121000083	12	San Antonio	Damage Center 6- Martinez Creek	Voluntary Property Acquisition is the only option that would be recommended under current regulatory and funding scenarios	12000025	Bexar	12100301	121003010202	12000010	Project Planning	0.66	Riverine,	12003327	00000007,00000255,00000282,12003327	No	40552312		427	361	1043	0	0	29	8.39999962	0			Y	Halff Identification Process
121000084	12	San Antonio	Damage Center 7-Zarzamora Creek	Based on the value of the homes within this damage center, VPAs appear to be a practical option that may be well received	12000025	Bexar	12100301	121003010202	12000010	Project Planning	0.51	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	14775610		259	249	729	10	0	27	3.70000005	0.44479001			Y	Halff Identification Process
121000085	12	San Antonio	Damage Center 9- Alazan Creek	severe flooding upstream of South Colorado Street, where the majority of the buildings flood during the 10&50 yr. Channel improvments	12000029	Bexar	12100301	121003010202	12000010	Project Planning	0.36	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	19406184		237	168	615	1	0	37	3.9000001	0.079213			Y	Halff Identification Process
121000086	12	San Antonio	Damage Center 14- Airport Trib	There are four bridges within this Damage Center, of which all overtop during the 1% AC storm event. Voluntary Acquisition of 79 residential propoerties that are compromised	12000025	Bexar	12100301	121003010104,121003010201	12000004,12000008	Project Planning	0.35	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	250000		85	62	553	1	0	11	1.5	0			Y	Halff Identification Process
121000087	12	San Antonio	Damage Center 19- San Pedro Creek	A lateral detention project is recommended to reduce the Camaron Street spill which will also provide some minor relief to the storm sewer surcharges at West Elmira Street, Cadwallader Street, Marshall Street, and Hill Street	12000029	Bexar	12100301	121003010202	12000010	Project Planning	0.11	Riverine,	12003327	00000007,00000255,00000282,12003327	No	8615588		33	13	275	0	0	14	1.41999996	0			Y	Halff Identification Process
121000088	12	San Antonio	Damage Center 20-Matinez Creek	Lateral detention is a viable alternative for this project and could be used in conjunction with VPA, and reduced channelization, to meet the desired outcomes of multi-use functionality and flood reduction.	12000029	Bexar	12100301	121003010202	12000010	Project Planning	0.26	Riverine,	12003327	00000007,00000255,00000282,12003327	No	22251474		202	192	593	0	0	26	2.73000002	0			Y	Halff Identification Process
121000089	12	San Antonio	Damage Center 23-New Braunfels, Austin Hwy, Broadway Drain	Reduce regional flooding and remove secure safe passage during 100 yr event. Utilizes a combined regional and local trunkline of 4'x4' and new outfall near Patterson Avenue.	12000029	Bexar	12100301	121003010201	12000008	Project Planning	0.88	Riverine,	12003327	00000007,00000255,00000282,12002437,12002475,12003327	No	23560934		127	70	1413	0	0	44	5.4000001	0			Y	Halff Identification Process
121000090	12	San Antonio	Damage Center 32-Six Mile Creek	the proposed pond would have a direct impact on the flow in Normoyle Ditch, it is recommended that the required drainage structures be r.eanalyzed	12000013,12000014	Bexar	12100301	121003010203	12000011	Watershed Planning	0.56	Riverine,	12003327	00000007,00000255,00000282,00000392,12003327	Yes	9392589		0	0	0	0	0	1	0.15000001	0			Y	Halff Identification Process
121000091	12	San Antonio	Damage Center 34-State Hospital Creek	the channelization project will have to be constructed to remove all structures from the 1% annual chance storm event floodplain	12000029	Bexar	12100301	121003010203	12000011	Project Planning	0.26	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	2005668.38		54	54	139	0	1	8	1.13999999	0			Y	Halff Identification Process
121000092	12	San Antonio	LWC at Ammann Rd and Post Oak Creek	Improve the low water crossing at Ammann Road and Post Oak Creek	12000029	Kendall	12100304	121003040103	12000063	Project Planning	0.09	Riverine,	00000017	00000017,00000255,00000291	No	100000		0	0	0	0	0	1	0.04	0			Y	Halff Identification Process
121000094	12	San Antonio	Damage Center 31-Rockwood Creek	Limits of the effective DFIRM model are incorrect based on the DFIRM hydrology if the hydrology is re-evaluated to take into account the limiting factor of the storm drain system, the actual flow to Rockwood	12000029	Bexar	12100301	121003010203	12000011	Watershed Planning	0.15	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	150000		123	111	297	2	0	10	0.77999997	0			Y	Halff Identification Process

Table 12. Potential Flood Management Evaluations Identified by RFPG

FME ID	RFPG No.	RFPG Name	FME Name	Description	Associated Goals	Counties	HUC8s	HUC12s	Watersheds	Study Type	FME Area (sqmi)	Flood Risk Type	Sponsor	Entities with Oversight	Emergency Need	Estimated Study Cost	Potential Funding Sources	Estimated number of structures at flood risk	Habitable structures at flood risk	Estimated Population at flood risk	Critical facilities at flood risk (#)	Number of low water crossings at flood risk (#)	Estimated number of road closures (#)	Estimated length of roads at flood risk (Miles)	Estimated active farm & ranch land at flood risk (acres)	Existing or Anticipated Models (year)	Existing or Anticipated Maps (year)	RFPG Recommendation (Y/N)	Reason for Recommendation
121000095	12	San Antonio	FM 1863 at Cibolo Creek LWC	Replace low water crossings at two locations(US &DS) where FM1863 crossing Cibolo Creek with bridges.	12000030	Bexar, Comal	12100304	121003040201	12000066	Project Planning	0.06	Riverine,	00000007	00000007,00000014,00000255,00000282,00000291,00002669	Yes	150000		1	1	3	0	2	1	0.81	0.54746699			Y	Halff Identification Process
121000096	12	San Antonio	Install pipe gates to close off streets	Install automated systems at low-water crossings with high rate of vehicular access resulting in frequency of accidents and loss of life.	12000005	Wilson	12100303	121003030204,121003030105	12000027,12000035	Preparedness	3.18	Riverine, Urban,	12003181	00000100,00000255,00000282,12003181	Yes	250000		69	50	100	0	6	25	1.54999995	11.5829			Y	Halff Identification Process
121000097	12	San Antonio	LWC# 101 Rittiman Creek @ Gibbs Sprawl	This proposed planning study adds culverts at the railroad crossing, upgrades the earthen channel in the park from the westerly property line to Rittiman road, and installation of larger box culverts at the Gibbs Sprawl LWC which requires Gibbs Sprawl	12000029	Bexar	12100301	121003010106	12000007	Project Planning	0.12	Riverine,	12003327	00000007,00000255,00000282,00000392,12003327	Yes	3994964.75		64	63	181	0	1	6	0.88	0			Y	Halff Identification Process
121000098	12	San Antonio	Maintain Drainage System	Improve storm water drainage within residential and commercial areas by removing brush and debris,opening and widening waterways, restricting building in the flood zone, and widening bridges. Status or project was 90% complete in 2012 plan awaiting purch	12000029,12000030,12000033	Wilson	12100304	121003040401	12000060	Project Planning	1.68	Riverine, Urban,	12003182	00000100,00000255,00000282,12003182	Yes	2073414.5		73	44	102	0	7	22	1.75	3.18080997			Y	Halff Identification Process
121000099	12	San Antonio	Upper Martinez Creek Improvements	Improvements to already channelized section of Martinez Creek (Cibolo Watershed) from Montgomery Dr to Walzem Rd and bridge improvements at Gibbs Sprawl Road	12000029	Bexar	12100304	121003040205	12000071	Project Planning	0.02	Riverine,	12003327	00000007,00000255,00000282,00000392,12003327	No	1673872.13		18	18	51	0	0	1	0.004	0			Y	Halff Identification Process
121000100	12	San Antonio	Recommend for Wilson Roadways - Project 4 - Mariana Rd & Mariana Creek	Upgrade crossing so that it provides a safe evacuation route during large storm events.	12000030	Wilson	12100303	121003030104	12000032	Project Planning	0	Riverine,	00000100	00000100,00000255,00000282	Yes	100000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000101	12	San Antonio	Recommend for Wilson Roadways - Project 5 - CR 108 & Mariana Creek	Upgrade crossing so that it provides a safe evacuation route during large storm events.	12000030	Wilson	12100303	121003030104	12000032	Project Planning	0	Riverine,	00000100	00000100,00000255,00000282,00000290	Yes	100000		0	0	0	0	0	1	0.01	0			Y	HDR Identification Process
121000102	12	San Antonio	Erosion at CR 401 and Cibolo Creek	Phase I: Engineering study of design solutions to erosion of CR 401 at Cibolo Creek.Phase II: Implementation of stabilization project to address stream incision and erosion CR 401 at Cibolo Creek.	12000034	Wilson	12100304	121003040401	12000060	Project Planning	0	Riverine,	00000100	00000100,00000255,00000282	Yes	100000		0	0	0	0	0	1	0.07	0			Y	HDR Identification Process
121000103	12	San Antonio	Erosion on CR 202 East and Marcelina Creek	Phase I: Engineering study of design solutions to erosion of CR 202 at Marcelina Creek. Phase II: Implementation of stabilization project to address stream incision and erosion CR 202 at Marcelina	12000030	Wilson	12100303	121003030204	12000027	Project Planning	0	Riverine,	00000100	00000100,00000255,00000282	Yes	100000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000105	12	San Antonio	Flat Creek Study	Update details on both current and expected ultimate watershed build-oit conditions, Identify at-risk infrastructure and detail oppurtunities for flood reduction, and provide mitigation plans with regard to risk due to delevopment.	12000014	Medina	12100302	121003020501,121003020502	12000081,12000107	Watershed Planning	5.8	Riverine,	12003377	00000005,00000255,12003377	Yes	500000		44	41	29	0	0	3	1.07000005	298.279999			Y	HDR Identification Process
121000106	12	San Antonio	Goliad Damage Center A	Vegetated swales along Bungalow Ave and N San Patricio St	12000032,12000012	Goliad	12100303	121003030604	12000049	Project Planning	0.01	Riverine,	00000090	00000090,00000264,00000282,12002986	No	50000		3	2	4	0	0	2	0.05	0			Y	HDR Identification Process
121000107	12	San Antonio	Goliad Damage Center B	Construct dam north of W. Ward St	12000026,12000012	Goliad	12100303	121003030604	12000049	Project Planning	0.02	Urban,	00000090	00000090,00000264,00000282	No	100000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000108	12	San Antonio	Kempf Creek Watershed Study	H&H Study. Alternatives analysis for regional flood conveyance systems. Project identification and recommendations.	12000014	Medina	12100302	121003020501	12000081	Watershed Planning	4.87	Riverine,	12003377	00000005,00000255	Yes	150000		32	18	20	0	0	6	2.24000001	697.672974			Y	HDR Identification Process
121000109	12	San Antonio	Lower Basin Predictive Flood Model	Lower Basin Predictive Flood Model	12000012	De Witt,Wilson,Bexar,Guadalupe,Refugio,Calhoun,Goliad,Victoria,Karnes	12100202,12100301,12100303,12100304,12110110			Watershed Planning	1481.11	Riverine, Coastal, Urban,	00000282	00000005,00000255	Yes	1000000		1068	537	790	0	0	1774	135.070007	31301.3008			Y	HDR Identification Process
121000110	12	San Antonio	Culvert improvement on Hatch St in Tivoli	The bridge on Hatch Street in Tivoli was replaced with a culvert which drains slow and causes the water to breach the levee. Study to find alternatives to determine solutions for this drainage issue.	12000030	Refugio	12100404	121004040000	12000073	Project Planning	0	Urban,	Tivoli Community	00000084,00000260,00000291,00000758,12001057,00001608	No	150000		0	0	0	0	0	2	0	0			Y	HDR Identification Process
121000111	12	San Antonio	Culvert Improvement on Highway 239 in Tivoli	Culverts on Highway 239 in Tivoli are too small causing water to get in houses. Study to find alternatives to determine solutions for this drainage issue.	12000030	Refugio	12100404	121004040000	12000073	Project Planning	0	Riverine, Urban,	Tivoli Community	00000084,00000260,00000291,00000758,12001057,00001608	No	150000		0	0	0	0	0	2	0.01	0			Y	HDR Identification Process
121000112	12	San Antonio	Miller Creek on the Smoky Creek Ranch Drainage Improvements	Miller Creek on the Smoky Creek Ranch drains Tivoli and the surrounding area which is washing out property where Indian artifacts were found. Study to find alternatives to determine solutions for this drainage issue.	12000030	Refugio	12100404	121004040000	12000073	Project Planning	0.01	Riverine, Coastal,	Tivoli Community	00000084,00000260,00000291,00000714,00000758,00001608	No	150000		0	0	0	0	0	0	0	0.003007			Y	HDR Identification Process
121000113	12	San Antonio	New Drainage Analysis to Update/Revise Flood Maps	This action proposes performing a new drainage analysis for the community to update/revise Flood Maps to better identify areas subject to this Hazard; last study completed in September 1977.	12000014	Medina	12100302	121003020501,121003020503	12000081,12000108	Watershed Planning	0.63	Riverine,	12002954	00000005,00000255,12002954	Yes	100000		170	133	263	0	0	23	4.21999979	1.40019			Y	HDR Identification Process
121000114	12	San Antonio	Low Water Crossing Upgrades	Prioritize low water crossings within Karnes County and upgrade with higher level of flood protection, warnings, and signage	12000014,12000007	Atascosa,De Witt,Wilson,Goliad,Karnes	12100202,12100303,12100304,12110110		12000014,12000016,12000019,12000020,12000021,12000022,12000023,12000024,12000025,12000026,12000027,12000030,12000034,12000037,12000040,12000041,12000042,12000043,12000045,12000052,12000057,12000070	Watershed Planning	749.22	Riverine, Urban,	00000095	00000095,00000096,00000099,00000100,00000255,00000260,00000264,00000282,00000290,00000291,00000519,00000526,00001006,12002756,12002757,12002974,12002975	No	305000		340	161	422	0	0	757	58.7999992	16557.1992			Y	HDR Identification Process
121000116	12	San Antonio	Recommend for Wilson Roadways-Project 3-CR 122 & Mariana Creek	Upgrade crossing so that it provides a safe evacuation route during large storm events.	12000030	Wilson	12100303	121003030104	12000032	Project Planning	0	Riverine,	00000100	00000100,00000255,00000282	Yes	100000		0	0	0	0	0	1	0.12	0			Y	HDR Identification Process
121000118	12	San Antonio	La Vernia Issue # 5 (Hwy 87 crossing and CR 342)	Study to assess city acquiring drainage easements in the area upstream of the Highway 87 crossings, as well as the area between the crossings at Highway 87 and the crossing at CR 342 for the purpose of constructing a channel.	12000016	Wilson	12100304	121003040302	12000056	Project Planning	0.03	Riverine,	12003180	00000100,00000255,00000282,00000392,12003180	No	150000		0	0	0	0	0	0	0.01	1.99131			Y	HDR Identification Process
121000119	12	San Antonio	La Vernia Issue # 2 and # 3 (City Park/ La Vernia ISD)	Study to assess 6'-wide concrete-bottom channel/sidewalk with earthen sides (graded 5:1) be constructed through this area to better define the flow path. Gauge boards on San Antonio Road. Aquire 25'-wide drainage easements.	12000013,12000032	Wilson	12100304	121003040302	12000056	Project Planning	0.07	Riverine,	12003180	00000100,00000255,00000282,00000392,12003180	Yes	150000		2	1	14	0	0	3	0.31	0			Y	HDR Identification Process
121000120	12	San Antonio	Escondidio Creek WS SCS Site 1, 2, 4 Dam	Rehabilitation of Escondido Creek 1,2, and 4 to ensure passage of the PMF.	12000030	Karnes	12100303	121003030402	12000021	Project Planning	0.13	Riverine,	00000282	00000095,00000255,00000282,00000519	No	300000		0	0	0	0	0	0	0	1.01918006			Y	HDR Identification Process
121000121	12	San Antonio	Wilson County LWC Study	Study to evaluate the LWC in Wilson County and recommend alternatives both short term and long term alternatives. Some short term alternatives could include Low Water Signage, Turn Around Don't Drown, automatic gates. 195 LWC in Wilson County.	12000030	Atascosa,Wilson,Bexar,Guadalupe,Karnes	12100202,12100301,12100303,12100304,12110110		12000006,12000012,12000027,12000028,12000029,12000030,12000031,12000032,12000033,12000034,12000035,12000036,12000038,12000039,12000040,12000041,12000052,12000053,12000054,12000056,12000057,12000059,12000060,12000065,12000070,12000072	Watershed Planning	805.06	Riverine, Urban,	00000100	00000007,00000010,00000095,00000096,00000100,00000255,00000264,00000282,00000290,00000291,00000392,12002000592,00001006,12001595,12002442,12002925,00002973,12003180,12003181,12003182	Yes	300000		1469	1073	1849	0	0	1646	89.0599976	14071.4004			Y	HDR Identification Process

Table 12. Potential Flood Management Evaluations Identified by RFPG

FME ID	RFPG No.	RFPG Name	FME Name	Description	Associated Goals	Counties	HUC8s	HUC12s	Watersheds	Study Type	FME Area (sqmi)	Flood Risk Type	Sponsor	Entities with Oversight	Emergency Need	Estimated Study Cost	Potential Funding Sources	Estimated number of structures at flood risk	Habitable structures at flood risk	Estimated Population at flood risk	Critical facilities at flood risk (#)	Number of low water crossings at flood risk (#)	Estimated number of road closures (#)	Estimated length of roads at flood risk (Miles)	Estimated active farm & ranch land at flood risk (acres)	Existing or Anticipated Models (year)	Existing or Anticipated Maps (year)	RFPG Recommendation (Y/N)	Reason for Recommendation
121000123	12	San Antonio	City of Floresville Flood Study	City wide study	12000013	Wilson	12100303	121003030102,121003030103	12000028,12000033	Watershed Planning	7.7	Riverine, Urban,	12002925	00000100,00000255,00000282,12000592,12002925	No	100000		107	63	161	0	0	26	3.80999994	80.7819977			Y	HDR Identification Process
121000124	12	San Antonio	Highway 16 Bridge Upgrade	Closes the road down which is the main access for citizens. Study to upgrade crossing.	12000030	Bandera	12100302	121003020203,121003020204	12000088,12000089	Project Planning	0.05	Riverine,	00000011	00000011,00000255,00000339	Yes	150000		1	0	0	0	1	2	0.30000001	0.116283			Y	HDR Identification Process
121000125	12	San Antonio	Bandera State Highway 173 Study	Prevents access to citizens from the city. Study to upgrade crossing.	12000030	Bandera	12100302	121003020204	12000089	Project Planning	0.01	Riverine,	00000011	00000011,00000255,00000339	Yes	150000		0	0	0	0	0	1	0.04	0			Y	HDR Identification Process
121000126	12	San Antonio	Bandera English Crossing Study	This low water crossing can sometimes remain flooded for months. Study to upgrade road.	12000030	Bandera	12100302	121003020302	12000097	Project Planning	0.07	Riverine,	00000011	00000011,00000255,00000339	Yes	100000		0	0	0	0	0	1	0.34999999	0.44479001			Y	HDR Identification Process
121000127	12	San Antonio	Bandera FM 2107 Study	FM 2107 is the only path for residents to access community lifelines.FM 2107 is the only path for residents to access community lifelines. Study to upgrade road.	12000030	Bandera	12100302	121003020103	12000082	Project Planning	0.14	Riverine,	00000011	00000011,00000255,00000339	Yes	150000		1	0	2	0	0	2	0.60000002	0.469868			Y	HDR Identification Process
121000128	12	San Antonio	Bandera Patterson Street Study	Impairs travel for citizens to reach community lifeline services. Study to upgrade road.	12000030	Bandera	12100302	121003020201	12000087	Project Planning	0.01	Riverine,	00000011	00000011,00000255,00000339	Yes	150000		1	1	0	0	0	1	0.15000001	0.219705			Y	HDR Identification Process
121000129	12	San Antonio	Bandera Lower Mason Creek and Bandera Creek at State Highway 16	Lower Mason Creek and Bandera Creek contribute to flooding at SH 16. Study to upgrade road.	12000030	Bandera	12100302	121003020204	12000089	Project Planning	0.01	Riverine,	00000011	00000011,00000255,00000339	Yes	150000		4	4	3	0	0	1	0.15000001	0			Y	HDR Identification Process
121000130	12	San Antonio	Bandera WWTP Study	Wastewater treatment plant is in 100 yr floodplain. Study to find solutions.	12000028	Bandera	12100302	121003020203	12000088	Project Planning	0.03	Riverine,	00000011	00000011,00000255,00000339,12003414	Yes	150000		2	2	0	0	0	2	0.01	0.79224199			Y	HDR Identification Process
121000131	12	San Antonio	Bandera 470 and Indian Creek Study	Blocks public access to lifelines in Bandera. Study to upgrade road.	12000030	Bandera	12100302	121003020203	12000088	Project Planning	0.02	Riverine,	00000011	00000011,00000255,00000339	Yes	150000		0	0	0	0	0	2	0.15000001	0			Y	HDR Identification Process
121000132	12	San Antonio	Bandera 470 and Medina River Study	Blocks people of Tarpley from EMS and other lifelines in the city of Bandera. Study to upgrade road.	12000030	Bandera	12100302	121003020203	12000088	Project Planning	0.01	Riverine,	00000011	00000011,00000255,00000339	Yes	150000		0	0	0	0	0	1	0.47	0			Y	HDR Identification Process
121000133	12	San Antonio	Natural capital inventory	Development of a dataset identifying lands under conservation easement. Project includes courthouse and deed records research to identify lands that are protected or have future development restrictions.	12000014	Atascosa,DeWitt,Wilson,Medina,Bexar,Guadalupe,Bandera,Comal,Kendall,Kerr,Aransas,Refugio,Calhoun,Goliad,Victoria,Karnes	12100201,12100202,12100301,12100303,12100304 ,12110110 ,12100302			Watershed Planning	4409.74	Riverine, Coastal, Urban,	00000282	00000011,00000255,00000339	No	300000		19145	13704	66191	0	0	9511	753.049988	62646.1016			Y	HDR Identification Process
121000134	12	San Antonio	Evaluation and prioritization of new gauge locations	Study to identify stream gage locations in the San Antonio River Basin and cost effective/resilient monitoring technologies.	12000014	Atascosa,DeWitt,Wilson,Medina,Bexar,Guadalupe,Bandera,Comal,Kendall,Kerr,Aransas,Refugio,Calhoun,Goliad,Victoria,Karnes	12100201,12100202,12100301,12100303,12100304 ,12110110 ,12100302			Watershed Planning	4409.74	Riverine, Coastal, Urban,	00000282	00000011,00000255,00000339	Yes	50000		19145	13704	66191	0	0	9511	753.049988	62646.1016			Y	HDR Identification Process
121000135	12	San Antonio	Future conditions data refinement study	Future conditions data refinement study,study future landuse and apply to future models	12000013	Atascosa,DeWitt,Wilson,Medina,Bexar,Guadalupe,Bandera,Comal,Kendall,Kerr,Aransas,Refugio,Calhoun,Goliad,Victoria,Karnes	12100201,12100202,12100301,12100303,12100304 ,12110110 ,12100302			Watershed Planning	4409.74	Riverine, Coastal, Urban,	00000282	00000011,00000255,00000339	No	500000		19145	13704	66191	0	0	9511	753.049988	62646.1016			Y	HDR Identification Process
121000136	12	San Antonio	Port of San Antonio Floodproofing	Port SA, site specific, study flood mitigation for critial structures	12000028	Bexar	12100302	121003020406	12000105	Project Planning	0.03		00000282	00000007,00000255,00000282,12003327	Yes	250000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000137	12	San Antonio	River Authority WWTP Resilience	Study of all River Authority WWTP Resilience, finding alternatives for floodproofing	12000028	Atascosa,DeWitt,Wilson,Medina,Bexar,Guadalupe,Bandera,Comal,Kendall,Kerr,Aransas,Refugio,Calhoun,Goliad,Victoria,Karnes	12100201,12100202,12100301,12100303,12100304 ,12110110 ,12100302			Project Planning	4409.74	Riverine, Coastal, Urban,	00000282	00000007,00000255,00000282,12003327	Yes	600000		19145	13704	66191	0	0	9511	753.049988	62646.1016			Y	HDR Identification Process
121000138	12	San Antonio	Bandera Substation In Floodplain Study	Electrical sub-station is in 100 yr floodplain. Study to find solutions.	12000028	Bexar	12100302	121003020405	12000104	Project Planning	0	Riverine,	00000011	00000011,00000255,00000339	Yes	150000		0	0	0	0	0	0	0	0.176359			Y	HDR Identification Process
121000139	12	San Antonio	Garcia Creek Channel Stabilization	Preliminary Engineering to identify stabilization methods and sizing.	12000030	Medina	12100302	121003020501	12000081	Project Planning	0.02	Riverine,	12003377	00000005,00000255,12003377	No	50000		0	0	0	0	0	2	0.06139042	0.09239171			Y	HDR Identification Process
121000140	12	San Antonio	Country Village Channel Improvements	Preliminary Engineering including an H&H study to size the channel improvements	12000030	Medina	12100302	121003020501	12000081	Project Planning	0.11		12003377	00000005,00000255,12003377	No	50000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000141	12	San Antonio	Lucas Creek at Cinco De Mayo Dr Bridge and Channel (DC-MRD)	Regional detention, channel improvements, and bridge/culvert upgrades, property acquisition	12000031	Bexar	12100302	121003020502,121003020503	12000107,12000108	Project Planning	0.97	Riverine,	00000005	00000007,00000255,00000282,00000392	Yes	150000		94	63	100	0	0	13	2.54999995	7.99344587			Y	HDR Identification Process
121000142	12	San Antonio	Cagnon Rd at Polecat Creek (DC-MRN)	Replace the existing crossing with an approximately 320-foot long bridge.	12000031	Bexar	12100302	121003020503	12000108	Project Planning	0.04	Riverine,	00000005	00000007,00000255,00000282,00000392	Yes	150000		1	0	2	0	0	0	0	0			Y	HDR Identification Process
121000143	12	San Antonio	Trumbo Rd at Palo Blanco Creek (DC-MRP)	Upgrades to Trumbo Rd and Loop 1604 crossings at Palo Blanco Creek with channel work.	12000031	Bexar	12100302	121003020509	12000094	Project Planning	0.25	Riverine,	00000005	00000007,00000255,00000282,00000290,00000392	Yes	100000		13	9	39	0	0	2	0.34999999	0.27402401			Y	HDR Identification Process
121000144	12	San Antonio	Wet-Proof Wastewater System	This action proposes "wet-proofing" city sewer lines to the Wastewater Treatment Plant	12000028	Medina	12100302	121003020501,121003020503	12000081,12000108	Project Planning	0.63	Riverine,	12002954	00000005,00000255,12002954	Yes	50000		170	133	263	0	0	24	4.21999979	1.40019			Y	HDR Identification Process
121000146	12	San Antonio	Additional flood proof at wastewater treatment plant	Study to evaluate removing the WWTP from flood and erosion risk	12000028	Wilson	12100304	121003040302	12000056	Project Planning	0.02	Riverine,	12003180	00000100,00000255,00000282,00000392,12003180	Yes	150000		5	5	9	0	0	2	0.14	2.0121901			Y	HDR Identification Process
121000147	12	San Antonio	Recommend for Wilson Roadways - Project 7 - CR 119 & Mariana Creek	Study: Upgrade bridge so that it provides a safe evacuation route during large storm events.	12000030	Wilson	12100303	121003030104	12000032	Project Planning	0	Riverine,	00000011	00000100,00000255,00000282	Yes	100000		0	0	0	0	0	1	0.04	0			Y	HDR Identification Process
121000148	12	San Antonio	Property acquisition and demolition and/or relocations	Property acquisition and demolition and/or relocations	12000022	Wilson	12100303	121003030102,121003030103	12000028,12000033	Project Planning	7.7	Riverine, Urban,	12002925	00000100,00000255,00000282,12000592,12002925	No	1500000		107	63	161	0	0	26	3.80999994	80.7819977			Y	HDR Identification Process
121000149	12	San Antonio	Damage Center 2: Project 1 Channelization	The channelization project would add 8 feet to the left bank of the channel, and the depth would be kept at its existing elevation. The project would remove two structures adjacent to the stream from the floodplain.	12000026	Wilson	12100303	121003030103	12000033	Project Planning	0	Riverine,	12002925	00000100,00000255,00000282,12002925	No	100000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000151	12	San Antonio	Repetitive loss properties	Offer relocation/mitigation incentives to current flood hazard area property owners; initiate a community program to acquire repetitive loss structures identified by FEMA.	12000024	Wilson	12100304	121003040304,121003040302	12000053,12000056	Project Planning	1.72	Riverine, Urban,	12003180	00000100,00000255,00000282,00000392,12001595,12003180	Yes	150000		153	101	568	0	0	20	3.6400001	63.2599983			Y	HDR Identification Process
121000152	12	San Antonio	Nichols Creek Stabilization	Restoration of Nichols Creek to improve stream function including conveyance of flow and sediment.	12000026	Karnes	12100303	121003030402	12000021	Project Planning	0.02	Riverine,	00000282	00000095,00000255,00000282,00000519,12002975	No	1000000		0	0	0	0	0	1	0.01	0.1015			Y	HDR Identification Process

Table 12. Potential Flood Management Evaluations Identified by RFPG

FME ID	RFPG No.	RFPG Name	FME Name	Description	Associated Goals	Counties	HUC8s	HUC12s	Watersheds	Study Type	FME Area (sqmi)	Flood Risk Type	Sponsor	Entities with Oversight	Emergency Need	Estimated Study Cost	Potential Funding Sources	Estimated number of structures at flood risk	Habitable structures at flood risk	Estimated Population at flood risk	Critical facilities at flood risk (#)	Number of low water crossings at flood risk (#)	Estimated number of road closures (#)	Estimated length of roads at flood risk (Miles)	Estimated active farm & ranch land at flood risk (acres)	Existing or Anticipated Models (year)	Existing or Anticipated Maps (year)	RFPG Recommendation (Y/N)	Reason for Recommendation
121000153	12	San Antonio	Master Drainage Plan for Bexar County Unincorporated Areas	Engineering master plan to assess flood damage centers for Bexar County unincorporated areas.	12000024	Atascosa,Wilson,Medina,Bexar,Guadalupe,Bandera,Comal,Kendall	12100301,12100303,12100304,12110110,12100302			Watershed Planning	1253.25	Riverine, Urban,	00000007	00000095,00000255,00000282,00000519,12002975	No	150000		11261	8306	52002	0	0	4535	353.029999	7583.35986			Y	HDR Identification Process
121000154	12	San Antonio	Master Drainage Plan for Bexar County HALT Low Water	Engineering master plan to assess existing HALT sites for drainage improvements.	12000024	Atascosa,Wilson,Medina,Bexar,Guadalupe,Bandera,Comal,Kendall	12100301,12100303,12100304,12110110,12100302			Watershed Planning	1253.25	Riverine, Urban,	00000007	00000095,00000255,00000282,00000519,12002975	No	150000		11261	8306	52002	0	0	4535	353.029999	7583.35986			Y	HDR Identification Process
121000155	12	San Antonio	Culebra Creek RSWF	Engineering study to evaluate the Culebra Creek RSWF under the revised Green & Ampt hydrology.	12000030	Bexar	12100302	121003020402,121003020403,121003020404,121003020405	12000078,12000102,12000103,12000104	Project Planning	0.36	Riverine,	00000007	00000007,00000255,00000282,00000392,12001484,12003327	Yes	50000		1	0	2	0	0	9	0.5	0.202686			Y	HDR Identification Process
121000157	12	San Antonio	Rockwood Creek (SA-39)	Engineering study to assess the removal of properties and residential structures from the 100-Yr flood plain along Rockwood Creek upstream of the San Antonio River and River Side Golf Course.	12000026	Bexar	12100301	121003010203	12000011	Project Planning	0.13	Riverine,	00000007	00000007,00000255,00000282,12003327	Yes	100000		120	108	293	0	0	10	0.76999998	0			Y	HDR Identification Process
121000158	12	San Antonio	Live Oak at Salitrillo Creek (CB-9)	Engineering study to assess removal of residential structures from the Salitrillo Creek 100-Yr flood plain upstream of Martinez Creek Dam No. 5.	12000027	Bexar	12100304	121003040205	12000071	Project Planning	0.78	Riverine,	00000007	00000007,00000255,00000282,12002512,12002967	Yes	250000		40	36	94	0	0	15	0.88048929	1.68083382			Y	HDR Identification Process
121000160	12	San Antonio	Update flood information and policies	Study to compile information on residential property in flood zones, establish a volunteer acquisition / elevation program based on FEMA protocol in association with SARA studies, and review permitting process based on the 100-year flood event	12000030	Atascosa,De Witt,Wilson,Goliad,Karnes	12100202,12100303,12100304,12110110		12000014,12000016,12000019,12000020,12000021,12000022,12000023,12000024,12000025,12000026,12000027,12000030,12000034,12000037,12000040,12000041,12000042,12000043,12000045,12000052,12000057,12000070	Project Planning	749.22	Riverine, Urban,	00000095	00000095,00000096,00000099,00000100,00000255,00000260,00000264,00000282,00000290,00000291,00000519,00000526,00001006,12002756,12002757,12002974,12002975	Yes	100000		340	161	422	0	0	757	58.7999992	16557.1992			Y	HDR Identification Process
121000161	12	San Antonio	Holistic Watershed based master planning consistent with Nature Based Solutions	This Flood Management Evaluation (FME) will fill the knowledge gap in the region on the benefits of NFMS for floodplains, flood peak attenuation, ecosystem services, groundwater recharge, and recreational value	12000013	Wilson,Bexar	12100301,12100303,12100304,12110110,12100302		12000001,12000002,12000003,12000004,12000005,12000006,12000007,12000008,12000009,12000010,12000011,12000012,12000013,12000029,12000055,12000056,12000063,12000064,12000066,12000069,12000071,12000076,12000078,12000094,12000104,12001105	Watershed Planning	505.2	Riverine, Urban,	00000282	00000084,00000260,00000291,00000714,00000758,00001608	Yes	2247403.25		7156	5573	41778	0	0	2760	194.160004	1054.41003			Y	HDR Identification Process
121000162	12	San Antonio	29010 Tivoli Way	Utilize existing stormwater infrastructure by regrading the roadway to slope towards existing inlets and open channels on the north and south side of Windermere Dr on the east side of Fair Oaks Parkway. New curb installed along the west side of Fair Oak	12000029,12000030	Bexar	12100304	121003040103	12000063	Project Planning	0		12002436	00000007,00000255,00000282,12002436	No	103952.023		0	0	0	0	0	0	0	0			Y	Halff Identification Process
121000164	12	San Antonio	Abbott Road and Graytown Road at Martinez Creek Study	A 2D hydraulic study flood study is needed to evaluate alternatives to remove these roads from overtopping. Priority should be placed on this study due to two deaths in 2021.	12000030,12000027	Bexar	12100304	121003040205	12000071	Project Planning	0.1	Riverine,	00000007	00000282,00000392,12001595,00000255,00000007,12003004,00000821	Yes	300000		7	6	12	0	1	3	0.63829064	15.6234264			Y	HDR Identification Process
121000165	12	San Antonio	Cibolo Creek Spill Study	A 2D hydraulic study flood study is needed to evaluate spill flow from the creek. The spill starts 2,500ft upstream of the Bexar Bowling Way Crossing to 2,000ft north of Ullrich Road Crossing.	12000027	Bexar	12100304	121003040202,121003040206	12000069,12000072	Project Planning	1.22	Riverine,	00000010	00000007,00000282,00000255,00000821,00000392,00000010,00000291	Yes	250000		43	23	54	0	1	3	1.15756392	79.4232178			Y	HDR Identification Process
121000166	12	San Antonio	FM1346 Crossing Upgrade Study	A hydraulic study is needed to evaluate alternatives to removing the FM1346 crossing from overtopping. Improvements to this road are important due to limited detour routes available.	12000030	Bexar	12100304	121003040301,121003040302	12000055,1200056	Project Planning	0.13	Riverine,	00000007	12003004,00000007,00000392,12001595,00000255,00000282	No	150000		0	0	0	0	0	1	0.35938999	1.05086315			Y	HDR Identification Process
121000167	12	San Antonio	Live Oak Slough Creek Improvements Study	The residents living along this slough are experiencing run-off water damage to their land causing the Live Oak Slough Creek to widened, and leaving them with less land usage.	12000027	Bexar	12100302	121003020505	12000109	Project Planning	0.02	Riverine,	12003318	12003318,00000255,00000282,00000007	No	250000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000168	12	San Antonio	North Benton City Road Improvements Study	Study to improve the road and remove it from being flooded during heavy rains.	12000030	Bexar	12100302	121003020505	12000109	Project Planning	0.01	Riverine,	12003318	12003318,00000255,00000282,00000007	No	150000		7	4	6	0	1	3	0.17496911	0			Y	HDR Identification Process
121000169	12	San Antonio	Quintana Road Drainage Improvements Study	Study to improve the drainage around Quintana Road and remove it from being flooded during heavy rains.	12000030	Bexar	12100302	121003020505	12000109	Project Planning	0.04	Riverine,	12003318	12003318,00000255,00000282,00000007	No	250000		9	8	15	0	0	2	0.24336547	0.16790755			Y	HDR Identification Process
121000170	12	San Antonio	South Benton City Road Improvements Study	Study to improve the road and remove it from being flooded during heavy rains.	12000030	Bexar	12100302	121003020506	12000091	Project Planning	0.01	Riverine,	12003318	12003318,00000255,00000282,00000007	Yes	150000		0	0	0	0	0	1	0.09999163	0.02462913			Y	HDR Identification Process
121000171	12	San Antonio	S Evans Rd Road Improvements Study	Study to improve the road and remove it from being flooded during heavy rains.	12000030	Bexar	12100302	121003020506	12000091	Project Planning	0.02	Riverine,	12003318	00000255,00000282,00000007	Yes	150000		0	0	0	0	0	1	0.19998194	3.23742223			Y	HDR Identification Process
121000172	12	San Antonio	Trainer Hale at Cibolo Creek	Improvements on Low water crossing at Trainer Hale Rd and Cibolo Creek	12000030	Bexar, Guadalupe	12100304	121003040206	12000072	Project Planning	0.26	Riverine,	00000007,00000010	00000007,00000010,00000255,00000282,00000291,00000392,00000821,12001595,00002973	Yes	150000		3	0	1	0	1	1	0.74000001	6.15625			Y	Halff Identification Process
121000173	12	San Antonio	Delcrest Channel Improvements PER	Improvements to strom drains and upstream drainage system to improve street flooding in Dellcrest neighborhood.	12000029,12000030,12000033	Bexar	12100301	121003010106	12000007	Project Planning	0.02	Riverine,	12003327	00000007,00000255,00000282,12003327	No	250000		3	3	6	0	0	5	0.23999999	0			Y	Halff Identification Process
121000174	12	San Antonio	Overbrook Outfall Drainage Project Phase 3	Upsizing the existing 9' RCP and two 12'x9' RCBs to capture 100-year flood event south of Overbrook Drive.	12000029,12000030,12000033	Bexar	12100301	121003010106	12000010	Project Planning	0.06	Riverine, Urban,	12003327	00000007,00000255,00000282,12003327	No	250000		11	11	30	0	0	4	0.38999999	0			Y	Halff Identification Process
121000175	12	San Antonio	CR 326B at Ecleto Creek	Evaluate upgrades to existing bridge with consideration of backwater from San Antonio River	12000030	Karnes	12100303	121003030306	12000016	Project Planning	0.11	Riverine,	00000095	00000095,00000255,00000282,00001006	Yes	100000		0	0	0	0	0	1	1.23739672	21.8530273	40470	40470	Y	HDR Recommended
121000176	12	San Antonio	CR 237 at Marcelinas Creek	Evaluate upgrades to existing bridge with consideration of backwater from San Antonio River	12000030	Karnes	12100303	121003030204	12000027	Project Planning	0.02	Riverine,	00000095	00000095,00000255,00000282,12002974	Yes	100000		0	0	0	0	0	1	0.44689167	0.58981264	40470	40470	Y	HDR Recommended
121000177	12	San Antonio	City of Kenedy Flooding on Escondido Creek Tributary	Evaluate alternatives to mitigate flooding within City of Kenedy commercial area along Escondido Creek tributary	12000026	Karnes	12100303	121003030402	12000021	Project Planning	0.28	Riverine,	00000095	00000095,00000255,00000282,00000519,12002975	Yes	100000		10	0	23	0	0	3	0.09684192	0.05040364	40470	40470	Y	HDR Recommended
121000178	12	San Antonio	Falls City Flooding from San Antonio River	Evaluate alternatives to mitigate flooding from the San Antonio River affecting buildings in the City of Falls City	12000026	Karnes	12100303	121003030204,121003030202,121003030205	12000027,12000030,12000034	Project Planning	0.7	Riverine,	00000095	00000095,00000255,00000282,12002974	Yes	100000		28	16	15	0	0	13	1.02529824	42.8695374	40470	40470	Y	HDR Recommended
121000179	12	San Antonio	San Antonio River Flooding on US 181	Evaluate alternatives to mitigate US 181 flooding from the San Antonio River and tributaries	12000030	Karnes	12100303	121003030205	12000034	Project Planning	1	Riverine,	00000095	00000095,00000255,00000282	Yes	100000		9	5	4	0	0	3	0.57059264	163.376434	40470	40470	Y	HDR Recommended
121000180	12	San Antonio	Cibolo Creek Flooding on SH 123	Evaluate alternatives to mitigate SH 123 flooding from Cibolo Creek	12000030	Karnes	12100304	121003040405	12000057	Project Planning	0.58	Riverine,	00000095	00000095,00000255,00000282	Yes	100000		1	0	1	0	0	3	0.84994906	114.098656	40470	40470	Y	HDR Recommended
121000181	12	San Antonio	San Antonio River Flooding on SH 80	Evaluate alternatives to mitigate SH 80 flooding from the San Antonio River and tributaries	12000030	Karnes	12100303	121003030206	12000037	Project Planning	0.17	Riverine,	00000095	00000095,00000255,00000282	Yes	100000		0	0	0	0	0	1	0.12061442	14.2274141	40470	40470	Y	HDR Recommended
121000182	12	San Antonio	Localized Residential Flooding in City of Kenedy	Evaluate alternatives to mitigate localized residential flooding in the southern portion of the City of Kenedy	12000026	Karnes	12100303	121003030402	12000021	Project Planning	0.15	Urban,	00000095	00000095,00000255,00000282,00000519,12002975	Yes	100000		3	3	7	0	0	3	0.04176157	0			Y	HDR Recommended
121000183	12	San Antonio	San Antonio River Flooding on SH 72	Evaluate alternatives to mitigate SH 72 flooding from the San Antonio River and tributaries	12000030	Karnes	12100303	121003030403,121003030404	12000022,12000023	Project Planning	0.38	Riverine,	00000095	00000095,00000255,00000282,00000519	Yes	100000		0	0	0	0	0	1	0.78123552	46.7500267	40470	40470	Y	HDR Recommended

Table 12. Potential Flood Management Evaluations Identified by RFPG

FME ID	RFPG No.	RFPG Name	FME Name	Description	Associated Goals	Counties	HUC8s	HUC12s	Watersheds	Study Type	FME Area (sqmi)	Flood Risk Type	Sponsor	Entities with Oversight	Emergency Need	Estimated Study Cost	Potential Funding Sources	Estimated number of structures at flood risk	Habitable structures at flood risk	Estimated Population at flood risk	Critical facilities at flood risk (#)	Number of low water crossings at flood risk (#)	Estimated number of road closures (#)	Estimated length of roads at flood risk (Miles)	Estimated active farm & ranch land at flood risk (acres)	Existing or Anticipated Models (year)	Existing or Anticipated Maps (year)	RFPG Recommendation (Y/N)	Reason for Recommendation
121000184	12	San Antonio	Karnes County FEWS	Flood Early Warning System	12000009	De Witt,Wilson,Goliad,Karnes	12100204,12100303,12100304,12100202,12100406,12110110,12110111		12000014,12000016,12000019,12000020,12000021,12000022,12000023,12000024,12000025,12000026,12000027,12000030,12000034,12000037,12000040,12000041,12000042,12000043,12000045,12000052,12000057,12000070	Preparedness	751.06	Riverine,	00000095	00000095,00000099,00000100,00000255,00000260,00000264,00000282,00000290,00000291,00000519,00000526,00001006,12002756,12002757,12002974,12002975	Yes	100000		336	161	422	0	19	213	58.797905	14495.2178			Y	HDR Recommended

Table 13. Potentially Feasible Flood Mitigation Projects Identified by RFPG

FMP ID	RFPG No.	RFPG Name	FMP Name	Description	Associated Goals (ID)	Counties	HUC12s	Watersheds	Project Type	Project Area (sqmi)	Flood Risk Type (Riverine, Coastal, Urban, Playa, Other)	Sponsor	Entities with Oversight	Emergency Need (Y/N)	Estimated Project Cost ($)	Potential Funding Sources and Amount	Flood Risk								
																	Area in 100yr (1% annual chance) Floodplain	Area in 500yr (0.2% annual chance) Floodplain	Estimated number of structures at 100yr flood risk	Habitable structures at flood risk	Estimated Population at flood risk	Critical facilities at flood risk (#)	Number of low water crossings at flood risk (#)	Estimated number of road closures (#)	Estimated length of roads at flood risk (Miles)	Estimated active farm & ranch land at flood risk (acres)
123000001	12	San Antonio	PROJECT 1A - ADLER ROAD AT CURREY CREEK AND UNNAMED TRIBUTARY A	Improve low water crossings along Adler Road, channel regrading, curbs, sidewalks, street reconstruction.	12000029,12000030	Kendall	121003040102	12000062	LWC upgrade	0	Riverine,	12002855	00000017,00000255,00000291,12002855	Y	1611120	-	0.00290875	3E-06	0	0	1548	0	2	0	0.088	0
123000002	12	San Antonio	PROJECT 2 - UNNAMED TRIBUTARY A REGIONAL DETENTION FACILITY	Inline detention facility with culvert improvements.	12000029,12000030	Kendall	121003040102	12000062	Detention Pond	0.03	Riverine,	12002855	00000017,00000255,00000291	N	7013130	-	0.004014	0.000536	121	0	1548	0	0	0	0	0
123000003	12	San Antonio	PROJECT 3 - CURREY CREEK REGIONAL DETENTION FACILITY	Inline detention facility with additional stormdrain imporvements.	12000029,12000030	Kendall	121003040102	12000062	Detention Pond	0.04	Riverine,	12002855	00000017,00000255,00000291,12002855	N	8908570	-	0.000686	0.000122	280	0	1548	0	0	2	0.074000001	0
123000004	12	San Antonio	PROJECT 4 - SCHOOL STREET AT CIBOLO CREEK AND FREDERICK CREEK	Elevated bridge, channel grading, street reconstruction, curb, sidewalks, and driveways.	12000034	Kendall	121003040101	12000058	LWC upgrade	0	Riverine,	12002855	00000017,00000255,00000291,12002855	Y	5022920	-	0.003936	8E-06	0	0	1548	0	2	1	0.057	0
123000005	12	San Antonio	PROJECT 5D - OLD SAN ANTONIO STREET AT MENGER CREEK	Elevated bridge, channel grading, street reconstruction, curb, sidewalks, and driveways.	12000029,12000030	Kendall	121003040102	12000062	Infrastructure	0	Riverine,	12002855	00000017,00000255,00000291,12002855	N	3506560	-	0.001633	0.000164	0	0	1548	0	1	3	0.142000005	0
123000006	12	San Antonio	PROJECT 6 - JOHNS ROAD NEAR CIBOLO CROSSING SUBDIVISION	Storm drain, channel, increase capacity of existing detention.	12000029,12000030	Kendall	121003040101	12000058	Storm Drain	0.01	Riverine,	12002855	00000017,00000255,00000291,12002855	N	1421580	-	0.00056	0.00056	25	0	1548	0	0	1	0.045000002	0
123000007	12	San Antonio	PROJECT 7 - SCHWEPPE AND HICKMAN STREET	Storm drain, and channel improvments.	12000029,12000030	Kendall	121003040102	12000062	Storm Drain	0.01	Riverine, Urban,	12002855	00000017,00000255,00000291,12002855	N	1990210	-	0.000207	0.00038	38	0	1548	0	0	0	0	0
123000008	12	San Antonio	PROJECT 8 - JOHNS AND LOHMANN STREET	Storm drain and channel improvements.	12000029,12000030	Kendall	121003040101	12000058	Storm Drain	0	Riverine,	12002855	00000017,00000255,00000291,12002855	N	1705900	-	0.000165	0.001627	12	0	1548	0	0	0	0	0
123000009	12	San Antonio	PROJECT 9 - UNNAMED TRIBUTARY A-SUBDIVISION FLOOD PROTECTION & MOBILITY PROJECT	Low water crossing improvemnts, channel improvements. This project is dependent on projects 1A, 3, 12, and 13 being completed and Project 15 being implimented at the same time as this project to achieve the project benefits.	12000029,12000030	Kendall	121003040102	12000062	LWC upgrade	0.01	Riverine,	12002855	00000017,00000255,00000291,12002855	Y	4833370	-	0.00502103	3.7E-05	121	0	1548	0	4	4	0.067000002	0
123000010	12	San Antonio	PROJECT 10 - E. BLANCO ROAD AT UNNAMED TRIBUTARY A	Improve low water crossings along Blanco Road, channel regrading, curbs, sidewalks, street reconstruction.	12000034	Kendall	121003040102	12000062	LWC upgrade	0	Riverine,	12002855	00000017,00000255,00000291,12002855	Y	1516350	-	0.000859	0	0	0	1548	0	1	2	0.052000001	0
123000011	12	San Antonio	PROJECT 11 - RIVER ROAD AT UNNAMED TRIBUTARY A	Improve low water crossings along River Road, channel regrading, curbs, sidewalks, street reconstruction.	12000034	Kendall	121003040102	12000062	LWC upgrade	0	Riverine,	12002855	00000017,00000255,00000291,12002855	Y	1326810	-	0.001629	7.243E-05	0	0	1548	0	1	2	0.064000003	0
123000012	12	San Antonio	PROJECT 13 - HERFF AND ESSER ROAD IMPROVEMENTS AT CURREY AND CIBOLO CREEK	Bridge at Currey Creek and Esser Road, Bridge at Cibolo Creek and River Road, Channel grading, Roadway reconstruction.	12000029,12000030	Kendall	121003040102	12000062	Storm Drain	0.02	Riverine,	12002855	00000017,00000255,00000291,12002855	Y	14500100	-	0.020376001	0.00045854	0	0	1548	0	3	4	0.709999979	0.01165
123000013	12	San Antonio	PROJECT 12 - PLANT CHANNEL IMPROVEMENT	Channel improvements	12000029,12000030	Kendall	121003040102	12000062	Channel	0	Riverine,	12002855	00000017,00000255,00000291,12002855	N	1232040	-	0.000854	0.000321	6	0	1548	0	0	0	0	0
123000014	12	San Antonio	PROJECT 14 - EAST BOERNE REGIONAL LID	Proposed inline extended detention facility that provides water quality benefits to the urbanized tributary of Cibolo Creek and properties downstream of Scenic Loop Road.	12000029,12000030	Kendall	121003040102	12000062	Natural	0	Riverine,	12002855	00000017,00000255,00000291,12002855	N	663404	-	0	0	0	0	1548	0	0	0	0	0

Table 13. Potentially Feasible Flood Mitigation Projects Identified by RFPG

FMP ID	RFPG No.	RFPG Name	FMP Name	Description	Associated Goals (ID)	Counties	HUC12s	Watersheds	Project Type	Project Area (sqmi)	Flood Risk Type (Riverine, Coastal, Urban, Playa, Other)	Sponsor	Entities with Oversight	Emergency Need (Y/N)	Estimated Project Cost ($)	Potential Funding Sources and Amount	Flood Risk									
																	Area in 100yr (1% annual chance) Floodplain	Area in 500yr (0.2% annual chance) Floodplain	Estimated number of structures at 100yr flood risk	Habitable structures at flood risk	Estimated Population at flood risk	Critical facilities at flood risk (#)	Number of low water crossings at flood risk (#)	Estimated number of road closures (#)	Estimated length of roads at flood risk (Miles)	Estimated active farm & ranch land at flood risk (acres)
123000015	12	San Antonio	PROJECT 15 - NORTH CURREY CHANNEL IMPROVEMENTS	Channel regrading, curbs, sidewalks, street reconstruction. This project is dependent on projects 1A, 3, 12, and 13 being completed and Project 16 being implimented at the same time as this project to achieve the project benefits.	12000029,12000030	Kendall	121003040102	12000062	Channel	0.01	Riverine, Urban,	12002855	00000017,00000255,00000291,12002855	Y	663404	-	0.001359	1.03E-06	280	0	1548	0	0	0	0.079999998	0
123000016	12	San Antonio	PROJECT 16 - SOUTH CURREY CREEK CHANNEL IMPROVEMENTS	Low water crossing improvemnts, channel improvements. This project is dependent on projects 1A, 3, 12, and 13 being completed and Project 15 being implimented at the same time as this project to achieve the project benefits.	12000029,12000030	Kendall	121003040102	12000062	LWC upgrade	0.01	Riverine,	12002855	00000017,00000255,00000291,12002855	N	1421580	-	0.008477	1.249E-05	280	0	1548	0	2	3	0.079999998	0
123000017	12	San Antonio	Lewis Creek Alternative 1 Phase 1 & 2	Channel improvement, roadway improvement	12000029,12000030,12000033	Comal	121003040105	12000061	Channel	0.1	Riverine,	00002669	00000014,00000255,00000291,00002121,00002669	Y	6021780	-	0.080173999	0.0117823	34	3	255	0	1	2	0.147	0
123000018	12	San Antonio	Seeling Drainage Improvements	Install box culverts, grass lined channel construction.	12000029,12000030	Bexar	121003010202	12000010	Storm Drain	0.26	Riverine,	12003327	00000007,00000255,00000282,12003327	N	28367500	-	0.071857996	0	623	128	4041	0	0	15	1.830000043	0
123000019	12	San Antonio	Lewis Creek Tributary 2 Alternative 1 & 2	Channel widening/lowering, culvert improvement, roadway improvement.	12000029,12000030,12000033	Comal	121003040105	12000061	Detention Pond	0.22	Riverine,	00002669	00000014,00000255,00000291,00002669	N	2939380	-	0.009257	0.00436065	38	20	255	0	0	2	0.043000001	0.222395003
123000020	12	San Antonio	Lewis Creek Main	High water detection system. System includes warning signs, with flashers and automatic arm barricade.	12000005,12000006	Comal	121003040105	12000061	Preparedness	0.1	Riverine,	00002669	00000014,00000255,00000291,00002121,00002669	Y	165184	-	0.080173999	0.0117823	34	3	255	0	1	2	0.147	0
123000021	12	San Antonio	Rock Creek - Alt 1	Reducing the height of the drop structure at the Olmos Creek outfall, Bridge replacements will be required for both the railroad crossing and West Ave.	12000029,12000030	Bexar	121003010201	12000008	Infrastructure	0.52	Riverine,	12003327	00000007,00000255,00000282,00000392,12002439,12003327	Y	17640700	-	0.123999998	0.033797398	14	0	81	0	2	5	1.75	0
123000022	12	San Antonio	Judson and Lookout LWC Improvement	Upgrade the low water crossings and the connecting/downstream channel.	12000029,12000030	Bexar	121003010104	12000004	LWC upgrade	0.03	Riverine,	12003327	00000007,00000255,00000282,12003327	Y	6301200	-	0.004666	0	0	0	63	0	2	2	0.143999994	0
123000023	12	San Antonio	Symphony Lane Voluntary Property Acquisition	Purchase 32 properties located west of the San Antonio River Symphony Reach, and along Pyron Ave and Symphony Lane.	12000025	Bexar	121003010203	12000011	Property Acquisition	0.42	Riverine,	12003327	00000007,00000255,00000282,12003327	Y	33019300	-	0.239492998	0.00123992	32	42	84	0	3	4	1.24000001	1.681489944
123000024	12	San Antonio	Holbrook Road Improvements	Offset a portion of the roadway south of Woodburn Rd.	12000033	Bexar	121003010105	12000002	Infrastructure	0.05	Riverine,	12003327	00000007,00000255,00000282,12003327	N	14608100	-	0.012145	0	0	0	0	0	0	1	0.148000002	0
123000025	12	San Antonio	Barbara Drive Drainage Improvements	Upsizing the boxes underneath Dellwood Drive and Oblate Drive. The improvements will also include reconstruction of the street and curb for the portion of Dellwood Drive and Oblate Drive within the project boundary.	12000029,12000030	Bexar	121003010201	12000008	Storm Drain	0.29	Riverine,	12003327	00000007,00000255,00000282,12003327	Y	27826900	-	0.065517999	0	42	74	129	0	1	16	1.950000048	0
123000026	12	San Antonio	Thames Drainage Channel Replacement - Alt 1	Replace the existing culverts at Blanco Rd., San Pedro Ave, Thames Dr, Private Dr and Dorsets.	12000029,12000030	Bexar	121003010201	12000008	Storm Drain	0.19	Riverine,	12003327	00000007,00000255,00000282,00000392,12002439,12003327	N	28990700	-	0.034044001	0.00492643	26	20	87	0	4	11	1.230000019	0
123000027	12	San Antonio	Shady Lane Dr.Voluntary Property Acquisition	This project consist primarily of property buy-outs within the floodplain to mitigate structural flooding to those properties.	12000025	Bexar	121003020401	12000076	Property Acquisition	0	Riverine,	12003327	00000007,00000255,00000282,12003327	N	1306980	-	0.003663	0.00092649	7	5	21	0	0	1	0.057	0
123000028	12	San Antonio	Concepcion Creek Improvements Project	Ph1. 54-ac detention, property acquisition and 10,000ft of storm drain systems and road reconstruction. Ph2. 1.36mi of Concepcion Creek channel improvements. Ph3. 2,300ft of (3)10x8 MBC systems.	12000026,12000027	Bexar	121003010202,121003010203	12000010,12000011	Infrastructure	0.96	Riverine,	12003327	00000007,00000255,00000282,00000392,12003327	Y	179482000	-	0.153999999	0.00364535	4216	3891	11177	2	10	1908	9.699999809	0
123000029	12	San Antonio	Damage Center 1 Project1 – Detention in East Branch Poth Creek	Storage in this area would reduce downstream flooding and remove existing structures from the FEMA floodplain	12000029,12000030	Wilson	121003030204	12000027	Detention Pond	0.05	Riverine,	12003181	00000100,00000255, 00000282, 12003181	N	1986000	-	0.0156588	0	188	160	441	0	0	0	1	0.324212998

Table 13. Potentially Feasible Flood Mitigation Projects Identified by RFPG

FMP ID	RFPG No.	RFPG Name	FMP Name	Description	Associated Goals (ID)	Counties	HUC12s	Watersheds	Project Type	Project Area (sqmi)	Flood Risk Type (Riverine, Coastal, Urban, Playa, Other)	Sponsor	Entities with Oversight	Emergency Need (Y/N)	Estimated Project Cost ($)	Potential Funding Sources and Amount	Flood Risk								
																	Area in 100yr (1% annual chance) Floodplain	Area in 500yr (0.2% annual chance) Floodplain	Estimated number of structures at 100yr flood risk	Habitable structures at flood risk	Estimated Population at flood risk	Critical facilities at flood risk (#)	Number of low water crossings at flood risk (#)	Estimated number of road closures (#)	Estimated length of roads at flood risk (Miles)	Estimated active farm & ranch land at flood risk (acres)
123000030	12	San Antonio	Damage Center 2-Project 1 Culvert Improvements at Menchaca	Significant overtopping at one 3' x 5' box culvert. Improving this culvert would provide emergency access to the areas of Poth west of Poth Creek.	12000029,12000030	Wilson	121003030105	12000035	LWC upgrade	0	Riverine,	12003181	00000100,00000255, 00000282, 12003181	Y	2204000	-	0.00840893	0	2	0	6	0	1	1	0.02	0
123000031	12	San Antonio	Damage Center 2- Project 2 Road connection from Mosspoint to Sunshine	During a large storm event, access to and from residences adjacent to Mosspoint Street is compromised.	12000033,12000034	Wilson	121003030204	12000027	Infrastructure	0.05	Riverine,	12003181	00000100,00000255, 00000282, 12003181	N	1389000	-	0.00657182	0	0	0	0	0	0	0	0	0
123000032	12	San Antonio	Woodlawn Lawn Lake Option 2	Detention, Storm drain improvements, Culvert Improvments, Roadway Improvements.	12000029,12000030,12000033	Bexar	121003010202	12000010	Channel	0.06	Riverine,	12002438	00000007,00000255, 00000282, 12002438, 12003327	N	9196000	-	0.0144271	0	19	19	224	0	0	4	0.140000001	0
123000033	12	San Antonio	LWC at Old Fredericksburg Rd and Balcones Creek	Improve the low water crossing at Old Fredericksburg Rd and Balcones Creek.	12000030,12000031	Bexar, Kendall	121003040102	12000062	LWC upgrade	0.01	Riverine,	00000007,00000017	00000007,00000017, 00000255, 00000282, 00000291	Y	10270000	-	0.00676728	0	0	0	0	0	1	1	0.115999997	0.259117991
123000034	12	San Antonio	Elm Spring	Flooding creates dangerous driving conditions and flood multiple homes. Proposed Storm drain system along Elm spring.	12000029,12000030	Bexar	121003010201	12000066	Storm Drain	0.05	Urban,	12003000	00000007,00000255, 00000282, 12003000	N	2191000	-	0.0150733	0	17	15	65	0	0	0	1	0
123000035	12	San Antonio	De Zavala/ Ripple Creek	Flooded street on De Zavala Rd and backwater on Ripple Creek Rd.	12000029,12000030	Bexar	121003010201	12000066	Storm Drain	0.07	Urban,	12003000	00000007,00000255, 00000282, 12003000	N	1729000	-	0.0155456	0	12	12	24	0	0	1	0.073155999	0
123000036	12	San Antonio	Blanco Road at Cibolo Creek	Improve Low water crossing at Blanco Rd and Cibolo Creek.	12000030,12000031	Bexar, Comal	121003040104	12000027	LWC upgrade	0.01	Riverine,	00000007,00000014	00000007,00000014, 00000255, 00000282, 00000291	Y	21717000	-	0.116649002	0	0	0	0	0	1	2	0.225932002	0
123000037	12	San Antonio	Specht/Obst Road at Cibolo Creek	Improve Low water crossing at West Specht Rd/ Obst Rd and Cibolo Creek.	12000030,12000031	Bexar, Comal	121003040104	12000027	LWC upgrade	0.06	Riverine,	00000007,00000014	00000007,00000014, 00000255, 00000282, 00000291	Y	4494000	-	0.116649002	0	3	2	3	0	1	1	2.171420097	0.355643004
123000038	12	San Antonio	Toutant Beauregard at Balcones Creek	Low water crossing Improvements at Toutant Beaureguard Rd and Upper Balcones Rd Intersection and Balcones Creek.	12000030,12000031	Bexar, Kendall	121003040102	12000062	LWC upgrade	0.06	Riverine,	00000007,00000017	00000007,00000017, 00000255, 00000282, 00000291	Y	3647000	-	0.026812799	0	0	0	0	0	1	2	0.539126992	7.247290134
123000039	12	San Antonio	Boerne Stage Road at Balcones Creek	Improvements on Low water crossing at Boerne Stage rd and Balcones.	12000030,12000031	Bexar, Kendall	121003040102	12000062	LWC upgrade	0.03	Riverine,	00000007,00000017	00000007,00000017, 00000255, 00000282, 00000291	Y	5855000	-	0.0117194	0	1	1	0	0	1	2	0.126038	0
123000040	12	San Antonio	Blue Ridge Drive Drainage Improvements	Improve neighborhood and street flooding along Blue Ridge Drive by installing new culverts and a flow bypass system.	12000029,12000030	Bexar	121003010202	12000010	Storm Drain	0.02	Riverine,	12003327	00000007,00000255, 00000282, 12003327	N	21064000	-	0.013752	0	49	47	163	0	0	11	0.457812011	0
123000041	12	San Antonio	Southwell Road Drainage Improvements	Improve the two Low water crossings along Encino Park Road and Southwell Road intersecting Huebner Creek.	12000029,12000030	Bexar	121003020405	12000104	LWC upgrade	0.03	Riverine,	12003327	00000007,00000255, 00000282, 12003327	Y	5921000	-	0.00951092	0	15	15	14	0	2	2	0.058062099	0
123000042	12	San Antonio	Ridge Run Street Area Drainage Improvements	Improve drainage east of Ridge Run Drive along Culebra Creek to contain 100 year flood event.	12000029,12000030	Bexar	121003020404	12000103	Channel	0.03	Riverine,	12003327	00000007,00000255, 00000282, 12003327	N	10443000	-	0.0242971	0	30	30	89	0	0	5	0.303059012	0
123000043	12	San Antonio	Huebner Creek Channelization (LWC #28)	Improve Low water crossing at intersection of Huebner creek and Hollyhock road. Improve drainage upstream and downstream of crossing.	12000030	Bexar	121003020405	12000104	LWC upgrade	0.02	Riverine,	12003327	00000007,00000255, 00000282, 12003327	Y	8371000	-	0.017345499	0	3	1	7	0	1	1	0.086880602	0
123000044	12	San Antonio	Overbrook Drainage Improvement Phase 1 & 2	Improve drainage system south of Overbrook Drive to contain 100 year storm event.	12000029,12000030	Bexar	121003010202	12000010	Storm Drain	0.16	Riverine, Urban,	12003327	00000007,00000255, 00000282, 12003327	N	30842000	-	0.0677016	0	160	157	620	0	0	12	1.347460032	0
123000053	12	San Antonio	Abbott Road at Tributary A to Salitrillo Creek and at Salitrillo Creek Bridge	This project will provide 50-year conveyance design, removing structures from the existing floodplain. Proposed improvements consist of channel regrading, increasing the road elevation, upgrading culverts, and adding a bridge.	12000031	Bexar	121003040205	12000071	LWC upgrade	0.02	Riverine,	00000007	00000392,12001595,00000007,00000282,00000255,00000821,12003004	N	5468000	-	0.008215	0	0	0	0	0	2	36	1	0

Table 14. Potentially Feasible Flood Management Strategies Identified by RFPG

FMS ID	RFPG No.	RFPG Name	FMS Name	Description	Associated Goals (ID)	Counties	HUC8s	HUC12s	Watersheds	Project Type	Strategy Project Area (sqmi)	Flood Risk Type (Riverine, Coastal, Urban, Playa Other)	Sponsor	Entities with Oversight	Emergency Need (Y/N)	Nonrecurring, Noncapital Cost ($)	Esitimated Total Strategy Cost ($)	Potential Funding Sources and Amount	Flood Risk								
																			Area in 100yr (1% annual chance) Floodplain	Area in 500yr (0.2% annual chance) Floodplain	Estimated number of structures at 100yr flood risk	Habitable structures at flood risk	Estimated Population at flood risk	Critical facilities at flood risk (#)	Number of low water crossings at flood risk (#)	Estimated number of road closures (#)	Estimated length of roads at flood risk (Miles)	Estimated active farm & ranch land at flood risk (acres)
122000001	12	San Antonio	Study the San Antonio River and its tributes	When the San Antonio River floods, the city is cutoff from the rest of the county (hospital and EMS) with islands lasting over a week. Install stream gauges and develop a study to identify solutions to flooding. SARA completed a study but County official	12000007	Karnes	12100303	121003030204,121003030202	12000027,12000030	Regulatory and Guidance	0.91	Riverine, Urban,	12002974	00000095 , 00000255 , 00000282 , 12002974	N	250000	250000	- 0	0.439664006	0.080706	37	19	53	0	0	21	1	27.72999954
122000002	12	San Antonio	San Antonio River drainage ownership study	Develop ownership and access understanding parcels fronting the San Antonio River and major tributaries to have better agreements and access to areas that need flood control mitigation and erosion control	12000001	Karnes	12100303	121003030204,121003030202	12000027,12000030	Education and Outreach	0.91	Riverine, Urban,	12002974	00000095 , 00000255 , 00000282 , 12002974	N	30000	30000	- 0	0.439664006	0.080706	37	19	53	0	0	21	1	27.72999954
122000003	12	San Antonio	San Antonio River drainage ownership mapping	Develop ownership and access understanding parcels fronting the San Antonio River and major tributaries to have better agreements and access to areas that need flood control mitigation and erosion control	12000001	Karnes	12100303	121003030401,121003030402,121003030403,121003030205,121003030206	12000020,12000021,12000022,12000034,12000037	Education and Outreach	2.31	Riverine,	12002756	00000095 , 00000255 , 00000282 , 00000519 , 12002756	N	30000	30000	- 0	0.079442002	0.014419	6	5	159	0	0	5	0	0.699999988
122000004	12	San Antonio	San Antonio River drainage ownership mapping	Develop ownership and access understanding parcels fronting the San Antonio River and major tributaries to have better agreements and access to areas that need flood control mitigation and erosion control	12000001	Karnes	12100303	121003030402	12000021	Education and Outreach	3.67	Riverine, Urban,	12002975	00000095 , 00000255 , 00000282 , 00000519 , 12002975	N	30000	30000	- 0	0.404747993	0.164841995	42	24	59	0	0	21	0	6.010000229
122000005	12	San Antonio	San Antonio River drainage ownership mapping	Develop ownership and access understanding parcels fronting the San Antonio River and major tributaries to have better agreements and access to areas that need flood control mitigation and erosion control	12000001	Karnes	12100303	121003030306,121003030404	12000016,12000023	Education and Outreach	1.18	Riverine, Urban,	12002757	00000095 , 00000255 , 00000282 , 00001006 , 12002757	N	30000	30000	- 0	0.051291	0.00469	4	3	14	0	0	4	0	1.090000033
122000006	12	San Antonio	Strengthen floodplain management ordinances	Adopt higher floodplain standards for new development	12000021, 12000022	Wilson	12100303	121003030204,121003030105	12000027,12000035	Regulatory and Guidance	3.18	Riverine, Urban,	12003181	00000100 , 00000255 , 00000282 , 12003181	Y	25000	25000	- 0	0.322614014	0.052650001	69	50	100	0	5	25	2	9.760000229
122000007	12	San Antonio	Education Signage	Install educational signage such as "Turn around don't drown" at high risk low water crossings.	12000005	Wilson	12100303	121003030204,121003030105	12000027,12000035	Education and Outreach	3.18	Riverine, Urban,	12003181	00000100 , 00000255 , 00000282 , 12003181	Y	5000	5000	- 0	0.322614014	0.052650001	69	50	100	0	5	25	2	9.760000229
122000008	12	San Antonio	Digital signage for communication	Coordinate with school district to use sign on US 181 for emergency info and safety directions during hazard events.	12000005	Wilson	12100303	121003030204,121003030105	12000027,12000035	Education and Outreach	3.18	Riverine, Urban,	12003181	00000100 , 00000255 , 00000282 , 12003181	Y	5000	5000	- 0	0.322614014	0.052650001	69	50	100	0	5	12	2	9.760000229
122000009	12	San Antonio	Early warning system education	Alert the population through education material, media and other methods about enrolling in the early warning system	12000001	Wilson	12100303	121003030204,121003030105	12000027,12000035	Education and Outreach	3.18	Riverine, Urban,	12003181	00000100 , 00000255 , 00000282 , 12003181	Y	5000	5000	- 0	0.322614014	0.052650001	69	50	100	0	5	25	2	9.760000229
122000010	12	San Antonio	Development of a Streamscaping Program for Flood Risk Management in Texas	Increase the number of public outreach and education activities to improve awareness of flood hazards and benefits of flood planning in the Flood Planning Region. Promote nature-based solution training	12000014	Wilson,Bexar,Goliad,Karnes	12100301,12100303,12100304,12110110,12100302	N/A	12000001,12000002,12000003,12000004,12000005,12000006,12000007,12000008,12000009,12000010,12000011,12000012,12000013,12000029,12000055,12000056,12000063,12000064,12000066,12000069,12000071,12000076,12000078,12000094,12000104,12000105	Education and Outreach	505.2	Riverine, Urban,	00000282	00000100 , 00000255 , 00000282 , 12003181	N	129000	129000	- 0	57.54629898	2.096080065	7156	5561	41778	73	78	1237	194	956.4500122
122000011	12	San Antonio	Automatic low water crossings and gauges	Add automatic low water crossings and gauges at various locations, providing real time flood information to the region. This would include development of a plan to identify locations, followed by installation.	12000005	Bexar,Bandera,Comal,Kendall,Kerr	12100304,12100201,12100302	N/A	12000058,12000062,12000063,12000095,12000096	Flood Measurement and Warning	660.51	Riverine, Urban,	00000017	00000007 , 00000017 , 00000022 , 00000255 , 00000282 , 00000291 , 00000297 , 00000339 , 00000936 , 12000937 , 12001324 , 12002226 , 12002367 , 12002436 , 12002855	Y	100000	100000	- 0	6.969930172	0.826269984	628	398	1812	5	21	147	12	42.72999954
122000012	12	San Antonio	Update flood information and policies	Identify and compile information on flood hazard areas and residential property in flood zones, establish and implement a volunteer acquisition / elevation program based on FEMA protocol in association with SARA studies, and review permitting process bas	12000021, 12000022	Karnes	12100303	121003030402	12000021	Regulatory and Guidance	3.67	Riverine, Urban,	12002975	00000095 , 00000255 , 00000282 , 00000519 , 12002975	N	100000	100000	- 0	0.404747993	0.164841995	42	24	59	0	0	22	0	6.010000229
122000013	12	San Antonio	Shelter requirement for RV parks	Adopt and implement an ordinance to require RV Parks to provide shelter facilities.	12000005	Atascosa,De Witt,Wilson,Goliad,Karnes	12100204,12100303,12100304,12100202,12100406,12110110,12110111	N/A	12000014,12000016,12000019,12000020,12000021,12000022,12000023,12000024,12000025,12000026,12000027,12000030,12000034,12000037,12000040,12000041,12000042,12000043,12000045,12000052,12000057,12000070	Regulatory and Guidance	749.22	Riverine, Urban,	00000095	00000095 , 00000096 , 00000099 , 00000100 , 00000255 , 00000260 , 00000264 , 00000282 , 00000290 , 00000291 , 00000519 , 00000526 , 00001006 , 12002756 , 12002757 , 12002974 , 12002975	N	10000	10000	- 0	120.5579987	17.8220005	336	161	422	0	19	757	59	14495.40039
122000014	12	San Antonio	Public Education & Outreach	Create a program to educate the public about specific mitigation actions for flooding hazards	12000001, 12000012	Medina	12100302	121003020501,121003020503	12000081,12000108	Education and Outreach	0.63	Riverine,	12002954	00000005 , 00000255 , 12002954	N	35000	35000	- 0	0.252743989	0.026970999	170	133	263	0	5	23	4	1.330000043
122000015	12	San Antonio	Public education and outreach	Implement public education and outreach programs to educate citizens about mitigation against (flood) hazards; seek partnership with county neighboring communities and San Antonio River Authority.	12000001	Wilson	12100304	121003040304,121003040302	12000053,12000056	Education and Outreach	1.72	Riverine, Urban,	12003180	00000100 , 00000255 , 00000282 , 00000392 , 12001595 , 12003180	N	5000	5000	- 0	0.702579975	0.098123997	153	101	568	0	0	26	4	62.15999985
122000016	12	San Antonio	Citizen flood education outreach	Educate citizens about mitigation strategies prior to any flood conditions, including dangers of debris flooding roads and how to best floodproof homes and businesses.	12000001	Wilson	12100303	121003030102,121003030103	12000028,12000033	Education and Outreach	7.7	Riverine, Urban,	12002925	00000100 , 00000255 , 00000282 , 12000592 , 12002925	N	10000	10000	- 0	1.414610028	0.209141999	107	63	161	3	2	31	4	74.56999969
122000017	12	San Antonio	Updating floodplain ordinances and development code	Updating floodplain ordinances and development code	12000011	Wilson	12100304	121003040304,121003040302	12000053,12000056	Regulatory and Guidance	1.72	Riverine, Urban,	12003180	00000100 , 00000255 , 00000282 , 00000392 , 12001595 , 12003180	N	50000	50000	- 0	0.702579975	0.098123997	153	101	568	0	0	26	4	62.15999985
122000019	12	San Antonio	Conservation Easement Program	Develop a Conservation Easement Program.	12000021	Medina,Bexar	12110107,12110109,12100302	121101070108,121100302010101,121003020307,121003020501,121003020304,121003020305,121003020502,121003020503	12000075,12000081,12000099,12000100,12000107,12000108	Regulatory and Guidance	69.34	Riverine,	00000005	00000005 , 00000255 , 00000290 , 00000299 , 12002954 , 12003377	N	50000	50000	- 0	11.1019001	6.285729885	362	255	444	1	25	292	15	2208.25
122000020	12	San Antonio	City of Floresville Floodplain Ordinance and Development Code Update	Create a floodplain ordinance and update development code	12000011	Wilson	12100303	121003030102,121003030103	12000028,12000033	Regulatory and Guidance	7.7	Riverine, Urban,	12002925	00000100 , 00000255 , 00000282 , 12000592 , 12002925	Y	100000	100000	- 0	1.414610028	0.209141999	107	63	161	3	2	31	4	74.56999969

Table 14. Potentially Feasible Flood Management Strategies Identified by RFPG

FMS ID	Reduction in Flood Risk												Cost/ Structure removed	Consideration of Nature-based Solution (Y/N)	Negative Impact (Y/N)	Negative Impact Mitigation (Y/N)	Water Supply Benefit (Y/N)	RFPG Recommendation (Y/N)	Reason for Recommendation
	Number of structures with reduced 100yr (1% annual chance) Flood risk	Number of structures removed from 100yr (1% annual chance) Flood risk	Number of structures removed from 500yr (0.2% annual chance) Flood risk	Habitable structures removed from 100yr (1% annual chance) Flood risk	Estimated Population removed from 100yr (1% annual chance) Flood risk	Critical facilities removed from 100yr (1% annual chance) Flood risk (#)	Number of low water crossings removed from 100yr (1% annual chance) Flood risk (#)	Estimated reduction in road closure occurrences	Estimated length of roads removed from 100yr flood risk (Miles)	Estimated active farm & ranch land removed from 100yr flood risk (acres)	Estimated reduction in fatalities (if available)	Estimated reduction in injuries (if available)							
122000001	0	0	0	0	0	0	0	0	0	0	0	0	0	N	N	N	N	Y	Halff Identification Process
122000002	0	0	0	0	0	0	0	0	0	0	0	0	0	N	N	N	N	Y	Halff Identification Process
122000003	0	0	0	0	0	0	0	0	0	0	0	0	0	N	N	N	N	Y	Halff Identification Process
122000004	0	0	0	0	0	0	0	0	0	0	0	0	0	N	N	N	N	Y	Halff Identification Process
122000005	0	0	0	0	0	0	0	0	0	0	0	0	0	N	N	N	N	Y	Halff Identification Process
122000006	0	0	0	0	0	0	0	0	0	0	0	0	0	N	N	N	N	Y	Halff Identification Process
122000007	0	0	0	0	0	0	0	0	0	0	0	0	0	N	N	N	N	Y	Halff Identification Process
122000008	0	0	0	0	0	0	0	0	0	0	0	0	0	N	N	N	N	Y	Halff Identification Process
122000009	0	0	0	0	0	0	0	0	0	0	0	0	0	N	N	N	N	Y	Halff Identification Process
122000010	0	0	0	0	0	0	0	0	0	0	0	0	0	N	N	N	N	Y	Halff Identification Process
122000011	0	0	0	0	0	0	0	0	0	0	0	0	0	N	N	N	N	Y	Halff Identification Process
122000012	0	0	0	0	0	0	0	0	0	0	0	0	0	N	N	N	N	Y	Halff Identification Process

Table 15. Flood Management Evaluations Recommended by RFPG

FME ID	FME Name	Description	Associated Goals	Counties	HUC8s	HUC12s^	Watershed Names	FME Study Area (sqmi)	Flood Risk Type	Sponsor	Entities Oversight	Emergency Need	Etimated Study Cost	RFPG Recommendation	Reason for Recommendation
121000001	Study the San Antonio River, Ojo de Agua Creek and its tributaries	Install steam gauges and develop a study to identify solutions to flooding. Implement engineering findings to reduce and mitigate risks.	12000007,12000011,12000013,12000014	Karnes	12100303	121003030306,121003030404	12000016,12000023	1.18	Riverine, Urban,	12002757	00000095,00000255,00000282,00001006,12002757	No	250000	Y	Halff Identification Process
121000002	7820 Rolling Acres Trail	Low water crossing. Road closure gate is deployed at this crossing during large storm events.	12000033	Kendall	12100304	121003040103	12000063	0		12002436	00000017,00000255,00000291,12002436	No	290211	Y	Halff Identification Process
121000003	7900 Fair Oaks Parkway	Analysis needed to confirm no adverse impacts on the solution that was implemented.	12000011,12000013,12000014	Bexar	12100304	121003040103	12000063	0		12002436	00000007,00000255,00000282,12002436	No	60282	Y	Halff Identification Process
121000004	Ammann Road Low Water Crossing	Low water crossing runs over the street due to insufficient culverts that pass under Ammann Road. Replacing the current road with an elevated concrete bridge above the flood stage.	12000033	Kendall	12100304	121003040103	12000063	0		12002436	00000017,00000255,00000291	No	213658	Y	Halff Identification Process
121000005	7420 Rolling Acres Trail Low Water Crossing	Low Water crossing moves toward home on Meadow Creek Trail. Road Closure gate is deployed at this crossing during large storm events.	12000033	Kendall	12100304	121003040103	12000063	0	Riverine,	12002436	00000017,00000255,00000291,12002436	No	733170	Y	Halff Identification Process
121000006	8402 Battle Intense Low Water Crossing	Battle intense is often shut down in large rain events. Debris collects and damages this low water crossing	12000011,12000013,12000014	Bexar	12100304	121003040103	12000063	0	Riverine,	12002436	00000007,00000255,00000282,12002436	No	1E+06	Y	Halff Identification Process
121000007	Battle Intense LWC Flow-activated Sensors	Add flow-activated sensors and automated drop-down arms to close off a road when the water has surpassed the road.	12000005	Bexar,Comal	12100304	121003040103	12000063	0	Riverine,	12002436	00000007,00000014,00000255,00000282,00000291,12002436	Yes	179792	Y	Halff Identification Process
121000008	Rolling Acres Trail LWC Flow-activated Sensors	Add flow-activated sensors and automated drop-down arms to close off a road when the water has surpassed the road.	12000005	Kendall	12100304	121003040103	12000063	0.01	Riverine,	12002436	00000017,00000255,00000291,12002436	No	359585	Y	Halff Identification Process
121000012	Damage Center 1 (Stockdale Creek)	Stockdale Creek Stream Restoration with a natural channel design	12000029,12000030	Wilson	12100304	121003040401	12000060	0.02	Riverine,	12003182	00000100,00000255,00000282,12003182	Yes	4E+06	Y	Halff Identification Process
121000013	Karnes County Damage Centers Karnes A	Multiple structures at risk Within San Antonio River at US 181	12000011,12000013,12000014	Karnes	12100303	121003030202	12000030	0	Riverine,	12002974	00000095,00000255,00000282,12002974	No	4E+06	Y	Halff Identification Process
121000015	Master Drainage Plan	A detailed drainage study of the city of Selma	12000011,12000013,12000014	Bexar,Guadalupe,Comal	12100304	121003040201,121003040202	12000066,12000069	5.02	Riverine, Urban,	12003258	00000007,00000010,00000014,00000255,00000282,00000291,00001485,12002512,00002671,12002967,12003258,12003327	Yes	577600	Y	Halff Identification Process
121000016	Antonio Drive Drainage Improvements	Bridge at Los Reyes Creek and Antonio Dr	12000029,12000030,12000033	Bexar	12100302	121003020404	12000103	0	Riverine,	12003002	00000007,00000255,00000282,12003002	No	150000	Y	Halff Identification Process
121000017	French Creek at Guilbeau Road NWWC	A basic trapezoidal channel with side slopes of 3:1, representing an earthen channel	12000029	Bexar	12100302	121003020402	12000078	0.1	Riverine,	12003327	00000007,00000255,00000282,12003327	No	4E+06	Y	Halff Identification Process
121000018	Huebner Creek Flood Control Project Segment 1	The channel will be widened to 50” in front of Raymond Rimkus Park (6440 Evers Road) and then widened more from the park to the bridge.	12000029,12000030,12000033	Bexar	12100302	121003020405	12000104	0.07	Riverine,	12002511	00000007,00000255,00000282,12002511	Yes	2E+07	Y	Halff Identification Process
121000019	DC19: Salado Creek Tributary B	Improvement on IH 10 culvert crossing to reduce peak flood stages upstream of IH 10 channel improvements downstream of IH 10 to prevent peak flood stage increase	12000029	Bexar	12100301	121003010105	12000002	0.06	Riverine,	12003327	00000007,00000255,00000282,12003327	No	5E+06	Y	Halff Identification Process
121000020	LWC#41 Vance Jackson 200ft south of Scenic	Low Water Crossing needs Bridge/Culvert Improvements with possible advanced warning signals. Associated street reconstruction to include curbs, sidewalks, and driveway approaches be incorporated into the project.	12000029,12000033	Bexar	12100301	121003010201	12000008	0.01		12003327	00000007,00000255,00000282,12003327	Yes	283546	Y	Halff Identification Process
121000021	LWC 112.1 Pvt Rd. 300' North of Marbcah Rd.	Project consists of channel improvements and an outfall to Slick Creek to alleviate street flooding. Channel improvements include installing 10x4 MBC along the channel to improve flow at this portion of Slick Creek.	12000029	Bexar	12100302	121003020405	12000104	0.1		12003327	00000007,00000255,00000282,12003327	Yes	100000	Y	Halff Identification Process
121000022	LWC 100, Blakeley Area Drainage Improvement	This option consists of upsizing the Blakeley crossing to (3) 6'x3' RCB and providing a 7' bottom width concrete trap channel with 3:1 side slopes upstream of the crossing.	12000029	Bexar	12100301	121003010105	12000002	0	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	269346	Y	Halff Identification Process
121000024	LWC157 New Sulphur Springs Rd – East of	The proposed project will install 4-10' x 9' MBC at the LWC and reconstruct the	12000029	Bexar	12100301	121003010302	12000009	0.01	Riverine,	120033	00000007,00000255,00000	Yes	340797	Y	Halff Identification Process
121000024	LWC#156 New Sulphur Springs Rd – btwn S. Foster & Gardner	The proposed project will replace the existing culvert system with a bridge approximately 1500' in length. The proposed bridge will span two streams at this location	12000029	Bexar	12100301	121003010302	12000009	0.01	Riverine,	12003327	00000007,00000255,00000282,00000392,12001595,12003327	Yes	2E+06	Y	Halff Identification Process
121000025	LWC #159.1 Southton Rd	The proposed project will replace the existing culvert system with a bridge approximately 1500' in length.	12000029	Bexar	12100301	121003010204	12000013	0.01	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	963772	Y	Halff Identification Process
121000026	LWC #34 Sleepy Hollow @ Sunburst	This project requires the placement culverts or a bridge to eliminate a low water crossing . Street Reconstruction includes driveway approaches, curbs, and sidewalks as required.	12000029,12000033	Bexar	12100301	121003010201	12000008	0.02	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	938003	Y	Halff Identification Process
121000027	Damage Center 43-Olmos Creek Middle Reach near DeZavala	The depth of flooding for the 100-year event ranges between 0.10 and 3.82 feet, therefore, buyouts do not appear to be a practical solution	12000025	Bexar	12100301	121003010201	12000008	0.26	Riverine,	12003000	00000007,00000255,00000282,12003000	No	9E+06	Y	Halff Identification Process
121000028	Damage Center 4- Apache Creek	Majority of the flooding is caused by the undersized culverts downstream of West Woodlawn, providing addition of box culverts will provide adequate capacity to the existing storm drain system	12000029	Bexar	12100301	121003010202	12000010	0.14	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	9E+06	Y	Halff Identification Process

Table 15. Flood Management Evaluations Recommended by RFPG

FME ID	FME Name	Description	Associated Goals	Counties	HUC8s	HUC12s^	Watershed Names	FME Study Area (sqmi)	Flood Risk Type	Sponsor	Entities Oversight	Emergency Need	Etimated Study Cost	RFPG Recommendation	Reason for Recommendation
12100002 9	Apache Creek & Elmendorf Lake Dam	The Elmendorf Lake Dam area is prone to flooding and will require an extensive drainage project to mitigate the floodplain. A Preliminary Engineering Report (PER) will need to be provided to assess a feasible solution	12000013	Bexar	12100301	121003010202	12000010	0.61	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	350000	Y	Halff Identification Process
12100002 30	Cibolo Creek Tributary 19 Mapping Improvements	Alternative Anylsis and Project recommendation	12000011,12000013,12000014	Comal	12100304	121003040105,121003040104	12000061,12000064	0.82	Riverine,	00002669	00000014,00000255,00000291,00002121,00002669	No	100000	Y	Halff Identification Process
12100002 31	Indian Creek Mapping Improvements	Alternative Anylsis and Project recommendation	12000011,12000013,12000014	Comal	12100201, 12100304	121003040104,121002010404,121002010401	12000064	13.08	Riverine,	00002669	00000014,00000255,00000291,00002669	Yes	100000	Y	Halff Identification Process
12100002 32	Inventory of residences in floodplain	Identify residential structures that are located in flood zones or high hazard areas and develop plan and implement a program for floodproofing or acquistion.	12000011,12000013,12000014	Karnes	12100303	121003030204,121003030202	12000027,12000030	0.91	Riverine, Urban,	12002974	00000095,00000255,00000282,12002974	No	50000	Y	Halff Identification Process
12100002 33	Update flood information and policies	Identify and compile information on flood hazard areas and residential property in flood zones, establish and implement a volunteer acquisition / elevation program based on FEMA protocol in association with SARA studies, and review permitting process bas	12000021,12000022	Karnes	12100303	121003030401,121003030402,121003030403,121003030205,121003030206	12000020,12000021,12000022,12000034,12000037	2.31	Riverine,	00000095	00000095,00000255,00000282,00000519,12002756	No	100000	Y	HDR Identification Process
12100002 34	Inventory of residences in floodplain	Identify residential structures that are located in flood zones or high hazard areas and develop plan and implement a program for floodproofing or acquistion.	12000011,12000013,12000014	Karnes	12100303	121003030402	12000021	3.67	Riverine, Urban,	12002975	00000095,00000255,00000282,00000519,12002975	No	50000	Y	Halff Identification Process
12100002 35	Mitigate local flooding in identified problem areas	Identify problem flooding areas and implement a program to reduce loaclized flooding	12000011,12000013,12000014	Wilson	12100303	121003030204,121003030105	12000027,12000035	3.18	Riverine, Urban,	12003181	00000100,00000255,00000282,12003181	No	5000	Y	Halff Identification Process
12100002 36	Develop and implement a Stormwater Management Plan for Stockdale Creek	Stockdale Creek, sa tributary of Clinton Branch which flows into Cibolo Creek, does not have sufficient capacity to contain floodwater as it flows through the center of Stockdale. The railroad on the east side of town used to act as a levee, but when it	12000013,12000014	Wilson	12100304	121003040401	12000060	1.68	Riverine, Urban,	12003182	00000100,00000255,00000282,12003182	No	1E+06	Y	Halff Identification Process
12100002 37	Update flood information and policies	Identify and compile information on flood hazard areas and residential property in flood zones, establish and implement a volunteer acquisition / elevation program based on FEMA protocol in association with SARA studies, and review permitting process bas	12000021,12000022	Karnes	12100303	121003030204,121003030202	12000027,12000030	0.91	Riverine, Urban,	12002974	00000095,00000255,00000282,12002974	No	100000	Y	HDR Identification Process
12100002 38	Inventory of residences in floodplain	Identify residential structures that are located in flood zones or high hazard areas and develop plan and implement a program for floodproofing or acquistion.	12000011,12000013,12000014	Karnes	12100303	121003030401,121003030402,121003030403,121003030205,121003030206	12000020,12000021,12000022,12000034,12000037	2.31	Riverine,	00000095	00000095,00000255,00000282,00000519,12002756	No	50000	Y	Halff Identification Process
12100002 39	Update flood information and policies	Identify and compile information on flood hazard areas and residential property in flood zones, establish and implement a volunteer acquisition / elevation program based on FEMA protocol in association with SARA studies, and review permitting process bas	12000021,12000022	Karnes	12100303	121003030306,121003030404	12000016,12000023	1.18	Riverine, Urban,	12002757	00000095,00000255,00000282,00001006,12002757	No	100000	Y	HDR Identification Process
12100002 40	Install early warning systems	Conduct a feasibility study that evaluates the coverage area, property ownership and availability, power requirements, telemetry requirements, technology, cost, and other local considerations. Based on study findings, install an emergency warning systems	12000013,12000014	Wilson	12100303	121003030204,121003030105	12000027,12000035	3.18	Riverine, Urban,	12003181	00000100,00000255,00000282,12003181	No	100000	Y	Halff Identification Process
12100002 41	Drainage Study Marcelinas Creek and its major tributary	Marcelinas Creek has a floodplain that runs through the center of the city. Install stream gauges and identify alternatives to mitigate flooding. Implement study findings.	12000005	Wilson	12100303	121003030204,121003030105	12000027,12000035	3.18	Riverine, Urban,	12003181	00000100,00000255,00000282,12003181	No	250727	Y	Halff Identification Process
12100002 43	Drainage improvements to wastewater treatment plants	A drainage improvement was completed in 2018 with 2016 disaster relief funding. Internal plumbing was buried and the size of the weir box was increased. Funding and improvements are still needed to connect 2 and 3 and cross CR401 to increase discharge ca	12000029,12000030,12000033	Wilson	12100304	121003040401	12000060	1.68	Riverine, Urban,	12003182	00000100,00000255,00000282,12003182	Yes	852326	Y	Halff Identification Process
12100002 44	New Bridges on 6th and 8th Streets	New construction of waterway bridges on 6th and 8th Streets crossing Stockdale Creek. Lift elevation profile of the two bridges that provide access to critical facilities and services within the city as well as access from the City to the surrounding reg	12000029,12000030	Wilson	12100304	121003040401	12000060	1.68	Riverine, Urban,	12003182	00000100,00000255,00000282,12003182	Yes	651454	Y	Halff Identification Process
12100002 45	Detention/Retention pond on school property	Install a Detention/Retention pond and reservoir to store excess stormwater on school property along Fordtran Street	12000029,12000030	Wilson	12100304	121003040401	12000060	1.68	Riverine, Urban,	12003182	00000100,00000255,00000282,12003182	Yes	2E+06	Y	Halff Identification Process
12100002 46	7840 Silver Spur Trail	Runoff collects from the northside of the city and passes this point before passing under Keeneland then to the Cibolo Creek Post Oak Creek low water crossing.	12000033	Kendall	12100304	121003040103	12000063	0		12002436	00000017,00000255,00000291,12002436	No	295351	Y	Halff Identification Process
12100002 47	8410 Noble Lark Dr	Regrade channel and install erosin control measures, repair the eroded foundation of the culvert headwall	12000029,12000030	Bexar	12100304	121003040103	12000063	0		12002436	00000007,00000255,00000282,12002436	No	165562	Y	Halff Identification Process
12100002 48	D/O Center A (Old Pearsall road at Medio Creek)	Old Pearsall Rd overtopping at Medio Creek Bridge and backwater conditions created from RailRoad Bridge DS Old pearsall rd	12000011,12000013,12000014	Bexar	12100302	121003020504	12000106	0.04	Riverine	12003327	00000007,00000255,00000282,12003327	No	2E+06	Y	Halff Identification Process
12100002 49	Damage Center 1 Project2A – Improved crossing at U.S. Highway 181	Creek crossing improvements on HWY 181. Ponding upstream to an elevation that inundates adjacent homes.	12000029,12000030	Wilson	12100303	121003030204	12000027	0	Riverine	12003181	00000100,00000255,00000282,12003181	No	2E+06	Y	Halff Identification Process
12100002 52	Damage Center 2 (South Tributary to Stockdale Creek)	Detention South Tributary to Stockdale Creek near the eastern city limit	12000029,12000030	Wilson	12100304	121003040401	12000060	0.03	Riverine	12003182	00000100,00000255,00000282,12003182	No	660768	Y	Halff Identification Process

Table 15. Flood Management Evaluations Recommended by RFPG

FME ID	FME Name	Description	Associated Goals	Counties	HUC8s	HUC12s^	Watershed Names	FME Study Area (sqmi)	Flood Risk Type	Sponsor	Entities Oversight	Emergency Need	Etimated Study Cost	RFPG Recommendation	Reason for Recommendation
12100005 3	Parrigin Road Drainage Improvements	Parrigin Road low water crossing at Helotes Creek Tributary A floods frequently, limiting access for nearby residences	12000011,12000013,12000014	Bexar	12100302	121003020404	12000103	0	Riverine	12003002	00000007,00000255,00000282,12003002	No	295580	Y	Halff Identification Process
12100005 4	Detailed Study of Unnamed Trib 3 to Helotes Creek	Detailed hydrologic and hydraulic study is needed to determine appropriate drainage improvements.	12000011,12000013,12000014	Bexar	12100302	121003020404	12000103	0.02	Riverine	12003002	00000007,00000255,00000282,12003327	Yes	40000	Y	Halff Identification Process
12100005 5	Detailed Study of Culebra Creek Trib C	Three low water crossings of Culebra Creek Tributary C, Beverly Hill Drive, Doheny at FM 1560, and FM 1560. A detailed hydrologic and hydraulic study is needed to determine appropriate drainage improvements	12000011,12000013,12000014	Bexar	12100302	121003020403	12000102	0.15	Riverine	12003002	00000007,00000255,00000282,12003002	Yes	65000	Y	Halff Identification Process
12100005 6	Inventory of residences in floodplain	Identify residential structures that are located in flood zones or high hazard areas and develop plan and implement a program for floodproofing or acquistion.	12000011,12000013,12000014	Karnes	12100303	121003030306,121003030404	12000016,12000023	1.18	Riverine, Urban	12002757	00000095,00000255,00000282,00001006,12002757	No	50000	Y	Halff Identification Process
12100005 7	French Creek RSWF	An on-channel RSWF provides approximately 150 acre-feet of storag	12000029	Bexar	12100302	121003020402	12000078	0.03	Riverine	12003327	00000007,00000255,00000282,12003327	No	6E+06	Y	Halff Identification Process
12100005 8	Culebra Creek Tributary A at Tezel Road Enhanced Conveyance	Increasing the flow area by widening the channel and increasing its side slope	12000029	Bexar	12100302	121003020404	12000103	0.18	Riverine	12003327	00000007,00000255,00000282,12003327	No	4E+06	Y	Halff Identification Process
12100005 9	Helotes Creek at Bandera Road Enhanced Conveyance	Channel modifications were designed as a basic trapezoidal channel with side slopes of 3:1.	12000029	Bexar	12100302	121003020404	12000103	0.18	Riverine	12003327	00000007,00000255,00000282,12003002	No	907127	Y	Halff Identification Process
12100006 0	Helotes Creek RSWF	An off-channel RSWF provides approximately 3330 acres-ft oof storage.	12000029	Bexar	12100302	121003020404	12000103	0.42	Riverine	12003327	00000007,00000255,00000282,12003327	Yes	5E+06	Y	Halff Identification Process
12100006 1	Hubner Creek Flood Protection Barier	This project includes proposed Flood Protection Barrier between Ingram Road and Culebra Road	12000029	Bexar	12100302	121003020402,121003020404,121003020405	12000078,12000103,12000104	0.57	Riverine	12003327	00000007,00000255,00000282,12003327	Yes	2E+07	Y	Halff Identification Process
12100006 2	Damage Center 5-Salado Creek Trib F	Approximately 4,487 feet of channel improvements as well as constructing two inline reservoirs.	12000029	Bexar	12100301	121003010104	12000004	0.96	Riverine	12003327	00000007,00000255,00000282,12003327	Yes	8E+06	Y	Halff Identification Process
12100006 3	Damage Center 3-Lorence Creek	Approximately 10,000 feet of channel improvement. The proposed drainage improvements reduces the occurrence of structural flooding in several areas along the banks of the creek.	12000029	Bexar	12100301	121003010103	12000005	0.72	Riverine	12003327	00000007,00000255,00000282,12003327	Yes	2E+06	Y	Halff Identification Process
12100006 4	DC13/14: Walzem Creek	A proposed combination of regional detention and channel improvement to reduce flooding on Walzem Creek.	12000029	Bexar	12100301	121003010105	12000002	0.18	Riverine	12003327	00000007,00000255,00000282,12001486,12002476,12003327	Yes	2E+06	Y	Halff Identification Process
12100006 5	Damage Center 2- Martinez Creek	The downstream culvert system creates a backwater which will continue to affect properties near the inlet of that structure. Improved channelization and culvert/bridge replacement and voluntary property acquisition	12000029	Bexar	12100301	121003010202	12000010	0.24	Riverine	12003327	00000007,00000255,00000282,12003327	Yes	1E+07	Y	Halff Identification Process
12100006 8	Normoyle Ditch - Alt 1	Channel improvements are proposed from the Six Mile Creek outfall up to approximately 200 feet upstream of New Laredo Hwy. The project area was limited to the area south of Kelly AFB as the majority of habitable structures area	12000029,12000033	Bexar	12100302	121003020406	12000105	0.37		12003327	00000007,00000255,00000282,00000392,12003327	No	150000	Y	Halff Identification Process
12100006 9	LWC 42 Dreamland south of RR Xing	The project will consist of proposed Bridge crossing with +/- 6300 LF of total channel grading upstream and downstream and excavating to eliminate a low water crossing. Street reconstruction includes driveway approaches, curbs, and sidewalks as required	12000029,12000033	Bexar	12100301	121003010201	12000008	0.14	Riverine	12003327	00000007,00000255,00000282,00000392,12002439,12003327	Yes	770000	Y	Halff Identification Process
12100007 0	LWC No 113-116 and Associated Channel Improvements	This project proposes to upgrade LWC 115 & 116 and construct an underground storm system on Military to tie into the existing earthen channel. The underground system will consist of 10' curb inlets, 6'x3' box culverts, 24"-42" (RCP),outfall structures	12000029	Bexar	12100302	121003020405	12000104	0.04		12003327	00000007,00000255,00000282,12003327	Yes	917274	Y	Halff Identification Process
12100007 1	LWC# 91 Weidner 500 ft N of Schertz	Construct a bridge on Weidner Rd. to pass a 100 yr storm to replace LWC# 91, to include curbs and sidewalks. This project will require channel excavation. This LWC is not within a FEMA floodplain.	12000029,12000033	Bexar	12100301	121003010104	12000004	0.01		12003327	00000007,00000255,00000282,12003327	No	699299	Y	Halff Identification Process
12100007 2	LWC #15 Copperhill Between Parkstone & Happy Hollow	Low Water Crossing #15 has approximately 128 acres of storm water that is conveyed through this crossing. This project proposes to construct an underground drainage system to assist in the conveyance of runoff crossing through this section	12000029	Bexar	12100301	121003010103	12000005	0		12003327	00000007,00000255,00000282,12003327	Yes	238773	Y	Halff Identification Process
12100007 3	LWC #13 West Ave. @ Interpark	Since approximately 2006, residents have complained about flooding within a low point on West Ave. Approximately 173 acres drains through this area. This project will construct an underground drainage system with an earthen channel	12000029	Bexar	12100301	121003010102	12000001	0		12003327	00000007,00000255,00000282,12003327	Yes	1E+06	Y	Halff Identification Process
12100007 4	New Sulphur Springs – East of Lodi Rd	This project will install a cross arm/barricade at the LWC. Construction of a bridge or culvertinstallation	12000029,12000033	Bexar	12100301	121003010302	12000009	0.03	Riverine	12003327	00000007,00000255,00000282,00000392,12003327	Yes	430558	Y	Halff Identification Process
12100007 5	LWC #71 Danville and Overbrook	This project requires the replacement of existing low water crossing on Danville with an upgraded culvert (2-10'X10' MBC) or bridge to eliminate a low water crossing with some channel modifications upstream and downstream of the crossing	12000029,12000033	Bexar	12100301	121003010202	12000010	0.01	Riverine	12003327	00000007,00000255,00000282,12003327	Yes	3E+06	Y	Halff Identification Process

Table 15. Flood Management Evaluations Recommended by RFPG

FME ID	FME Name	Description	Associated Goals	Counties	HUC8s	HUC12s^	Watershed Names	FME Study Area (sqmi)	Flood Risk Type	Sponsor	Entities Oversight	Emergency Need	Etimated Study Cost	RFPG Recommendation	Reason for Recommendation
121000076	LWC#72 Spencer Lane, east of Balcones Rd.	During a rain storm event, storm water runoff from the East Woodlawn Ditch overtops the road. This project proposes the construction of a culvert crossing to include an associated energy dissipation system, headwall, and outfall structures.	12000029	Bexar	12100301	121003010202	12000010	0	Riverine	12003327	00000007,00000255,00000282,12003327	Yes	487970	Y	Halff Identification Process
121000077	Mahncke Park Outfall	To convey the 100-yr ultimate development and relieve the current backwater conditions. This project proposes drainage improvement to watershed SA4.To reduce clogging and increase effciency.	12000029	Bexar	12100301	121003010201	12000008	0.08	Riverine	12003327	00000007,00000255,00000282,12003327	No	2E+06	Y	Halff Identification Process
121000079	Damage Center 40-San Antonio River DS Reach near Roosevelt	Three lots have 100-year flood depths greater than 2 feet and were therefore not considered for flood-proofing. Due to its location between parks,it appears reasonable to be buyout the flooed properties and continue the park	12000025	Bexar	12100301	121003010203	12000011	0.31	Riverine	12003327	00000007,00000255,00000282,12003327	Yes	250000	Y	Halff Identification Process
121000081	Damage Center 38-Olmos Creek Lower Reach Near Montview	Flooding occurs on the left overbank and begins just upstream of Montview. A total of 10 lots are impacted by the 100-year storm event and the depth of flooding ranges between 0.10 and 0.15 feet.Flood depths are less than 0.5 feet; therefore	12000029	Bexar	12100301	121003010201	12000008	0.05	Riverine	12003327	00000007,00000255,00000282,00000392,12003327	No	250000	Y	Halff Identification Process
121000082	Damage Center 3- Zarzamora Creek	The proposed earthen channel would begin upstream of the pedestrian bridge and end approximately 780 feet downstream of Ingram Road	12000029	Bexar	12100301	121003010202	12000010	0.55	Riverine	12003327	00000007,00000255,00000282,12003327	Yes	3E+07	Y	Halff Identification Process
121000083	Damage Center 6- Martinez Creek	Voluntary Property Acquisition is the only option that would be recommended under current regulatory and funding scenarios	12000025	Bexar	12100301	121003010202	12000010	0.66	Riverine	12003327	00000007,00000255,00000282,12003327	No	4E+07	Y	Halff Identification Process
121000084	Damage Center 7- Zarzamora Creek	Based on the value of the homes within this damage center, VPAs appear to be a practical option that may be well received	12000025	Bexar	12100301	121003010202	12000010	0.51	Riverine	12003327	00000007,00000255,00000282,12003327	Yes	1E+07	Y	Halff Identification Process
121000085	Damage Center 9- Alazan Creek	severe flooding upstream of South Colorado Street, where the majority of the buildings flood during the 10&50 yr. Channel improvments	12000029	Bexar	12100301	121003010202	12000010	0.36	Riverine	12003327	00000007,00000255,00000282,12003327	Yes	2E+07	Y	Halff Identification Process
121000086	Damage Center 14- Airport Trib	There are four bridges within this Damage Center, of which all overtop during the 1% AC storm event. Voluntary Acquisition of 79 residential propoerties that are compromised	12000025	Bexar	12100301	121003010104,121003010201	12000004,12000008	0.35	Riverine	12003327	00000007,00000255,00000282,12003327	Yes	250000	Y	Halff Identification Process
121000087	Damage Center 19- San Pedro Creek	A lateral detention project is recommended to reduce the Camaron Street spill which will also provide some minor relief to the storm sewer surcharges at West Elmira Street, Cadwallader Street, Marshall Street, and Hill Street	12000029	Bexar	12100301	121003010202	12000010	0.11	Riverine	12003327	00000007,00000255,00000282,12003327	No	9E+06	Y	Halff Identification Process
121000088	Damage Center 20-Matinez Creek	Lateral detention is a viable alternative for this project and could be used in conjunction with VPA, and reduced channelization, to meet the desired outcomes of multi-use functionality and flood reduction.	12000029	Bexar	12100301	121003010202	12000010	0.26	Riverine	12003327	00000007,00000255,00000282,12003327	No	2E+07	Y	Halff Identification Process
121000089	Damage Center 23-New Braunfels, Austin Hwy, Broadway Drain	Reduce regional flooding and remove secure safe passage during 100 yr event. Utilizes a combined regional and local trunkline of 4'x4' and new outfall near Patterson Avenue.	12000029	Bexar	12100301	121003010201	12000008	0.88	Riverine	12003327	00000007,00000255,00000282,12002437,12002475,12003327	No	2E+07	Y	Halff Identification Process
121000090	Damage Center 32-Six Mile Creek	the proposed pond would have a direct impact on the flow in Normoyle Ditch, it is recommended that the required drainage structures be r.eanalyzed	12000013,12000014	Bexar	12100301	121003010203	12000011	0.56	Riverine	12003327	00000007,00000255,00000282,00000392,12003327	Yes	9E+06	Y	Halff Identification Process
121000091	Damage Center 34-State Hospital Creek	the channelization project will have to be constructed to remove all structures from the 1% annual chance storm event floodplain	12000029	Bexar	12100301	121003010203	12000011	0.26	Riverine	12003327	00000007,00000255,00000282,12003327	Yes	2E+06	Y	Halff Identification Process
121000092	LWC at Ammann Rd and Post Oak Creek	Improve the low water crossing at Ammann Road and Post Oak Creek	12000029	Kendall	12100304	121003040103	12000063	0.09	Riverine	00000017	00000017,00000255,00000291	No	100000	Y	Halff Identification Process
121000094	Damage Center 31-Rockwood Creek	Limits of the effective DFIRM model are incorrect based on the DFIRM hydrology if the hydrology is re-evaluated to take into account the limiting factor of the storm drain system, the actual flow to Rockwood Crk is less than the DFIRM flow	12000029	Bexar	12100301	121003010203	12000011	0.15	Riverine	12003327	00000007,00000255,00000282,12003327	Yes	150000	Y	Halff Identification Process
121000095	FM 1863 at Cibolo Creek LWC	Replace low water crossings at two locations(US &DS) where FM1863 crossing Cibolo Creek with bridges.	12000030	Bexar, Comal	12100304	121003040201	12000066	0.06	Riverine	00000007	00000007,00000014,00000255,00000282,00000291,00002669	Yes	150000	Y	Halff Identification Process
121000096	Install pipe gates to close off streets	Install automated systems at low-water crossings with high rate of vehicular access resulting in frequency of accidents and loss of life.	12000005	Wilson	12100303	121003030204,121003030105	12000027,12000035	3.18	Riverine, Urban,	12003181	00000100,00000255,00000282,12003181	Yes	250000	Y	Halff Identification Process
121000097	LWC# 101 Rittiman Creek @ Gibbs Sprawl	This proposed planning study adds culverts at the railroad crossing, upgrades the earthen channel in the park from the westerly property line to Rittiman road, and installation of larger box culverts at the Gibbs Sprawl LWC which requires Gibbs Sprawl	12000029	Bexar	12100301	121003010106	12000007	0.12	Riverine	12003327	00000007,00000255,00000282,00000392,12003327	Yes	4E+06	Y	Halff Identification Process
121000098	Maintain Drainage System	Improve storm water drainage within residential and commercial areas by removing brush and debris,opening and widening waterways, restricting building in the flood zone, and widening bridges. Status or project was 90% complete in 2012 plan awaiting purch	12000029,12000030,12000033	Wilson	12100304	121003040401	12000060	1.68	Riverine, Urban	12003182	00000100,00000255,00000282,12003182	Yes	2E+06	Y	Halff Identification Process
121000099	Upper Martinez Creek Improvements	Improvements to already channelized section of Martinez Creek (Cibolo Watershed) from Montgomery Dr to Walzem Rd and bridge improvements at Gibbs Sprawl Road	12000029	Bexar	12100304	121003040205	12000071	0.02	Riverine	12003327	00000007,00000255,00000282,00000392,12003327	No	2E+06	Y	Halff Identification Process

Table 15. Flood Management Evaluations Recommended by RFPG

FME ID	FME Name	Description	Associated Goals	Counties	HUC8s	HUC12s^	Watershed Names	FME Study Area (sqmi)	Flood Risk Type	Sponsor	Entities Oversight	Emergency Need	Etimated Study Cost	RFPG Recommendation	Reason for Recommendation
121000100	Recommend for Wilson Roadways - Project 4 - Mariana Rd & Mariana Creek	Upgrade crossing so that it provides a safe evacuation route during large storm events.	12000030	Wilson	12100303	121003030104	12000032	0	Riverine	00000100	00000100,00000255,00000282	Yes	100000	Y	HDR Identification Process
121000101	Recommend for Wilson Roadways - Project 5 - CR 108 & Mariana Creek	Upgrade crossing so that it provides a safe evacuation route during large storm events.	12000030	Wilson	12100303	121003030104	12000032	0	Riverine	00000100	00000100,00000255,00000282,00000290	Yes	100000	Y	HDR Identification Process
121000102	Erosion at CR 401 and Cibolo Creek	Phase I: Engineering study of design solutions to erosion of CR 401 at Cibolo Creek.Phase II: Implementation of stabilization project to address stream incision and erosion CR 401 at Cibolo Creek.	12000034	Wilson	12100304	121003040401	12000060	0	Riverine	00000100	00000100,00000255,00000282	Yes	100000	Y	HDR Identification Process
121000103	Erosion on CR 202 East and Marcelina Creek	Phase I: Engineering study of design solutions to erosion of CR 202 at Marcelina Creek. Phase II: Implementation of stabilization project to address stream incision and erosion CR 202 at Marcelina Creek.	12000030	Wilson	12100303	121003030204	12000027	0	Riverine	00000100	00000100,00000255,00000282	Yes	100000	Y	HDR Identification Process
121000105	Flat Creek Study	Update details on both current and expected ultimate watershed build-oit conditions, Identify at-risk infrastructure and detail oppurtunities for flood reduction, and provide mitigation plans with regard to risk due to delevopment.	12000014	Medina	12100302	121003020501,121003020502	12000081,12000107	5.8	Riverine	12003377	00000005,00000255,12003377	Yes	500000	Y	HDR Identification Process
121000106	Goliad Damage Center A	Vegetated swales along Bungalow Ave and N San Patricio St	12000032,12000012	Goliad	12100303	121003030604	12000049	0.01	Riverine	00000090	00000090,00000264,00000282,12002986	No	50000	Y	HDR Identification Process
121000107	Goliad Damage Center B	Construct dam north of W. Ward St	12000026,12000012	Goliad	12100303	121003030604	12000049	0.02	Urban	00000090	00000090,00000264,00000282	No	100000	Y	HDR Identification Process
121000108	Kempf Creek Watershed Study	H&H Study. Alternatives analysis for regional flood conveyance systems. Project identification and recommendations.	12000014	Medina	12100302	121003020501	12000081	4.87	Riverine,	12003377	00000005,00000255	Yes	150000	Y	HDR Identification Process
121000109	Lower Basin Predictive Flood Model	Lower Basin Predictive Flood Model	12000012	De Witt,Wilson,Bexar,Guadalupe,Refugio,Calhoun,Goliad,Victoria,Karnes	12100202, 12100301, 12100303, 12100304, 12110110			1481.11	Riverine, Coastal, Urban	00000282	00000005,00000255	Yes	1E+06	Y	HDR Identification Process
121000110	Culvert improvement on Hatch St in Tivoli	The bridge on Hatch Street in Tivoli was replaced with a culvert which drains slow and causes the water to breach the levee. Study to find alternatives to determine solutions for this drainage issue.	12000030	Refugio	12100404	121004040000	12000073	0	Urban	Tivoli Community	00000084,00000260,00000291,00000758,12001057,00001608	No	150000	Y	HDR Identification Process
121000111	Culvert Improvement on Highway 239 in Tivoli	Culverts on Highway 239 in Tivoli are too small causing water to get in houses. Study to find alternatives to determine solutions for this drainage issue.	12000030	Refugio	12100404	121004040000	12000073	0	Riverine, Urban	Tivoli Community	00000084,00000260,00000291,00000758,12001057,00001608	No	150000	Y	HDR Identification Process
121000112	Miller Creek on the Smoky Creek Ranch Drainage Improvements	Miller Creek on the Smoky Creek Ranch drains Tivoli and the surrounding area which is washing out property where Indian artifacts were found. Study to find alternatives to determine solutions for this drainage issue.	12000030	Refugio	12100404	121004040000	12000073	0.01	Riverine, Coastal	Tivoli Community	00000084,00000260,00000291,00000714,00000758,00001608	No	150000	Y	HDR Identification Process
121000113	New Drainage Analysis to Update/Revise Flood Maps	This action proposes performing a new drainage analysis for the community to update/revise Flood Maps to better identify areas subject to this Hazard; last study completed in September 1977.	12000014	Medina	12100302	121003020501,121003020503	12000081,12000108	0.63	Riverine	12002954	00000005,00000255,12002954	Yes	100000	Y	HDR Identification Process
121000114	Low Water Crossing Upgrades	Prioritize low water crossings within Karnes County and upgrade with higher level of flood protection, warnings, and signage	12000014,12000007	Atascosa,De Witt,Wilson,Goliad,Karnes	12100202, 12100303, 12100304, 12110110		12000014,12000016,12000019,12000020,12000021,12000022,12000023,12000024,12000025,12000026,12000027,12000030,12000034,12000037,12000040,12000041,12000042,12000043,12000045,12000052,12000057,12000070	749.22	Riverine, Urban	00000095	00000095,00000096,00000099,00000100,00000255,00000260,00000264,00000282,00000290,00000291,00000519,00000526,00001006,12002756,12002757,12002974,12002975	No	305000	Y	HDR Identification Process
121000116	Recommend for Wilson Roadways-Project 3-CR 122 & Mariana Creek	Upgrade crossing so that it provides a safe evacuation route during large storm events.	12000030	Wilson	12100303	121003030104	12000032	0	Riverine	00000100	00000100,00000255,00000282	Yes	100000	Y	HDR Identification Process
121000118	La Vernia Issue # 5 (Hwy 87 crossing and CR 342)	Study to assess city acquiring drainage easements in the area upstream of the Highway 87 crossings, as well as the area between the crossings at Highway 87 and the crossing at CR 342 for the purpose of constructing a channel.	12000016	Wilson	12100304	121003040302	12000056	0.03	Riverine	12003180	00000100,00000255,00000282,00000392,12003180	No	150000	Y	HDR Identification Process
121000119	La Vernia Issue # 2 and # 3 (City Park/ La Vernia ISD)	Study to assess 6'-wide concrete-bottom channel/sidewalk with earthen sides (graded 5:1) be constructed through this area to better define the flow path. Gauge boards on San Antonio Road. Aquire 25'-wide drainage easements.	12000013,12000032	Wilson	12100304	121003040302	12000056	0.07	Riverine	12003180	00000100,00000255,00000282,00000392,12003180	Yes	150000	Y	HDR Identification Process
121000120	Escondidio Creek WS SCS Site 1, 2, 4 Dam	Rehabilitation of Escondido Creek 1,2, and 4 to ensure passage of the PMF.	12000030	Karnes	12100303	121003030402	12000021	0.13	Riverine	00000282	00000095,00000255,00000282,00000519	No	300000	Y	HDR Identification Process
121000121	Wilson County LWC Study	Study to evaluate the LWC in Wilson County and recommend alternatives both short term and long term alternatives. Some short term alternatives could include Low Water Signage, Turn Around Don't Drown, automatic gates. 195 LWC in Wilson County.	12000030	Atascosa,Wilson,Bexar, Guadalupe,Karnes	12100202, 12100301, 12100303, 12100304, 12110110		12000006,12000012,12000027,12000028,12000029,12000030,12000031,12000032,12000033,12000034,12000035,12000036,12000038,12000039,12000040,12000041,12000052,12000053,12000054,12000056,12000057,12000059,12000060,12000065,12000070,12000072	805.06	Riverine, Urban	00000100	00000007,00000010,00000095,00000096,00000100,00000255,00000264,00000282,00000290,00000291,00000392,12000592,00001006,12001595,12002442,12002925,00002973,12003180,12003181,12003182	Yes	300000	Y	HDR Identification Process
121000123	City of Floresville Flood Study	City wide study	12000013	Wilson	12100303	121003030102,121003030103	12000028,12000033	7.7	Riverine, Urban	12002925	00000100,00000255,00000282,12000592,12002925	No	100000	Y	HDR Identification Process

Table 15. Flood Management Evaluations Recommended by RFPG

FME ID	FME Name	Description	Associated Goals	Counties	HUC8s	HUC12s^	Watershed Names	FME Study Area (sqmi)	Flood Risk Type	Sponsor	Entities Oversight	Emergency Need	Etimated Study Cost	RFPG Recommendation	Reason for Recommendation
121000124	Highway 16 Bridge Upgrade	Closes the road down which is the main access for citizens. Study to upgrade crossing.	12000030	Bandera	12100302	121003020203,121003020204	12000088,12000089	0.05	Riverine	00000011	00000011,00000255,00000339	Yes	150000	Y	HDR Identification Process
121000125	Bandera State Highway 173 Study	Prevents access to citizens from the city. Study to upgrade crossing.	12000030	Bandera	12100302	121003020204	12000089	0.01	Riverine	00000011	00000011,00000255,00000339	Yes	150000	Y	HDR Identification Process
121000126	Bandera English Crossing Study	This low water crossing can sometimes remain flooded for months. Study to upgrade road.	12000030	Bandera	12100302	121003020302	12000097	0.07	Riverine	00000011	00000011,00000255,00000339	Yes	100000	Y	HDR Identification Process
121000127	Bandera FM 2107 Study	FM 2107 is the only path for residents to access community lifelines.FM 2107 is the only path for residents to access community lifelines. Study to upgrade road.	12000030	Bandera	12100302	121003020103	12000082	0.14	Riverine	00000011	00000011,00000255,00000339	Yes	150000	Y	HDR Identification Process
121000128	Bandera Patterson Street Study	Impairs travel for citizens to reach community lifeline services. Study to upgrade road.	12000030	Bandera	12100302	121003020201	12000087	0.01	Riverine	00000011	00000011,00000255,00000339	Yes	150000	Y	HDR Identification Process
121000129	Bandera Lower Mason Creek and Bandera Creek at State Highway 16	Lower Mason Creek and Bandera Creek contribute to flooding at SH 16. Study to upgrade road.	12000030	Bandera	12100302	121003020204	12000089	0.01	Riverine	00000011	00000011,00000255,00000339	Yes	150000	Y	HDR Identification Process
121000130	Bandera WWTP Study	Wastewater treatment plant is in 100 yr floodplain. Study to find solutions.	12000028	Bandera	12100302	121003020203	12000088	0.03	Riverine	00000011	00000011,00000255,00000339,12003414	Yes	150000	Y	HDR Identification Process
121000131	Bandera 470 and Indian Creek Study	Blocks public access to lifelines in Bandera. Study to upgrade road.	12000030	Bandera	12100302	121003020203	12000088	0.02	Riverine	00000011	00000011,00000255,00000339	Yes	150000	Y	HDR Identification Process
121000132	Bandera 470 and Medina River Study	Blocks people of Tarpley from EMS and other lifelines in the city of Bandera. Study to upgrade road.	12000030	Bandera	12100302	121003020203	12000088	0.01	Riverine	00000011	00000011,00000255,00000339	Yes	150000	Y	HDR Identification Process
121000133	Natural capital inventory	Development of a dataset identifying lands under conservation easement. Project includes courthouse and deed records research to identify lands that are protected or have future development restrictions.	12000014	Atascosa,De Witt,Wilson,Medina,Bexar,Guadalupe,Bandera,Comal,Kendall,Kerr,Aransas,Refugio,Calhoun,Goliad,Victoria,Karnes	12100201, 12100202, 12100301, 12100303, 12100304, 12110110, 12100302			4409.74	Riverine, Coastal, Urban	00000282	00000011,00000255,00000339	No	300000	Y	HDR Identification Process
121000134	Evaluation and prioritization of new gauge locations	Study to identify stream gage locations in the San Antonio River Basin and cost effective/resilient monitoring technologies.	12000014	Atascosa,De Witt,Wilson,Medina,Bexar,Guadalupe,Bandera,Comal,Kendall,Kerr,A	12100201, 12100202, 12100301, 12100303,			4409.74	Riverine, Coastal, Urban	00000282	00000011,00000255,00000339	Yes	50000	Y	HDR Identification Process
121000135	Future conditions data refinement study	Future conditions data refinement study,study future landuse and apply to future models	12000013	Atascosa,De Witt,Wilson,Medina,Bexar,Guadalupe,Bandera,Comal,Kendall,Kerr,Aransas,Refugio,Calhou	12100201, 12100202, 12100301, 12100303, 12100304			4409.74	Riverine, Coastal, Urban	00000282	00000011,00000255,00000339	No	500000	Y	HDR Identification Process
121000136	Port of San Antonio Floodproofing	Port SA, site specific, study flood mitigation for critial structures	12000028	Bexar	12100302	121003020406	12000105	0.03		00000282	00000007,00000255,00000282,12003327	Yes	250000	Y	HDR Identification Process
121000137	River Authority WWTP Resilience	Study of all River Authority WWTP Resilience, finding alternatives for floodproofing	12000028	Atascosa,De Witt,Wilson,Medina,Bexar,Guadalupe,Bandera,Comal,Kendall,Kerr,Aransas,Refugio,Calhoun,Goliad,Victoria,Karnes	12100201, 12100202, 12100301, 12100303, 12100304, 12110110, 12100302			4409.74	Riverine, Coastal, Urban	00000282	00000007,00000255,00000282,12003327	Yes	600000	Y	HDR Identification Process
121000138	Bandera Substation In Floodplain Study	Electrical sub-station is in 100 yr floodplain. Study to find solutions.	12000028	Bexar	12100302	121003020405	12000104	0	Riverine	00000011	00000011,00000255,00000339	Yes	150000	Y	HDR Identification Process
121000139	Garcia Creek Channel Stabilization	Preliminary Engineering to identify stabilization methods and sizing.	12000030	Medina	12100302	121003020501	12000081	0.02	Riverine	12003377	00000005,00000255,12003377	No	50000	Y	HDR Identification Process
121000140	Country Village Channel Improvements	Preliminary Engineering including an H&H study to size the channel improvements	12000030	Medina	12100302	121003020501	12000081	0.11		12003377	00000005,00000255,12003377	No	50000	Y	HDR Identification Process
121000141	Lucas Creek at Cinco De Mayo Dr Bridge and Channel (DC-MRD)	Regional detention, channel improvements, and bridge/culvert upgrades, property acquisition	12000031	Bexar	12100302	121003020502,121003020503	12000107,12000108	0.97	Riverine	00000005	00000007,00000255,00000282,00000392	Yes	150000	Y	HDR Identification Process
121000142	Cagnon Rd at Polecat Creek (DC-MRN)	Replace the existing crossing with an approximately 320-foot long bridge.	12000031	Bexar	12100302	121003020503	12000108	0.04	Riverine	00000005	00000007,00000255,00000282,00000392	Yes	150000	Y	HDR Identification Process
121000143	Trumbo Rd at Palo Blanco Creek (DC-MRP)	Upgrades to Trumbo Rd and Loop 1604 crossings at Palo Blanco Creek with channel work.	12000031	Bexar	12100302	121003020509	12000094	0.25	Riverine	00000005	00000007,00000255,00000282,00000290,00000392	Yes	100000	Y	HDR Identification Process
121000144	Wet-Proof Wastewater System	This action proposes “wet-proofing” city sewer lines to the Wastewater Treatment Plant	12000028	Medina	12100302	121003020501,121003020503	12000081,12000108	0.63	Riverine	12002954	00000005,00000255,12002954	Yes	50000	Y	HDR Identification Process
121000146	Additional flood proof at wastewater treatment plant	Study to evaluate removing the WWTP from flood and erosion risk	12000028	Wilson	12100304	121003040302	12000056	0.02	Riverine	12003180	00000100,00000255,00000282,00000392,12003180	Yes	150000	Y	HDR Identification Process

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FME ID	FME Name	Description	Associated Goals	Counties	HUC8s	HUC12s^	Watershed Names	FME Study Area (sqmi)	Flood Risk Type	Sponsor	Entities Oversight	Emergency Need	Etimated Study Cost	RFPG Recommendation	Reason for Recommendation
121000147	Recommend for Wilson Roadways - Project 7 - CR 119 & Mariana Creek	Study: Upgrade bridge so that it provides a safe evacuation route during large storm events.	12000030	Wilson	12100303	121003030104	12000032	0	Riverine	00000011	00000100,00000255,00000282	Yes	100000	Y	HDR Identification Process
121000148	Property acquisition and demolition and/or relocations	Property acquisition and demolition and/or relocations	12000022	Wilson	12100303	121003030102,121003030103	12000028,12000033	7.7	Riverine, Urban	12002925	00000100,00000255,00000282,12000592,12002925	No	2E+06	Y	HDR Identification Process
121000149	Damage Center 2: Project 1 Channelization	The channelization project would add 8 feet to the left bank of the channel, and the depth would be kept at its existing elevation. The project would remove two structures adjacent to the stream from the floodplain.	12000026	Wilson	12100303	121003030103	12000033	0	Riverine	12002925	00000100,00000255,00000282,12002925	No	100000	Y	HDR Identification Process
121000151	Repetitive loss properties	Offer relocation/mitigation incentives to current flood hazard area property owners; initiate a community program to acquire repetitive loss structures identified by FEMA.	12000024	Wilson	12100304	121003040304,121003040302	12000053,12000056	1.72	Riverine, Urban	12003180	00000100,00000255,00000282,00000392,12001595,12003180	Yes	150000	Y	HDR Identification Process
121000152	Nichols Creek Stabilization	Restoration of Nichols Creek to improve stream function including conveyance of flow and sediment.	12000026	Karnes	12100303	121003030402	12000021	0.02	Riverine	00000282	00000095,00000255,00000282,00000519,12002975	No	1E+06	Y	HDR Identification Process
121000153	Master Drainage Plan for Bexar County Unincorporated Areas	Engineering master plan to assess flood damage centers for Bexar County unincorporated areas.	12000024	Atascosa,Wilson,Medina,Bexar,Guadalupe,Bandera,Comal,Kendall	12100301, 12100303, 12100304, 12110110, 12100302			1253.25	Riverine, Urban	00000007	00000095,00000255,00000282,00000519,12002975	No	150000	Y	HDR Identification Process
121000154	Master Drainage Plan for Bexar County HALT Low Water	Engineering master plan to assess existing HALT sites for drainage improvements.	12000024	Atascosa,Wilson,Medina,Bexar,Guadalupe,Bandera,Comal,Kendall	12100301, 12100303, 12100304, 12110110, 12100302			1253.25	Riverine, Urban	00000007	00000095,00000255,00000282,00000519,12002975	No	150000	Y	HDR Identification Process
121000155	Culebra Creek RSWF	Engineering study to evaluate the Culebra Creek RSWF under the revised Green & Ampt hydrology.	12000030	Bexar	12100302	121003020402,121003020403,121003020404,121003020405	12000078,12000102,12000103,12000104	0.36	Riverine	00000007	00000007,00000255,00000282,00000392,12001484,12003327	Yes	50000	Y	HDR Identification Process
121000157	Rockwood Creek (SA-39)	Engineering study to assess the removal of properties and residential structures from the 100-Yr flood plain along Rockwood Creek upstream of the San Antonio River and River Side Golf Course.	12000026	Bexar	12100301	121003010203	12000011	0.13	Riverine	00000007	00000007,00000255,00000282,12003327	Yes	100000	Y	HDR Identification Process
121000158	Live Oak at Salitrillo Creek (CB-9)	Engineering study to assess removal of residential structures from the Salitrillo Creek 100-Yr flood plain upstream of Martinez Creek Dam No. 5.	12000027	Bexar	12100304	121003040205	12000071	0.78	Riverine	00000007	00000007,00000255,00000282,12002512,12002967	Yes	250000	Y	HDR Identification Process
121000160	Update flood information and policies	Study to compile information on residential property in flood zones, establish a volunteer acquisition / elevation program based on FEMA protocol in association with SARA studies, and review permitting process based on the 100-year flood event	12000030	Atascosa,De Witt,Wilson,Goliad,Karnes	12100202, 12100303, 12100304, 12110110		12000014,12000016,12000019,12000020,12000021,12000022,12000023,12000024,12000025,12000026,12000027,12000030,12000034,12000037,12000040,12000041,12000042,12000043,12000045,12000052,12000057,12000070	749.22	Riverine, Urban	00000095	00000095,00000096,00000099,00000100,00000255,00000260,00000264,00000282,00000290,00000291,00000519,00000526,00001006,12002756,12002757,12002974,12002975	Yes	100000	Y	HDR Identification Process
121000161	Holistic Watershed based master planning consistent with Nature Based Solutions	This Flood Management Evaluation (FME) will fill the knowledge gap in the region on the benefits of NFMS for floodplains, flood peak attenuation, ecosystem services, groundwater recharge, and recreational value	12000013	Wilson,Bexar	12100301, 12100303, 12100304, 12110110, 12100302		12000001,12000002,12000003,12000004,12000005,12000006,12000007,12000008,12000009,12000010,12000011,12000012,12000013,12000029,12000055,12000056,12000063,12000064,12000066,12000069,12000071,12000076,12000078,12000094,12000104,12000105	505.2	Riverine, Urban	00000282	00000084,00000260,00000291,00000714,00000758,00001608	Yes	2E+06	Y	HDR Identification Process
121000162	29010 Tivoli Way	Utilize existing stormwater infrastructure by regrading the roadway to slope towards existing inlets and open channels on the north and south side of Windermere Dr on the east side of Fair Oaks Parkway. New curb installed along the west side of Fair Oak	12000029,12000030	Bexar	12100304	121003040103	12000063	0		12002436	00000007,00000255,00000282,12002436	No	103952	Y	Halff Identification Process
121000164	Abbott Road and Graytown Road at Martinez Creek Study	A 2D hydraulic study flood study is needed to evaluate alternatives to remove these roads from overtopping. Priority should be placed on this study due to two deaths in 2021.	12000030,12000027	Bexar	12100304	121003040205	12000071	0.1	Riverine	00000007	00000282,00000392,12001595,00000255,00000007,12003004,00000821	Yes	300000	Y	HDR Identification Process
121000165	Cibolo Creek Spill Study	A 2D hydraulic study flood study is needed to evaluate spill flow from the creek. The spill starts 2,500ft upstream of the Bexar Bowling Way Crossing to 2,000ft north of Ullrich Road Crossing.	12000027	Bexar	12100304	121003040202,121003040206	12000069,12000072	1.22	Riverine	00000010	00000007,00000282,00000255,00000821,00000392,00000010,00000291	Yes	250000	Y	HDR Identification Process
121000166	FM1346 Crossing Upgrade Study	A hydraulic study is needed to evaluate alternatives to removing the FM1346 crossing from overtopping. Improvements to this road are important due to limited detour routes available.	12000030	Bexar	12100304	121003040301,121003040302	12000055,1200056	0.13	Riverine	00000007	12003004,00000007,00000392,12001595,00000255,00000282	No	150000	Y	HDR Identification Process
121000167	Live Oak Slough Creek Improvements Study	The residents living along this slough are experiencing run-off water damage to their land causing the Live Oak Slough Creek to widened, and leaving them with less land usage.	12000027	Bexar	12100302	121003020505	12000109	0.02	Riverine	12003318	12003318,00000255,00000282,00000007	No	250000	Y	HDR Identification Process

Table 15. Flood Management Evaluations Recommended by RFPG

FME ID	FME Name	Description	Associated Goals	Counties	HUC8s	HUC12s^	Watershed Names	FME Study Area (sqmi)	Flood Risk Type	Sponsor	Entities Oversight	Emergency Need	Etimated Study Cost	RFPG Recommendation	Reason for Recommendation
121000168	North Benton City Road Improvements Study	Study to improve the road and remove it from being flooded during heavy rains.	12000030	Bexar	12100302	121003020505	12000109	0.01	Riverine	12003318	12003318,00000255,00000282,00000007	No	150000	Y	HDR Identification Process
121000169	Quintana Road Drainage Improvements Study	Study to improve the drainage around Quintana Road and remove it from being flooded during heavy rains.	12000030	Bexar	12100302	121003020505	12000109	0.04	Riverine	12003318	12003318,00000255,00000282,00000007	No	250000	Y	HDR Identification Process
121000170	South Benton City Road Improvements Study	Study to improve the road and remove it from being flooded during heavy rains.	12000030	Bexar	12100302	121003020506	12000091	0.01	Riverine	12003318	12003318,00000255,00000282,00000007	Yes	150000	Y	HDR Identification Process
121000171	S Evans Rd Road Improvements Study	Study to improve the road and remove it from being flooded during heavy rains.	12000030	Bexar	12100302	121003020506	12000091	0.02	Riverine	12003318	00000255,00000282,00000007	Yes	150000	Y	HDR Identification Process
121000172	Trainer Hale at Cibolo Creek	Improvements on Low water crossing at Trainer Hale Rd and Cibolo Creek	12000030	Bexar, Guadalupe	12100304	121003040206	12000072	0.26	Riverine	00000007,00000010	00000007,00000010,00000255,00000282,00000291,00000392,00000821,12001595,00002973	Yes	150000	Y	Halff Identification Process
121000173	Delcrest Channel Improvements PER	Improvements to strom drains and upstream drainage system to improve street flooding in Dellcrest neighborhood.	12000029,12000030,12000033	Bexar	12100301	121003010106	12000007	0.02	Riverine	12003327	00000007,00000255,00000282,12003327	No	250000	Y	Halff Identification Process
121000174	Overbrook Outfall Drainage Project Phase 3	Upsizing the existing 9' RCP and two 12'x9' RCBs to capture 100-year flood event south of Overbrook Drive.	12000029,12000030,12000033	Bexar	12100301	121003010106	12000010	0.06	Riverine, Urban	12003327	00000007,00000255,00000282,12003327	No	250000	Y	Halff Identification Process
121000175	CR 326B at Ecleto Creek	Evaluate upgrades to existing bridge with consideration of backwater from San Antonio River	12000030	Karnes	12100303	121003030306	12000016	0.11	Riverine	00000095	00000095,00000255,00000282,00001006	Yes	100000	Y	HDR Recommended
121000176	CR 237 at Marcelinas Creek	Evaluate upgrades to existing bridge with consideration of backwater from San Antonio River	12000030	Karnes	12100303	121003030204	12000027	0.02	Riverine	00000095	00000095,00000255,00000282,12002974	Yes	100000	Y	HDR Recommended
121000177	City of Kenedy Flooding on Escondido Creek Tributary	Evaluate alternatives to mitigate flooding within City of Kenedy commercial area along Escondido Creek tributary	12000026	Karnes	12100303	121003030402	12000021	0.28	Riverine	00000095	00000095,00000255,00000282,00000519,12002975	Yes	100000	Y	HDR Recommended
121000178	Falls City Flooding from San Antonio River	Evaluate alternatives to mitigate flooding from the San Antonio River affecting buildings in the City of Falls City	12000026	Karnes	12100303	121003030204,121003030202,121003030205	12000027,12000030,12000034	0.7	Riverine	00000095	00000095,00000255,00000282,12002974	Yes	100000	Y	HDR Recommended
121000179	San Antonio River Flooding on US 181	Evaluate alternatives to mitigate US 181 flooding from the San Antonio River and tributaries	12000030	Karnes	12100303	121003030205	12000034	1	Riverine	00000095	00000095,00000255,00000282	Yes	100000	Y	HDR Recommended
121000180	Cibolo Creek Flooding on SH 123	Evaluate alternatives to mitigate SH 123 flooding from Cibolo Creek	12000030	Karnes	12100304	121003040405	12000057	0.58	Riverine	00000095	00000095,00000255,00000282	Yes	100000	Y	HDR Recommended
121000181	San Antonio River Flooding on SH 80	Evaluate alternatives to mitigate SH 80 flooding from the San Antonio River and tributaries	12000030	Karnes	12100303	121003030206	12000037	0.17	Riverine	00000095	00000095,00000255,00000282	Yes	100000	Y	HDR Recommended
121000182	Localized Residential Flooding in City of Kenedy	Evaluate alternatives to mitigate localized residential flooding in the southern portion of the City of Kenedy	12000026	Karnes	12100303	121003030402	12000021	0.15	Urban	00000095	00000095,00000255,00000282,00000519,12002975	Yes	100000	Y	HDR Recommended
121000183	San Antonio River Flooding on SH 72	Evaluate alternatives to mitigate SH 72 flooding from the San Antonio River and tributaries	12000030	Karnes	12100303	121003030403,121003030404	12000022,12000023	0.38	Riverine	00000095	00000095,00000255,00000282,00000519	Yes	100000	Y	HDR Recommended
121000184	Karnes County FEWS	Flood Early Warning System	12000009	De Witt,Wilson,Goliad,Karnes	12100204, 12100303, 12100304, 12100202, 12100406, 12110110, 12110111		12000014,12000016,12000019,12000020,12000021,12000022,12000023,12000024,12000025,12000026,12000027,12000030,12000034,12000037,12000040,12000041,12000042,12000043,12000045,12000052,12000057,12000070	751.06	Riverine	00000095	00000095,00000099,00000100,00000255,00000260,00000264,00000282,00000290,00000291,00000519,00000526,00001006,12002756,12002757,12002974,12002975	Yes	100000	Y	HDR Recommended

Table 16. Potentially Feasible Flood Mitigation Projects Recommended by RFPG

FMP ID	FMP Name	Description	Associated Goals (ID)	Counties	HUC 8s	HUC12s	Watersheds	Project Type	Project Area (sqmi)	Flood Risk Type (Riverine, Coastal, Urban, Playa, Other)	Sponsor	Entities with Oversight	Emergency Need (Y/N)	Estimated Project Cost ($)	Potential Funding Sources and Amount	Cost/ Structure removed	Percent Nature-based Solution (by cost)	Negative Impact (Y/N)	Negative Impact Mitigation (Y/N)	Water Supply Benefit (Y/N)	Traffic Count for Low Water Crossings	Benefit-Cost Ratio	Social Vulnrability Index (SVI)	RFPG Recommendation (Y/N)	Reason for Recommendation
123000001	PROJECT 1A - ADLER ROAD AT CURREY CREEK AND UNNAMED TRIBUTARY A	Improve low water crossings along Adler Road, channel regrading, curbs, sidewalks, street reconstruction	12000029, 12000030	Kendall	12100304	121003040102	12000062	LWC upgrade	0	Riverine,	12002855	00000017,00000255,00000291,12002855	Y	1611124	- 0	4497	0	Y	N	N	0	2.5	0.26	Y	Halff Identification Process
123000002	PROJECT 2 - UNNAMED TRIBUTARY A REGIONAL DETENTION FACILITY	Inline detention facility with culvert improvements	12000029, 12000030	Kendall	12100304	121003040102	12000062	Detention Pond	0.03	Riverine,	12002855	00000017,00000255,00000291	N	7013126	- 0	19577	0	Y	N	N	0	0.54	0.10	Y	Halff Identification Process
123000003	PROJECT 3 - CURREY CREEK REGIONAL DETENTION FACILITY	Inline detention facility with additional stormdrain imporvements	12000029, 12000030	Kendall	12100304	121003040102	12000062	Detention Pond	0.04	Riverine,	12002855	00000017,00000255,00000291,12002855	N	8908566	- 0	24868	0	Y	N	N	0	2.79	0.26	Y	Halff Identification Process
123000004	PROJECT 4 - SCHOOL STREET AT CIBOLO CREEK AND FREDERICK CREEK	Elevated bridge, channel grading, street reconstruction, curb, sidewalks, and driveways	12000034	Kendall	12100304	121003040101	12000058	LWC upgrade	0	Riverine,	12002855	00000017,00000255,00000291,12002855	Y	5022915	- 0	0	0	Y	N	N	0	0.4	0.40	Y	Halff Identification Process
123000005	PROJECT 5D - OLD SAN ANTONIO STREET AT MENGER CREEK	Elevated bridge, channel grading, street reconstruction, curb, sidewalks, and driveways	12000029, 12000030	Kendall	12100304	121003040102	12000062	Infrastructure	0	Riverine,	12002855	00000017,00000255,00000291,12002855	N	3506563	- 0	0	0	Y	N	N	0	0.5	0.39	Y	Halff Identification Process
123000006	PROJECT 6 - JOHNS ROAD NEAR CIBOLO CROSSING SUBDIVISION	Storm drain, channel, increase capacity of existing detention	12000029, 12000030	Kendall	12100304	121003040101	12000058	Storm Drain	0.01	Riverine,	12002855	00000017,00000255,00000291,12002855	N	1421580	- 0	3968	0	Y	N	N	0	0.86	0.38	Y	Halff Identification Process
123000007	PROJECT 7 - SCHWEPPE AND HICKMAN STREET	Storm drain, and channel improvments	12000029, 12000030	Kendall	12100304	121003040102	12000062	Storm Drain	0.01	Riverine, Urban,	12002855	00000017,00000255,00000291,12002855	N	1990212	- 0	5556	0	Y	N	N	0	0.82	0.42	Y	Halff Identification Process
123000008	PROJECT 8 - JOHNS AND LOHMANN STREET	Storm drain and channel improvements	12000029, 12000030	Kendall	12100304	121003040101	12000058	Storm Drain	0	Riverine,	12002855	00000017,00000255,00000291,12002855	N	1705896	- 0	4762	0	Y	N	N	0	5.46	0.40	Y	Halff Identification Process
123000009	PROJECT 9 - UNNAMED TRIBUTARY A-SUBDIVISION FLOOD PROTECTION & MOBILITY PROJECT	Low water crossing improvemnts, channel improvements	12000029, 12000030	Kendall	12100304	121003040102	12000062	LWC upgrade	0.01	Riverine,	12002855	00000017,00000255,00000291,12002855	Y	4833371	- 0	13492	0	Y	N	N	0	0.48	0.42	Y	Halff Identification Process
123000010	PROJECT 10 - E. BLANCO ROAD AT UNNAMED TRIBUTARY A	Improve low water crossings along Blanco Road, channel regrading, curbs, sidewalks, street reconstruction	12000034	Kendall	12100304	121003040102	12000062	LWC upgrade	0	Riverine,	12002855	00000017,00000255,00000291,12002855	Y	1516352	- 0	4233	0	Y	N	N	0	4.1	0.42	Y	Halff Identification Process
123000011	PROJECT 11 - RIVER ROAD AT UNNAMED TRIBUTARY A	Improve low water crossings along River Road, channel regrading, curbs, sidewalks, street reconstruction	12000034	Kendall	12100304	121003040102	12000062	LWC upgrade	0	Riverine,	12002855	00000017,00000255,00000291,12002855	Y	1326808	- 0	3704	0	Y	N	N	0	3.1	0.42	Y	Halff Identification Process
123000012	PROJECT 13 - HERFF AND ESSER ROAD IMPROVEMENTS AT CURREY AND CIBOLO CREEK	Bridge at Currey Creek and Esser Road, Bridge at Cibolo Creek and River Road, Channel grading, Roadway reconstruction	12000029, 12000030	Kendall	12100304	121003040102	12000062	Storm Drain	0.02	Riverine,	12002855	00000017,00000255,00000291,12002855	Y	14500113	- 0	40476	0	Y	N	N	0	1.7	0.35	Y	Halff Identification Process
123000013	PROJECT 12 - PLANT CHANNEL IMPROVEMENT	Channel improvements	12000029, 12000030	Kendall	12100304	121003040102	12000062	Channel	0	Riverine,	12002855	00000017,00000255,00000291,12002855	N	1232036	- 0	3439	0	Y	N	N	0	0.4	0.42	Y	Halff Identification Process
123000014	PROJECT 14 - EAST BOERNE REGIONAL LID	Proposed inline extended detention facility that provides water quality benefits to the urbanized tributary of Cibolo Creek and properties downstream of Scenic Loop Road	12000029, 12000030	Kendall	12100304	121003040102	12000062	Natural	0	Riverine,	12002855	00000017,00000255,00000291,12002855	N	663404	- 0	1852	0	Y	N	N	0	0.6	0.35	Y	Halff Identification Process
123000015	PROJECT 15 - NORTH CURREY CHANNEL IMPROVEMENTS	Channel regrading, curbs, sidewalks, street reconstruction. This project is dependent on projects 1A, 3, 12, and 13 being completed and Project 16 being implimented at the same time as this project to achieve the project benefits.	12000029, 12000030	Kendall	12100304	121003040102	12000062	Channel	0.01	Riverine, Urban,	12002855	00000017,00000255,00000291,12002855	Y	663404	- 0	1852	0	Y	N	N	0	1.33	0.10	Y	Halff Identification Process
123000016	PROJECT 16 - SOUTH CURREY CREEK CHANNEL IMPROVEMENTS	Low water crossing improvemnts, channel improvements. This project is dependent on projects 1A, 3, 12, and 13 being completed and Project 15 being implimented at the same time as this project to achieve the project benefits.	12000029, 12000030	Kendall	12100304	121003040102	12000062	LWC upgrade	0.01	Riverine,	12002855	00000017,00000255,00000291,12002855	N	1421580	- 0	3968	0	Y	N	N	0	1.33	0.42	Y	Halff Identification Process
123000017	Lewis Creek Alternative 1 Phase 1 & 2	Channel improvement, roadway improvement	12000029, 12000030, 12000033	Comal	12100304	121003040105	12000061	Channel	0.1	Riverine,	00000014	00000014,00000255,00000291,00002121,00002669	Y	6021778	- 0	151896	0	Y	N	N	0	0.11	0.10	Y	Halff Identification Process
123000018	Seeling Drainage Improvements	Install box culverts, grass lined channel construction	12000029, 12000030	Bexar	12100301	121003010202	12000010	Storm Drain	0.26	Riverine,	12003327	00000007,00000255,00000282,12003327	N	28367456	- 0	0	0	Y	N	N	0	0.62	0.44	Y	Halff Identification Process
123000019	Lewis Creek Tributary 2 Alternative 1 & 2	Channel widening/lowering, culvert improvement, roadway improvement	12000029, 12000030, 12000033	Comal	12100304	121003040105	12000061	Detention Pond	0.22	Riverine,	00000014	00000014,00000255,00000291,00002669	N	2939381	- 0	70242	0	Y	N	N	0	0.19	0.12	Y	Halff Identification Process
123000020	Lewis Creek Main	High water detection system. System includes warning signs, with flashers and automatic arm barricade.	12000005, 12000006	Comal	12100304	121003040105	12000061	Preparedness	0.1	Riverine,	00000014	00000014,00000255,00000291,00002121,00002669	Y	165184	- 0	4167	0	Y	N	N	0	0	0.10	Y	Halff Identification Process
123000021	Rock Creek - Alt 1	Reducing the height of the drop structure at the Olmos Creek outfall, Bridge replacements will be required for both the railroad crossing and West Ave.	12000029, 12000030	Bexar	12100301	121003010201	12000008	Infrastructure	0.52	Riverine,	12003327	00000007,00000255,00000282,00000392,12002439,12003327	Y	17640716	- 0	0	0	Y	N	N	0	0.1	0.65	Y	Halff Identification Process
123000022	Judson and Lookout LWC Improvement	Upgrade the low water crossings and the connecting/downstream channel	12000029, 12000030	Bexar	12100301	121003010104	12000004	LWC upgrade	0.03	Riverine,	12003327	00000007,00000255,00000282,12003327	Y	6301204	- 0	5665140	0	Y	N	N	0	0.9	0.44	Y	Halff Identification Process

Table 16. Potentially Feasible Flood Mitigation Projects Recommended by RFPG

FMP ID	FMP Name	Description	Associated Goals (ID)	Counties	HUC 8s	HUC12s	Watersheds	Project Type	Project Area (sqmi)	Flood Risk Type (Riverine, Coastal, Urban, Playa, Other)	Sponsor	Entities with Oversight	Emergency Need (Y/N)	Estimated Project Cost ($)	Potential Funding Sources and Amount	Cost/ Structure removed	Percent Nature-based Solution (by cost)	Negative Impact (Y/N)	Negative Impact Mitigation (Y/N)	Water Supply Benefit (Y/N)	Traffic Count for Low Water Crossings	Benefit-Cost Ratio	Social Vulnrability Index (SVI)	RFPG Recommendation (Y/N)	Reason for Recommendation
123000001	PROJECT 1A - ADLER ROAD AT CURREY CREEK AND UNNAMED TRIBUTARY A	Improve low water crossings along Adler Road, channel regrading, curbs, sidewalks, street reconstruction	12000029,12000030	Kendall	12100304	121003040102	12000062	LWC upgrade	0	Riverine,	12002855	00000017,00000255,00000291,12002855	Y	1611120	-	0	1.47	N	N	N	0	2.5	0.263250	Y	Halff Identification Process
123000002	PROJECT 2 - UNNAMED TRIBUTARY A REGIONAL DETENTION FACILITY	Inline detention facility with culvert improvements	12000029,12000030	Kendall	12100304	121003040102	12000062	Detention Pond	0.03	Riverine,	12002855	00000017,00000255,00000291	N	7013130	-	62063.1	0	N	N	Y	0	0.54	0.104300	Y	Halff Identification Process
123000003	PROJECT 3 - CURREY CREEK REGIONAL DETENTION FACILITY	Inline detention facility with additional stormdrain imporvements	12000029,12000030	Kendall	12100304	121003040102	12000062	Detention Pond	0.04	Riverine,	12002855	00000017,00000255,00000291,12002855	N	8908570	-	84043.11	0	N	N	Y	0	2.79	0.263250	Y	Halff Identification Process
123000004	PROJECT 4 - SCHOOL STREET AT CIBOLO CREEK AND FREDERICK CREEK	Elevated bridge, channel grading, street reconstruction, curb, sidewalks, and driveways	12000034	Kendall	12100304	121003040101	12000058	LWC upgrade	0	Riverine,	12002855	00000017,00000255,00000291,12002855	Y	5022920	-	0	0	N	N	N	0	0.4	0.399000	Y	Halff Identification Process
123000005	PROJECT 5D - OLD SAN ANTONIO STREET AT MENGER CREEK	Elevated bridge, channel grading, street reconstruction, curb, sidewalks, and driveways	12000029,12000030	Kendall	12100304	121003040102	12000062	Infrastructure	0	Riverine,	12002855	00000017,00000255,00000291,12002855	N	3506560	-	0	0.676	N	N	N	0	0.5	0.387550	Y	Halff Identification Process
123000006	PROJECT 6 - JOHNS ROAD NEAR CIBOLO CROSSING SUBDIVISION	Storm drain, channel, increase capacity of existing detention	12000029,12000030	Kendall	12100304	121003040101	12000058	Storm Drain	0.01	Riverine,	12002855	00000017,00000255,00000291,12002855	N	1421580	-	203082.9	0.0667	N	N	N	0	0.86	0.375800	Y	Halff Identification Process
123000007	PROJECT 7 - SCHWEPPE AND HICKMAN STREET	Storm drain, and channel improvments	12000029,12000030	Kendall	12100304	121003040102	12000062	Storm Drain	0.01	Riverine, Urban,	12002855	00000017,00000255,00000291,12002855	N	1990210	-	284315.7	0	N	N	N	0	0.82	0.422200	Y	Halff Identification Process
123000008	PROJECT 8 - JOHNS AND LOHMANN STREET	Storm drain and channel improvements	12000029,12000030	Kendall	12100304	121003040101	12000058	Storm Drain	0	Riverine,	12002855	00000017,00000255,00000291,12002855	N	1705900	-	0	0	N	N	N	0	5.46	0.399000	Y	Halff Identification Process
123000009	PROJECT 9 - UNNAMED TRIBUTARY A- SUBDIVISION FLOOD PROTECTION & MOBILITY PROJECT	Low water crossing improvemnts, channel improvements	12000029,12000030	Kendall	12100304	121003040102	12000062	LWC upgrade	0.01	Riverine,	12002855	00000017,00000255,00000291,12002855	Y	4833370	-	61181.9	0.351	N	N	N	0	0.48	0.422200	Y	Halff Identification Process
123000010	PROJECT 10 - E. BLANCO ROAD AT UNNAMED TRIBUTARY A	Improve low water crossings along Blanco Road, channel regrading, curbs, sidewalks, street reconstruction	12000034	Kendall	12100304	121003040102	12000062	LWC upgrade	0	Riverine,	12002855	00000017,00000255,00000291,12002855	Y	1516350	-	0	0.281	N	N	N	0	4.1	0.422200	Y	Halff Identification Process
123000011	PROJECT 11 - RIVER ROAD AT UNNAMED TRIBUTARY A	Improve low water crossings along River Road, channel regrading, curbs, sidewalks, street reconstruction	12000034	Kendall	12100304	121003040102	12000062	LWC upgrade	0	Riverine,	12002855	00000017,00000255,00000291,12002855	Y	1326810	-	0	0.357	N	N	N	0	3.1	0.422200	Y	Halff Identification Process
123000012	PROJECT 13 - HERFF AND ESSER ROAD IMPROVEMENTS AT CURREY AND CIBOLO CREEK	Bridge at Currey Creek and Esser Road, Bridge at Cibolo Creek and River Road, Channel grading, Roadway reconstruction	12000029,12000030	Kendall	12100304	121003040102	12000062	Storm Drain	0.02	Riverine,	12002855	00000017,00000255,00000291,12002855	Y	14500100	-	0	0.49	N	N	N	0	1.7	0.352900	Y	Halff Identification Process
123000013	PROJECT 12 - PLANT CHANNEL IMPROVEMENT	Channel improvements	12000029,12000030	Kendall	12100304	121003040102	12000062	Channel	0	Riverine,	12002855	00000017,00000255,00000291,12002855	N	1232040	-	0	0.558	N	N	N	0	0.4	0.422200	Y	Halff Identification Process
123000014	PROJECT 14 - EAST BOERNE REGIONAL LID	Proposed inline extended detention facility that provides water quality benefits to the urbanized tributary of Cibolo Creek and properties downstream of Scenic Loop Road	12000029,12000030	Kendall	12100304	121003040102	12000062	Natural	0	Riverine,	12002855	00000017,00000255,00000291,12002855	N	663404	-	0	12.86	N	N	N	0	0.6	0.352900	Y	Halff Identification Process
123000015	PROJECT 15 - NORTH CURREY CHANNEL IMPROVEMENTS	Channel regrading, curbs, sidewalks, street reconstruction. This project is dependent on projects 1A, 3, 12, and 13 being completed and Project 16 being implimented at the same time as this project to achieve the project benefits.	12000029,12000030	Kendall	12100304	121003040102	12000062	Channel	0.01	Riverine, Urban,	12002855	00000017,00000255,00000291,12002855	Y	663404	-	10365.69	1.79	N	N	N	0	1.33	0.104300	Y	Halff Identification Process
123000016	PROJECT 16 - SOUTH CURREY CREEK CHANNEL IMPROVEMENTS	Low water crossing improvemnts, channel improvements. This project is dependent on projects 1A, 3, 12, and 13 being completed and Project 15 being implimented at the same time as this project to achieve the project benefits.	12000029,12000030	Kendall	12100304	121003040102	12000062	LWC upgrade	0.01	Riverine,	12002855	00000017,00000255,00000291,12002855	N	1421580	-	22212.19	1.2	N	N	N	0	1.33	0.422200	Y	Halff Identification Process

Table 17: Potentially Feasible Flood Management Strategies Recommended by RFPG

FMS ID	FMS Name	Description	Associated Goals (ID)	Counties	HUC8s	HUC12s	Watersheds	Project Type	Strategy Project Area (sqmi)	Flood Risk Type (Riverine, Coastal	Sponsor	Entities with Oversight	Emergency Need (Y/N)	Esitimated Total Stategy Cost ($)	Potential Funding Sources and Amount	Cost/ Structure removed	Consideration of Nature-based Solution (Y/N)	Negative Impact (Y/N)	Negative Impact Mitigation (Y/N)	Water Supply Benefit (Y/N)	RFPG Recommendation (Y/N)	Reason for Recommendation
122000001	Study the San Antonio River and its tributes	When the San Antonio River floods, the city is cutoff from the rest of the county (hospital and EMS) with islands lasting over a week. Install stream gauges and develop a study to identify solutions to flooding. SARA completed a study but County official	12000007	Karnes	12100303	121003030204,121003030202	12000027,12000030	Regulatory and Guidance	0.91	Riverine, Urban,	12002974	00000095 , 00000255 , 00000282 , 12002974	N	250000	0	0	N	N	N	N	Y	Halff Identification Process
122000002	San Antonio River drainage ownership study	Develop ownership and access understanding parcels fronting the San Antonio River and major tributaries to have better agreements and access to areas that need flood control mitigation and erosion control	12000001	Karnes	12100303	121003030204,121003030202	12000027,12000030	Education and Outreach	0.91	Riverine, Urban,	12002974	00000095 , 00000255 , 00000282 , 12002974	N	30000	0	0	N	N	N	N	Y	Halff Identification Process
122000003	San Antonio River drainage ownership mapping	Develop ownership and access understanding parcels fronting the San Antonio River and major tributaries to have better agreements and access to areas that need flood control mitigation and erosion control	12000001	Karnes	12100303	121003030401,121003030402,121003030403,121003030205,121003030206	12000020,12000021,12000022,12000034,12000037	Education and Outreach	2.31	Riverine,	12002756	00000095 , 00000255 , 00000282 , 00000519 , 12002756	N	30000	0	0	N	N	N	N	Y	Halff Identification Process
122000004	San Antonio River drainage ownership mapping	Develop ownership and access understanding parcels fronting the San Antonio River and major tributaries to have better agreements and access to areas that need flood control mitigation and erosion control	12000001	Karnes	12100303	121003030402	12000021	Education and Outreach	3.67	Riverine, Urban,	12002975	00000095 , 00000255 , 00000282 , 00000519 , 12002975	N	30000	0	0	N	N	N	N	Y	Halff Identification Process
122000005	San Antonio River drainage ownership mapping	Develop ownership and access understanding parcels fronting the San Antonio River and major tributaries to have better agreements and access to areas that need flood control mitigation and erosion control	12000001	Karnes	12100303	121003030306,121003030404	12000016,12000023	Education and Outreach	1.18	Riverine, Urban,	12002757	00000095 , 00000255 , 00000282 , 00001006 , 12002757	N	30000	0	0	N	N	N	N	Y	Halff Identification Process
122000006	Strengthen floodplain management ordinances	Adopt higher floodplain standards for new development	12000021, 12000022	Wilson	12100303	121003030204,121003030105	12000027,12000035	Regulatory and Guidance	3.18	Riverine, Urban,	12003181	00000100 , 00000255 , 00000282 , 12003181	Y	25000	0	0	N	N	N	N	Y	Halff Identification Process
122000007	Education Signage	Install educational signage such as "Turn around don't drown" at high risk low water crossings.	12000005	Wilson	12100303	121003030204,121003030105	12000027,12000035	Education and Outreach	3.18	Riverine, Urban,	12003181	00000100 , 00000255 , 00000282 , 12003181	Y	5000	0	0	N	N	N	N	Y	Halff Identification Process
122000008	Digital signage for communication	Coordinate with school district to use sign on US 181 for emergency info and safety directions during hazard events.	12000005	Wilson	12100303	121003030204,121003030105	12000027,12000035	Education and Outreach	3.18	Riverine, Urban,	12003181	00000100 , 00000255 , 00000282 , 12003181	Y	5000	0	0	N	N	N	N	Y	Halff Identification Process
122000009	Early warning system education	Alert the population through education material, media and other methods about enrolling in the early warning system	12000001	Wilson	12100303	121003030204,121003030105	12000027,12000035	Education and Outreach	3.18	Riverine, Urban,	12003181	00000100 , 00000255 , 00000282 , 12003181	Y	5000	0	0	N	N	N	N	Y	Halff Identification Process
122000010	Development of a Streamscaping Program for Flood Risk Management in Texas	Increase the number of public outreach and education activities to improve awareness of flood hazards and benefits of flood planning in the Flood Planning Region. Promote nature-based solution training	12000014	Wilson,Bexar, Goliad,Karnes	12100301,12100303,12100304,12110110,12100302		12000001,12000002,12000003,12000004,12000005,12000006,12000007,12000008,12000009,12000010,12000011,12000012,12000013,12000029,12000055,12000056,12000063,12000064,12000066,12000069,12000071,12000076,12000078,12000094,12000104,12000105	Education and Outreach	505.2	Riverine, Urban,	00000282	00000100 , 00000255 , 00000282 , 12003181	N	129000	0	0	N	N	N	N	Y	Halff Identification Process
122000011	Automatic low water crossings and gauges	Add automatic low water crossings and gauges at various locations, providing real time flood information to the region. This would include development of a plan to identify locations, followed by installation.	12000005	Bexar,Bandera,Comal,Kendall,Kerr	12100304,12100201,12100302		12000058,12000062,12000063,12000095,12000096	Flood Measurement and Warning	660.51	Riverine, Urban,	00000017	00000022 , 00000255 , 00000282 , 00000291 , 00000297 , 00000339 , 00000936 , 12000937 , 12001324 , 12002226 ,	Y	100000	0	0	N	N	N	N	Y	Halff Identification Process
122000012	Update flood information and policies	Identify and compile information on flood hazard areas and residential property in flood zones, establish and implement a volunteer acquisition / elevation program based on FEMA protocol in association with SARA studies, and review permitting process bas	12000021, 12000022	Karnes	12100303	121003030402	12000021	Regulatory and Guidance	3.67	Riverine, Urban,	12002975	00000095 , 00000255 , 00000282 , 00000519 , 12002975	N	100000	0	0	N	N	N	N	Y	Halff Identification Process
122000013	Shelter requirement for RV parks	Adopt and implement an ordinance to require RV Parks to provide shelter facilities.	12000005	Atascosa,De Witt,Wilson,Goliad,Karnes	12100303,12100304,12100202,12100406,12110110,12110111		12000014,12000016,12000019,12000020,12000021,12000022,12000023,12000024,12000025,12000026,12000027,12000030,12000034,12000037,12000040,12000041,12000042,12000043,12000045,12000052,12000057,12000070	Regulatory and Guidance	749.22	Riverine, Urban,	00000095	00000099 , 00000100 , 00000255 , 00000260 , 00000264 , 00000282 , 00000290 , 00000291 , 00000519 , 00000526 ,	N	10000	0	0	N	N	N	N	Y	HDR Identification Process
122000014	Public Education & Outreach	Create a program to educate the public about specific mitigation actions for flooding hazards	12000001, 12000012	Medina	12100302	121003020501,121003020503	12000081,12000108	Education and Outreach	0.63	Riverine,	12002954	00000005 , 00000255 , 12002954	N	35000	0	0	N	N	N	N	Y	HDR Identification Process
122000015	Public education and outreach	Implement public education and outreach programs to educate citizens about mitigation against (flood) hazards; seek partnership with county neighboring communities and San Antonio River Authority.	12000001	Wilson	12100304	121003040304,121003040302	12000053,12000056	Education and Outreach	1.72	Riverine, Urban,	12003180	00000100 , 00000255 , 00000282 , 00000392 , 12001595 , 12003180	N	5000	0	0	N	N	N	N	Y	HDR Identification Process
122000016	Citizen flood education outreach	Educate citizens about mitigation strategies prior to any flood conditions, including dangers of debris flooding roads and how to best floodproof homes and businesses.	12000001	Wilson	12100303	121003030102,121003030103	12000028,12000033	Education and Outreach	7.7	Riverine, Urban,	12002925	00000100 , 00000255 , 00000282 , 12000592 , 12002925	N	10000	0	0	N	N	N	N	Y	HDR Identification Process
122000017	Updating floodplain ordinances and development code	Updating floodplain ordinances and development code	12000011	Wilson	12100304	121003040304,121003040302	12000053,12000056	Regulatory and Guidance	1.72	Riverine, Urban,	12003180	00000100 , 00000255 , 00000282 , 00000392 , 12001595 , 12003180	N	50000	0	0	N	N	N	N	Y	HDR Identification Process
122000019	Conservation Easement Program	Develop a Conservation Easement Program.	12000021	Medina,Bexar	12110107,12110109,12100302	121101070108,121101090101,121003020307,121003020501,121003020304,121003020305,121003020502,121003020503	12000075,12000081,12000099,12000100,12000107,12000108	Regulatory and Guidance	69.34	Riverine,	00000005	00000005 , 00000255 , 00000290 , 00000299 , 12002954 , 12003377	N	50000	0	0	N	N	N	N	Y	HDR Identification Process
122000020	City of Floresville Floodplain Ordinance and Development Code Update	Create a floodplain ordinance and update development code	12000011	Wilson	12100303	121003030102,121003030103	12000028,12000033	Regulatory and Guidance	7.7	Riverine, Urban,	12002925	00000100 , 00000255 , 00000282 , 12000592 , 12002925	Y	100000	0	0	N	N	N	N	Y	HDR Identification Process

Table 19. FMS, FMP, FME Funding Survey

Funding Survey												
						Estimated costs in plan			Estimated percent (share) of total FMS, FMP, or FME estimated cost			
									Sponsor Funding			
RFPG #	Sponsor Entity Name	FMS or FMP or FME	FMS FMP FME - Name	Regional plan's unique FMS/FMP/FME identification number	Target year of full implementation	Non-construction costs	Construction-related costs	Total estimated cost	ANTICIPATED SOURCE of Sponsor funding (e.g., taxes; general revenue; dedicated revenue incl. fees)	FUNDING TO BE FINANCED BY SPONSOR (incl. those local, county, or regional mechanisms available but not yet fully utilized)	Other Funding Needed (including state, federal and/ or other funding)	TOTAL (auto) sum must = 100%
12	Bandera County	FME	Bandera 470 and Indian Creek Study	121000131	2030	$ 150,000.00	$0	$150,000	Grants	50%	50%	100%
12	Bandera County	FME	Bandera 470 and Medina River Study	121000132	2030	$ 150,000.00	$0	$150,000	Grants	50%	50%	100%
12	Bandera County	FME	Bandera English Crossing Study	121000126	2030	$ 100,000.00	$0	$100,000	Grants	25%	75%	100%
12	Bandera County	FME	Bandera FM 2107 Study	121000127	2030	$ 150,000.00	$0	$150,000	Grants	25%	75%	100%
12	Bandera County	FME	Bandera Lower Mason Creek and Bandera Creek at State Highway 16	121000129	2030	$ 150,000.00	$0	$150,000	Grants	50%	50%	100%
12	Bandera County	FME	Bandera Patterson Street Study	121000128	2030	$ 150,000.00	$0	$150,000	Grants	50%	50%	100%
12	Bandera County	FME	Bandera State Highway 173 Study	121000125	2030	$ 150,000.00	$0	$150,000	Grants	25%	75%	100%
12	Bandera County	FME	Bandera Substation In Floodplain Study	121000138	2030	$ 150,000.00	$0	$150,000	Adjacent counties, grants	25%	75%	100%
12	Bandera County	FME	Bandera WWTP Study	121000130	2030	$ 150,000.00	$0	$150,000	Grants	25%	75%	100%
12	Bandera County	FME	Highway 16 Bridge Upgrade	121000124	2030	$ 150,000.00	$0	$150,000	Grants	25%	75%	100%
12	Bexar County	FME	Culebra Creek RSWF	121000155	2030	$ 50,000.00	$0	$50,000	Adjacent counties, grants	25%	75%	100%
12	Bexar County	FME	Live Oak at Salitrillo Creek (CB-9)	121000158	2030	$ 250,000.00	$0	$250,000	Adjacent counties, grants	25%	75%	100%
12	Bexar County	FME	Master Drainage Plan for Bexar County HALT Low Water	121000154	2030	$ 150,000.00	$0	$150,000	Adjacent counties, grants	25%	75%	100%
12	Bexar County	FME	Master Drainage Plan for Bexar County Unincorporated Areas	121000153	2030	$ 150,000.00	$0	$150,000	Adjacent counties, grants	25%	75%	100%
12	Bexar County	FME	Rockwood Creek (SA-39)	121000157	2030	$ 100,000.00	$0	$100,000	Adjacent counties, grants	25%	75%	100%
12	Bexar County	FMP	Abbott Road at Tributary A to Salitrillo Creek and at Salitrillo Creek Bridge	123000053	2030	$ 778,365.00	$4,689,635	$5,468,000	taxes, grants, loans	25%	75%	100%
12	Bexar County	FMP	Abbott Road at Unnamed Tributary 1 to Salitrillo Creek LWC Improvement	123000054	2030	$ 132,092.00	$607,908	$740,000	taxes, grants, loans	25%	75%	100%
12	Bexar County	FMP	Freudenburg Road at Salitrillo Creek Barrier Arms	123000058	2030	$ 30,801.00	$133,199	$164,000	taxes, grants, loans	25%	75%	100%
12	Bexar County	FMP	Gass Road at Culebra Creek Tributary D Bridge	123000059	2030	$ 547,125.00	$3,350,875	$3,898,000	taxes, grants, loans	25%	75%	100%
12	Bexar County	FME	Abbott Road and Graytown Road at Martinez Creek Study	121000164	2030	$ 300,000.00		$300,000	taxes, grants, loans	25%	75%	100%
12	Bexar County	FME	FM1346 Crossing Upgrade Study	121000166	2030	$ 150,000.00		$150,000	taxes, grants, loans	25%	75%	100%
12	Bexar County	FME	FM 1863 at Cibolo Creek LWC	121000095	2030	$ 150,000.00	$0	$150,000	taxes, grants, loans	25%	75%	100%
12	Bexar County / Comal County	FMP	Blanco Road at Cibolo Creek	123000036	2030	$ 3,007,966.90	$18,709,033	$21,717,000	taxes, grants, loans	25%	75%	100%
12	Bexar County / Comal County	FMP	Specht/Obst Road at Cibolo Creek	123000037	2030	$ 727,132.44	$3,766,868	$4,494,000	taxes, grants, loans	25%	75%	100%
12	Bexar County / Guadalupe County	FME	Trainer Hale at Cibolo Creek	121000172	2030	$ 150,000.00	$0	$150,000	taxes, grants, loans	25%	75%	100%
12	Bexar County / Guadalupe County	FMP	Bexar Bowling Way at Cibolo Creek Bridge	123000055	2030	$ 1,741,850.00	$11,510,150	$13,252,000	taxes, grants, loans	0%	100%	100%
12	Bexar County / Guadalupe County	FMP	Ullrich Road at Cibolo Creek Barrier Arms	123000061	2030	$ 44,201.00	$199,799	$244,000	taxes, grants, loans	0%	100%	100%
12	Bexar County / Kendall County	FMP	LWC at Old Fredericksburg Rd and Balcones Creek	123000033	2030	$ 1,687,704.58	$8,582,295	$10,270,000	taxes, grants, loans	25%	75%	100%
12	Bexar County / Kendall County	FMP	Toutant Beauregard at Balcones Creek	123000038	2030	$ 706,318.51	$2,940,681	$3,647,000	taxes, grants, loans	25%	75%	100%
12	Bexar County / Kendall County	FMP	Boerne Stage Road at Balcones Creek	123000039	2030	$ 1,337,698.86	$4,517,301	$5,855,000	taxes, grants, loans	25%	75%	100%
12	Bexar County / Wilson County	FMP	Felix Road at Dry Hollow Creek Barrier Arms	123000057	2030	$ 30,801.00	$133,199	$164,000	taxes, grants, loans	0%	100%	100%

Table 19. FMS, FMP, FME Funding Survey

RFPG #	Sponsor Entity Name	FMS or FMP or FME	FMS FMP FME - Name	Regional plan's unique FMS/FMP/FME identification number	Target year of full implementation	Estimated costs in plan			Estimated percent (share) of total FMS, FMP, or FME estimated cost			
									Sponsor Funding		Other Funding Needed (including state, federal and/ or other funding)	TOTAL (auto) sum must = 100%
						Non-construction costs	Construction-related costs	Total estimated cost	ANTICIPATED SOURCE of Sponsor funding (e.g., taxes; general revenue; dedicated revenue incl. fees)	FUNDING TO BE FINANCED BY SPONSOR (incl. those local, county, or regional mechanisms available but not yet fully utilized)		
12	City of Balcones Heights	FMP	Woodlawn Lawn Lake Option 2	123000032	2030	$ 1,419,468.40	$7,776,532	$9,196,000	taxes, grants, loans	25%	75%	100%
12	City of Boerne	FMP	PROJECT 10 - E. BLANCO ROAD AT UNNAMED TRIBUTARY A	123000010	2025	$ 505,635.99	$1,010,714	$1,516,350	taxes, grants, loans	20%	80%	100%
12	City of Boerne	FMP	PROJECT 11 - RIVER ROAD AT UNNAMED TRIBUTARY A	123000011	2035	$ 477,595.80	$849,214	$1,326,810	taxes, grants, loans	20%	80%	100%
12	City of Boerne	FMP	PROJECT 12 - PLANT CHANNEL IMPROVEMENT	123000013	2030	$ 438,073.99	$793,966	$1,232,040	taxes, grants, loans	20%	80%	100%
12	City of Boerne	FMP	PROJECT 13 - HERFF AND ESSER ROAD IMPROVEMENTS AT CURREY AND CIBOLO CREEK	123000012	2035	$ 4,836,253.84	$9,663,846	$14,500,100	taxes, grants, loans	20%	80%	100%
12	City of Boerne	FMP	PROJECT 14 - EAST BOERNE REGIONAL LID	123000014	2030	$ 275,976.00	$387,428	$663,404	taxes, grants, loans	20%	80%	100%
12	City of Boerne	FMP	PROJECT 15 - NORTH CURREY CHANNEL IMPROVEMENTS	123000015	2030	$ 278,321.61	$385,082	$663,404	taxes, grants, loans	20%	80%	100%
12	City of Boerne	FMP	PROJECT 16 - SOUTH CURREY CREEK CHANNEL IMPROVEMENTS	123000016	2030	$ 507,030.08	$914,550	$1,421,580	taxes, grants, loans	20%	80%	100%
12	City of Boerne	FMP	PROJECT 1A - ADLER ROAD AT CURREY CREEK AND UNNAMED TRIBUTARY A	123000001	In Design (2025)	$ 296,597.35	$1,314,523	$1,611,120	general revenue	25%	75%	100%
12	City of Boerne	FMP	PROJECT 2 - UNNAMED TRIBUTARY A REGIONAL DETENTION FACILITY	123000002	2030	$ 2,359,462.12	$4,653,668	$7,013,130	taxes, grants, loans	20%	80%	100%
12	City of Boerne	FMP	PROJECT 3 - CURREY CREEK REGIONAL DETENTION FACILITY	123000003	2030	$ 2,969,774.70	$5,938,795	$8,908,570	taxes, grants, loans	20%	80%	100%
12	City of Boerne	FMP	PROJECT 4 - SCHOOL STREET AT CIBOLO CREEK AND FREDERICK CREEK	123000004	2025	$ 1,688,854.66	$3,334,065	$5,022,920	taxes, grants, loans	20%	80%	100%
12	City of Boerne	FMP	PROJECT 5D - OLD SAN ANTONIO STREET AT MENGER CREEK	123000005	In Design (2025)	$ 812,921.20	$2,693,639	$3,506,560	general revenue	20%	80%	100%
12	City of Boerne	FMP	PROJECT 6 - JOHNS ROAD NEAR CIBOLO CROSSING SUBDIVISION	123000006	2025	$ 484,512.26	$937,067	$1,421,580	taxes, grants, loans	20%	80%	100%
12	City of Boerne	FMP	PROJECT 7 - SCHWEPPE AND HICKMAN STREET	123000007	2025	$ 681,292.06	$1,308,918	$1,990,210	taxes, grants, loans	20%	80%	100%
12	City of Boerne	FMP	PROJECT 8 - JOHNS AND LOHMANN STREET	123000008	2030	$ 609,952.45	$1,095,948	$1,705,900	taxes, grants, loans	20%	80%	100%
12	City of Boerne	FMP	PROJECT 9 - UNNAMED TRIBUTARY A-SUBDIVISION FLOOD PROTECTION & MOBILITY PROJECT	123000009	2035	$ 1,612,886.39	$3,220,484	$4,833,370	taxes, grants, loans	20%	80%	100%
12	City of Bulverde	FME	Cibolo Creek Tributary 19 Mapping Improvements	121000030	2030	$ 100,000.00	$0	$100,000	taxes, grants, loans	25%	75%	100%
12	City of Bulverde	FME	Indian Creek Mapping Improvements	121000031	2030	$ 100,000.00	$0	$100,000	taxes, grants, loans	25%	75%	100%
12	City of Bulverde	FMP	Lewis Creek Alternative 1 Phase 1 & 2	123000017	2030	$ 645,318.33	$5,376,462	$6,021,780	taxes, grants, loans	20%	80%	100%
12	City of Bulverde	FMP	Lewis Creek Main	123000020	2030	$ -	$165,184	$165,184	taxes, grants, loans	20%	80%	100%
12	City of Bulverde	FMP	Lewis Creek Tributary 2 Alternative 1 & 2	123000019	2030	$ 314,950.58	$2,624,429	$2,939,380	taxes, grants, loans	20%	80%	100%
12	City of Castroville	FME	Country Village Channel Improvements	121000140	2030	$ 50,000.00	$0	$50,000	bonds, grants, drainage fees	50%	50%	100%
12	City of Castroville	FME	Flat Creek Study	121000105	2030	$ 500,000.00	$0	$500,000	bonds, grants, drainage fees	50%	50%	100%
12	City of Castroville	FME	Garcia Creek Channel Stabilization	121000139	2030	$ 50,000.00	$0	$50,000	bonds, grants, drainage fees	50%	50%	100%
12	City of Castroville	FME	Kempf Creek Watershed Study	121000108	2030	$ 150,000.00	$0	$150,000	bonds, grants, drainage fees	50%	50%	100%

Table 19. FMS, FMP, FME Funding Survey

RFPG #	Sponsor Entity Name	FMS or FMP or FME	FMS FMP FME - Name	Regional plan's unique FMS/FMP/FME identification number	Target year of full implementation	Estimated costs in plan			Estimated percent (share) of total FMS, FMP, or FME estimated cost			
									Sponsor Funding		Other Funding Needed (including state, federal and/ or other funding)	TOTAL (auto) sum must = 100%
						Non-construction costs	Construction-related costs	Total estimated cost	ANTICIPATED SOURCE of Sponsor funding (e.g., taxes; general revenue; dedicated revenue incl. fees)	FUNDING TO BE FINANCED BY SPONSOR (incl. those local, county, or regional mechanisms available but not yet fully utilized)		
12	City of Castroville	FMP	Athens Street South Drainage Improvements	123000063	2030	$ 2,643,070.00	$16,377,930	$19,021,000	bonds, grants, drainage fees	20%	80%	100%
12	City of Castroville	FMP	Lorenzo Street North Drainage Improvements	123000064	2030	$ 1,612,004.00	$10,034,996	$11,647,000	bonds, grants, drainage fees	20%	80%	100%
12	City of Castroville	FMP	Naples Street North Drainage Improvements	123000065	2030	$ 3,170,879.00	$19,533,121	$22,704,000	bonds, grants, drainage fees	20%	80%	100%
12	City of Fair Oaks Ranch	FME	29010 Tivoli Way	121000162	2030	$ 103,952.00	$415,808	$519,760	taxes, grants, loans	20%	80%	100%
12	City of Fair Oaks Ranch	FME	7420 Rolling Acres Trail Low Water Crossing	121000005	2030	$ 733,169.90	$451,830	$1,185,000	taxes, grants, loans	25%	75%	100%
12	City of Fair Oaks Ranch	FME	7820 Rolling Acres Trail	121000002	2030	$ 290,210.60	$514,083	$804,293	taxes, grants, loans	25%	75%	100%
12	City of Fair Oaks Ranch	FME	7840 Silver Spur Trail	121000046	2030	$ 295,351.40	$514,083	$809,434	taxes, grants, loans	25%	75%	100%
12	City of Fair Oaks Ranch	FME	7900 Fair Oaks Parkway	121000003	2030	$ 60,281.65	$0	$60,282	taxes, grants, loans	25%	75%	100%
12	City of Fair Oaks Ranch	FME	8402 Battle Intense Low Water Crossing	121000006	2030	$ 1,105,087.00	$2,512,733	$3,617,820	taxes, grants, loans	25%	75%	100%
12	City of Fair Oaks Ranch	FME	8410 Noble Lark Dr	121000047	2030	$ 165,562.00	$163,787	$329,349	taxes, grants, loans	25%	75%	100%
12	City of Fair Oaks Ranch	FME	Ammann Road Low Water Crossing	121000004	2030	$ 213,657.50	$1,042,344	$1,256,002	taxes, grants, loans	25%	75%	100%
12	City of Fair Oaks Ranch	FME	Battle Intense LWC Flow-activated Sensors	121000007	2030	$ 179,792.30	$0	$179,792	taxes, grants, loans	25%	75%	100%
12	City of Fair Oaks Ranch	FME	Rolling Acres Trail LWC Flow-activated Sensors	121000008	2030	$ 359,584.50	$0	$359,585	taxes, grants, loans	25%	75%	100%
12	City of Falls City	FME	Inventory of residences in floodplain	121000032	2030	$ 50,000.00	$0	$50,000	taxes, grants, loans	20%	80%	100%
12	City of Falls City	FME	Karnes County Damage Centers Karnes A	121000013	2030	$ 4,243,043.00	$0	$4,243,043	taxes, grants, loans	25%	75%	100%
12	City of Falls City	FMS	San Antonio River drainage ownership study	122000002	2030	$ 30,000.00	$0	$30,000	taxes, grants, loans	20%	80%	100%
12	City of Falls City	FMS	Study the San Antonio River and its tributes	122000001	2030	$ 250,000.00	$0	$250,000	taxes, grants, loans	25%	75%	100%
12	City of Falls City	FME	Update flood information and policies	121000037	2030	$ 100,000.00	$0	$100,000	taxes, grants, loans	25%	75%	100%
12	City of Floresville	FMS	Citizen flood education outreach	122000016	2030	$ 10,000.00	$0	$10,000	grants and loans	0%	100%	100%
12	City of Floresville	FME	City of Floresville Flood Study	121000123	2030	$ 100,000.00	$0	$100,000	grants and loans	0%	100%	100%
12	City of Floresville	FMS	City of Floresville Floodplain Ordinance and Development Code Update	122000020	2030	$ 100,000.00	$0	$100,000	grants and loans	0%	100%	100%
12	City of Floresville	FME	Damage Center 2: Project 1 Channelization	121000149	2030	$ 100,000.00	$0	$100,000	grants and loans	0%	100%	100%
12	City of Floresville	FME	Property acquisition and demolition and/or relocations	121000148	2030	$ 1,500,000.00	$0	$1,500,000	grants and loans	0%	100%	100%
12	City of Floresville	FMP	Damage Center 1: Project 1A, B, C	123000056	2030	$ 1,380,632.00	$2,928,368	$4,309,000	grants and loans	0%	100%	100%
12	City of Karnes City	FME	Inventory of residences in floodplain	121000038	2030	$ 50,000.00	$0	$50,000	taxes, grants, loans	20%	80%	100%
12	City of Karnes City	FMS	San Antonio River drainage ownership mapping	122000003	2030	$ 30,000.00	$0	$30,000	taxes, grants, loans	20%	80%	100%
12	City of Karnes City	FME	Update flood information and policies	121000033	2030	$ 100,000.00	$0	$100,000	taxes, grants, loans	25%	75%	100%
12	City of Kenedy	FME	Inventory of residences in floodplain	121000034	2030	$ 50,000.00	$0	$50,000	taxes, grants, loans	20%	80%	100%
12	City of Kenedy	FMS	San Antonio River drainage ownership mapping	122000004	2030	$ 30,000.00	$0	$30,000	taxes, grants, loans	20%	80%	100%

Table 19. FMS, FMP, FME Funding Survey

RFPG #	Sponsor Entity Name	FMS or FMP or FME	FMS FMP FME - Name	Regional plan's unique FMS/FMP/FME identification number	Target year of full implementation	Estimated costs in plan			Estimated percent (share) of total FMS, FMP, or FME estimated cost			
						Non-construction costs	Construction-related costs	Total estimated cost	Sponsor Funding		Other Funding Needed (including state, federal and/ or other funding)	TOTAL (auto) sum must = 100%
									ANTICIPATED SOURCE of Sponsor funding (e.g., taxes; general revenue; dedicated revenue incl. fees)	FUNDING TO BE FINANCED BY SPONSOR (incl. those local, county, or regional mechanisms available but not yet fully utilized)		
12	City of Kenedy	FMS	Update flood information and policies	122000012	2030	$ 100,000.00	$0	$100,000	taxes, grants, loans	25%	75%	100%
12	City of La Coste	FME	New Drainage Analysis to Update/Revise Flood Maps	121000113	2030	$ 100,000.00	$0	$100,000	taxes, grants, loans	25%	75%	100%
12	City of La Coste	FMS	Public Education & Outreach	122000014	2030	$ 35,000.00	$0	$35,000	grants	0%	100%	100%
12	City of La Coste	FME	Wet-Proof Wastewater System	121000144	2030	$ 50,000.00	$0	$50,000	grants	0%	100%	100%
12	City of La Vernia	FME	Additional flood proof at wastewater treatment plant	121000146	2030	$ 150,000.00	$0	$150,000	Fees, loans, grants	25%	75%	100%
12	City of La Vernia	FME	La Vernia Issue # 5 (Hwy 87 crossing and CR 342)	121000118	2030	$ 150,000.00	$0	$150,000	Fees, loans, grants	25%	75%	100%
12	City of La Vernia	FMS	Public education and outreach	122000015	2030	$ 5,000.00	$0	$5,000	Fees, loans, grants	50%	50%	100%
12	City of La Vernia	FME	Repetitive loss properties	121000151	2030	$ 150,000.00	$0	$150,000	Fees, loans, grants	25%	75%	100%
12	City of La Vernia	FMS	Updating floodplain ordinances and development code	122000017	2030	$ 50,000.00	$0	$50,000	Fees, loans, grants	50%	50%	100%
12	City of La Vernia	FME	La Vernia Issue # 2 and # 3 (City Park/ La Vernia ISD)	121000119	2030	$ 150,000.00	$0	$150,000	Fees, loans, grants	25%	75%	100%
12	City of Leon Valley	FME	Huebner Creek Flood Control Project Segment 1	121000018	2030	$ 22,471,310.00	$0	$22,471,310	taxes, grants, loans	25%	75%	100%
12	City of Poth	FME	Damage Center 1 Project2A – Improved crossing at U.S. Highway 181	121000049	2030	$ 1,928,035.00	$0	$1,928,035	taxes, grants, loans	25%	75%	100%
12	City of Poth	FMS	Digital signage for communication	122000008	2030	$ 5,000.00	$0	$5,000	taxes, grants, loans	25%	75%	100%
12	City of Poth	FME	Drainage Study Marcelinas Creek and its major tributary	121000041	2030	$ 250,726.80	$0	$250,727	taxes, grants, loans	20%	80%	100%
12	City of Poth	FMS	Early warning system education	122000009	2030	$ 5,000.00	$0	$5,000	taxes, grants, loans	20%	80%	100%
12	City of Poth	FMS	Education Signage	122000007	2030	$ 5,000.00	$0	$5,000	taxes, grants, loans	20%	80%	100%
12	City of Poth	FME	Install early warning systems	121000040	2030	$ 100,000.00	$0	$100,000	taxes, grants, loans	20%	80%	100%
12	City of Poth	FME	Install pipe gates to close off streets	121000096	2030	$ 250,000.00	$0	$250,000	taxes, grants, loans	20%	80%	100%
12	City of Poth	FME	Mitigate local flooding in identified problem areas	121000035	2030	$ 5,000.00	$0	$5,000	taxes, grants, loans	20%	80%	100%
12	City of Poth	FMS	Strengthen floodplain management ordinances	122000006	2030	$ 25,000.00	$0	$25,000	taxes, grants, loans	20%	80%	100%
12	City of Poth	FMP	Damage Center 1 Project1 – Detention in East Branch Poth Creek	123000029	2030	$ 1,036,210.47	$949,790	$1,986,000	taxes, grants, loans	0%	100%	100%
12	City of Poth	FMP	Damage Center 2-Project 1 Culvert Improvements at Menchaca	123000030	2030	$ 378,026.85	$1,825,973	$2,204,000	taxes, grants, loans	25%	75%	100%
12	City of Poth	FMP	Damage Center 2- Project 2 Road connection from Mosspoint to Sunshine	123000031	2030	$ 288,755.05	$1,100,245	$1,389,000	taxes, grants, loans	25%	75%	100%
12	City of Runge	FME	Inventory of residences in floodplain	121000056	2030	$ 50,000.00	$0	$50,000	taxes, grants, loans	20%	80%	100%
12	City of Runge	FMS	San Antonio River drainage ownership mapping	122000005	2030	$ 30,000.00	$0	$30,000	taxes, grants, loans	20%	80%	100%
12	City of Runge	FME	Study the San Antonio River, Ojo de Agua Creek and its tributaries	121000001	2030	$ 250,000.00	$0	$250,000	taxes, grants, loans	25%	75%	100%
12	City of Runge	FME	Update flood information and policies	121000039	2030	$ 100,000.00	$0	$100,000	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FME	Apache Creek & Elmendorf Lake Dam	121000029	2030	$ 350,000.00	$0	$350,000	general revenue	100%	0%	100%
12	City of San Antonio	FMP	Barbara Drive Drainage Improvements	123000025	2030	$ 3,706,395.59	$24,120,504	$27,826,900	taxes, grants, loans	10%	90%	100%

Table 19. FMS, FMP, FME Funding Survey

RFPG #	Sponsor Entity Name	FMS or FMP or FME	FMS FMP FME - Name	Regional plan's unique FMS/FMP/FME identification number	Target year of full implementation	Estimated costs in plan			Estimated percent (share) of total FMS, FMP, or FME estimated cost			
						Non-construction costs	Construction-related costs	Total estimated cost	Sponsor Funding		Other Funding Needed (including state, federal and/ or other funding)	TOTAL (auto) sum must = 100%
									ANTICIPATED SOURCE of Sponsor funding (e.g., taxes; general revenue; dedicated revenue incl. fees)	FUNDING TO BE FINANCED BY SPONSOR (incl. those local, county, or regional mechanisms available but not yet fully utilized)		
12	City of San Antonio	FMP	Concepcion Creek Improvements Project	123000028	2030	$ 66,094,000.00	$113,388,000	$179,482,000	taxes, grants, loans	10%	90%	100%
12	City of San Antonio	FME	Culebra Creek Tributary A at Tezel Road Enhanced Conveyance	121000058	2030	$ 3,729,220.00	$5,440,595	$9,169,815	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FME	D/O Center A (Old Pearsall road at Medio Creek)	121000048	2030	$ 1,959,014.00	$18,571,350	$20,530,364	taxes, grants, loans	10%	90%	100%
12	City of San Antonio	FME	Damage Center 14- Airport Trib	121000086	2030	$ 250,000.00	$0	$250,000	taxes, grants, loans	10%	90%	100%
12	City of San Antonio	FME	Damage Center 19- San Pedro Creek	121000087	2030	$ 8,615,588.00	$3,237,314	$11,852,902	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FME	Damage Center 2- Martinez Creek	121000065	2030	$ 12,459,060.00	$12,653,150	$25,112,210	taxes, grants, loans	10%	90%	100%
12	City of San Antonio	FME	Damage Center 20-Matinez Creek	121000088	2030	$ 22,251,470.00	$44,314,310	$66,565,780	taxes, grants, loans	10%	90%	100%
12	City of San Antonio	FME	Damage Center 23-New Braunfels, Austin Hwy, Broadway Drain	121000089	2030	$ 23,560,930.00	$32,054,650	$55,615,580	taxes, grants, loans	10%	90%	100%
12	City of San Antonio	FME	Damage Center 3- Zarzamora Creek	121000082	2030	$ 32,730,100.00	$11,684,210	$44,414,310	taxes, grants, loans	10%	90%	100%
12	City of San Antonio	FME	Damage Center 31-Rockwood Creek	121000094	2030	$ 150,000.00	$0	$150,000	general revenue	100%	0%	100%
12	City of San Antonio	FME	Damage Center 32-Six Mile Creek	121000090	2030	$ 9,392,589.00	$10,735,320	$20,127,909	taxes, grants, loans	10%	90%	100%
12	City of San Antonio	FME	Damage Center 34-State Hospital Creek	121000091	2030	$ 2,005,668.00	$4,036,230	$6,041,898	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FME	Damage Center 38-Olmos Creek Lower Reach Near Montview	121000081	2030	$ 250,000.00	$0	$250,000	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FME	Damage Center 3-Lorence Creek	121000063	2030	$ 2,473,247.00	$6,619,756	$9,093,003	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FME	Damage Center 4- Apache Creek	121000028	2030	$ 8,787,565.29	$6,289,905	$15,077,470	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FME	Damage Center 40-San Antonio River DS Reach near Roosevelt	121000079	2030	$ 250,000.00	$0	$250,000	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FME	Damage Center 43-Olmos Creek Middle Reach near DeZavala	121000027	2030	$ 8,878,636.00	$0	$8,878,636	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FME	Damage Center 5-Salado Creek Trib F	121000062	2030	$ 7,617,754.00	$19,227,280	$26,845,034	taxes, grants, loans	10%	90%	100%
12	City of San Antonio	FME	Damage Center 6- Martinez Creek	121000083	2030	$ 40,552,310.00	$0	$40,552,310	taxes, grants, loans	10%	90%	100%
12	City of San Antonio	FME	Damage Center 7- Zarzamora Creek	121000084	2030	$ 14,775,610.00	$0	$14,775,610	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FME	Damage Center 9- Alazan Creek	121000085	2030	$ 19,406,180.00	$46,217,800	$65,623,980	taxes, grants, loans	10%	90%	100%
12	City of San Antonio	FME	DC13/14: Walzem Creek	121000064	2030	$ 2,034,308.00	$5,000,898	$7,035,206	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FME	DC19: Salado Creek Tributary B	121000019	2030	$ 5,336,254.00	$14,454,210	$19,790,464	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FME	French Creek at Guilbeau Road NWWC	121000017	2030	$ 3,823,239.00	$6,004,761	$9,828,000	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FME	French Creek RSWF	121000057	2030	$ 5,975,659.00	$13,141,430	$19,117,089	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FME	Helotes Creek at Bandera Road Enhanced Conveyance	121000059	2030	$ 907,127.20	$1,704,354	$2,611,481	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FME	Helotes Creek RSWF	121000060	2030	$ 5,173,548.00	$3,805,098	$8,978,646	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FMP	Holbrook Road Improvements	123000024	2030	$ 3,488,580.31	$11,119,520	$14,608,100	taxes, grants, loans	25%	75%	100%

Table 19. FMS, FMP, FME Funding Survey

RFPG #	Sponsor Entity Name	FMS or FMP or FME	FMS FMP FME - Name	Regional plan's unique FMS/FMP/FME identification number	Target year of full implementation	Estimated costs in plan			Estimated percent (share) of total FMS, FMP, or FME estimated cost			
									Sponsor Funding		Other Funding Needed (including state, federal and/ or other funding)	TOTAL (auto) sum must = 100%
						Non-construction costs	Construction-related costs	Total estimated cost	ANTICIPATED SOURCE of Sponsor funding (e.g., taxes; general revenue; dedicated revenue incl. fees)	FUNDING TO BE FINANCED BY SPONSOR (incl. those local, county, or regional mechanisms available but not yet fully utilized)		
12	City of San Antonio	FMP	Judson and Lookout LWC Improvement	123000022	2030	$ 2,895,982.82	$3,405,217	$6,301,200	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FME	Hubner Creek Flood Protection Barier	121000061	2030	$ 22,480,290.00	$13,200,840	$35,681,130	taxes, grants, loans	10%	90%	100%
12	City of San Antonio	FME	LWC #13 West Ave. @ Interpark	121000073	2030	$ 1,374,680.00	$4,385,273	$5,759,953	taxes, grants, loans	100%	0%	100%
12	City of San Antonio	FME	LWC #15 Copperhill Between Parkstone & Happy Hollow	121000072	2030	$ 238,773.30	$233,215	$471,988	general revenue	100%	0%	100%
12	City of San Antonio	FME	LWC #159.1 Southton Rd	121000025	2030	$ 963,772.10	$5,138,908	$6,102,680	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FME	LWC #34 Sleepy Hollow @ Sunburst	121000026	2030	$ 938,002.70	$4,483,086	$5,421,089	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FME	LWC #71 Danville and Overbrook	121000075	2030	$ 2,890,500.00	$0	$2,890,500	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FME	LWC 100, Blakeley Area Drainage Improvement	121000022	2030	$ 269,346.10	$403,432	$672,778	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FME	LWC 112.1 Pvt Rd. 300' North of Marbcah Rd.	121000021	2030	$ 100,000.00	$0	$100,000	general revenue	100%	0%	100%
12	City of San Antonio	FME	LWC No 113-116 and Associated Channel Improvements	121000070	2030	$ 917,273.90	$2,748,767	$3,666,041	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FME	LWC# 101 Rittiman Creek @ Gibbs Sprawl	121000097	2030	$ 3,994,965.00	$6,978,475	$10,973,440	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FME	LWC# 91 Weidner 500 ft N of Schertz	121000071	2030	$ 699,298.90	$2,419,307	$3,118,606	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FME	LWC#156 New Sulphur Springs Rd – btwn S. Foster & Gardner	121000024	2030	$ 2,290,161.00	$20,555,630	$22,845,791	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FME	LWC#41 Vance Jackson 200ft south of Scenic	121000020	2030	$ 283,546.00	$729,754	$1,013,300	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FME	LWC 42 Dreamland south of RR Xing	121000069	2030	$ 770,000.00	$10,700,000	$11,470,000	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FME	LWC#72 Spencer Lane, east of Balcones Rd.	121000076	2030	$ 487,969.60	$1,401,362	$1,889,332	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FME	LWC157 New Sulphur Springs Rd – East of Beck Rd	121000023	2030	$ 340,796.60	$601,951	$942,748	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FME	Mahncke Park Outfall	121000077	2030	$ 1,526,936.00	$9,265,734	$10,792,670	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FME	New Sulphur Springs – East of Lodi Rd	121000074	2030	$ 430,557.80	$1,887,226	$2,317,784	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FME	Normoyle Ditch - Alt 1	121000068	2030	$ 150,000.00	$0	$150,000	general revenue	100%	0%	100%
12	City of San Antonio	FMP	Rock Creek - Alt 1	123000021	2030	$ 5,938,555.98	$11,702,144	$17,640,700	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FMP	Seeling Drainage Improvements	123000018	2030	$ 9,862,734.96	$18,504,765	$28,367,500	taxes, grants, loans	10%	90%	100%
12	City of San Antonio	FMP	Shady Lane Dr.Voluntary Property Acquisition	123000027	2030	$ 1,306,980.00	$0	$1,306,980	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FMP	Symphony Lane Voluntary Property Acquisition	123000023	2030	$ 33,019,300.00	$0	$33,019,300	taxes, grants, loans	10%	90%	100%
12	City of San Antonio	FMP	Thames Drainage Channel Replacement - Alt 1	123000026	2030	$ 8,818,036.90	$20,172,663	$28,990,700	taxes, grants, loans	10%	90%	100%
12	City of San Antonio	FME	Upper Martinez Creek Improvements	121000099	2030	$ 1,673,872.00	$2,426,984	$4,100,856	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FMP	Blue Ridge Drive Drainage Improvements	123000040	2030	$ 1,444,919.00	$19,619,081	$21,064,000	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FMP	Southwell Road Drainage Improvements	123000041	2030	$ 2,091,079.39	$3,829,921	$5,921,000	taxes, grants, loans	25%	75%	100%

Table 19. FMS, FMP, FME Funding Survey

RFPG #	Sponsor Entity Name	FMS or FMP or FME	FMS FMP FME - Name	Regional plan's unique FMS/FMP/FME identification number	Target year of full implementation	Estimated costs in plan			Estimated percent (share) of total FMS, FMP, or FME estimated cost			
									Sponsor Funding		Other Funding Needed (including state, federal and/ or other funding)	TOTAL (auto) sum must = 100%
						Non-construction costs	Construction-related costs	Total estimated cost	ANTICIPATED SOURCE of Sponsor funding (e.g., taxes; general revenue; dedicated revenue incl. fees)	FUNDING TO BE FINANCED BY SPONSOR (incl. those local, county, or regional mechanisms available but not yet fully utilized)		
12	City of San Antonio	FMP	Ridge Run Street Area Drainage Improvements	123000042	2030	$ 2,159,961.36	$8,283,039	$10,443,000	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FMP	Huebner Creek Channelization (LWC #28)	123000043	2030	$ 3,820,851.26	$4,550,149	$8,371,000	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FMP	Overbrook Drainage Improvement Phase 1 & 2	123000044	2030	$ 4,072,908.82	$26,769,091	$30,842,000	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FME	Delcrest Channel Improvements PER	121000173	2030	$ 250,000.00	$0	$250,000	general revenue	100%	0%	100%
12	City of San Antonio	FME	Overbrook Outfall Drainage Project Phase 3	121000174	2030	$ 250,000.00	$0	$250,000	general revenue	100%	0%	100%
12	City of Selma	FME	Master Drainage plan	121000015	2030	$ 577,600.00	$0	$577,600	taxes, grants, loans	25%	75%	100%
12	City of Shavano Park	FMP	Elm Spring	123000034	2030	$ 384,665.51	$1,806,334	$2,191,000	taxes, grants, loans	25%	75%	100%
12	City of Shavano Park	FMP	De Zavala/ Ripple Creek	123000035	2030	$ 325,106.00	$1,403,894	$1,729,000	taxes, grants, loans	25%	75%	100%
12	City of Stockdale	FME	Damage Center 1 (Stockdale Creek)	121000012	2030	$ 3,569,335.00	$0	$3,569,335	taxes, grants, loans	25%	75%	100%
12	City of Stockdale	FME	Damage Center 2 (South Tributary to Stockdale Creek)	121000052	2030	$ 660,768.10	$0	$660,768	taxes, grants, loans	25%	75%	100%
12	City of Stockdale	FME	Detention/Retention pond on school property	121000045	2030	$ 1,604,361.00	$0	$1,604,361	taxes, grants, loans	25%	75%	100%
12	City of Stockdale	FME	Develop and implement a Stormwater Management Plan for Stockdale Creek	121000036	2030	$ 1,203,489.00	$0	$1,203,489	taxes, grants, loans	25%	75%	100%
12	City of Stockdale	FME	Drainage improvements to wastewater treatment plants	121000043	2030	$ 852,325.80	$0	$852,326	taxes, grants, loans	25%	75%	100%
12	City of Stockdale	FME	Maintain Drainage System	121000098	2030	$ 2,073,415.00	$0	$2,073,415	taxes, grants, loans	25%	75%	100%
12	City of Stockdale	FME	New Bridges on 6th and 8th Streets	121000044	2030	$ 651,453.60	$0	$651,454	taxes, grants, loans	25%	75%	100%
12	City of Helotes	FME	Antonio Drive Drainage Improvements	121000016	2030	$ 150,000.00	$3,316,811	$3,466,811	taxes, grants, loans	25%	75%	100%
12	City of Helotes	FME	Detailed Study of Culebra Creek Trib C	121000055	2030	$ 65,000.00	$0	$65,000	taxes, grants, loans	25%	75%	100%
12	City of Helotes	FME	Detailed Study of Unnamed Trib 3 to Helotes Creek	121000054	2030	$ 40,000.00	$0	$40,000	taxes, grants, loans	25%	75%	100%
12	City of Helotes	FME	Parrigin Road Drainage Improvements	121000053	2030	$ 295,579.50	$975,648	$1,271,228	taxes, grants, loans	25%	75%	100%
12	Goliad County	FME	Goliad Damage Center A	121000106	2030	$ 50,000.00	$0	$50,000	taxes, grants, loans	0%	100%	100%
12	Goliad County	FME	Goliad Damage Center B	121000107	2030	$ 100,000.00	$0	$100,000	taxes, grants, loans	0%	100%	100%
12	San Antonio River Authority	FMS	Development of a Streamscaping Program for Flood Risk Management in Texas	122000010	2030	$ 129,000.00	$0	$129,000	taxes, grants, loans	25%	75%	100%
12	Guadalupe County	FME	Cibolo Creek Spill Study	121000165	2030	$ 250,000.00		$250,000	taxes, grants, loans	0%	100%	100%
12	Karnes County	FME	Low Water Crossing Upgrades	121000114	2030	$ 305,000.00	$0	$305,000	taxes, grants, loans	25%	75%	100%
12	Karnes County	FMS	Shelter requirement for RV parks	122000013	2030	$ 10,000.00	$0	$10,000	taxes, grants, loans	25%	75%	100%
12	Karnes County	FME	Update flood information and policies	121000160	2030	$ 100,000.00	$0	$100,000	taxes, grants, loans	25%	75%	100%
12	Karnes County	FMP	CR 294 Drainage Improvements at Dry Ecleto Creek	123000066	2030	$ 1,780,000.00	$5,398,000	$7,178,000	Taxes, grants, loans	25%	75%	100%
12	Karnes County	FMP	CR 302 Drainage Improvements at Ecleto Creek	123000067	2030	$ 4,584,000.00	$10,677,000	$15,261,000	Taxes, grants, loans	25%	75%	100%

Table 19. FMS, FMP, FME Funding Survey

RFPG #	Sponsor Entity Name	FMS or FMP or FME	FMS FMP FME - Name	Regional plan's unique FMS/FMP/FME identification number	Target year of full implementation	Estimated costs in plan			Estimated percent (share) of total FMS, FMP, or FME estimated cost			
									Sponsor Funding		Other Funding Needed (including state, federal and/ or other funding)	TOTAL (auto) sum must = 100%
						Non-construction costs	Construction-related costs	Total estimated cost	ANTICIPATED SOURCE of Sponsor funding (e.g., taxes; general revenue; dedicated revenue incl. fees)	FUNDING TO BE FINANCED BY SPONSOR (incl. those local, county, or regional mechanisms available but not yet fully utilized)		
12	Karnes County	FMP	CR 262 Drainage Improvements at Ecleto Creek	123000068	2030	$ 2,737,400.00	$8,505,000	$11,242,400	Taxes, grants, loans	25%	75%	100%
12	Karnes County	FMP	Drainage Improvements at CR 337 and CR 326 Near City of Runge	123000069	2030	$ 1,748,000.00	$5,025,000	$6,773,000	Taxes, grants, loans	25%	75%	100%
12	Karnes County	FMP	CR 336 Drainage Improvements at Ecleto Creek Tributary	123000070	2030	$ 687,756.00	$2,172,000	$2,859,756	Taxes, grants, loans	25%	75%	100%
12	Karnes County	FMP	CR 331 Drainage Improvements at Escondido Creek	123000071	2030	$ 1,256,554.00	$3,609,000	$4,865,554	Taxes, grants, loans	25%	75%	100%
12	Karnes County	FMP	City of Kenedy Drainage Improvements on Escondido Creek	123000072	2030	$ 8,227,000.00	$25,090,000	$33,317,000	Taxes, grants, loans	25%	75%	100%
12	Karnes County	FMP	CR 127 Drainage Improvements at Hondo Creek	123000073	2030	$ 2,768,000.00	$6,224,000	$8,992,000	Taxes, grants, loans	25%	75%	100%
12	Karnes County	FMP	CR 145 Drainage Improvements at Hondo Creek	123000074	2030	$ 894,372.00	$2,794,000	$3,688,372	Taxes, grants, loans	25%	75%	100%
12	Karnes County	FMP	CR 354 Drainage Improvements at Lower San Antonio Tributary 147	123000075	2030	$ 1,653,859.00	$4,814,000	$6,467,859	Taxes, grants, loans	25%	75%	100%
12	Karnes County	FMP	US 181 Drainage Improvements at Marcelinas Creek Trib	123000076	2030	$ 658,200.00	$1,807,000	$2,465,200	Taxes, grants, loans	25%	75%	100%
12	Karnes County	FMP	Nichols Creek Tributary 2 Drainage Improvements	123000077	2030	$ 397,000.00	$1,254,000	$1,651,000	Taxes, grants, loans	25%	75%	100%
12	Karnes County	FMP	Nichols Creek Tributary 4 Drainage Improvements	123000078	2030	$ 348,000.00	$1,093,000	$1,441,000	Taxes, grants, loans	25%	75%	100%
12	Karnes County	FMP	CR 325 Drainage Improvements at Ojo De Agua Creek	123000079	2030	$ 510,000.00	$1,497,000	$2,007,000	Taxes, grants, loans	25%	75%	100%
12	Karnes County	FMP	CR 163 Drainage Improvements at Panther Creek	123000080	2030	$ 819,400.00	$2,399,000	$3,218,400	Taxes, grants, loans	25%	75%	100%
12	Karnes County	FME	CR 326B at Ecleto Creek	121000175	2030	$ 100,000.00		$100,000	Taxes, grants, loans	25%	75%	100%
12	Karnes County	FME	CR 237 at Marcelinas Creek	121000176	2030	$ 100,000.00		$100,000	Taxes, grants, loans	25%	75%	100%
12	Karnes County	FME	City of Kenedy Flooding on Escondido Creek Tributary	121000177	2030	$ 100,000.00		$100,000	Taxes, grants, loans	25%	75%	100%
12	Karnes County	FME	Falls City Flooding from San Antonio River	121000178	2030	$ 100,000.00		$100,000	Taxes, grants, loans	25%	75%	100%
12	Karnes County	FME	San Antonio River Flooding on US 181	121000179	2030	$ 100,000.00		$100,000	Taxes, grants, loans	25%	75%	100%
12	Karnes County	FME	Cibolo Creek Flooding on SH 123	121000180	2030	$ 100,000.00		$100,000	Taxes, grants, loans	25%	75%	100%
12	Karnes County	FME	San Antonio River Flooding on SH 80	121000181	2030	$ 100,000.00		$100,000	Taxes, grants, loans	25%	75%	100%
12	Karnes County	FME	Localized Residential Flooding in City of Kenedy	121000182	2030	$ 100,000.00		$100,000	Taxes, grants, loans	25%	75%	100%
12	Karnes County	FME	San Antonio River Flooding on SH 72	121000183	2030	$ 100,000.00		$100,000	Taxes, grants, loans	25%	75%	100%
12	Karnes County	FME	Karnes County FEWS	121000184	2030	$ 100,000.00		$100,000	Taxes, grants, loans	25%	75%	100%
12	Kendall County	FMS	Automatic low water crossings and gauges	122000011	2030	$ 100,000.00	$0	$100,000	taxes, grants, loans	25%	75%	100%
12	Kendall County	FME	LWC at Ammann Rd and Post Oak Creek	121000092	2030	$ 100,000.00	$0	$100,000	taxes, grants, loans	25%	75%	100%
12	Medina County	FME	Cagnon Rd at Polecat Creek (DC-MRN)	121000142	2030	$ 150,000.00	$0	$150,000	taxes, grants, loans	25%	75%	100%
12	Medina County	FMS	Conservation Easement Program	122000019	2030	$ 50,000.00	$0	$50,000	taxes, grants, loans	25%	75%	100%

Table 19. FMS, FMP, FME Funding Survey

RFPG #	Sponsor Entity Name	FMS or FMP or FME	FMS FMP FME - Name	Regional plan's unique FMS/FMP/FME identification number	Target year of full implementation	Estimated costs in plan			Estimated percent (share) of total FMS, FMP, or FME estimated cost			
						Non-construction costs	Construction-related costs	Total estimated cost	Sponsor Funding		Other Funding Needed (including state, federal and/ or other funding)	TOTAL (auto) sum must = 100%
									ANTICIPATED SOURCE of Sponsor funding (e.g., taxes; general revenue; dedicated revenue incl. fees)	FUNDING TO BE FINANCED BY SPONSOR (incl. those local, county, or regional mechanisms available but not yet fully utilized)		
12	Medina County	FME	Lucas Creek at Cinco De Mayo Dr Bridge and Channel (DC-MRD)	121000141	2030	$ 150,000.00	$0	$150,000	taxes, grants, loans	25%	75%	100%
12	Medina County	FME	Trumbo Rd at Palo Blanco Creek (DC-MRP)	121000143	2030	$ 100,000.00	$0	$100,000	taxes, grants, loans	25%	75%	100%
12	San Antonio River Authority	FME	Evaluation and prioritization of new gauge locations	121000134	2030	$ 50,000.00	$0	$50,000	inner local agreement loans and grants, bond	25%	75%	100%
12	San Antonio River Authority	FME	Future conditions data refinement study	121000135	2030	$ 500,000.00	$0	$500,000	inner local agreement loans and grants, bond	25%	75%	100%
12	San Antonio River Authority	FME	Holistic Watershed based master planning consistent with Nature Based Solutions	121000161	2030	$ 2,247,403.00	$0	$2,247,403	inner local agreement loans and grants, bond	25%	75%	100%
12	San Antonio River Authority	FME	Escondidio Creek WS SCS Site 1, 2, 4 Dam	121000120	2030	$ 300,000.00	$0	$300,000	inner local agreement, grant	0%	100%	100%
12	San Antonio River Authority	FME	Lower Basin Predictive Flood Model	121000109	2030	$ 1,000,000.00	$0	$1,000,000	inner local agreement loans and grants, bond	25%	75%	100%
12	San Antonio River Authority	FME	Natural capital inventory	121000133	2030	$ 300,000.00	$0	$300,000	inner local agreement loans and grants, bond	25%	75%	100%
12	San Antonio River Authority	FME	Nichols Creek Stabilization	121000152	2030	$ 1,000,000.00	$0	$1,000,000	inner local agreement loans and grants, bond	25%	75%	100%
12	San Antonio River Authority	FME	Port of San Antonio Floodproofing	121000136	2030	$ 250,000.00	$0	$250,000	inner local agreement, grant	0%	100%	100%
12	San Antonio River Authority	FME	River Authority WWTP Resilience	121000137	2030	$ 600,000.00	$0	$600,000	utility revenue, grant	25%	75%	100%
12	Tivoli Community	FME	Culvert improvement on Hatch St in Tivoli	121000110	2030	$ 150,000.00	$0	$150,000	grants, loans	25%	75%	100%
12	Tivoli Community	FME	Culvert Improvement on Highway 239 in Tivoli	121000111	2030	$ 150,000.00	$0	$150,000	grants, loans	25%	75%	100%
12	Tivoli Community	FME	Miller Creek on the Smoky Creek Ranch Drainage Improvements	121000112	2030	$ 150,000.00	$0	$150,000	grants, loans	25%	75%	100%
12	Von Ormy	FME	Live Oak Slough Creek Improvements Study	121000167	2030	$ 250,000.00		$250,000	grants and loans	0%	100%	100%
12	Von Ormy	FME	North Benton City Road Improvements Study	121000168	2030	$ 150,000.00		$150,000	grants and loans	0%	100%	100%
12	Von Ormy	FME	Quintana Road Drainage Improvements Study	121000169	2030	$ 250,000.00		$250,000	grants and loans	0%	100%	100%
12	Von Ormy	FME	South Benton City Road Improvements Study	121000170	2030	$ 150,000.00		$150,000	grants and loans	0%	100%	100%
12	Von Ormy	FME	S Evans Rd Road Improvements Study	121000171	2030	$ 150,000.00		$150,000	grants and loans	0%	100%	100%
12	Wilson County	FME	Erosion at CR 401 and Cibolo Creek	121000102	2030	$ 100,000.00	$0	$100,000	taxes, fees, loans, grants	50%	50%	100%
12	Wilson County	FME	Erosion on CR 202 East and Marcelina Creek	121000103	2030	$ 100,000.00	$0	$100,000	taxes, fees, loans, grants	50%	50%	100%
12	Wilson County	FME	Recommend for Wilson Roadways-Project 3-CR 122 & Mariana Creek	121000116	2030	$ 100,000.00	$0	$100,000	taxes, fees, loans, grants	25%	75%	100%
12	Wilson County	FME	Recommend for Wilson Roadways - Project 4 - Mariana Rd & Mariana Creek	121000100	2030	$ 100,000.00	$0	$100,000	taxes, fees, loans, grants	25%	75%	100%
12	Wilson County	FME	Recommend for Wilson Roadways - Project 5 - CR 108 & Mariana Creek	121000101	2030	$ 100,000.00	$0	$100,000	taxes, fees, loans, grants	50%	50%	100%
12	Wilson County	FME	Recommend for Wilson Roadways - Project 7 - CR 119 & Mariana Creek	121000147	2030	$ 100,000.00	$0	$100,000	taxes, fees, loans, grants	25%	75%	100%
12	Wilson County	FME	Wilson County LWC Study	121000121	2030	$ 300,000.00	$0	$300,000	taxes, fees, loans, grants	25%	75%	100%

Regional Flood Plan FMP Project Details Scoring Summary Table

Project	Severity Ranking: Pre-Project Average Depth of Flooding (100-year)	Severity Ranking: Community Need (% Population)	Flood Risk Reduction	Flood Damage Reduction	Reduction in critical facilities flood risk	Life and Safety Ranking (Injury/Loss of life)	Water Supply Yield Ranking	Social Vulnerability Ranking	Nature-Based Solutions Ranking	Multiple Benefit Ranking	Operations and Maintenance Ranking	Administrative, Regulatory and Other Obstacle Ranking	Environmental Benefit Ranking	Environmental Impact Ranking	Mobility Ranking	Total Score
Project 1 - PROJECT 1A - ADLER ROAD AT CURREY CREEK AND UNNAMED TRIBUTARY A	8	1	0	2	0	10	0	4	1	1	1	6	6	10	10	60
Project 2 - PROJECT 2 - UNNAMED TRIBUTARY A REGIONAL DETENTION FACILITY	2	1	10	2	0	2	4	4	1	10	1	6	6	10	10	69
Project 3 - PROJECT 3 - CURREY CREEK REGIONAL DETENTION FACILITY	2	1	4	6	0	2	4	1	1	10	1	6	6	10	10	64
Project 4 - PROJECT 4 - SCHOOL STREET AT CIBOLO CREEK AND FREDERICK CREEK	10	1	0	2	0	10	0	4	1	1	1	6	6	10	10	62
Project 5 - PROJECT 5D - OLD SAN ANTONIO STREET AT MENGER CREEK	10	1	0	2	0	10	0	4	1	1	1	6	6	10	10	62
Project 6 - PROJECT 6 - JOHNS ROAD NEAR CIBOLO CROSSING SUBDIVISION	2	1	4	6	0	2	0	4	1	4	1	6	6	10	10	57
Project 7 - PROJECT 7 - SCHWEPPE AND HICKMAN STREET	2	1	4	8	0	2	0	4	1	4	1	6	6	10	10	59
Project 8 - PROJECT 8 - JOHNS AND LOHMANN STREET	2	1	0	10	0	2	0	4	1	1	1	6	6	10	10	54
Project 9 - PROJECT 9 - UNNAMED TRIBUTARY A- SUBDIVISION FLOOD PROTECTION & MOBILITY PROJECT	2	1	7	4	0	2	0	4	1	10	1	6	6	10	10	64
Project 10 - PROJECT 10 - E. BLANCO ROAD AT UNNAMED TRIBUTARY A	8	1	0	2	0	10	0	1	1	1	1	6	6	10	10	57
Project 11 - PROJECT 11 - RIVER ROAD AT UNNAMED TRIBUTARY A	10	1	0	2	0	10	0	4	1	1	1	6	6	10	10	62
Project 12 - PROJECT 13 - HERFF AND ESSER ROAD IMPROVEMENTS AT CURREY AND CIBOLO CREEK	4	1	0	2	0	4	0	4	1	10	1	6	6	10	10	59
Project 13 - PROJECT 12 - PLANT CHANNEL IMPROVEMENT	4	1	0	10	0	4	0	4	1	1	1	6	6	10	10	58
Project 14 - PROJECT 14 - EAST BOERNE REGIONAL LID	2	1	0	2	0	2	4	4	1	4	1	6	6	10	10	53
Project 15 - PROJECT 15 - NORTH CURREY CHANNEL IMPROVEMENTS	8	1	4	8	0	10	0	4	1	1	1	6	6	10	10	70
Project 16 - PROJECT 16 - SOUTH CURREY CREEK CHANNEL IMPROVEMENTS	8	1	4	8	0	10	0	1	1	4	1	6	6	10	10	70
Project 17 - Lewis Creek Alternative 1 Phase 1 & 2	8	1	7	4	0	10	0	4	1	4	1	10	6	10	7	73
Project 18 - Seeling Drainage Improvements	8	1	10	6	0	10	0	7	1	4	1	6	6	10	4	74
Project 19 - Lewis Creek Tributary 2 Alternative 1 & 2	8	1	4	4	0	10	0	1	1	4	1	10	6	10	7	67
Project 20 - Lewis Creek Main	8	1	7	4	0	10	0	1	1	4	1	6	6	10	7	66
Project 21 - Rock Creek - Alt 1	8	1	0	10	0	10	0	4	1	4	1	6	0	10	4	59
Project 22 - Judson and Lookout LWC Improvement	8	1	0	2	0	10	0	7	1	4	1	2	0	10	7	53
Project 23 - Symphony Lane Voluntary Property Acquisition	8	1	0	10	0	10	0	4	1	1	1	6	0	10	0	52
Project 24 - Holbrook Road Improvements	8	1	0	2	0	10	0	10	1	4	1	6	0	10	0	53
Project 25 - Barbara Drive Drainage Improvements	8	1	7	6	0	10	0	7	1	4	1	6	0	10	7	68
Project 26 - Thames Drainage Channel Replacement - Alt 1	8	1	4	10	0	10	0	10	1	4	1	6	0	10	7	72
Project 27 - Shady Lane Dr.Voluntary Property Acquisition	8	1	0	10	0	10	0	4	1	1	1	6	0	10	0	52
Project 28 - Concepcion Creek Improvements Project	4	1	7	4	7	4	0	10	1	7	1	2	6	10	4	68

Regional Flood Plan FMP Project Details Scoring Summary Table

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Project 29 - Damage Center 1 Project1 – Detention in East Branch Poth Creek	4	1	1	4	0	6	0	4	1	4	1	10	6	10	10	62
Project 30 - Damage Center 2-Project 1 Culvert Improvements at Menchaca	8	1	0	2	0	10	0	4	1	4	1	10	3	10	10	64
Project 31 - Damage Center 2- Project 2 Road connection from Mosspoint to Sunshine	2	1	0	2	0	2	0	4	1	7	1	10	3	10	10	53
Project 32 - Woodlawn Lawn Lake Option 2	4	1	7	8	0	6	0	7	1	4	1	10	6	10	10	75
Project 33 - LWC at Old Fredericksburg Rd and Balcones Creek	10	1	0	2	0	10	0	1	1	4	1	2	3	10	0	45
Project 34 - Elm Spring	2	1	4	10	0	4	0	1	1	4	1	6	3	10	10	57
Project 35 - De Zavala/ Ripple Creek	6	1	7	2	0	10	0	1	1	4	1	10	3	10	10	66
Project 36 - Blanco Road at Cibolo Creek	10	1	0	2	0	10	0	1	1	4	1	2	3	10	10	55
Project 37 - Specht/Obst Road at Cibolo Creek	10	1	0	2	0	10	0	1	1	4	1	2	3	10	0	45
Project 38 - Toutant Beauregard at Balcones Creek	10	1	0	2	0	10	0	1	1	4	1	2	3	10	10	55
Project 39 - Boerne Stage Road at Balcones Creek	10	1	0	2	0	10	0	1	1	4	1	2	3	10	10	55
Project 40 - Blue Ridge Drive Drainage Improvements	4	1	4	4	0	8	0	10	1	4	1	6	3	10	10	66
Project 41 - Southwell Road Drainage Improvements	10	1	7	10	0	10	0	7	1	4	1	2	3	10	0	66
Project 42 - Ridge Run Street Area Drainage Improvements	4	1	10	10	0	4	0	7	1	4	1	2	3	10	0	57
Project 43 - Huebner Creek Channelization (LWC #28)	10	1	0	2	0	10	0	7	1	4	1	2	3	10	10	61
Project 44 - Overbrook Drainage Improvement Phase 1 & 2	4	1	7	2	0	6	0	10	1	4	1	6	3	10	10	65
Project 45 - Abbott Road at Tributary A to Salitrillo Creek and at Salitrillo Creek Bridge	8	1	0	2	0	10	0	4	1	1	1	6	3	10	7	54
Project 46 - Abbott Road at Unnamed Tributary 1 to Salitrillo Creek LWC Improvement	8	1	0	2	0	10	0	4	1	1	1	6	0	10	7	51
Project 47 - Bexar Bowling Way at Cibolo Creek Bridge	10	1	0	2	0	10	0	4	1	1	1	2	3	10	7	52
Project 48 - Damage Center 1: Project 1A, B, C	2	1	4	4	10	2	0	10	1	7	1	2	6	10	7	67
Project 49 - Felix Road at Dry Hollow Creek Barrier Arms	8	1	0	2	0	8	0	4	1	1	1	6	0	10	0	42
Project 50 - Freudenburg Road at Salitrillo Creek Barrier Arms	8	1	0	2	0	10	0	4	1	1	1	6	0	10	0	44
Project 51 - Gass Road at Culebra Creek Tributary D Bridge	8	1	0	2	0	10	0	1	1	1	1	6	3	10	7	51
Project 52 - Ullrich Road at Cibolo Creek Barrier Arms	10	1	0	2	0	10	0	1	1	1	1	6	0	10	0	43
Project 53 - Wilson 10 - Acquisitions of Flooded Structures	6	1	10	10	0	6	0	7	1	1	1	2	0	10	0	55
Project 54 - Athens Street South Drainage Improvements	6	1	7	6	0	4	0	4	1	1	1	6	0	10	7	54
Project 55 - Lorenzo Street North Drainage Improvements	6	1	7	4	0	2	0	4	1	1	1	6	0	10	7	50
Project 56 - Naples Street North Drainage Improvements	6	1	7	6	0	2	0	4	1	1	1	6	0	10	7	52

Regional Flood Plan FMP Project Details Scoring Summary Table

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Project 57 - CR 294 Drainage Improvements at Dry Ecleto Creek	10	1	0	2	0	10	0	1	1	1	7	6	6	6	4	55
Project 58 - CR 302 Drainage Improvements at Ecleto Creek	10	1	0	2	0	10	0	7	1	1	7	6	6	6	4	61
Project 59 - CR 262 Drainage Improvements at Ecleto Creek	10	1	0	2	0	10	0	1	1	1	7	6	6	6	4	55
Project 60 - Drainage Improvements at CR 337 and CR 326 Near City of Runge	10	1	10	10	0	10	0	7	1	1	7	6	6	6	4	79
Project 61 - CR 336 Drainage Improvements at Ecleto Creek Tributary	8	1	0	2	0	10	0	7	1	1	7	6	6	6	4	59
Project 62 - CR 331 Drainage Improvements at Escondido Creek	10	1	0	2	0	10	0	7	1	1	7	6	6	6	4	61
Project 63 - City of Kenedy Drainage Improvements on Escondido Creek	10	1	7	6	0	10	0	7	1	1	7	6	6	6	4	72
Project 64 - CR 127 Drainage Improvements at Hondo Creek	10	1	0	2	0	10	0	7	1	1	7	6	6	6	4	61
Project 65 - CR 145 Drainage Improvements at Hondo Creek	10	1	0	2	0	10	0	7	1	1	7	6	6	6	4	61
Project 66 - CR 354 Drainage Improvements at Lower San Antonio Tributary 147	8	1	0	2	0	4	0	10	1	1	7	6	6	6	4	56
Project 67 - US 181 Drainage Improvements at Marcelinas Creek Trib	10	1	7	4	0	6	0	1	1	0	7	6	6	6	4	59
Project 68 - Nichols Creek Tributary 2 Drainage Improvements	8	1	7	6	0	10	0	7	1	1	7	6	6	6	4	70
Project 69 - Nichols Creek Tributary 4 Drainage Improvements	8	1	0	2	0	10	0	7	1	1	7	6	6	6	4	59
Project 70 - CR 325 Drainage Improvements at Ojo De Agua Creek	10	1	0	2	0	10	0	7	1	1	7	6	6	6	4	61
Project 71 - CR 163 Drainage Improvements at Panther Creek	10	1	0	2	0	10	0	7	1	1	7	6	6	6	4	61

No Negative Impact Determination Table

Region Number	FMP ID	FMP Name	FMP Meets ALL No Negative Impacts Requirements from Exhibit C Section 3.6.A (Yes/ No)	Negative Impact Description	Planning level Mitigation Plan (Yes/ No)	Mitigation Plan Description	No Negative Impact Determination (Yes/No)	Basis of No Negative Impact Determination (Model, Study, Engineering Judgement)	Model ID	Model Name	Model Submitted	Study Name and Location	Engineer of Record (Optional)	Engineering Judgement Description
12	123000001	PROJECT 1A - ADLER ROAD AT CURREY CREEK AND UNNAMED TRIBUTARY A	Yes		No		Yes	Model	120000000002, 120000000005	Unnamed Tributary A_Project1, Currey Creek_Project1	Yes	Boerne Master Drainage Plan, Boerne, TX	Halff	
12	123000002	PROJECT 2 - UNNAMED TRIBUTARY A REGIONAL DETENTION FACILITY	Yes		No		Yes	Model	120000000003	Unnamed Tributary A_Project2	Yes	Boerne Master Drainage Plan, Boerne, TX	Halff	
12	123000003	PROJECT 3 - CURREY CREEK REGIONAL DETENTION FACILITY	Yes		No		Yes	Model	120000000006	Currey Creek_Project3	Yes	Boerne Master Drainage Plan, Boerne, TX	Halff	
12	123000004	PROJECT 4 - SCHOOL STREET AT CIBOLO CREEK AND FREDERICK CREEK	Yes		No		Yes	Model	120000000011, 120000000012	Cibolo_RAS, Frederick Creek	Yes	Boerne Master Drainage Plan, Boerne, TX	Halff	
12	123000005	PROJECT 5D - OLD SAN ANTONIO STREET AT MENGER CREEK	Yes		No		Yes	Model	120000000014	Menger Creek_Boerne_S_MainStem	Yes	Boerne Master Drainage Plan, Boerne, TX	Halff	
12	123000006	PROJECT 6 - JOHNS ROAD NEAR CIBOLO CROSSING SUBDIVISION	Yes		No		Yes	Model	120000000013	Johns Cibolo Crossing	Yes	Boerne Master Drainage Plan, Boerne, TX	Halff	
12	123000007	PROJECT 7 - SCHWEPPE AND HICKMAN STREET	Yes		No		Yes	Model	120000000015	Hickman and Schweppe	Yes	Boerne Master Drainage Plan, Boerne, TX	Halff	
12	123000008	PROJECT 8 - JOHNS AND LOHMANN STREET	Yes		No		Yes	Model	120000000016	Johns and Lohmann	Yes	Boerne Master Drainage Plan, Boerne, TX	Halff	
12	123000009	PROJECT 9 - UNNAMED TRIBUTARY A- SUBDIVISION FLOOD PROTECTION & MOBILITY PROJECT	Yes		No		Yes	Model	120000000004	Unnamed Tributary A_Project9_11	Yes	Boerne Master Drainage Plan, Boerne, TX	Halff	
12	123000010	PROJECT 10 - E. BLANCO ROAD AT UNNAMED TRIBUTARY A	Yes		No		Yes	Model	120000000004	Unnamed Tributary A_Project9_11	Yes	Boerne Master Drainage Plan, Boerne, TX	Halff	
12	123000011	PROJECT 11 - RIVER ROAD AT UNNAMED TRIBUTARY A	Yes		No		Yes	Model	120000000004	Unnamed Tributary A_Project9_11	Yes	Boerne Master Drainage Plan, Boerne, TX	Halff	
12	123000012	PROJECT 13 - HERFF AND ESSER ROAD IMPROVEMENTS AT CURREY AND CIBOLO CREEK	Yes		No		Yes	Model	120000000008, 120000000011	Currey Creek_Project13, Cibolo_RAS	Yes	Boerne Master Drainage Plan, Boerne, TX	Halff	
12	123000013	PROJECT 12 - PLANT CHANNEL IMPROVEMENT	Yes		No		Yes	Model	120000000007	Currey Creek_Project12	Yes	Boerne Master Drainage Plan, Boerne, TX	Halff	
12	123000014	PROJECT 14 - EAST BOERNE REGIONAL LID	Yes		No		Yes	Model	120000000017	SARA_CiboloCreek	Yes	Boerne Master Drainage Plan, Boerne, TX	Halff	
12	123000015	PROJECT 15 - NORTH CURREY CHANNEL IMPROVEMENTS	Yes		No		Yes	Model	120000000009	Currey Creek_Project15	Yes	Boerne Master Drainage Plan, Boerne, TX	Halff	
12	123000016	PROJECT 16 - SOUTH CURREY CREEK CHANNEL IMPROVEMENTS	Yes		No		Yes	Model	120000000010	Currey Creek_Project16	Yes	Boerne Master Drainage Plan, Boerne, TX	Halff	
12	123000017	Lewis Creek Alternative 1 Phase 1 & 2	Yes		No		Yes	Model	120000000018	LewisCk and Trib 2	Yes	Lewis Creek Watershed Phase 2 Alternatives Analysis Drainage Report, Bulverde, TX	Halff	
12	123000018	Seeling Drainage Improvements	Yes		No		Yes	Model	120000000024	Seeling_Working_V2019.1	Yes	Seeling Phase IV Preliminary Engineering Report, San Antonio, TX	Halff	
12	123000019	Lewis Creek Tributary 2 Alternative 1 & 2	Yes		No		Yes	Model	120000000018	LewisCk and Trib 2	Yes	Lewis Creek Watershed Phase 2 Alternatives Analysis Drainage Report, Bulverde, TX	Halff	
12	123000020	Lewis Creek Main	Yes		No		Yes	Model	120000000018	LewisCk and Trib 2	Yes	Lewis Creek Watershed Phase 2 Alternatives Analysis Drainage Report, Bulverde, TX	Halff	
12	123000021	Rock Creek - Alt 1	Yes		No		Yes	Model	120000000021	Rock Creek	Yes	Judson and Lookout LWC Improvement, San Antonio, TX	Pape-Dawson	
12	123000022	Judson and Lookout LWC Improvement	Yes		No		Yes	Model	120000000022	LookoutJudsonLWCImp	Yes	Rock Creek - Alt 1	HDR	
12	123000023	Symphony Lane Voluntary Property Acquisition	Not Applicable		No		Not Applicable				No	Symphony Lane Neighborhood Flood Relief Study, San Antonio, TX	KBR	Acquisition
12	123000024	Holbrook Road Improvements	Yes		No		Yes	Model	120000000023	SaladCreekDetailedModel_Lift	Yes	Holbrook Road Preliminary Engineering Report, San Antonio, TX	Halff	
12	123000025	Barbara Drive Drainage Improvements	Yes		No		Yes	Model	120000000019	Barbara Drive	Yes	Barbara Drive Preliminary Engineering Report	CEC	
12	123000026	Thames Drainage Channel Replacement - Alt 1	Yes		No		Yes	Model	120000000020	TribAtoAirtportTrib	Yes	Thames Drainage Channel Replacement - Alt 1, San Antonio, TX	HDR	
12	123000027	Shady Lane Dr.Voluntary Property Acquisition	Not Applicable		No		Not Applicable				No	Shady Lane Dr.Voluntary Property Acquisition	City of San Antonio	Acquisition
12	123000032	Woodlawn Lawn Lake Option 2	Yes		No		Yes	Model	120000000025	PCM_Ph4_100YR_V2	Yes	Upper Woodlawn Lake Watershed, Balcones Heights, TX	AECOM	
12	123000039	Boerne Stage Road at Balcones Creek	Yes		No		Yes	Model	120000000026	Balcones_Creek_BoerneStage	Yes	Boerne Stage Road at Balcones Creek	Halff	
12	123000033	LWC at Old Fredericksburg Rd and Balcones Creek	Yes		No		Yes	Model	120000000027	Balcones_Creek_OldFredericksburg	Yes	LWC at Old Fredericksburg Rd and Balcones Creek	Halff	
12	123000038	Toutant Beauregard at Balcones Creek	Yes		No		Yes	Model	120000000028	Balcones_Creek_Toutant	Yes	Toutant Beauregard at Balcones Creek	Halff	
12	123000044	Overbrook Drainage Improvement Phase 1 & 2	Yes		No		Yes	Model	120000000025	PCM_Ph4_100YR_V2	Yes	Overbrook Drainage Improvement Phase 1 & 2	Halff	
12	123000036	Blanco Road at Cibolo Creek	Yes		No		Yes	Model	120000000030	BlancoRoad_Upper Cibolo Creek	Yes	Blanco Road at Cibolo Creek	Halff	
12	123000034	Elm Spring	Yes		No		Yes	Study	120000000031	ElmCreek	Yes	City of Shavano Park PER, Shavano Park, TX	KFW	
12	123000035	De Zavala/ Ripple Creek	Yes		No		Yes	Study	120000000031	ElmCreek	Yes	City of Shavano Park PER, Shavano Park, TX	KFW	
12	123000040	Blue Ridge Drive Drainage Improvements	Yes		No		Yes	Study	120000000033	ApacheCreek_Alts	Yes	Blue Ridge Drive PER, San Antonio, TX	Halff	
12	123000029	Damage Center 1 Project1 Detention in East Branch Poth Creek	Yes		No		Yes	Model	120000000034	East_Branch_Poth_Creek	Yes	Wilson and Karnes Watershed Master Plan, Poth, TX	URS	
12	123000043	Huebner Creek Channelization (LWC #28)	Yes		No		Yes	Model	120000000035	Huebner Creek	Yes	Huebner Creek Channelization (LWC #28), San Antonio, TX	Halff	

No Negative Impact Determination Table

Region Number	FMP ID	FMP Name	FMP Meets ALL No Negative Impacts Requirements from Exhibit C Section 3.6.A (Yes/ No)	Negative Impact Description	Planning level Mitigation Plan (Yes/ No)	Mitigation Plan Description	No Negative Impact Determination (Yes/No)	Basis of No Negative Impact Determination (Model, Study, Engineering Judgement)	Model ID	Model Name	Model Submitted	Study Name and Location	Engineer of Record (Optional)	Engineering Judgement Description
12	123000030	Damage Center 2-Project 1 Culvert Improvements at Menchaca	Yes		No		Yes	Model	120000000036	Poth Creek_Menchaca	Yes	Wilson and Karnes Watershed Master Plan, Poth, TX	URS	
12	123000031	Damage Center 2- Project 2 Road connection from Mosspoint to Sunshine	Not Applicable		No		Not Applicable				No	Wilson and Karnes Watershed Master Plan, Poth, TX	URS	Alternative Route not in floodplain
12	123000042	Ridge Run Street Area Drainage Improvements	Yes		No		Yes	Study	120000000037	TributaryAofCulebraCreek	Yes	Ridge Run Street Area Drainage Improvements, San Antonio, TX	HDR	
12	123000041	Southwell Road Drainage Improvements	Yes		No		Yes	Study	120000000032	Huebner Creek Trib A	Yes	Southwell Road PER, San Antonio, TX	Halff	
12	123000037	Specht/Obst Road at Cibolo Creek	Yes		No		Yes	Model	120000000029	Specht/Obst LWC	Yes	Specht/Obst Road at Cibolo Creek	Halff	
12	123000028	Concepcion Creek Improvements Project	Yes		No		Yes	Model	120000000001	Concepcion	Yes	Concepcion PER - City of San Antonio	HDR	
12	123000053	Abbott Road at Tributary A to Salitrillo Creek and at Salitrillo Creek Bridge	Yes		No		Yes	Model	120000000038	Abbott Road at Tributary A to Salitrillo Creek and at Salitrillo Creek Bridge	Yes	Abbott Road at Tributary A to Salitrillo Creek and at Salitrillo Creek Bridge - Bexar County	HDR	
12	123000054	Abbott Road at Unnamed Tributary 1 to Salitrillo Creek LWC Improvement	Yes		No		Yes	Model	120000000039	Abbott Road at Unnamed Tributary 1 to Salitrillo Creek LWC Improvement	Yes	Abbott Road at Unnamed Tributary 1 to Salitrillo Creek LWC Improvement - Bexar County	HDR	
12	123000055	Bexar Bowling Way at Cibolo Creek Bridge	Yes		No		Yes	Model	120000000040	Bexar Bowling Way at Cibolo Creek Bridge, Ullrich Road at Cibolo Creek Barrier Arms	Yes	Bexar Bowling Way at Cibolo Creek Bridge - Bexar County	HDR	
12	123000056	Damage Center 1: Project 1A, B, C	Yes		No		Yes	Model	120000000044	Damage Center 1: Project 1A, B, C	Yes	Damage Center 1: Project 1A, B, C - City of Floresville	HDR	
12	123000057	Felix Road at Dry Hollow Creek Barrier Arms	Not Applicable		No		Not Applicable						HDR	Barrier Arms
12	123000058	Freudenburg Road at Salitrillo Creek Barrier Arms	Not Applicable		No		Not Applicable						HDR	Barrier Arms
12	123000059	Gass Road at Culebra Creek Tributary D Bridge	Yes		No		Yes	Model	120000000043	Gass Road at Culebra Creek Tributary D Bridge	Yes	Gass Road at Culebra Creek Tributary D Bridge	HDR	
12	123000061	Ullrich Road at Cibolo Creek Barrier Arms	Not Applicable		No		Not Applicable						HDR	Barrier Arms
12	123000062	Wilson 10 - Acquisitions of Flooded Structures	Not Applicable		No		Not Applicable						HDR	Acquisition
12	123000063	Athens Street South Drainage Improvements	Yes		No		Yes	Model	120000000046	Castorville - Athens	Yes	Castroville Drainage Master Plan - City of Castroville	Kfriese	
12	123000064	Lorenzo Street North Drainage Improvements	Yes		No		Yes	Model	120000000047	Castorville - Lorenzo	Yes	Castroville Drainage Master Plan - City of Castroville	Kfriese	
12	123000065	Naples Street North Drainage Improvements	Yes		No		Yes	Model	120000000048	Castorville - Naples	Yes	Castroville Drainage Master Plan - City of Castroville	Kfriese	
12	123000066	CR 294 Drainage Improvements at Dry Ecleto Creek	Yes		No		Yes	Model	120000000049	CR 294 Drainage Improvements at Dry Ecleto Creek	Yes	TWDB FIF Karnes County Flood Protection Planning Study - Karnes County	Doucet	
12	123000067	CR 302 Drainage Improvements at Ecleto Creek	Yes		No		Yes	Model	120000000050	CR 302 Drainage Improvements at Ecleto Creek	Yes	TWDB FIF Karnes County Flood Protection Planning Study - Karnes County	Doucet	
12	123000068	CR 262 Drainage Improvements at Ecleto Creek	Yes		No		Yes	Model	120000000051	CR 262 Drainage Improvements at Ecleto Creek	Yes	TWDB FIF Karnes County Flood Protection Planning Study - Karnes County	Doucet	
12	123000069	Drainage Improvements at CR 337 and CR 326 Near City of Runge	Yes		No		Yes	Model	120000000052	Drainage Improvements at CR 337 and CR 326 Near City of Runge	Yes	TWDB FIF Karnes County Flood Protection Planning Study - Karnes County	Doucet	
12	123000070	CR 336 Drainage Improvements at Ecleto Creek Tributary	Yes		No		Yes	Model	120000000053	CR 336 Drainage Improvements at Ecleto Creek Tributary	Yes	TWDB FIF Karnes County Flood Protection Planning Study - Karnes County	Doucet	
12	123000071	CR 331 Drainage Improvements at Escondido Creek	Yes		No		Yes	Model	120000000054	CR 331 Drainage Improvements at Escondido Creek	Yes	TWDB FIF Karnes County Flood Protection Planning Study - Karnes County	Doucet	
12	123000072	City of Kenedy Drainage Improvements on Escondido Creek	Yes		No		Yes	Model	120000000055	City of Kenedy Drainage Improvements on Escondido Creek	Yes	TWDB FIF Karnes County Flood Protection Planning Study - Karnes County	Doucet	
12	123000073	CR 127 Drainage Improvements at Hondo Creek	Yes		No		Yes	Model	120000000056	CR 127 Drainage Improvements at Hondo Creek	Yes	TWDB FIF Karnes County Flood Protection Planning Study - Karnes County	Doucet	
12	123000074	CR 145 Drainage Improvements at Hondo Creek	Yes		No		Yes	Model	120000000057	CR 145 Drainage Improvements at Hondo Creek	Yes	TWDB FIF Karnes County Flood Protection Planning Study - Karnes County	Doucet	
12	123000075	CR 354 Drainage Improvements at Lower San Antonio Tributary 147	Yes		No		Yes	Model	120000000058	CR 354 Drainage Improvements at Lower San Antonio Tributary 147	Yes	TWDB FIF Karnes County Flood Protection Planning Study - Karnes County	Doucet	
12	123000076	US 181 Drainage Improvements at Marcelinas Creek Trib	Yes		No		Yes	Model	120000000059	US 181 Drainage Improvements at Marcelinas Creek Trib	Yes	TWDB FIF Karnes County Flood Protection Planning Study - Karnes County	Doucet	
12	123000077	Nichols Creek Tributary 2 Drainage Improvements	Yes		No		Yes	Model	120000000060	Nichols Creek Tributary 2 Drainage Improvements	Yes	TWDB FIF Karnes County Flood Protection Planning Study - Karnes County	Doucet	
12	123000078	Nichols Creek Tributary 4 Drainage Improvements	Yes		No		Yes	Model	120000000061	Nichols Creek Tributary 4 Drainage Improvements	Yes	TWDB FIF Karnes County Flood Protection Planning Study - Karnes County	Doucet	
12	123000079	CR 325 Drainage Improvements at Ojo De Agua Creek	Yes		No		Yes	Model	120000000062	CR 325 Drainage Improvements at Ojo De Agua Creek	Yes	TWDB FIF Karnes County Flood Protection Planning Study - Karnes County	Doucet	
12	123000080	CR 163 Drainage Improvements at Panther Creek	Yes		No		Yes	Model	120000000063	CR 163 Drainage Improvements at Panther Creek	Yes	TWDB FIF Karnes County Flood Protection Planning Study - Karnes County	Doucet	

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Appendix B. Maps

Map 1. Existing Flood Infrastructure (2.1 Task 1 – Planning Area Description)

Map 2. Proposed or Ongoing Flood Mitigation Projects (2.1 Task 1 – Planning Area Description)

Map 3. Nonfunctional or Deficient Infrastructure (2.1 Task 1 – Planning Area Description)

Map 4. Existing Condition Flood Hazard (2.2.A.1 Existing Condition Flood Hazard Analysis)

Map 5. Existing Condition Flood Hazard - Gaps in Inundation Boundary Mapping including Identification of Known Flood-Prone Areas (2.2.A.1 Existing Condition Flood Hazard Analysis)

Map 6. Existing Condition Flood Exposure (2.2.A.2 Existing Condition Flood Exposure Analysis)

Map 7. Existing Condition Flood Vulnerability including Critical Infrastructure (2.2A.3 Existing Condition Vulnerability Analysis)

Map 8. Future Condition Flood Hazard (2.2.B.1 Future Condition Flood Hazard Analysis)

Map 9. Future Condition Flood Hazard - Gaps in Inundation Boundary Mapping including Identification of Known Flood-Prone Areas (2.2.B.1 Future Condition Flood Hazard Analysis)

Map 10. Extent of Increase of Flood Hazard Compared to Existing Condition (2.2.B.1 Future Condition Flood Hazard Analysis)

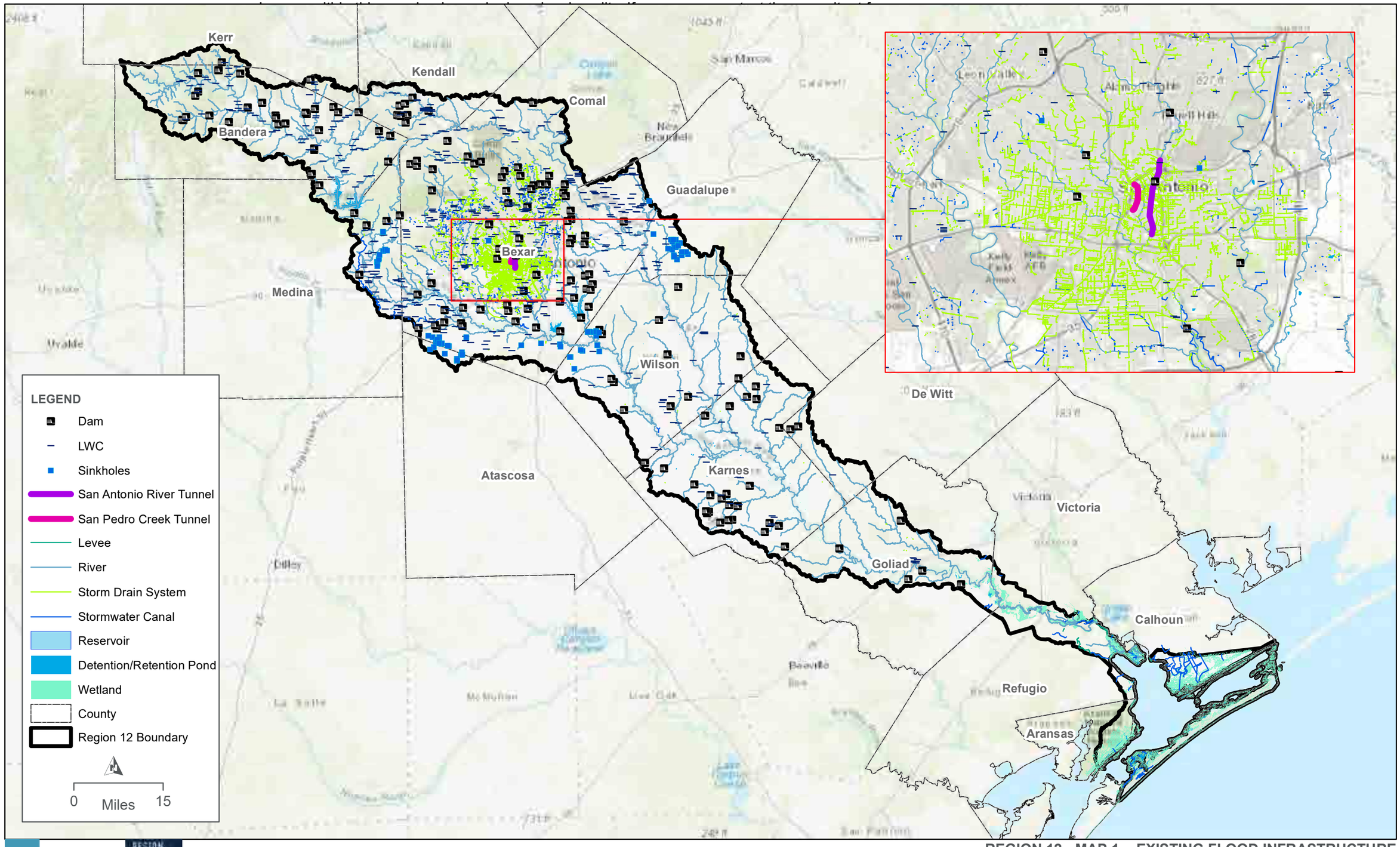
Map 11. Future Condition Flood Exposure (2.2.B.2 Future Condition Flood Exposure Analysis)

Map 12. Future Condition Flood Vulnerability including Critical Infrastructure (2.2.B.3 Future Condition Vulnerability Analysis)

Map 13. Floodplain Management (2.3.A Task 3A – Evaluation and Recommendations on Floodplain Management Practices)

Map 14. Greatest Gaps in Flood Risk Information (2.4.A Task 4A – Flood Mitigation Needs Analysis)

Map 15. Greatest Flood Risk (2.4.A Task 4A – Flood Mitigation Needs Analysis)



REGION 12 - MAP 1 - EXISTING FLOOD INFRASTRUCTURE

FINAL

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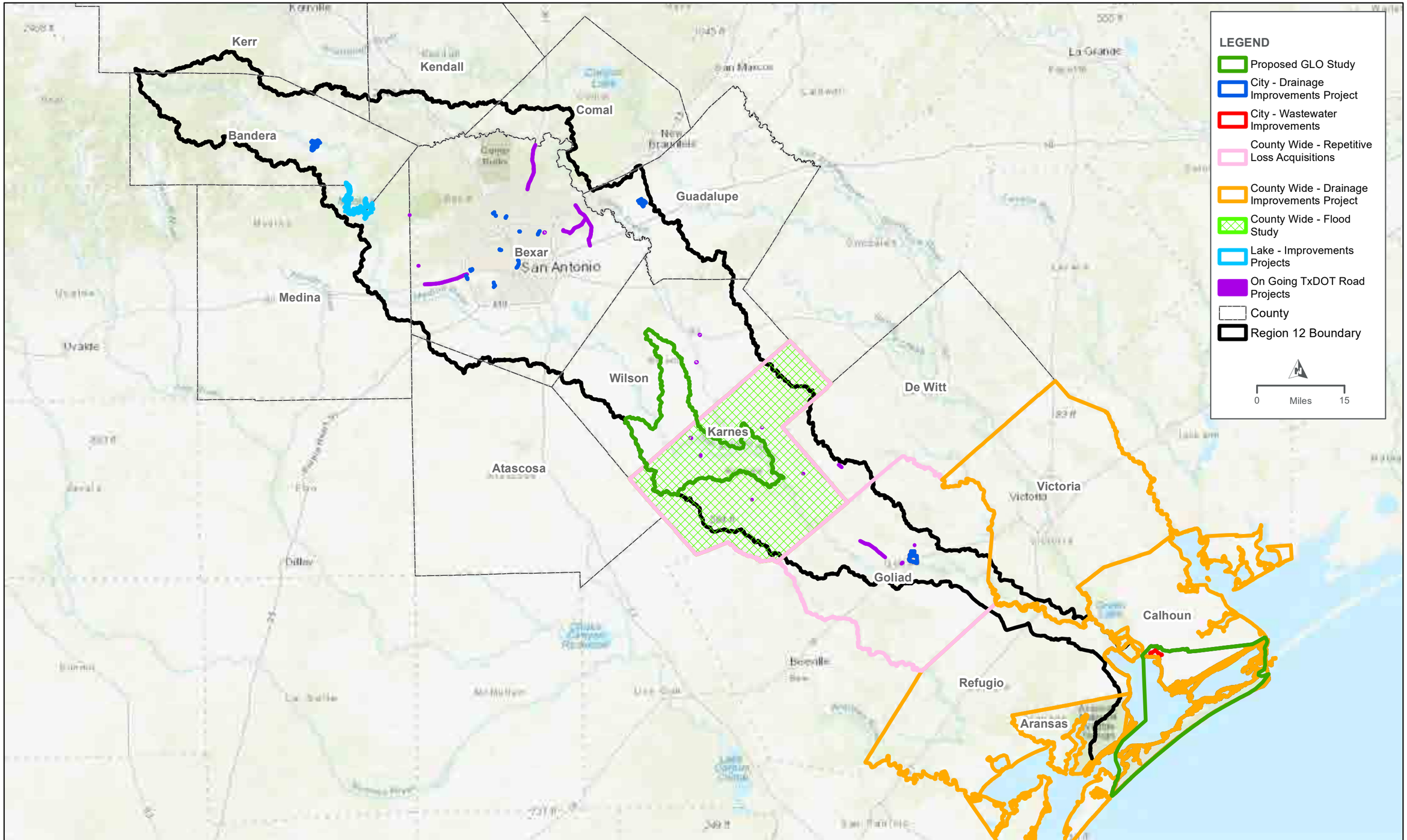

REGION 12 - MAP 2 - PROPOSED OR ONGOING FLOOD MITIGATION PROJECTS

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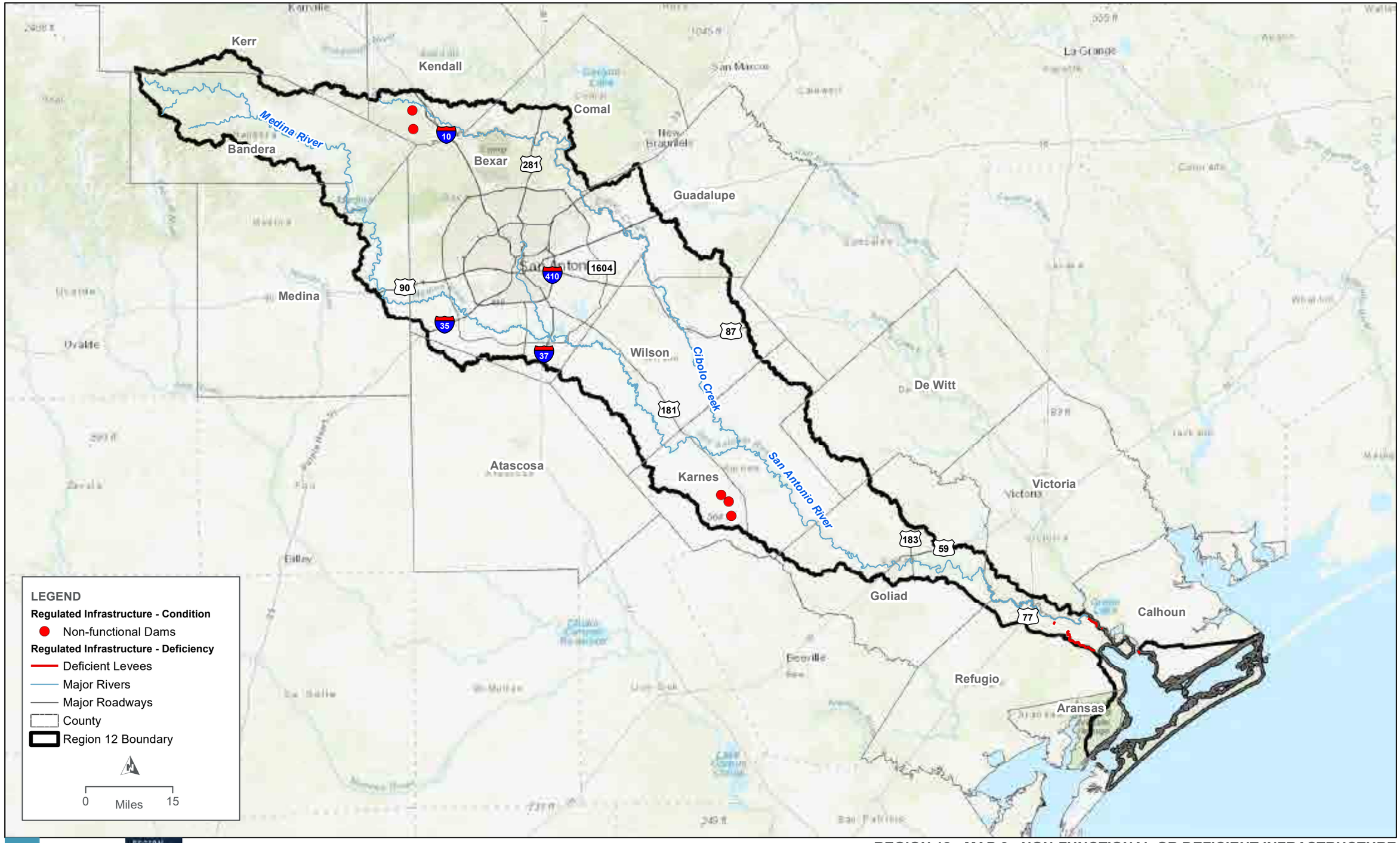

REGION 12 - MAP 3 - NON-FUNCTIONAL OR DEFICIENT INFRASTRUCTURE

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Kerr Co.

Bandera Co.

Kendall Co.

Medina Co.

Boerne

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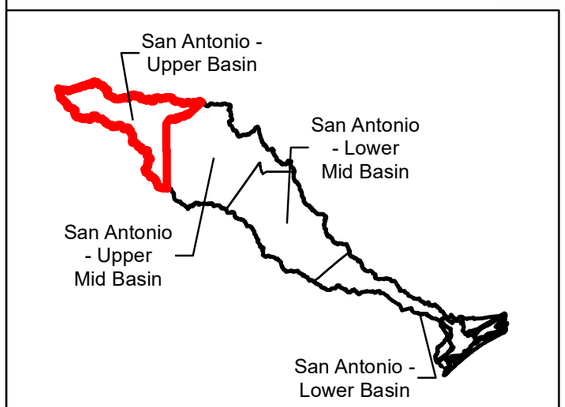
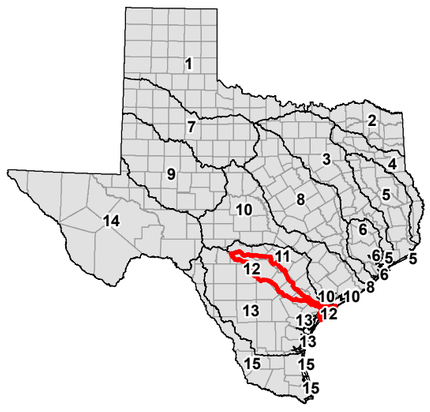
Medina River





LEGEND

- Fatality Locations
- Injury Locations
- Loss Locations
- Public Comment
- Low Water Crossings
- Major Rivers
- Minor Roads
- Major Roads
- Cities
- County
- Region 12 Boundary

Existing Flood Hazard

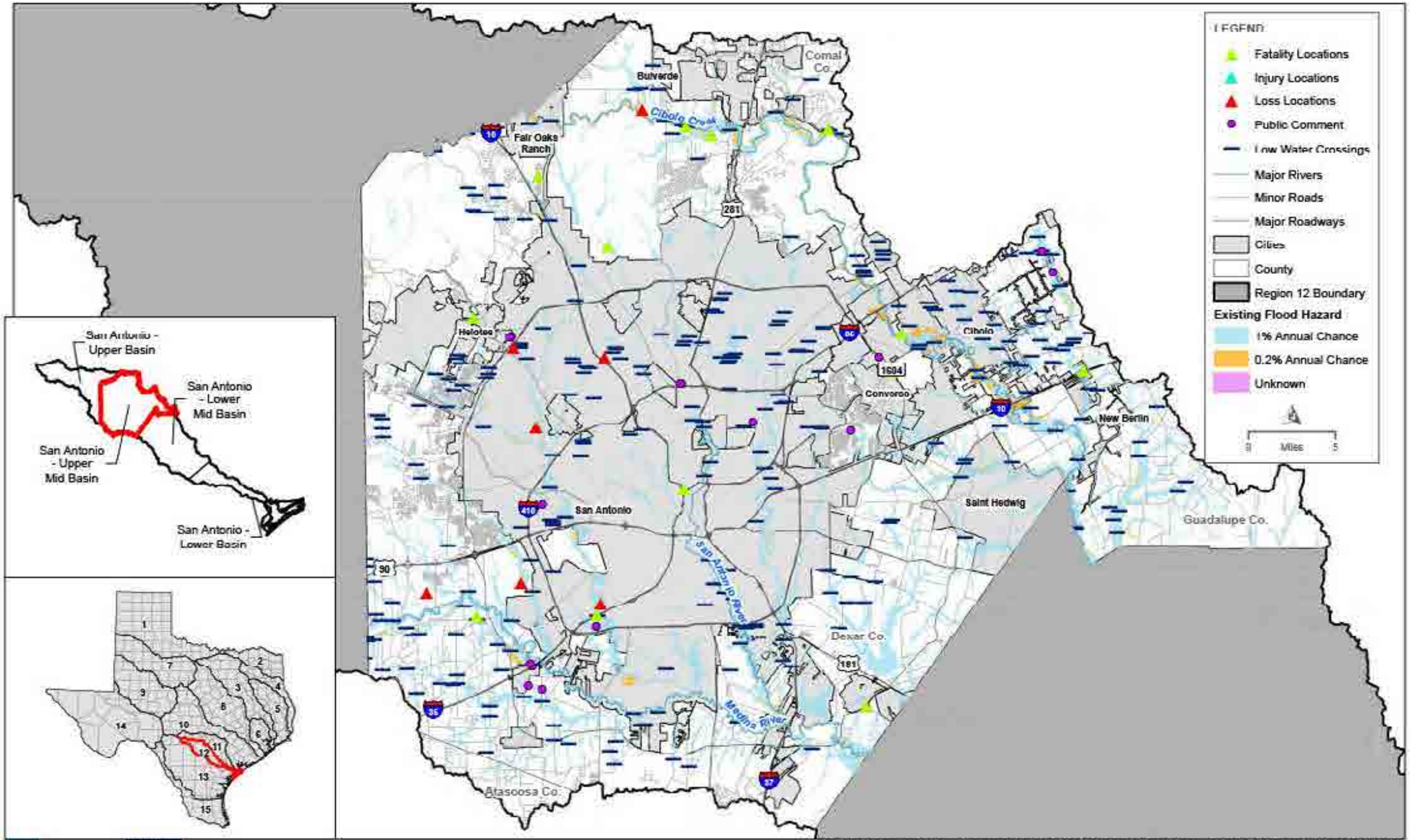
- 1% Annual Chance
- 0.2% Annual Chance
- Unknown

0 Miles 5

REGION 12 - MAP 4A - SAN ANTONIO UPPER BASIN - EXISTING FLOOD HAZARD

FINAL

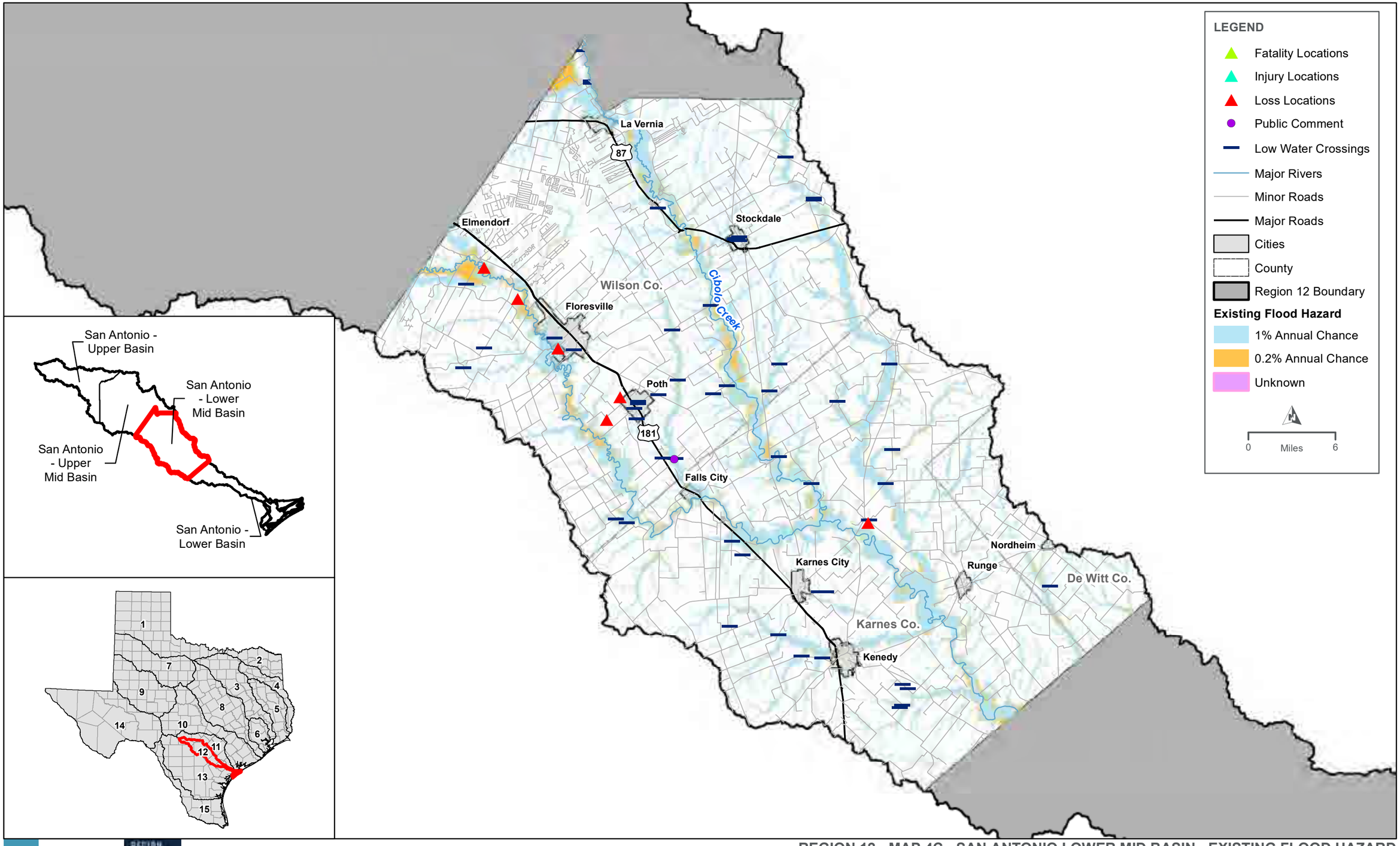
FIGURE 1



REGION 12 - MAP 4D - SAN ANTONIO UPPER MID BASIN - EXISTING FLOOD HAZARD

FINAL

FIGURE 2



REGION 12 - MAP 4C - SAN ANTONIO LOWER MID BASIN - EXISTING FLOOD HAZARD

FINAL

FIGURE 3

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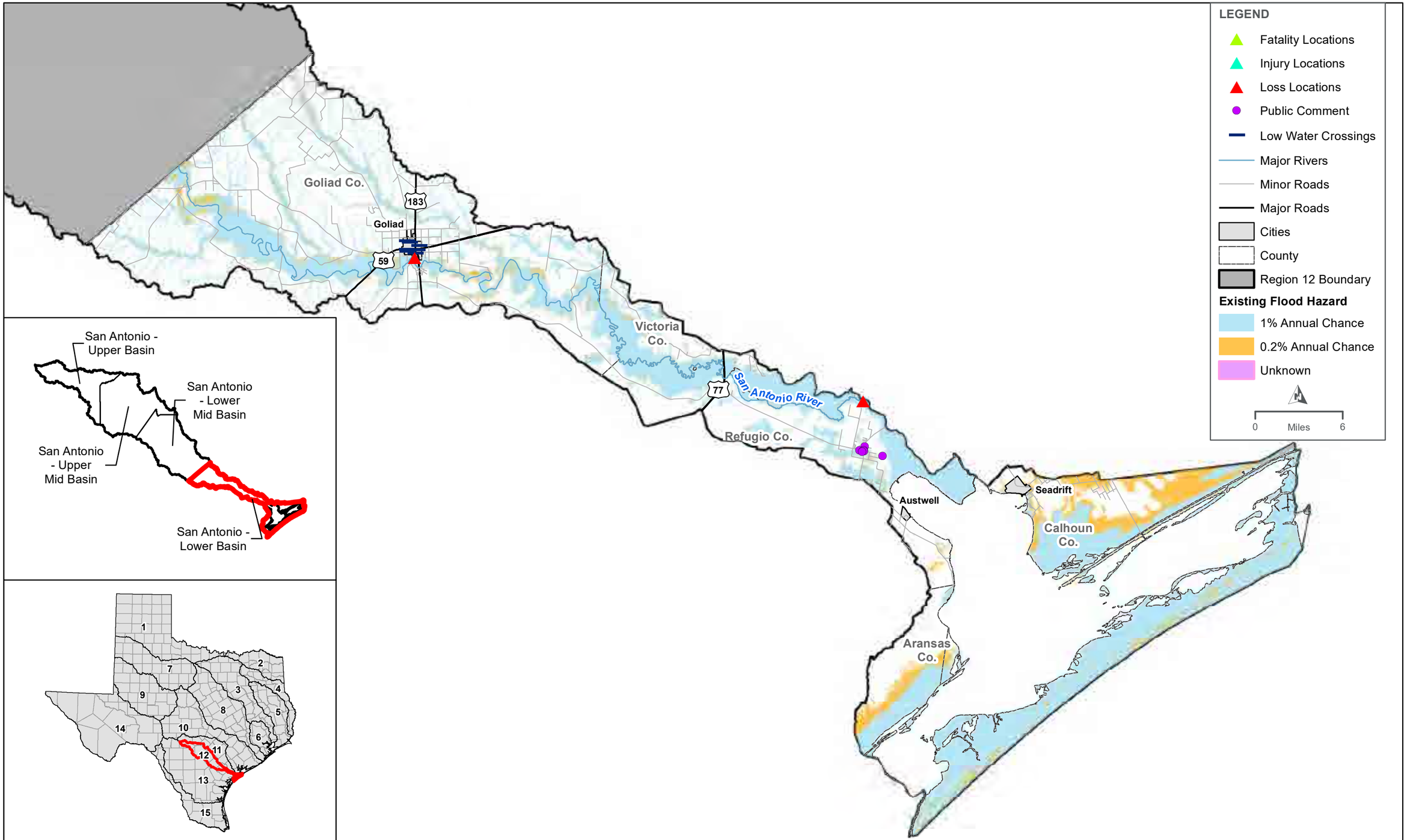


REGION 12 - MAP 4D - SAN ANTONIO LOWER BASIN - EXISTING FLOOD HAZARD

FINAL

FIGURE 4

Kerr Co.

Bandera Co.

Kendall Co.

Medina Co.

Boerne

87

Medina River

LEGEND

- Fatality Locations
- Injury Locations
- Loss Locations
- Public Comment
- Low Water Crossings
- Major Rivers
- Minor Roads
- Major Roads
- Cities
- County
- Region 12 Boundary

Existing Flood Type

- Local
- Coastal
- Riverine

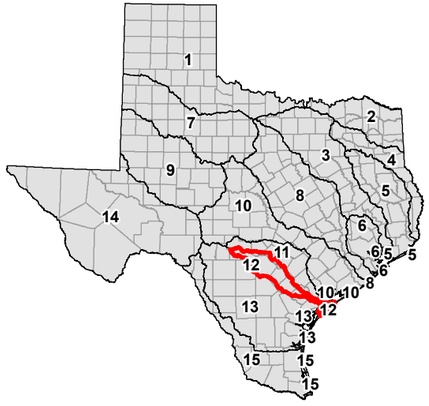
0 Miles 5

San Antonio - Upper Basin

San Antonio - Lower Mid Basin

San Antonio - Upper Mid Basin

San Antonio - Lower Basin



REGION 12 - MAP 4E - SAN ANTONIO UPPER BASIN - EXISTING FLOOD HAZARD TYPE

FINAL

FIGURE 1

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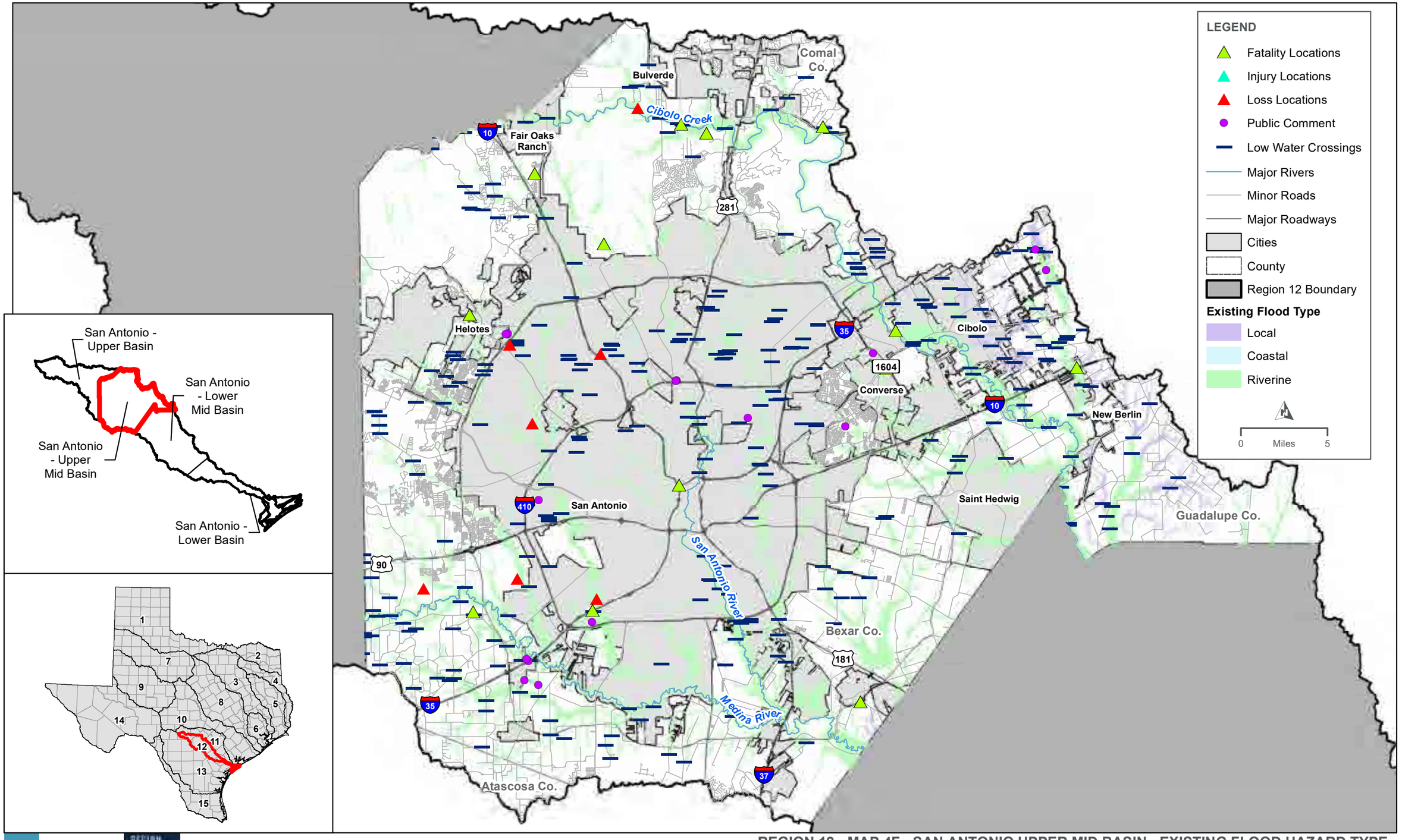

REGION 12 - MAP 4F - SAN ANTONIO UPPER MID BASIN - EXISTING FLOOD HAZARD TYPE

FINAL

FIGURE 2

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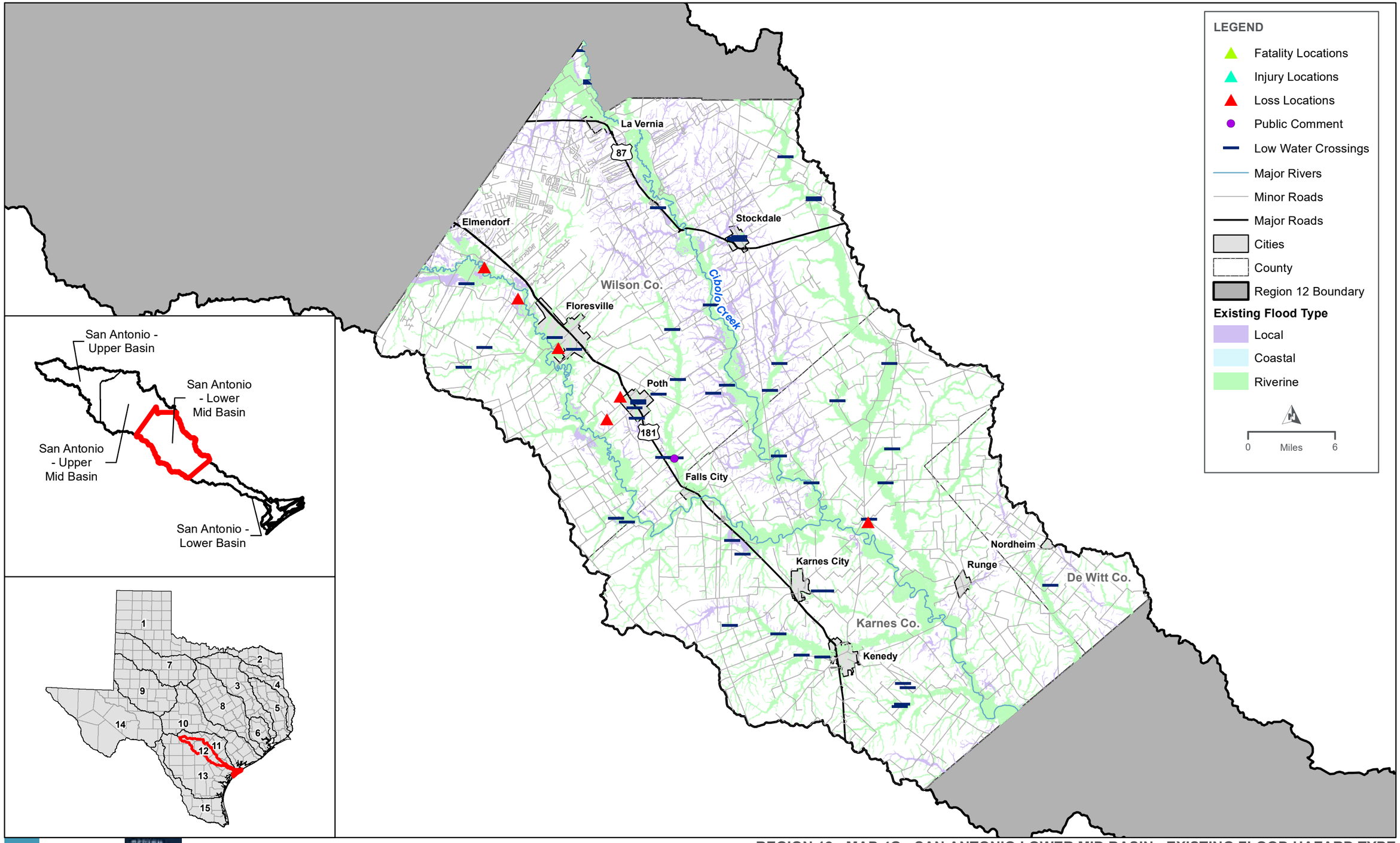
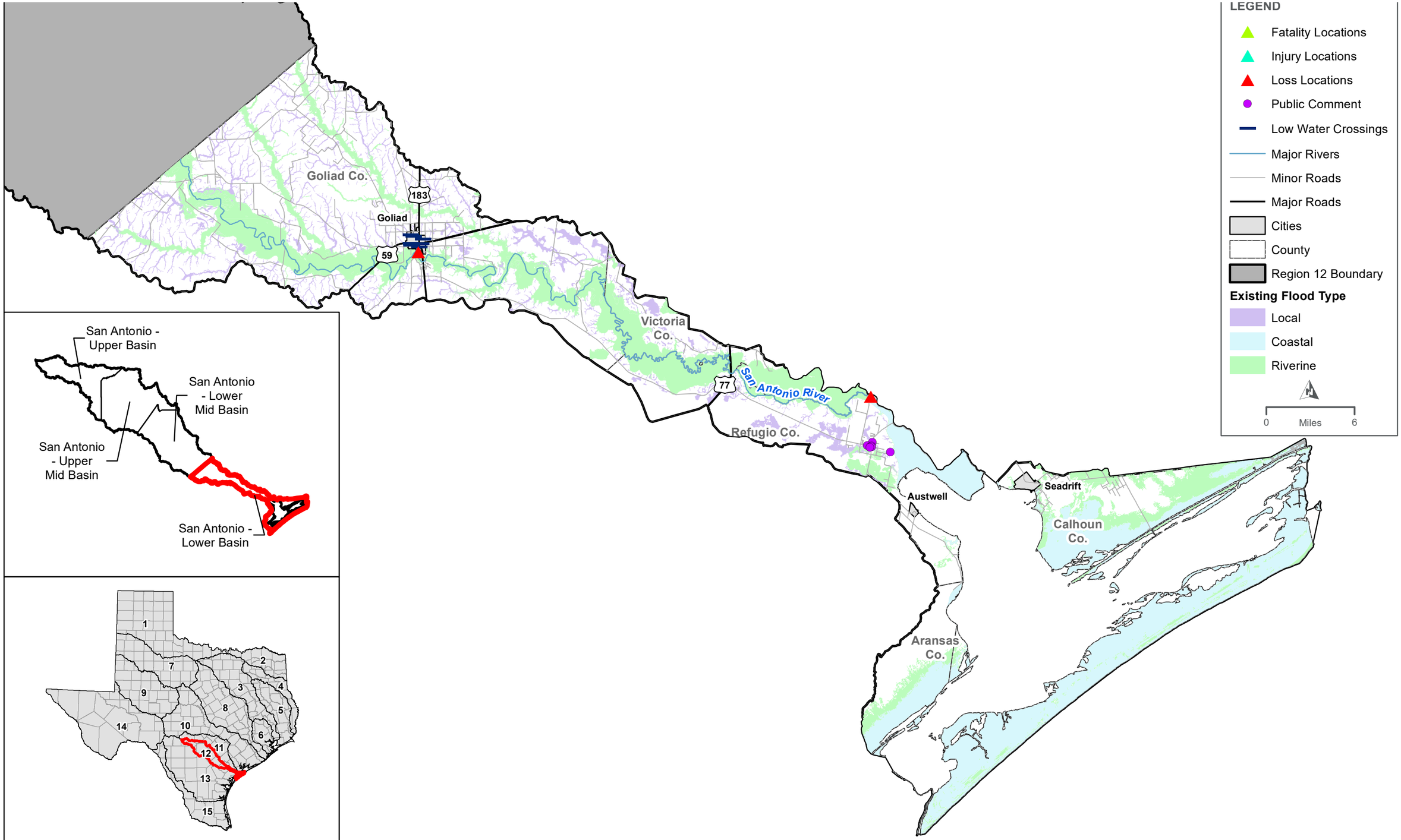


REGION 12 - MAP 4G - SAN ANTONIO LOWER MID BASIN - EXISTING FLOOD HAZARD TYPE

FINAL

FIGURE 3

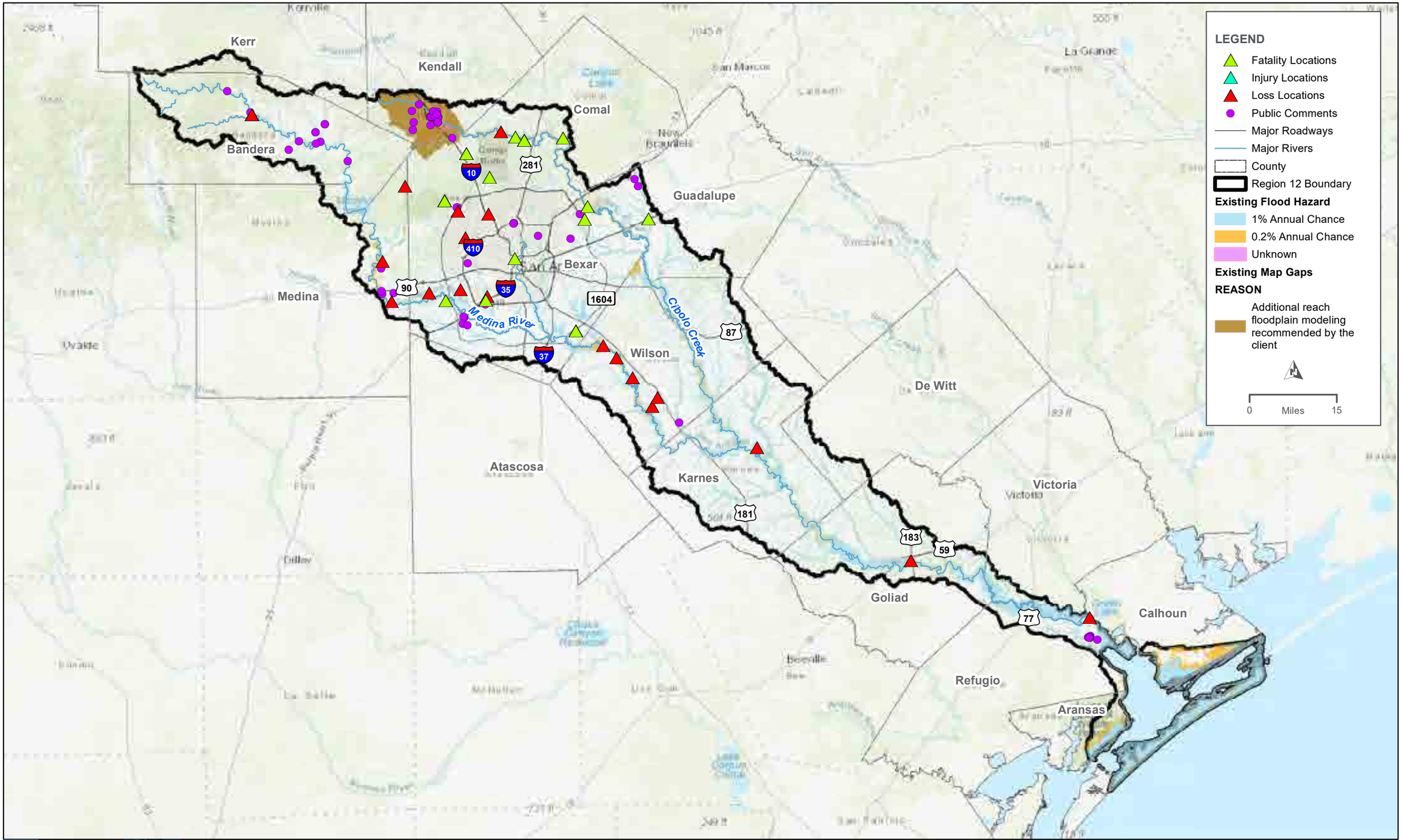
PATH: \\OMAPI-GISAPP03\PROJECTS\PROJECTS\TWDB\TWDB_RFPG\RFP2023_REGION12_ELECTRONICFILES_HDR_WORKING\MAP_DOCS\EXHIBITS\TM_FIGURES\MAP4\MAP4_EXISTINGFLDTYPE_GROUPC_11X17_FIG3.MXD - USER: PDUNNING - DATE: 6/9/2023



REGION 12 - MAP 4H - SAN ANTONIO LOWER BASIN - EXISTING FLOOD HAZARD TYPE

FINAL

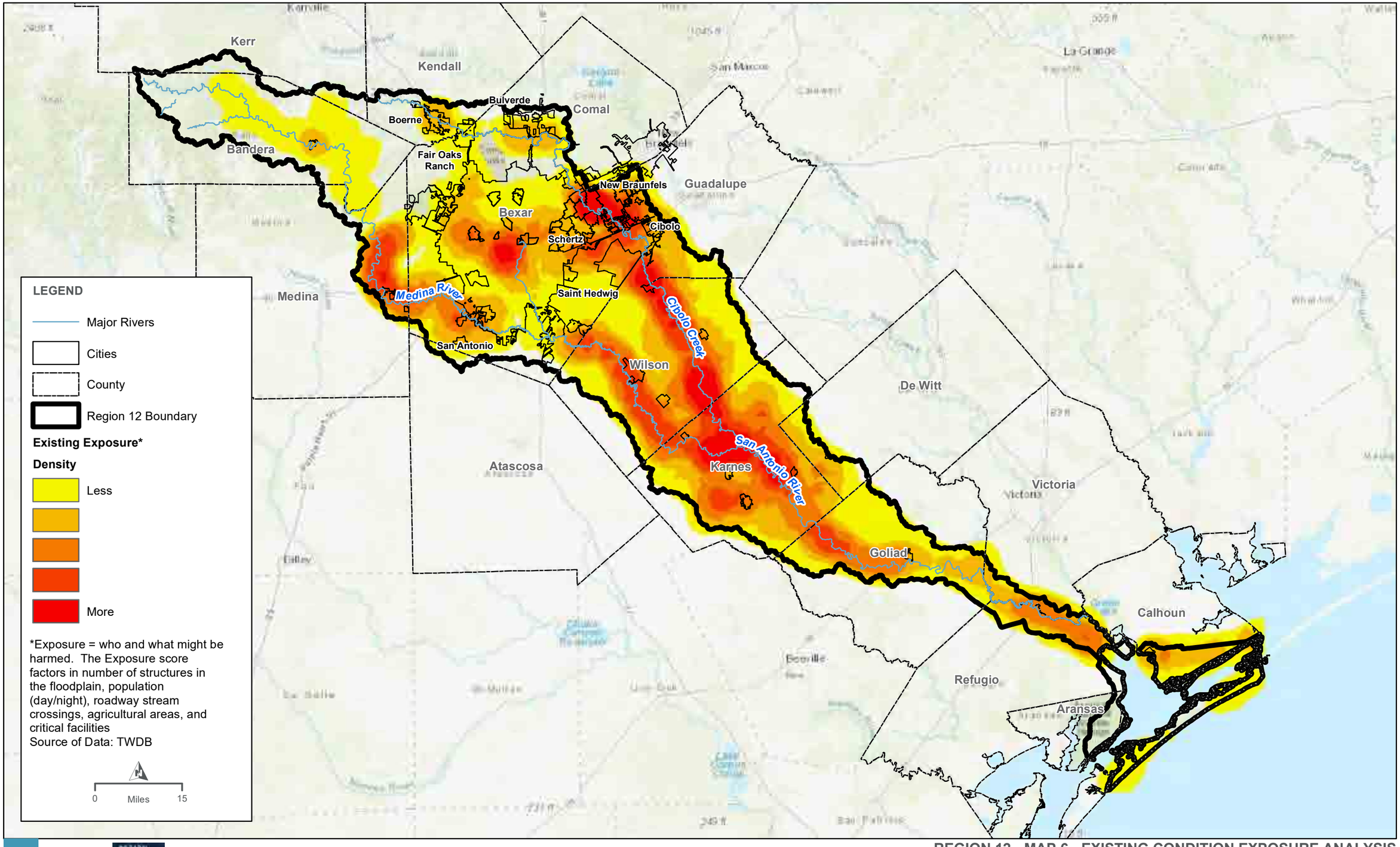
FIGURE 4



REGION 12 - MAP 5 - EXISTING CONDITIONS FLOOD HAZARD KNOWN DATA GAPS

FINAL

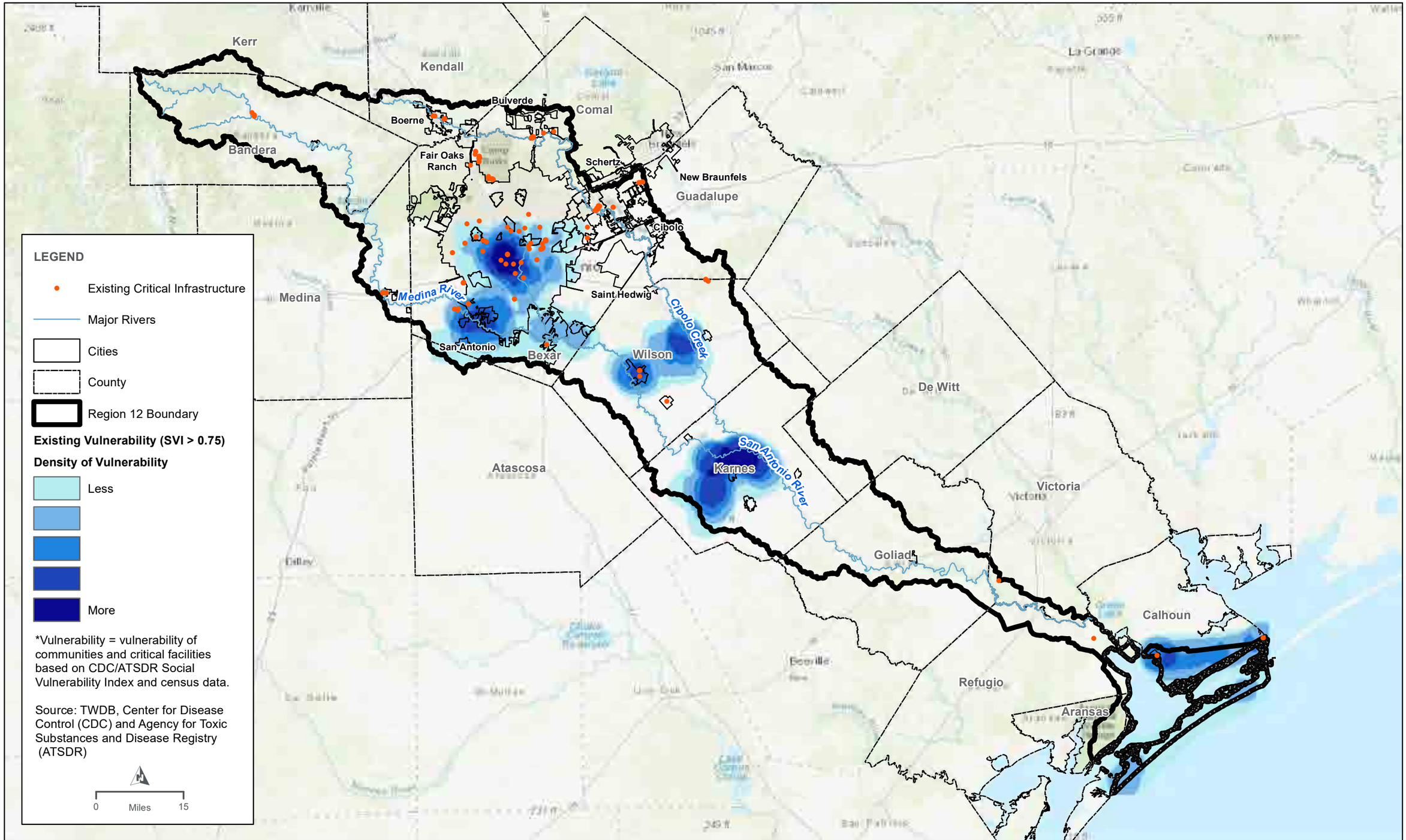
PATH: \\OMAPI-GISAPP03\PROJECTS\PROJECTS\TWDB\TWDB_RFPG\RFP2023_REGION12_ELECTRONICFILES_HDR_WORKING\MAP_DOCS\EXHIBITS\TM_FIGURES\MAP5_EXISTGAPMAP_11X17.MXD - USER: PDUNNING - DATE: 6/9/2023



REGION 12 - MAP 6 - EXISTING CONDITION EXPOSURE ANALYSIS

FINAL

DOCUMENT PATH: \\OMAPI-GISAPP03\PROJECTS\PROJECTS\TWDB\TWDB_RFPG\RFP2023_REGION12_ELECTRONICFILES_HDR_WORKING\MAP_DOCS\EXHIBITS\TM_FIGURES\MAP6_REGIONAL_HEATMAP_EXISTING_EXPOSURE_11X17.MXD



REGION 12 - MAP 7 - EXISTING CONDITION FLOOD VULNERABILITY ANALYSIS (SVI > 0.75)

FINAL

DOCUMENT PATH: \\OMAPI-GISAPP03\PROJECTS\PROJECTS\TWDB\TWDB_RFPG\RFP2023_REGION12_ELECTRONICFILES_HDR_WORKING\MAP_DOCS\EXHIBITS\TM_FIGURES\MAP7_REGIONAL_HEATMAP_EXISTING_VULNERABILITY_GREATERTHAN0-75_11X17.MXD

ALL FUTURE FLOODPLAIN LIMITS ARE APPROXIMATE AND FOR STATE FLOOD PLANNING PURPOSES ONLY, THEY ARE NOT INTENDED FOR REGULATORY USE.

Kerr Co.

Bandera Co.

Kendall Co.

Boerne

87

Medina River

Medina Co.

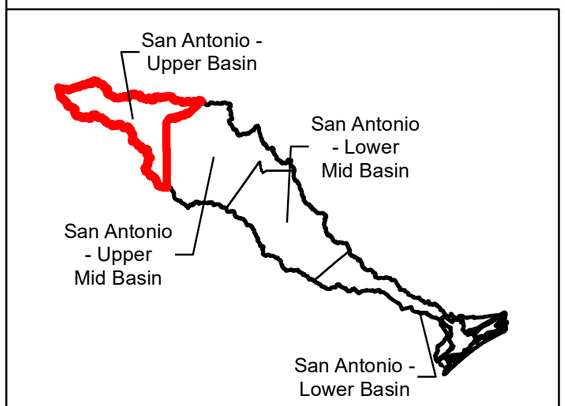
LEGEND

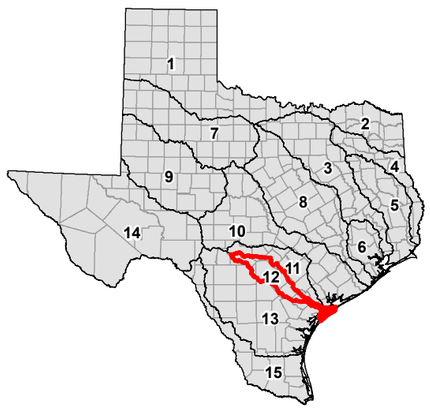
- Fatality Locations
- Injury Locations
- Loss Locations
- Public Comment
- Low Water Crossings
- Major Rivers
- Minor Roads
- Major Roads
- Cities
- County
- Region 12 Boundary

Future Flood Hazard

- 1% Annual Chance
- 0.2% Annual Chance
- Unknown

0 Miles 5





REGION 12 - MAP 8A - SAN ANTONIO UPPER BASIN - FUTURE FLOOD HAZARD

FINAL

FIGURE 1

PATH: \\OMAPI-GISAPP03\PROJECTS\PROJECTS\TWDB\TWDB_RFPG\RFP2023_REGION12_ELECTRONICFILES_HDR_WORKING\MAP_DOCS\EXHIBITS\TM_FIGURES\MAP8\MAP8_FUTUREFLDHAZARD_GROUPA_11X17_FIG1.MXD - USER: PDUNNING - DATE: 6/9/2023

ALL FUTURE FLOODPLAIN LIMITS ARE APPROXIMATE AND FOR STATE FLOOD PLANNING PURPOSES ONLY, THEY ARE NOT INTENDED FOR REGULATORY USE.

LEGEND

- Fatality Locations
- Injury Locations
- Loss Locations
- Public Comment
- Low Water Crossings
- Major Rivers
- Minor Roads
- Major Roadways
- Cities
- County
- Region 12 Boundary

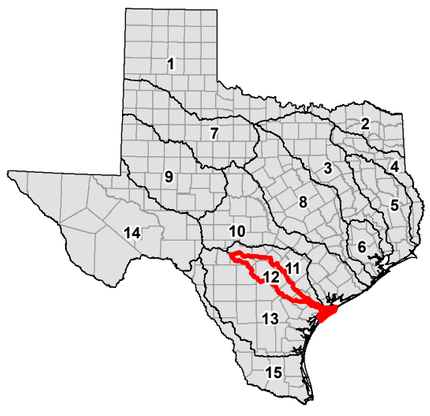
Future Flood Hazard

- 1% Annual Chance
- 0.2% Annual Chance
- Unknown

0 Miles 5

Comal Co.
Bulverde
Cibolo Creek
Fair Oaks Ranch
281
Helotes
35
Cibolo
1604
Converse
10
New Berlin
Saint Hedwig
Guadalupe Co.
410
San Antonio
90
San Antonio River
Bexar Co.
181
Medina River
37
Atascosa Co.

San Antonio - Upper Basin
San Antonio - Lower Mid Basin
San Antonio - Upper Mid Basin
San Antonio - Lower Basin



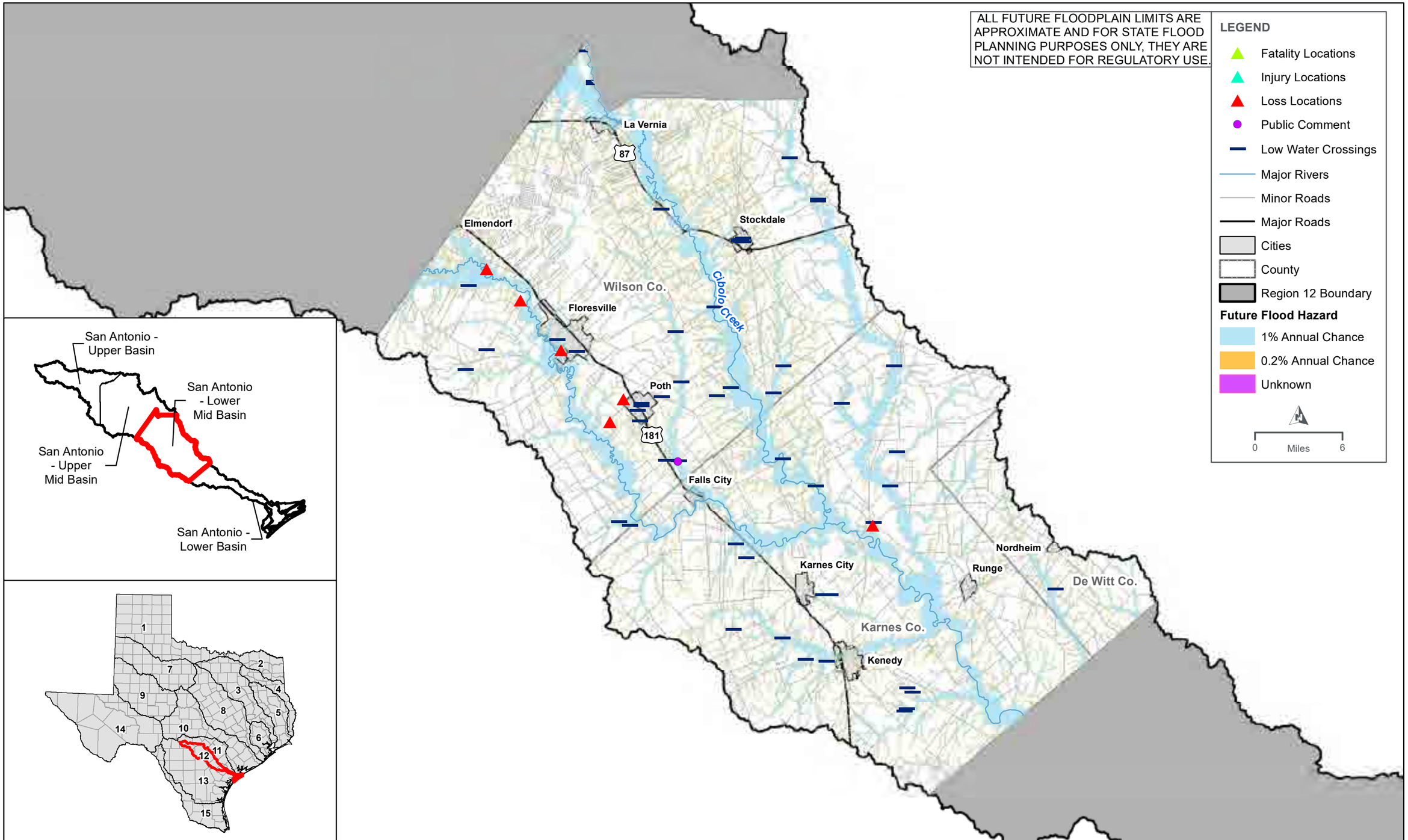
REGION 12 - MAP 8B - SAN ANTONIO UPPER MID BASIN - FUTURE FLOOD HAZARD

FINAL

FIGURE 2

PATH: \\OMAPI-GISAPP03\PROJECTS\PROJECTS\TWDB\TWDB_RFPG\RFP2023_REGION12_ELECTRONICFILES_HDR_WORKING\MAP_DOCS\EXHIBITS\TM_FIGURES\MAP8\MAP8_FUTUREFLDHAZARD_GROUPB_11X17_FIG2.MXD - USER: PDUNNING - DATE: 6/9/2023

ALL FUTURE FLOODPLAIN LIMITS ARE APPROXIMATE AND FOR STATE FLOOD PLANNING PURPOSES ONLY, THEY ARE NOT INTENDED FOR REGULATORY USE.



REGION 12 - MAP 8C - SAN ANTONIO LOWER MID BASIN - FUTURE FLOOD HAZARD

FINAL

FIGURE 3

PATH: \\OMAPI-GISAPP03\PROJECTS\PROJECTS\TWDB\TWDB_RFPG\RFP2023_REGION12_ELECTRONICFILES_HDR_WORKING\MAP_DOCS\EXHIBITS\TM_FIGURES\MAP8\MAP8_FUTUREFLDHAZARD_GROUPC_11X17_FIG3.MXD - USER: PDUNNING - DATE: 6/9/2023

ALL FUTURE FLOODPLAIN LIMITS ARE APPROXIMATE AND FOR STATE FLOOD PLANNING PURPOSES ONLY, THEY ARE NOT INTENDED FOR REGULATORY USE.

LEGEND

- Fatality Locations
- Injury Locations
- Loss Locations
- Public Comment
- Low Water Crossings
- Major Rivers
- Minor Roads
- Major Roads
- Cities
- County
- Region 12 Boundary

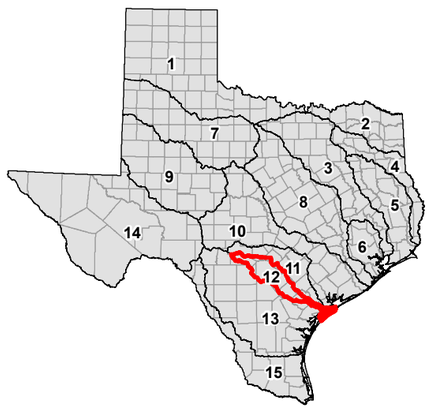
Future Flood Hazard

- 1% Annual Chance
- 0.2% Annual Chance
- Unknown

0 Miles 6

Goliad Co.
183
Goliad
59
Victoria Co.
77
San Antonio River
Refugio Co.
Austwell
Seadrift
Calhoun Co.
Aransas Co.

San Antonio - Upper Basin
San Antonio - Lower Mid Basin
San Antonio - Upper Mid Basin
San Antonio - Lower Basin



REGION 12 - MAP 8D - SAN ANTONIO LOWER BASIN - FUTURE FLOOD HAZARD

FINAL

FIGURE 4

ALL FUTURE FLOODPLAIN LIMITS ARE APPROXIMATE AND FOR STATE FLOOD PLANNING PURPOSES ONLY, THEY ARE NOT INTENDED FOR REGULATORY USE.

Kerr Co.

Bandera Co.

Kendall Co.

Boerne

87

Medina Co.

Medina River

LEGEND

- Fatality Locations
- Injury Locations
- Loss Locations
- Public Comment
- Low Water Crossings
- Major Rivers
- Minor Roads
- Major Roads
- Cities
- County
- Region 12 Boundary

Future Flood Type

- Local
- Coastal
- Riverine

N

0 Miles 5

San Antonio - Upper Basin

San Antonio - Lower Mid Basin

San Antonio - Upper Mid Basin

San Antonio - Lower Basin

REGION 12 - MAP 8E - SAN ANTONIO UPPER BASIN - FUTURE FLOOD HAZARD TYPE

FINAL

FIGURE 1

ALL FUTURE FLOODPLAIN LIMITS ARE APPROXIMATE AND FOR STATE FLOOD PLANNING PURPOSES ONLY, THEY ARE NOT INTENDED FOR REGULATORY USE.

LEGEND

- Fatality Locations
- Injury Locations
- Loss Locations
- Public Comment
- Low Water Crossings
- Major Rivers
- Minor Roads
- Major Roadways
- Cities
- County
- Region 12 Boundary

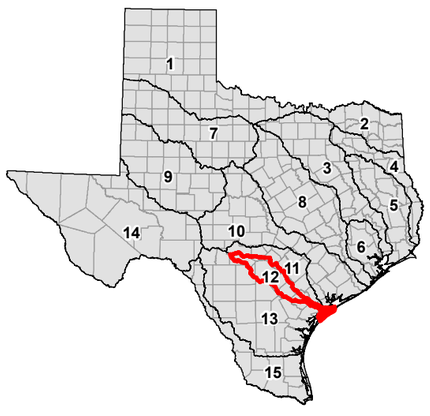
Future Flood Type

- Local
- Coastal
- Riverine

0 Miles 5

Comal Co.
Bulverde
Cibolo Creek
Fair Oaks Ranch
281
Helotes
35
Cibolo
1604
Converse
10
New Berlin
Saint Hedwig
Guadalupe Co.
410
San Antonio
90
San Antonio River
Bexar Co.
181
Medina River
37
Atascosa Co.

San Antonio - Upper Basin
San Antonio - Lower Mid Basin
San Antonio - Upper Mid Basin
San Antonio - Lower Basin



REGION 12 - MAP 8F - SAN ANTONIO UPPER MID BASIN - FUTURE FLOOD HAZARD TYPE

FINAL

FIGURE 2

PATH: \\OMAPI-GISAPP03\PROJECTS\PROJECTS\TWDB\TWDB_RFPG\RFP2023_REGION12_ELECTRONICFILES_HDR_WORKING\MAP_DOCS\EXHIBITS\TM_FIGURES\MAP8\MAP8_FUTUREFLDTYPE_GROUPB_11X17_FIG2.MXD - USER: PDUNNING - DATE: 6/9/2023

ALL FUTURE FLOODPLAIN LIMITS ARE APPROXIMATE AND FOR STATE FLOOD PLANNING PURPOSES ONLY, THEY ARE NOT INTENDED FOR REGULATORY USE.

LEGEND

- Fatality Locations
- Injury Locations
- Loss Locations
- Public Comment
- Low Water Crossings
- Major Rivers
- Minor Roads
- Major Roads
- Cities
- County
- Region 12 Boundary

Future Flood Type

- Local
- Coastal
- Riverine

0 Miles 6

La Vernia
87
Stockdale
Elmendorf
Wilson Co.
Floresville
Poth
181
Falls City
Nordheim
Runge
Karnes City
DeWitt Co.
Karnes Co.
Kenedy

San Antonio - Upper Basin
San Antonio - Lower Mid Basin
San Antonio - Upper Mid Basin
San Antonio - Lower Basin

REGION 12 - MAP 8G - SAN ANTONIO LOWER MID BASIN - FUTURE FLOOD HAZARD TYPE

FINAL

FIGURE 3

ALL FUTURE FLOODPLAIN LIMITS ARE APPROXIMATE AND FOR STATE FLOOD PLANNING PURPOSES ONLY, THEY ARE NOT INTENDED FOR REGULATORY USE.

LEGEND

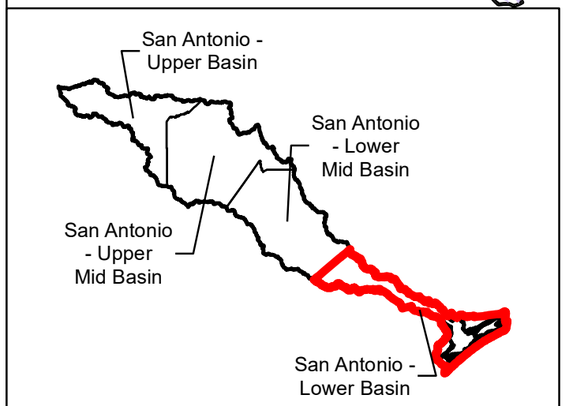
- Fatality Locations
- Injury Locations
- Loss Locations
- Public Comment
- Low Water Crossings
- Major Rivers
- Minor Roads
- Major Roads
- Cities
- County
- Region 12 Boundary

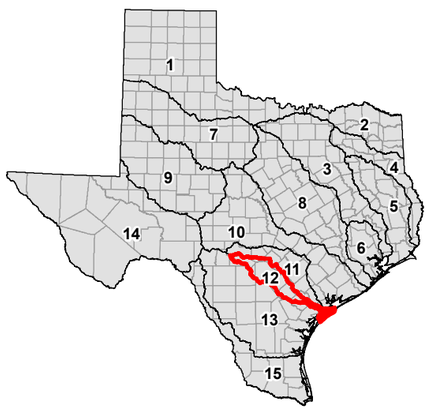
Future Flood Type

- Local
- Coastal
- Riverine

0 Miles 6

Goliad Co.
183
Goliad
59
Victoria Co.
77
San Antonio River
Refugio Co.
Austwell
Seadrift
Calhoun Co.
Aransas Co.



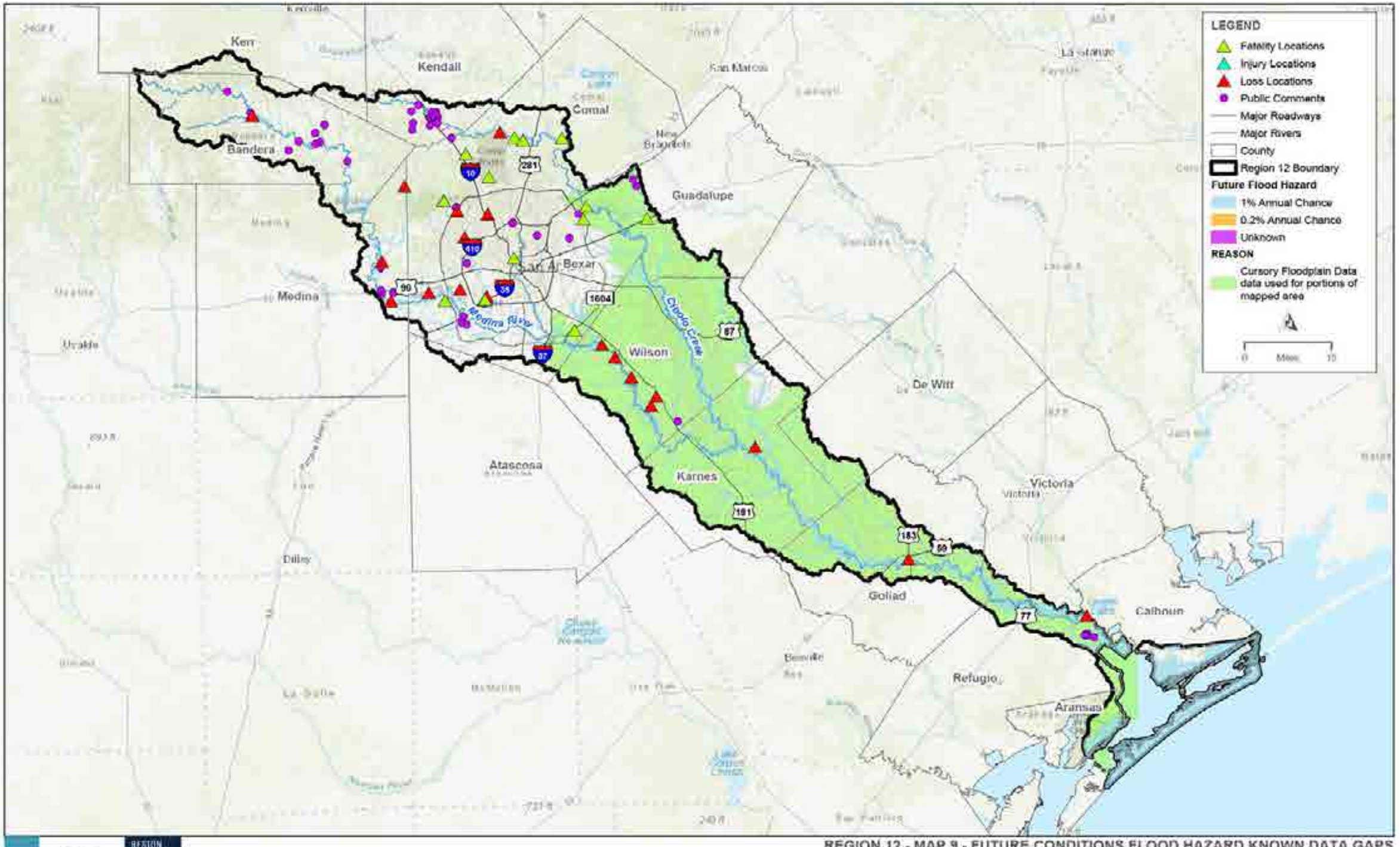


REGION 12 - MAP 8H - SAN ANTONIO LOWER BASIN - FUTURE FLOOD HAZARD TYPE

FINAL

FIGURE 4

PATH: \\OMAPI-GISAPP03\PROJECTS\PROJECTS\TWDB\TWDB_RFPG\RFP2023_REGION12_ELECTRONICFILES_HDR_WORKING\MAP_DOCS\EXHIBITS\TM_FIGURES\MAPS\MAP8_FUTUREFLDTYPE_GROUPD_11X17_FIG4.MXD - USER: PDUNNING - DATE: 6/9/2023



REGION 12 - MAP 9 - FUTURE CONDITIONS FLOOD HAZARD KNOWN DATA GAPS

FINAL

ALL FUTURE FLOODPLAIN LIMITS ARE APPROXIMATE AND FOR STATE FLOOD PLANNING PURPOSES ONLY, THEY ARE NOT INTENDED FOR REGULATORY USE

Kerr Co.

Bandera Co.

Kendall Co.

Boerne

87

Medina River

Medina Co.

LEGEND

- Fatality Locations
- Injury Locations
- Loss Locations
- Public Comment
- Low Water Crossings
- Major Rivers
- Minor Roads
- Major Roads
- Cities
- County
- Region 12 Boundary

1% Annual Flood Hazard

- Existing
- Future

0 Miles 5

REGION 12 - MAP 10A - SAN ANTONIO UPPER BASIN - EXTENT OF INCREASE OF FLOOD HAZARD COMPARED TO EXISTING CONDITONS

FINAL

FIGURE 1

ALL FUTURE FLOODPLAIN LIMITS ARE APPROXIMATE AND FOR STATE FLOOD PLANNING PURPOSES ONLY, THEY ARE NOT INTENDED FOR REGULATORY USE.

LEGEND

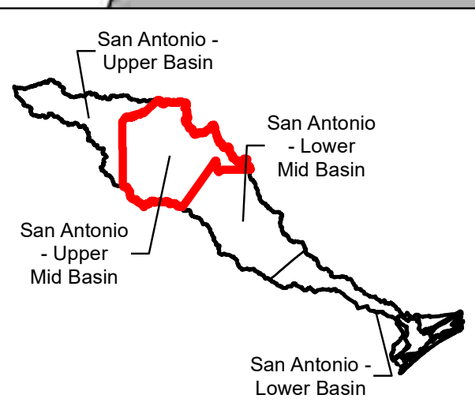
- Fatality Locations
- Injury Locations
- Loss Locations
- Public Comment
- Low Water Crossings
- Major Rivers
- Minor Roads
- Major Roadways
- Cities
- County
- Region 12 Boundary

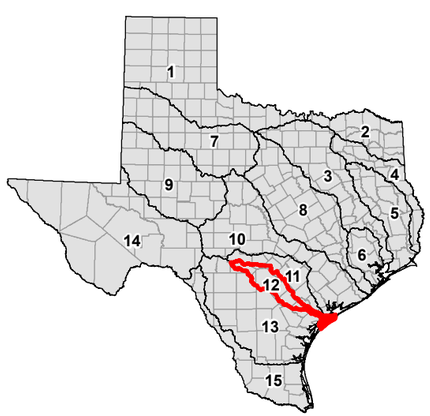
1% Annual Flood Hazard

- Existing
- Future

0 Miles 5

Comal Co.
Bulverde
Cibolo Creek
Fair Oaks Ranch
281
Helotes
35
Cibolo
1604
Converse
10
New Berlin
Saint Hedwig
Guadalupe Co.
410
San Antonio
90
San Antonio River
Bexar Co.
181
Medina River
37
Atascosa Co.





REGION 12 - MAP 10B - SAN ANTONIO UPPER MID BASIN - EXTENT OF INCREASE OF FLOOD HAZARD COMPARED TO EXISTING CONDITION

FINAL

FIGURE 2

PATH: \\OMAPI-GISAPP03\PROJECTS\PROJECTS\TWDB\TWDB_RFPG\RFP2023_REGION12_ELECTRONICFILES_HDR_WORKING\MAP_DOCS\EXHIBITS\TM_FIGURES\MAP10\MAP10_100YR_EXTENT_OF_INCREASE_GROUPB_11X17.MXD - USER: PDUNNING - DATE: 6/9/2023

ALL FUTURE FLOODPLAIN LIMITS ARE APPROXIMATE AND FOR STATE FLOOD PLANNING PURPOSES ONLY, THEY ARE NOT INTENDED FOR REGULATORY USE.

LEGEND

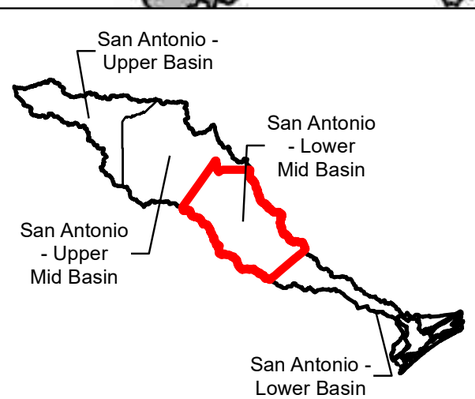
- Fatality Locations
- Injury Locations
- Loss Locations
- Public Comment
- Low Water Crossings
- Major Rivers
- Minor Roads
- Major Roads
- Cities
- County
- Region 12 Boundary

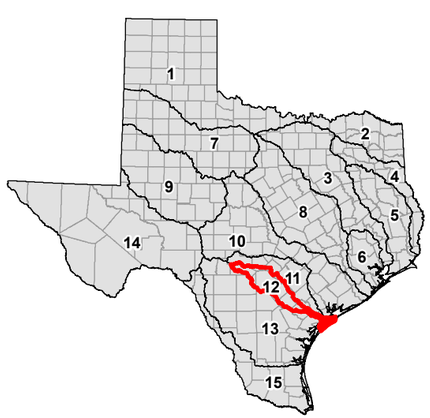
1% Annual Flood Hazard

- Existing
- Future

0 Miles 6

La Vernia
87
Elmendorf
Stockdale
Wilson Co.
Floresville
Cibolo Creek
Poth
181
Falls City
Nordheim
Runge
Karnes City
De Witt Co.
Karnes Co.
Kenedy





REGION 12 - MAP 10C - SAN ANTONIO LOWER MID BASIN - EXTENT OF INCREASE OF FLOOD HAZARD COMPARED TO EXISTING CONDITION

FINAL

FIGURE 3

PATH: \\OMAPI-GISAPP03\PROJECTS\PROJECTS\TWDB\TWDB_RFPG\RFP2023_REGION12_ELECTRONICFILES_HDR_WORKING\MAP_DOCS\EXHIBITS\TM_FIGURES\MAP10\MAP10_100YR_EXTENT_OF_INCREASE_GROUPC_11X17.MXD - USER: PDUNNING - DATE: 6/9/2023

ALL FUTURE FLOODPLAIN LIMITS ARE APPROXIMATE AND FOR STATE FLOOD PLANNING PURPOSES ONLY, THEY ARE NOT INTENDED FOR REGULATORY USE.

LEGEND

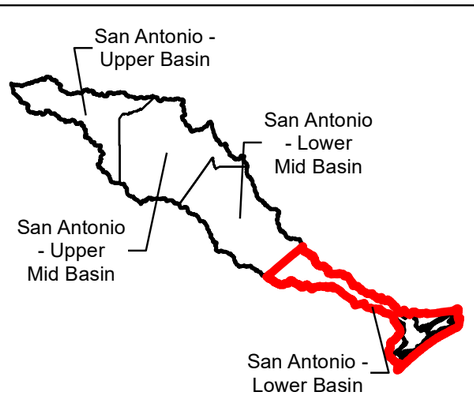
- Fatality Locations
- Injury Locations
- Loss Locations
- Public Comment
- Low Water Crossings
- Major Rivers
- Minor Roads
- Major Roads
- Cities
- County
- Region 12 Boundary

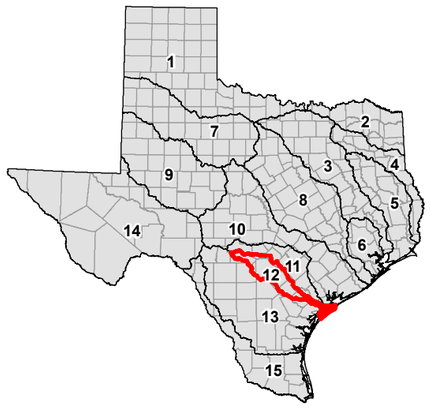
1% Annual Flood Hazard

- Existing
- Future

0 Miles 6

Goliad Co.
183
Goliad
59
Victoria Co.
77
San Antonio River
Refugio Co.
Austwell
Seadrift
Calhoun Co.
Aransas Co.





REGION 12 - MAP 10D - SAN ANTONIO LOWER BASIN - EXTENT OF INCREASE OF FLOOD HAZARD COMPARED TO EXISTING CONDITION

FINAL

FIGURE 4

PATH: \\OMAPI-GISAPP03\PROJECTS\PROJECTS\TWDB\TWDB_RFPG\RFP2023_REGION12_ELECTRONICFILES_HDR_WORKING\MAP_DOCS\EXHIBITS\TM_FIGURES\MAP10\MAP10_100YR_EXTENT_OF_INCREASE_GROUPD_11X17.MXD - USER: PDUNNING - DATE: 6/9/2023

ALL FUTURE FLOODPLAIN LIMITS ARE APPROXIMATE AND FOR STATE FLOOD PLANNING PURPOSES ONLY, THEY ARE NOT INTENDED FOR REGULATORY USE.

Kerr Co.

Bandera Co.

Kendall Co.

Boerne

87

Medina River

Medina Co.

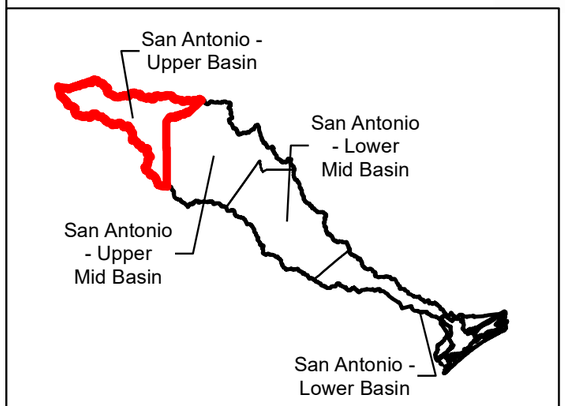
LEGEND

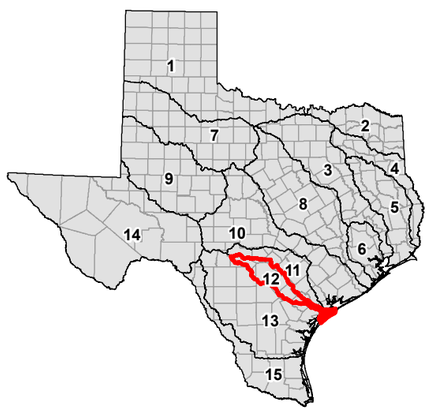
- Fatality Locations
- Injury Locations
- Loss Locations
- Public Comment
- Low Water Crossings
- Major Rivers
- Minor Roads
- Major Roads
- Cities
- County
- Region 12 Boundary

0.2% Annual Flood Hazard

- Existing
- Future

0 Miles 5





REGION 12 - MAP 10E - SAN ANTONIO UPPER BASIN - EXTENT OF INCREASE OF FLOOD HAZARD COMPARED TO EXISTING CONDITION

FINAL

FIGURE 1

PATH: \\OMAPI-GISAPP03\PROJECTS\PROJECTS\TWDB\TWDB_RFPG\RFP2023_REGION12_ELECTRONICFILES_HDR_WORKING\MAP_DOCS\EXHIBITS\TM_FIGURES\MAP10\MAP10_500YR_EXTENT_OF_INCREASE_GROUPA_11X17.MXD - USER: PDUNNING - DATE: 6/9/2023

ALL FUTURE FLOODPLAIN LIMITS ARE APPROXIMATE AND FOR STATE FLOOD PLANNING PURPOSES ONLY, THEY ARE NOT INTENDED FOR REGULATORY USE.

LEGEND

- Fatality Locations
- Injury Locations
- Loss Locations
- Public Comment
- Low Water Crossings
- Major Rivers
- Minor Roads
- Major Roadways
- Cities
- County
- Region 12 Boundary

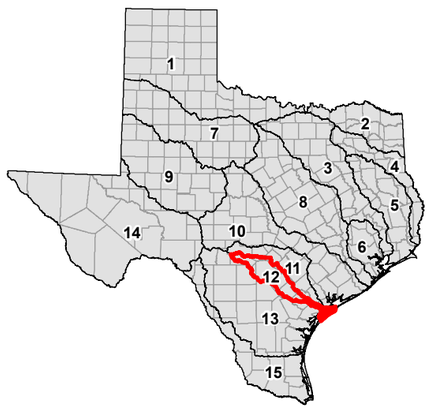
0.2% Annual Flood Hazard

- Existing
- Future

0 Miles 5

Comal Co.
Bulverde
Cibolo Creek
Fair Oaks Ranch
281
Helotes
35
1604
Converse
Cibolo
10
New Berlin
Saint Hedwig
Guadalupe Co.
410
San Antonio
90
San Antonio River
Bexar Co.
181
Medina River
37
Atascosa Co.

San Antonio - Upper Basin
San Antonio - Lower Mid Basin
San Antonio - Upper Mid Basin
San Antonio - Lower Basin



REGION 12 - MAP 10F - SAN ANTONIO UPPER MID BASIN - EXTENT OF INCREASE OF FLOOD HAZARD COMPARED TO EXISTING CONDITION

FINAL

FIGURE 2

PATH: \\OMAPI-GISAPP03\PROJECTS\PROJECTS\TWDB\TWDB_RFPG\RFP2023_REGION12_ELECTRONICFILES_HDR_WORKING\MAP_DOCS\EXHIBITS\TM_FIGURES\MAP10\MAP10_500YR_EXTENT_OF_INCREASE_GROUPB_11X17.MXD - USER: PDUNNING - DATE: 6/9/2023

ALL FUTURE FLOODPLAIN LIMITS ARE APPROXIMATE AND FOR STATE FLOOD PLANNING PURPOSES ONLY, THEY ARE NOT INTENDED FOR REGULATORY USE.

LEGEND

- Fatality Locations
- Injury Locations
- Loss Locations
- Public Comment
- Low Water Crossings
- Major Rivers
- Minor Roads
- Major Roads
- Cities
- County
- Region 12 Boundary

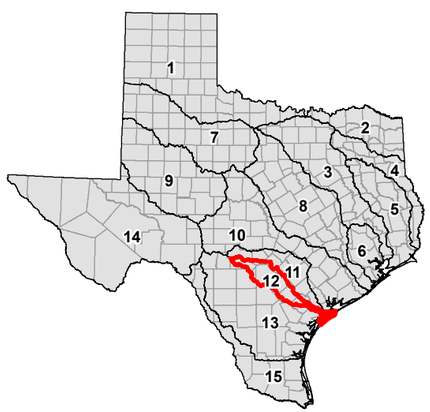
0.2% Annual Flood Hazard

- Existing
- Future

0 Miles 6

La Vernia
87
Elmendorf
Stockdale
87
Wilson Co.
Floresville
Cibolo Creek
Poth
181
Falls City
Nordheim
Runge
De Witt Co.
Karnes City
181
Karnes Co.
Kenedy

San Antonio - Upper Basin
San Antonio - Lower Mid Basin
San Antonio - Upper Mid Basin
San Antonio - Lower Basin



REGION 12 - MAP 10G - SAN ANTONIO LOWER MID BASIN - EXTENT OF INCREASE OF FLOOD HAZARD COMPARED TO EXISTING CONDITION

FINAL

FIGURE 3

PATH: \\OMAPI-GISAPP03\PROJECTS\PROJECTS\TWDB\TWDB_RFPG\RFP2023_REGION12_ELECTRONICFILES_HDR_WORKING\MAP_DOCS\EXHIBITS\TM_FIGURES\MAP10\MAP10_500YR_EXTENT_OF_INCREASE_GROUPC_11X17.MXD - USER: PDUNNING - DATE: 6/9/2023

ALL FUTURE FLOODPLAIN LIMITS ARE APPROXIMATE AND FOR STATE FLOOD PLANNING PURPOSES ONLY, THEY ARE NOT INTENDED FOR REGULATORY USE.

LEGEND

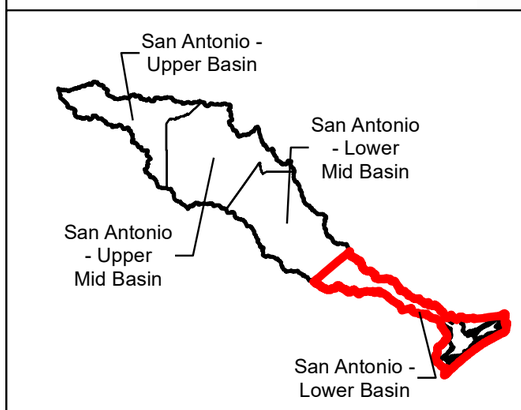
- Fatality Locations
- Injury Locations
- Loss Locations
- Public Comment
- Low Water Crossings
- Major Rivers
- Minor Roads
- Major Roads
- Cities
- County
- Region 12 Boundary

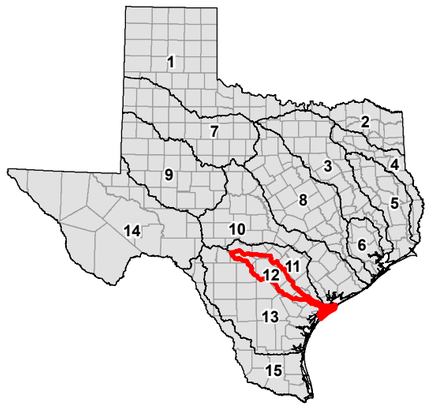
0.2% Annual Flood Hazard

- Existing
- Future

0 Miles 6

Goliad Co.
183
Goliad
59
Victoria Co.
77
San Antonio River
Refugio Co.
Austwell
Seadrift
Calhoun Co.
Aransas Co.

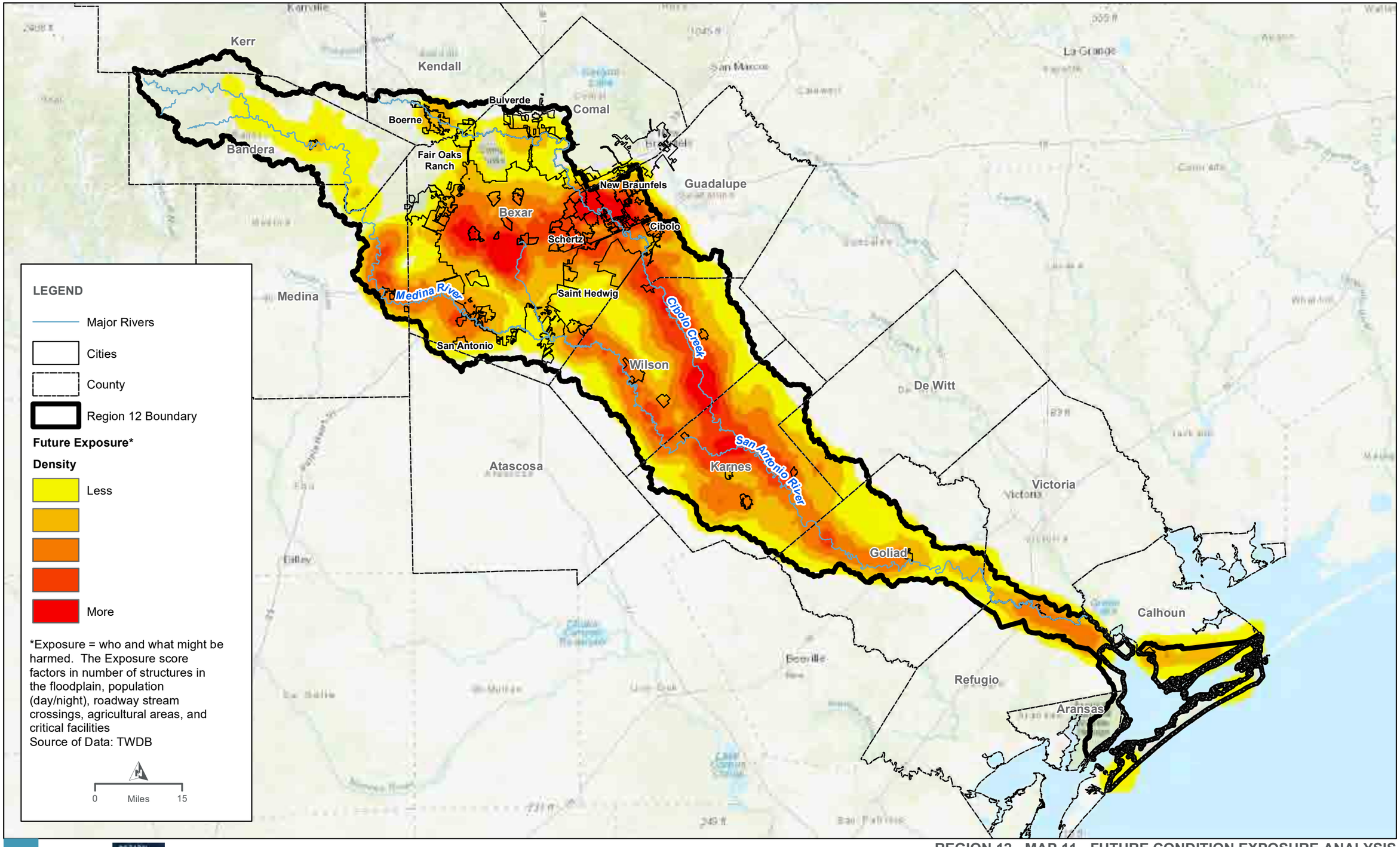




REGION 12 - MAP 10H - SAN ANTONIO LOWER BASIN - EXTENT OF INCREASE OF FLOOD HAZARD COMPARED TO EXISTING CONDITION

FINAL

FIGURE 4



REGION 12 - MAP 11 - FUTURE CONDITION EXPOSURE ANALYSIS

FINAL

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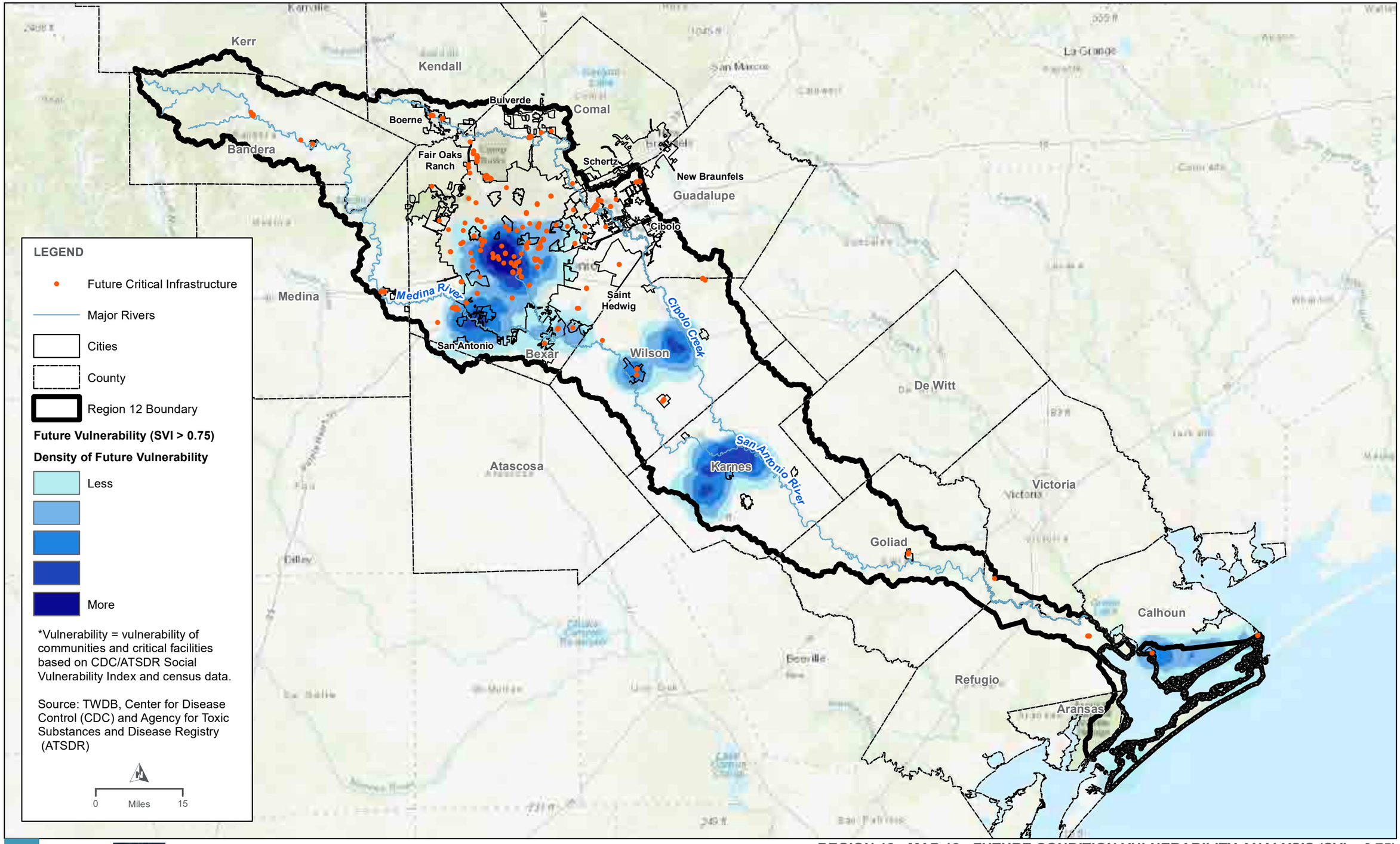

REGION 12 - MAP 12 - FUTURE CONDITION VULNERABILITY ANALYSIS (SVI > 0.75)

FINAL

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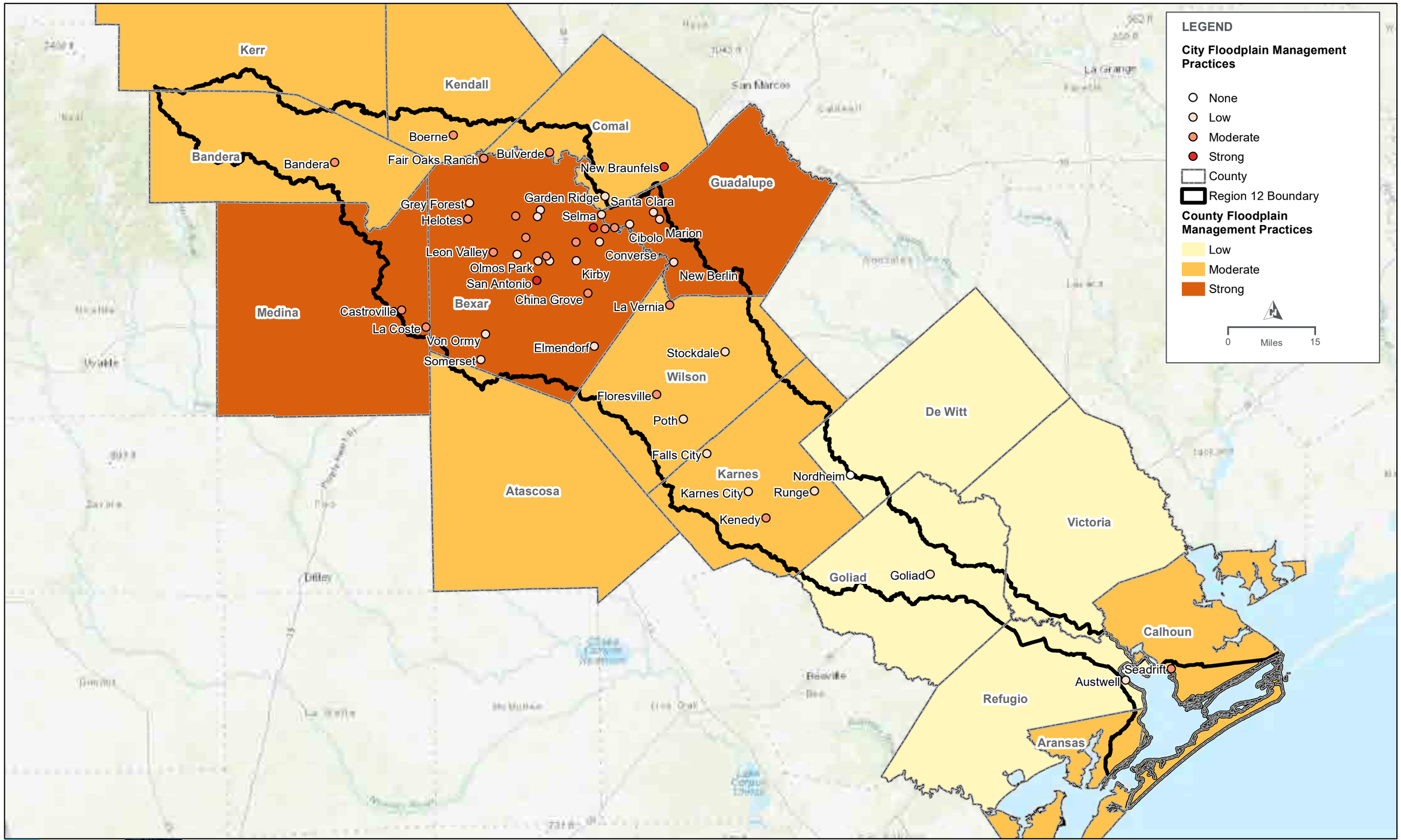


REGION 12 - MAP 13 - FLOODPLAIN MANAGEMENT PRACTICES

FINAL

PATH: \\OMAPI-GISAPP03\PROJECTS\PROJECTS\TWDB\TWDB_RFPG\RFP2023_REGION12_ELECTRONICFILES_HDR_WORKING\MAP_DOCS\EXHIBITS\TM_FIGURES\MAP13_FLOODPLAINMANAGEMENTPRACTICESMAP_11X17.MXD - USER: PDUNNING - DATE: 6/9/2023

LEGEND

- Cities
- Major Rivers
- Major Roadways
- Watersheds (HUC-12)
- County

Data Gaps

- Cursory Floodplain Data Gaps
- Not Fully Modeled
- Region 12 Boundary

Risk Score*

- 0 - 1
- 1 - 2
- 2 - 3
- 3 - 4
- 4 - 5

*Risk score calculated for each HUC is based on the number of Low Water Crossings (TWDB) and Dams (TWDB), Historical Life Loss (NWS/FEMA), Flood Exposure, Flood Vulnerability, Critical Facilities (TWDB), Historical Property Damage, and Public Information on Flood Prone Areas.

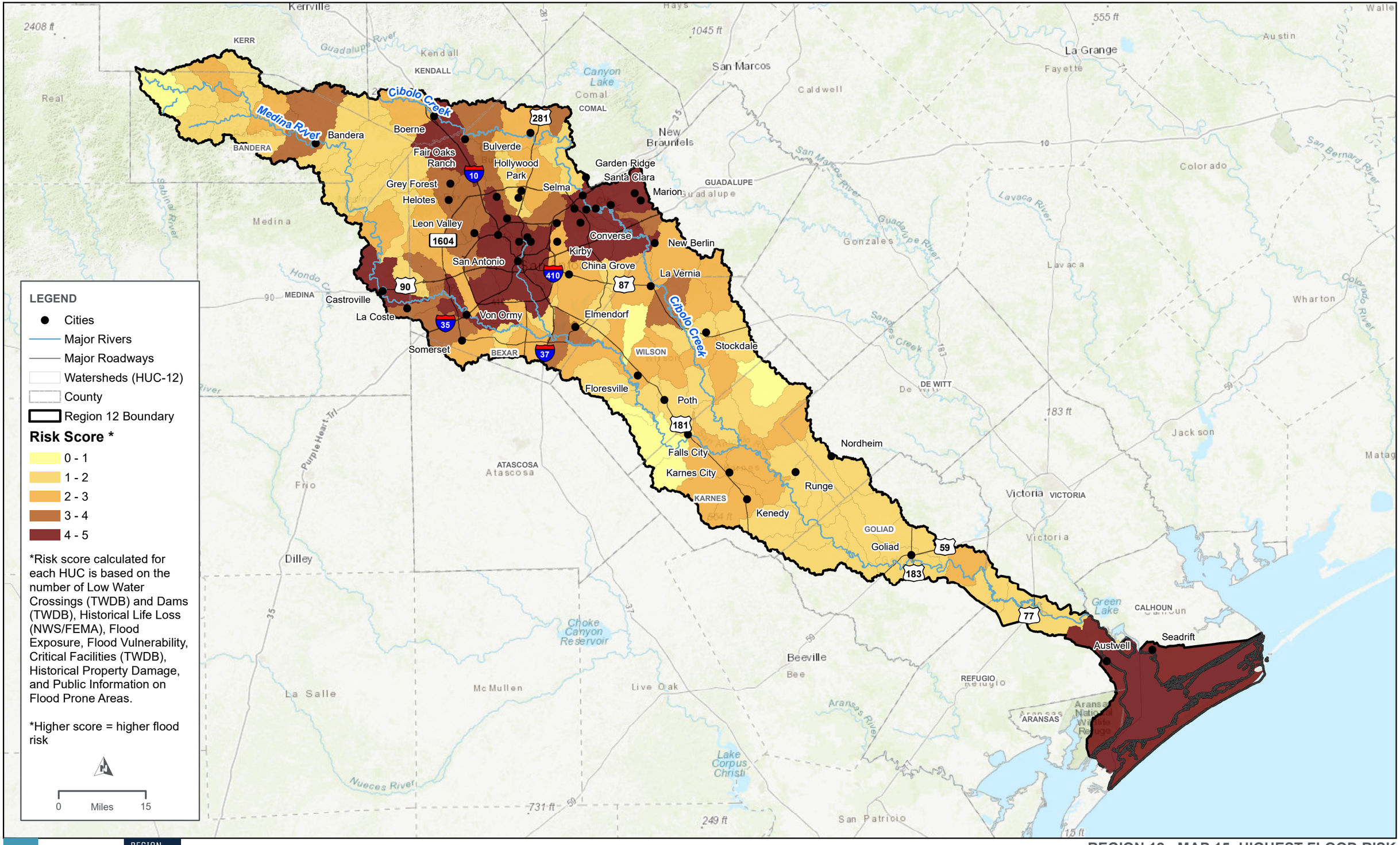
*Higher score = higher flood risk

0 Miles 15

REGION 12 - MAP 14 - GREATEST GAPS AND RISK SCORE

FINAL

DOCUMENT PATH: Z:\PROJECTS\TWDB\TWDB_RFPG\RFP2023_REGION12_ELECTRONICFILES_HDR_WORKING\MAP_DOCS\EXHIBITS\TM_FIGURES\MAP14_FLD_RISK_GAPS_11X17.MXD



REGION 12 - MAP 15 -HIGHEST FLOOD RISK

FINAL

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Regionwide FMEs	
FME_ID	***FME_NAME***
121000133	Natural capital inventory
121000134	Evaluation and prioritization of new gauge locations
121000135	Future conditions data refinement study
121000137	River Authority WWTP Resilience
121000161	Holistic Watershed based master planning consistent with Nature Based Solutions

*These are not displayed due to overlap with other FMEs

Kerr
Kendall
Comal
Bexar
Bandera
Medina
Uvalde
Guadalupe
Wilson
De Witt
Atascosa
Karnes
Victoria
Goliad
Calhoun
Refugio
Aransas

Cibolo Creek
Medina River
San Antonio River

10
281
87
90
410
35
1604
37
181
59
183
77

LEGEND

- Major Rivers
- Major Roadways
- Major Reservoirs
- TWDB FIF Category 1 Project - Karnes County 400111

FME TYPE

- Preparedness
- Project Planning
- Watershed Planning
- Watersheds (HUC-12)
- County
- Region 12 Boundary

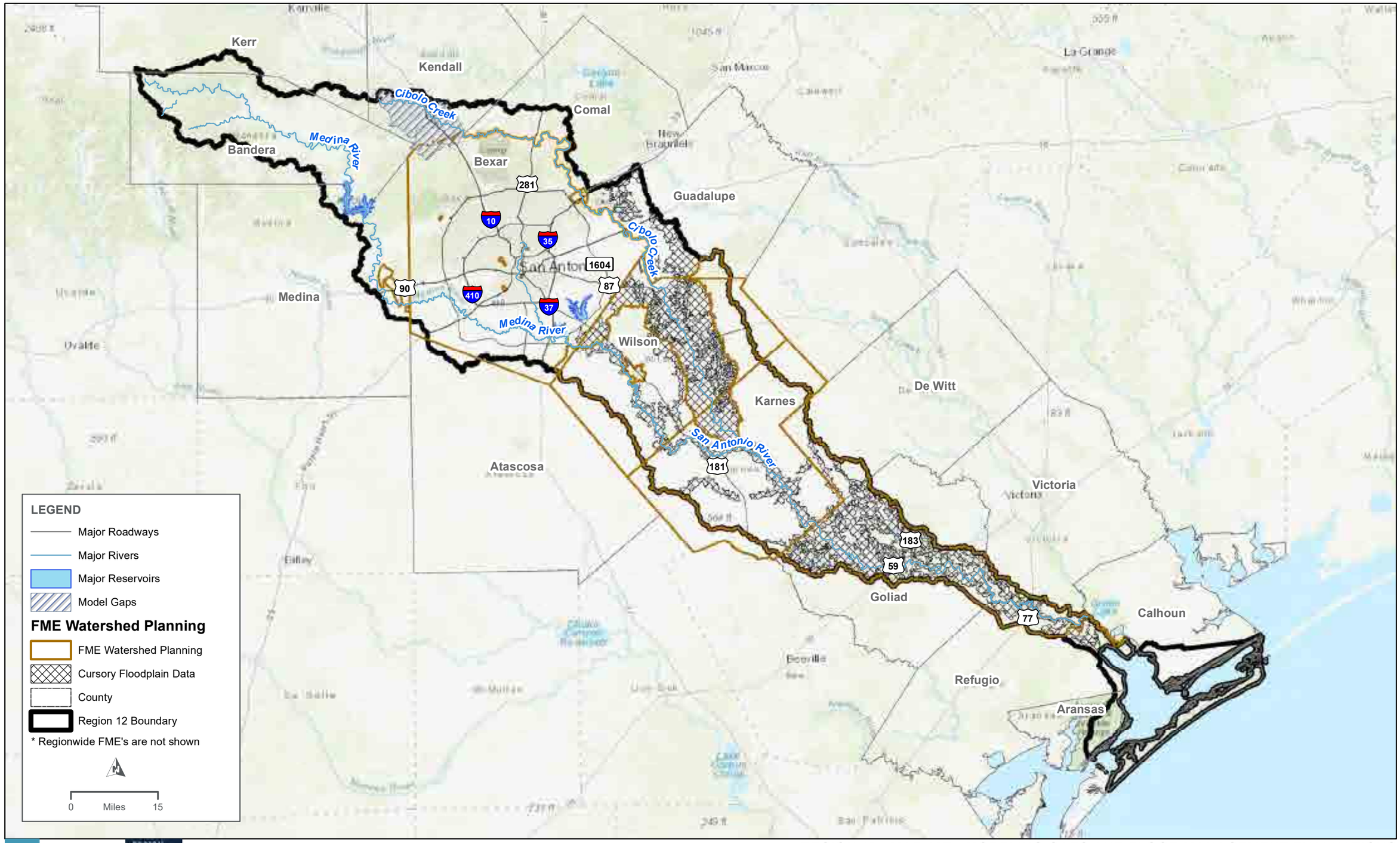
* Regionwide FME's are not shown

0 Miles 15

REGION 12 - MAP 16A - FLOOD MANAGEMENT EVALUATIONS

FINAL

DOCUMENT PATH: \\OMAPI-GISAPP03\PROJECTS\PROJECTS\TWDB\TWDB_RFP\RFP2023_REGION12_ELECTRONICFILES_HDR_WORKING\MAP_DOCS\EXHIBITS\ITM_FIGURES\MAP16\MAP16A_REGIONAL_FME_PROJECTPLANNING_11X17.MXD



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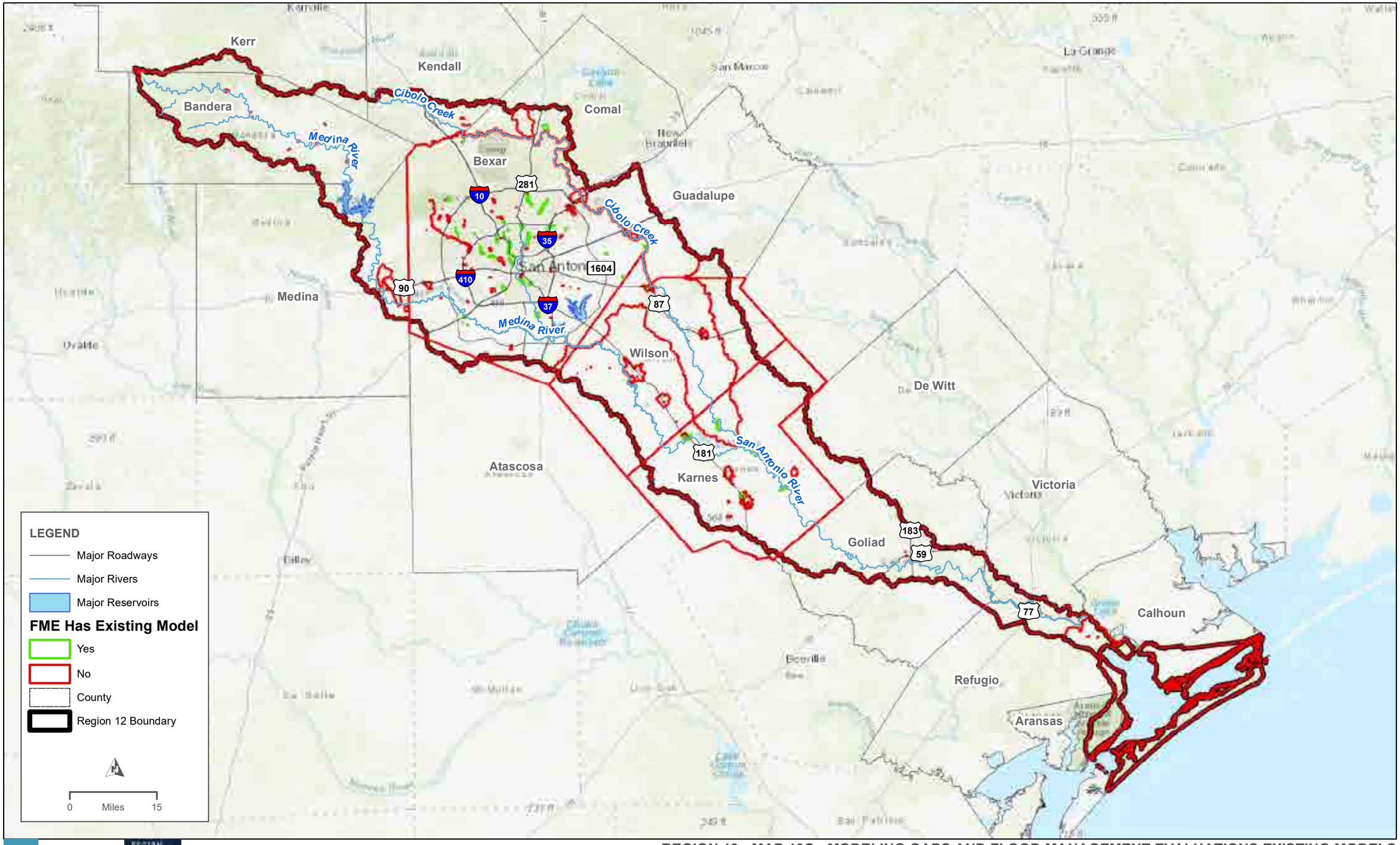
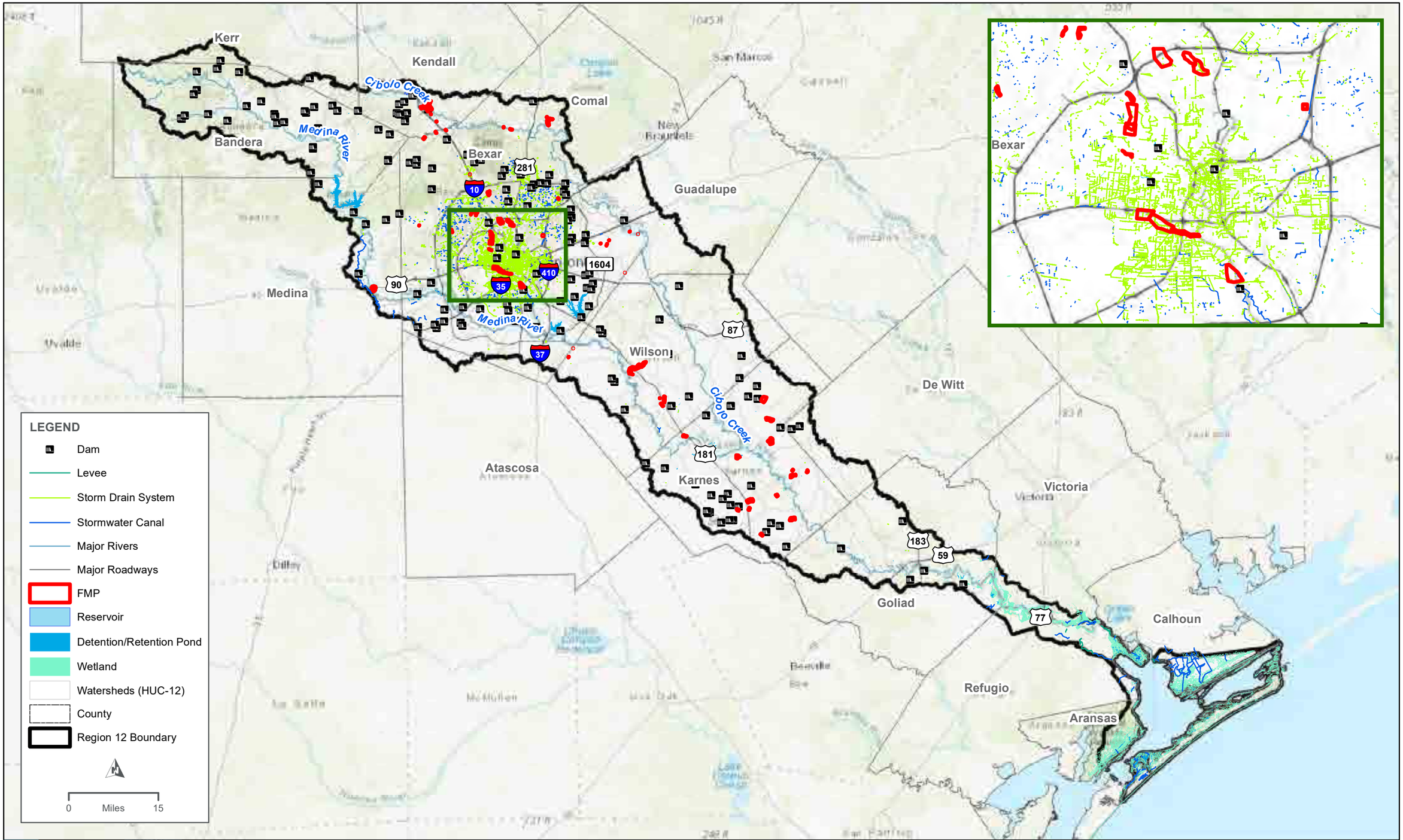


REGION 12 - MAP 16C - MODELING GAPS AND FLOOD MANAGEMENT EVALUATIONS EXISTING MODELS

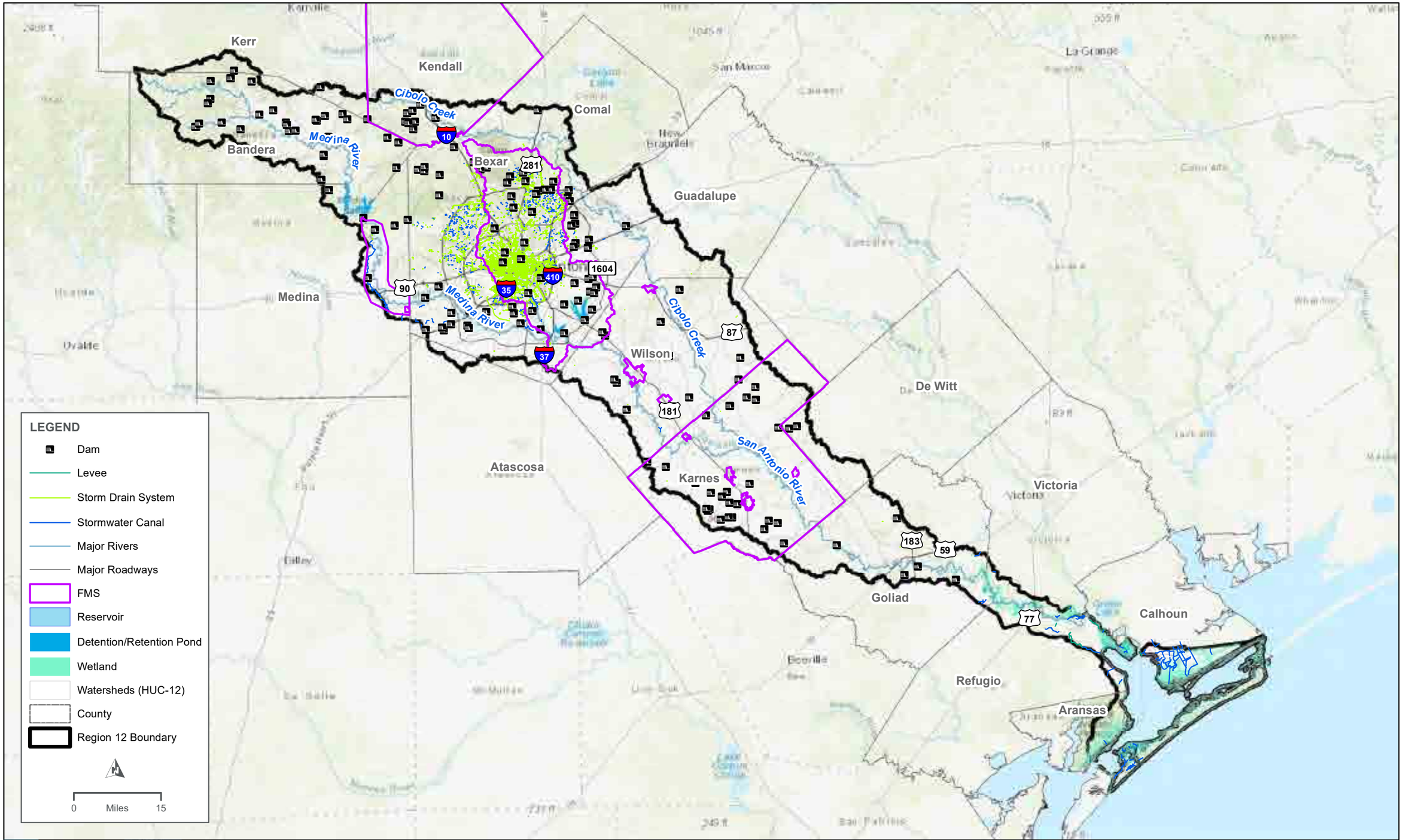
FINAL



REGION 12 - MAP 17 - FLOOD MITIGATION PROJECTS

FINAL

DOCUMENT PATH: \\OMAPI-GISAPP03\PROJECTS\PROJECTS\TWDB\TWDB_RFPG\RFP2023_REGION12_ELECTRONICFILES_HDR_WORKING\MAP_DOCS\EXHIBITS\TM_FIGURES\MAP17_REGIONAL_FMP_11X17.MXD



REGION 12 - MAP 18 - FLOOD MANAGEMENT STRATEGIES

FINAL

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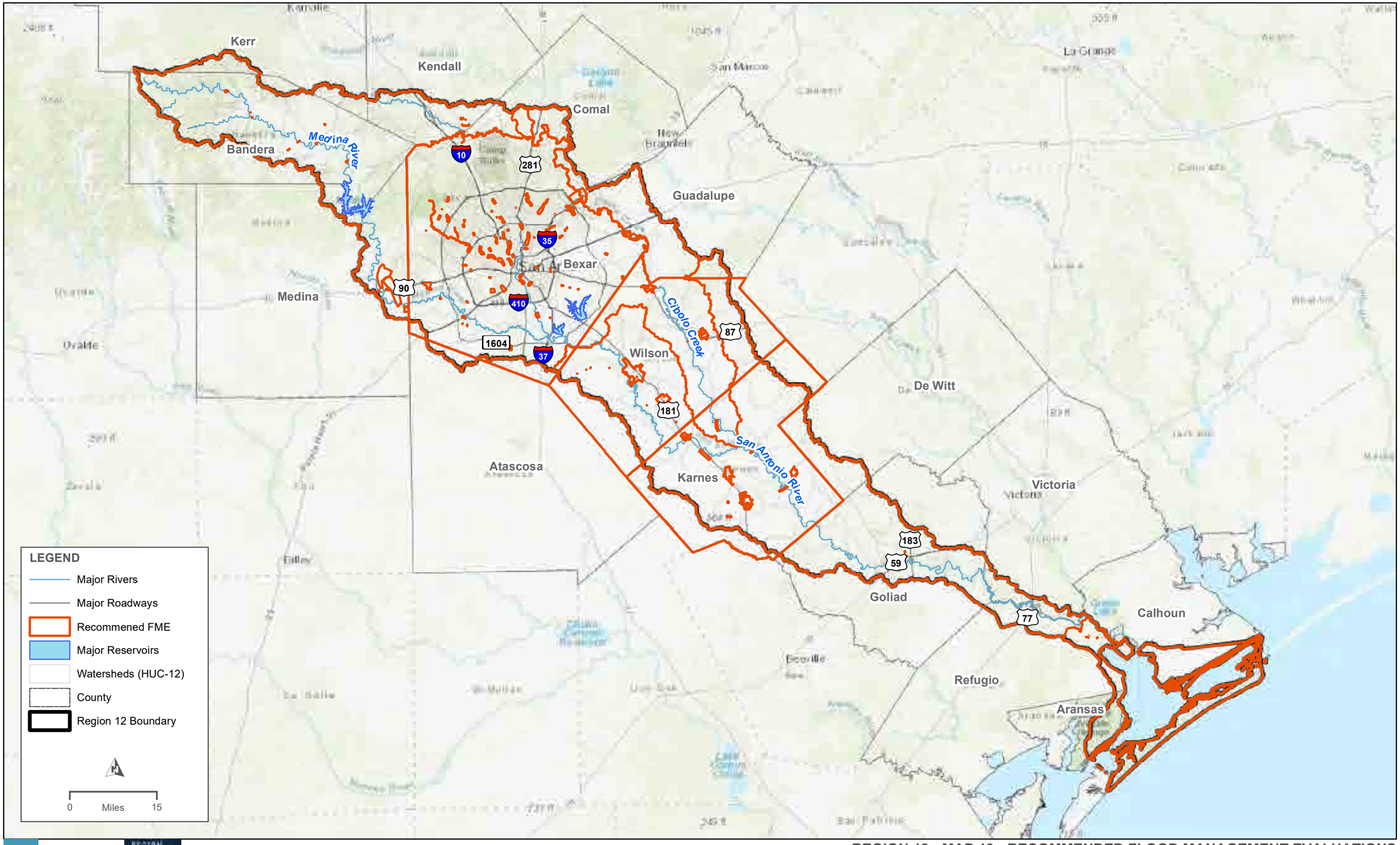
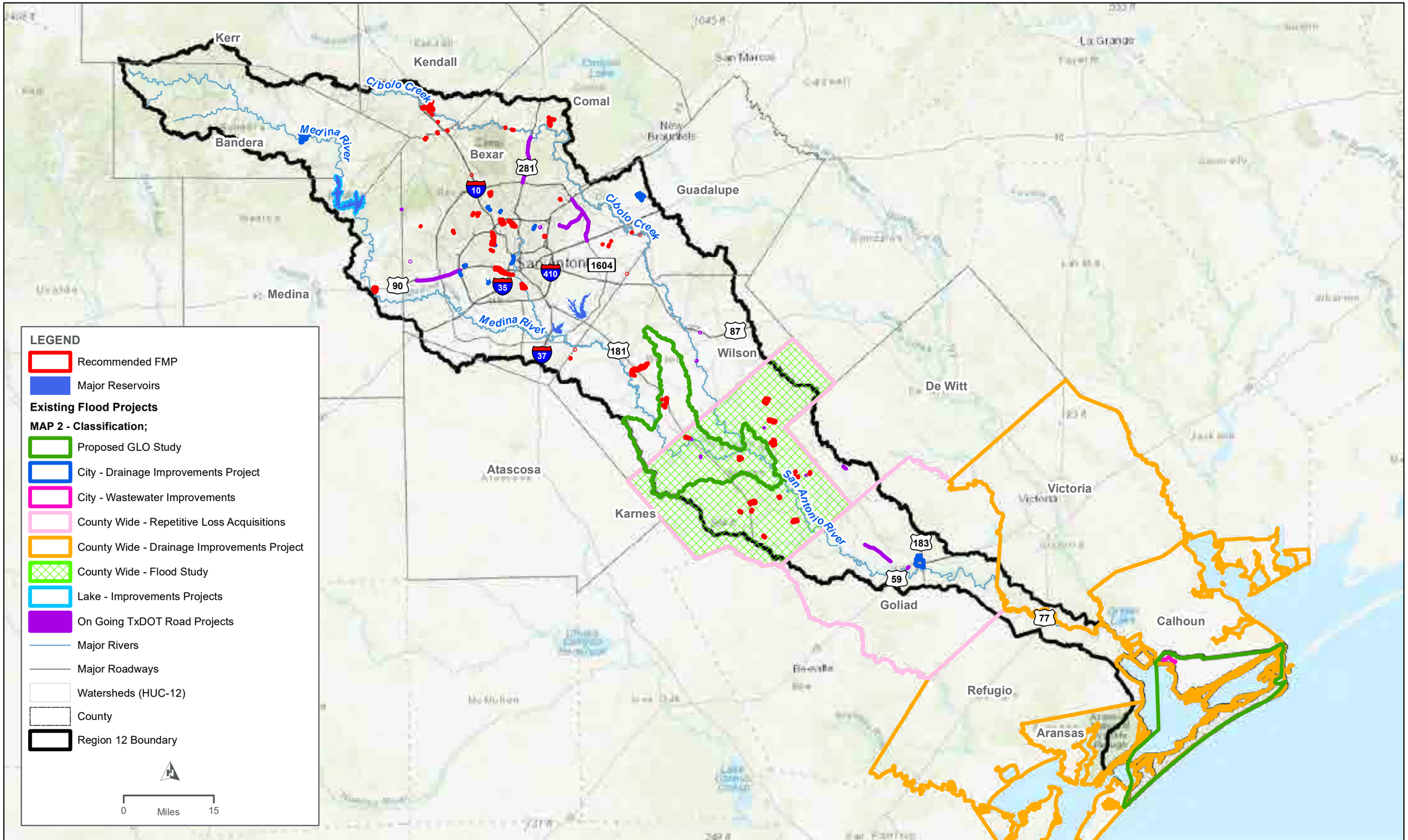


REGION 12 - MAP 19 - RECOMMENDED FLOOD MANAGEMENT EVALUATIONS

FINAL

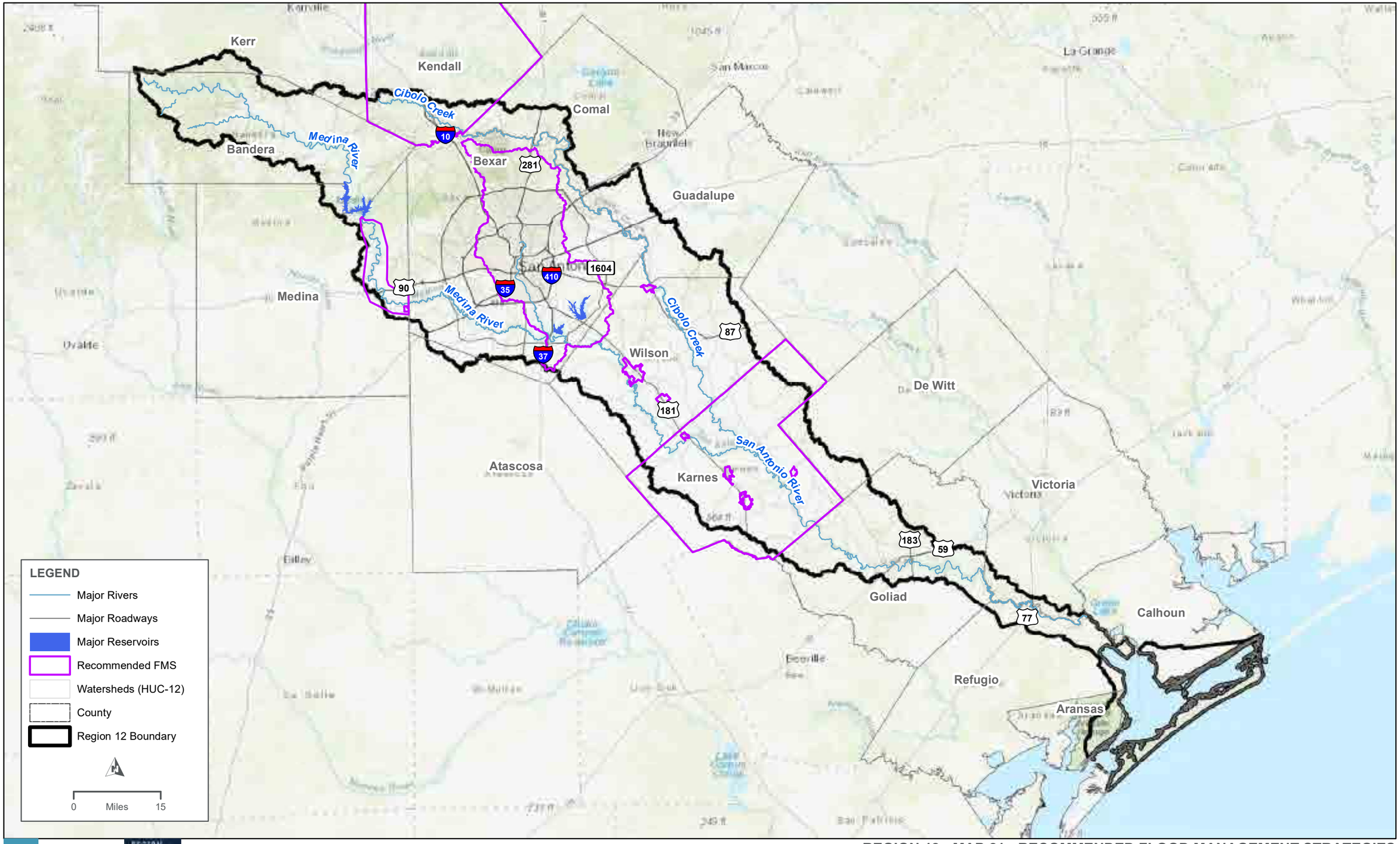
DOCUMENT PATH: \\OMAPI-GISAPP03\PROJECTS\PROJECTS\TWDB\TWDB_RFPG\RFP2023_REGION12_ELECTRONICFILES_HDR_WORKING\MAP_DOCS\EXHIBITS\TM_FIGURES\MAP19_REGIONAL_RECOMMENDEDFME_11X17.MXD



REGION 12 - MAP 20 - RECOMMENDED FLOOD MANAGEMENT PROJECTS

FINAL

DOCUMENT PATH: \\OMAPI-GISAPP03\PROJECTS\PROJECTS\TWDB\TWDB_RFPG\RFP2023_REGION12_ELECTRONICFILES_HDR_WORKING\MAP_DOCS\EXHIBITS\TM_FIGURES\MAP20_REGIONAL_RECOMMENDEDFMP_11X17.MXD



REGION 12 - MAP 21 - RECOMMENDED FLOOD MANAGEMENT STRATEGIES

FINAL

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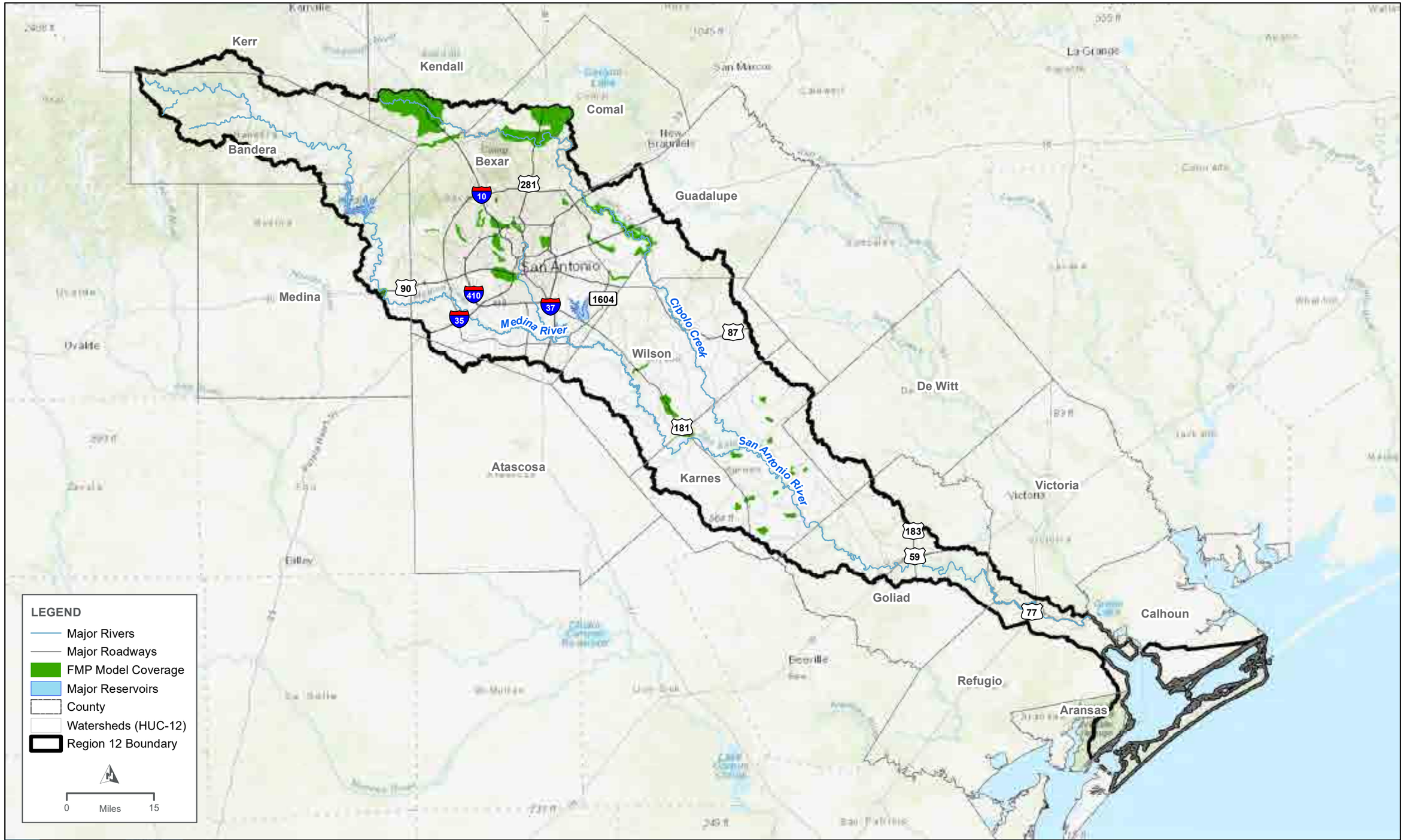

REGION 12 - MAP 22 -MODELING MAP

FINAL

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Appendix C. Public Outreach Meeting Reports

San Antonio RFPG Public Meeting – Bandera County

San Antonio RFPG Public Meeting – St. Hedwig

San Antonio RFPG Public Meeting – Virtual

San Antonio RFPG Public Meeting – San Antonio

San Antonio RFPG Public Meeting – Schertz

San Antonio RFPG Public Meeting – Floresville

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San Antonio Regional Flood Planning Group
Public Meeting Documentation

Planning Region

Region 12 consisting of parts of Aransas, Atascosa, Bandera, Bexar, Caldwell, ! Calhoun, Comal, DeWitt, Goliad, Guadalupe, Karnes, Kendall, Kerr, Medina, ! Refugio, Victoria, and Wilson counties. !

Meeting Location, Time, and Date

Thursday, December 9, 2021 !
10 a.m. – 11:30 a.m. !
Bandera County River Authority and Conservation District (BCRAGD) !

Presenters

Ronald Branson, P.E, Project Manager, HDR, Inc. !
Troy Dorman, P.E., Assistant Project Manager, Halff, Inc. !
David Mauk, CFM, General Manager, BCRAGD !
Larry Thomas, CFM, Natural Resource Specialist, BCRAGD !

Elected Officials in Attendance

3

Total Number of Attendees (approx.)

10

Number of Comments Submitted at Meeting

3

San Antonio Regional Flood Planning Group
Public Meeting Documentation

Planning Region

Region 12 consisting of parts of Aransas, Atascosa, Bandera, Bexar, Caldwell, Calhoun, Comal, DeWitt, Goliad, Guadalupe, Karnes, Kendall, Kerr, Medina, Refugio, Victoria, and Wilson counties.

Meeting Location, Time, and Date

Tuesday, January 11, 2021
6:30 p.m. – 8 p.m.
Tradition Elementary School Cafeteria
12885 FM 1346, St. Hedwig, TX 78152

Presenters

Ronald Branson, P.E, Project Manager, HDR, Inc.

Elected Officials in Attendance

1

Total Number of Attendees (approx.)

7

Number of Comments Submitted at Meeting

2

San Antonio Regional Flood Planning Group
Virtual Public Meeting Documentation

Planning Region
Region 12 consisting of parts of Aransas, Atascosa, Bandera, Bexar, Caldwell, !
Calhoun, Comal, DeWitt, Goliad, Guadalupe, Karnes, Kendall, Kerr, Medina, !
Refugio, Victoria, and Wilson counties. !

Virtual Meeting Date, Time and Location
Monday, February 7, 2022 !
6 p.m. – 7 p.m. !
Webex link at www.region12texas.org !

Presenters
Ronald Branson, P.E, Project Manager, HDR, Inc.

Elected Officials in Attendance
None

Total Number of Attendees (approx.)
3

Number of Comments Submitted
Any comments submitted by meeting participants can be found at www.region12texas.org and clicking the link in the Comment Map section of the webpage.

San Antonio Regional Flood Planning Group
Public Meeting Documentation

Planning Region

Region 12 consisting of parts of Aransas, Atascosa, Bandera, Bexar, Calhoun, Comal, DeWitt, Goliad, Guadalupe, Karnes, Kendall, Kerr, Medina, Refugio, Victoria, and Wilson counties.

Meeting Date, Time, and Location

Monday, June 6, 2022, 6:30 p.m. to 8 p.m.
Sam Rayburn Middle School
1400 Cedarhurst Dr.
San Antonio, TX 78227

Presenters

Ronald Branson, P.E, Project Manager, HDR, Inc.

Elected Officials in Attendance

0

Total Number of Attendees (approx.)

5

Number of Comments Submitted at Meeting

2

San Antonio Regional Flood Planning Group
Public Meeting Documentation

Planning Region

Region 12 consisting of parts of Aransas, Atascosa, Bandera, Bexar, Calhoun, Comal, DeWitt, Goliad, Guadalupe, Karnes, Kendall, Kerr, Medina, Refugio, Victoria, and Wilson counties.

Meeting Date, Time, and Location

Tuesday, June 7, 2022, 6:30 p.m. to 8 p.m.
City of Schertz North Center
3501 Morning Dr.
Schertz, TX 78108

Presenters

Ronald Branson, P.E, Project Manager, HDR, Inc.

Elected Officials in Attendance

1

Total Number of Attendees (approx.)

6

Number of Comments Submitted at Meeting

1

San Antonio Regional Flood Planning Group
Public Meeting Documentation

Planning Region

Region 12 consisting of parts of Aransas, Atascosa, Bandera, Bexar, Calhoun, Comal, DeWitt, Goliad, Guadalupe, Karnes, Kendall, Kerr, Medina, Refugio, Victoria, and Wilson counties.

Meeting Location, Time, and Date

Thursday, June 16, 2022, 6:30 p.m. to 8 p.m.
Jack's Café
507 Tenth Street
Floresville, TX 78114

Presenters

Ronald Branson, P.E, Project Manager, HDR, Inc.

Elected Officials in Attendance

2

Total Number of Attendees (approx.)

6

Number of Comments Submitted at Meeting

2

San Antonio Regional Flood Plan

January 11, 2022

Agenda

- Introductions
- Plan Objectives and Benefits
- Background
- Planning Process and Other Studies
- Stakeholder Input
- Next Steps

Meeting Purpose: Introduce the regional flood planning process and gather local knowledge of flood-prone areas, flood mitigation projects and needs.

Local management team has dedicated their careers to San Antonio Basin

Ron Branyon, PE, CFM

Project Manager

Point of contact/HDR

Added Value To SARFPG

- **Local, Responsive Project Manager**
- **20 years of experience delivering TWDB flood mitigation studies, drainage master plans, and floodplain mapping studies, in San Antonio River Basin**
- **Extensive experience in public outreach related to flood mitigation and mapping projects**
- **A strong working relationship with members of the Bexar Regional Watershed Management partnership.**
- **Track record for successful delivery of local high-profile projects, including nature- based solutions**

Relevant Experience To SARFP Tasks

- **SARA, City of San Antonio Drainage Master Plan — TX**
- **SARA, San Antonio River Watershed Cooperating Technical Partners (CTP) — TX**
- **SARA/Bexar County, San Pedro Creek Improvements Project — TX**
- **USACE, Leon Creek Master Plan — TX**
- **FEMA, DFIRM-Refugio, Calhoun, Aransas — TX**
- **USACE, Lower San Antonio River Basin Hydraulic Routing Models — TX**

"I work in Bexar County, reside in Wilson County and ranch in Goliad County, so this watershed is my home! From the headwaters to the Gulf I have seen it all and protecting the watershed and those who live here is what excites me about this opportunity."

What is the Region 12 Flood Plan?

- Historic Flooding – Realization of the need for flood planning
- In 2019, the 86th Texas legislature created and funded the first-ever regional and state flood planning process
- Schedule
  - Regional flood plans to be delivered by January 10, 2023, and then every five years thereafter
  - State plan to be adopted by September 1, 2024, and then every five years thereafter
- TWDB Flood Planning website:
- https://www.twdb.texas.gov/flood/planning/index.asp

Plan Objectives

- Document existing flood infrastructure and preparedness
- Identify current and future flood risk and hazard
- Develop flood mitigation/management goals
- Identify and evaluate flood management strategies and mitigation projects
- Evaluate benefits/impacts to water supply environment, and economics

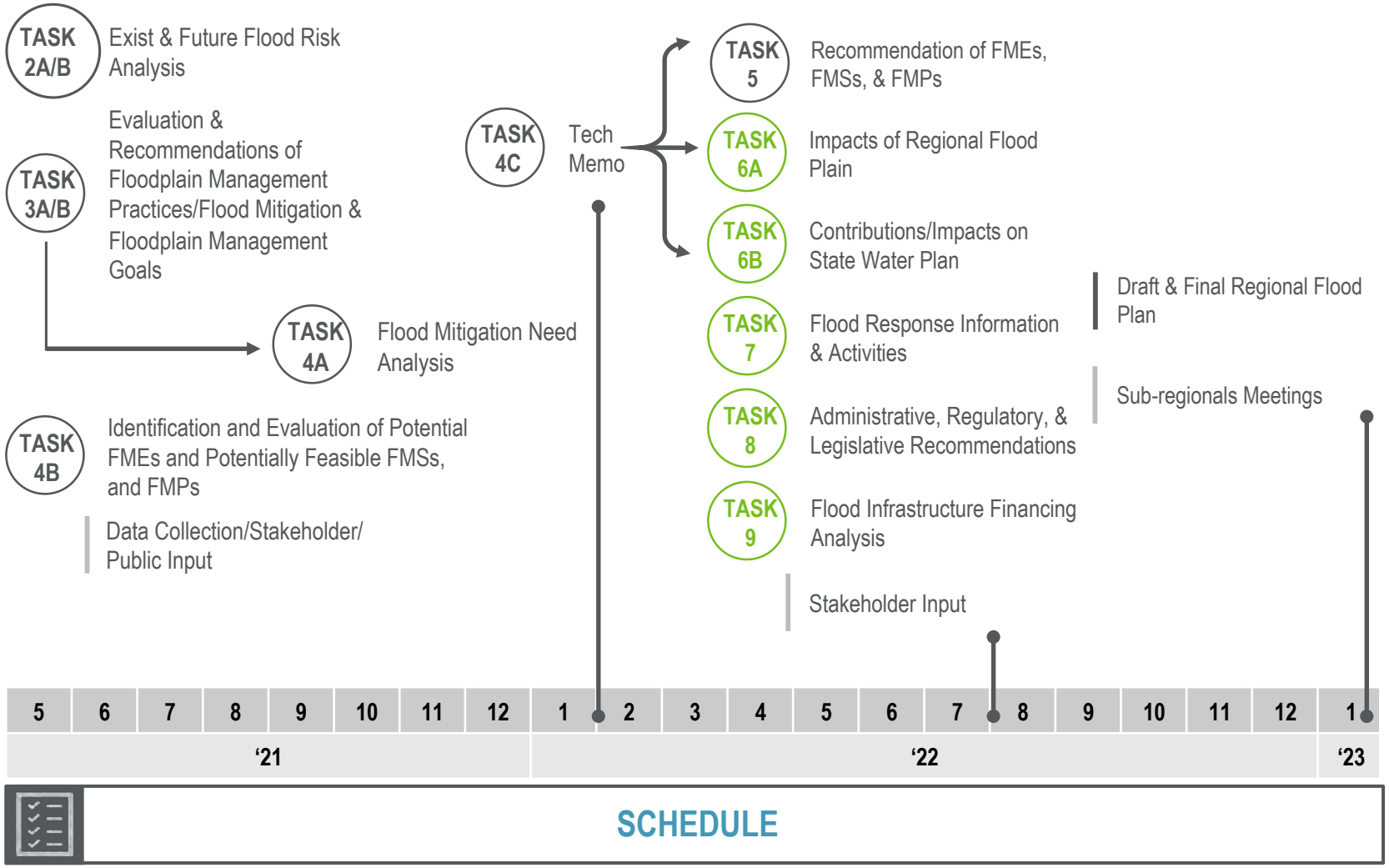
Region 12 Background

- **San Antonio Region Flood Planning Group (SARFPG)**
  - Created to represent diverse interest and to deliver the 2023 regional flood plan
- **Sponsor**
  - San Antonio River Authority
- **Technical Team**
  - HDR/Halff team selected as consultant to prepare plan

San Antonio Regional Flood Planning Group

- Flood Districts- Nefi Garza, *City of San Antonio (Chair)*
- River Authorities- Derek Boese, *SARA (Vice-Chair)*
- Water Districts- David Mauk, *Bandera Co River Authority & GWD*
- Municipalities- Jeffery Carrol, *City of Boerne*
- Agriculture- Brian Yanta, *Goliad County Ag-Extension*
- Counties- David Wegmann, *Bexar County*
- Electric-generating Utilities- Doris Cooksey, *CPS Energy*
- Environment- Debbie Reed, *Greater Edwards Aquifer Alliance*
- Industries- Cara Tackett, *Pape-Dawson Engineers*
- Non-Profit- Suzanne Scott, *Nature Conservancy*
- Public- John Beasley, *US Army Environmental Command*
- Small Business- Steve Gonzales, *Civil Tech Engineering, Inc.*
- Water Utilities- Steven Clouse, *SAWS*

TWDB Flood Planning Tasks



Schedule

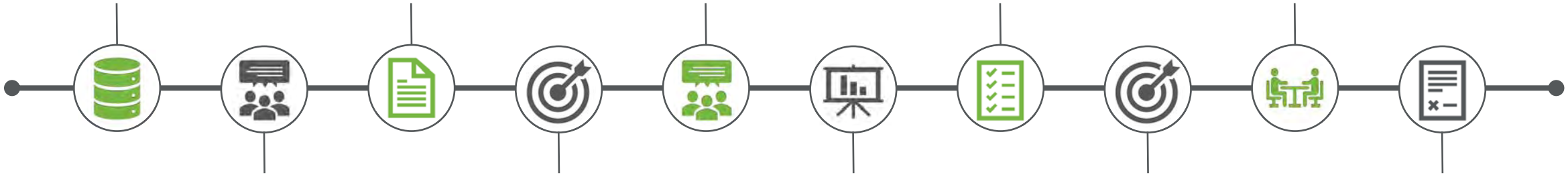
Updated Flood Risk Geodatabase – July 2021: Flood Risk Data used for base map for an interactive website for review and comment.

Draft Technical Memorandum – November 2021: We propose a workshop with you to review and collect comments for incorporation into the final document.

Regular RFPG Meeting Check-ins – February – July 2022: We will continue attending regular RFPG meetings to provide status updates on Tasks 5-9 progress.

Draft Plan – June 2022: We propose a workshop with you to review and collect comments on the Draft Plan to incorporate into the final Draft Plan.

Sub-regional Public Meeting(s) – September – October 2022: We will hold sub-regional public meetings to present the Draft Plan and incorporate public comments from the meetings and interactive website, along with TWDB's review comments into Final Plan.



Regular RFPG Meeting Check-ins – July – November 2021: We will attend regular RFPG meetings to provide status updates on Tasks 1-4 progress and discuss issues, decisions needed, action items, and next steps.

MAJOR DELIVERABLE- Technical Memorandum – January 7, 2022

Summary of Proposed Evaluations, Projects, and Strategies – May 2022: We propose a workshop with you to review preliminary list of potential flood management evaluations and potentially feasible flood mitigation projects and strategies.

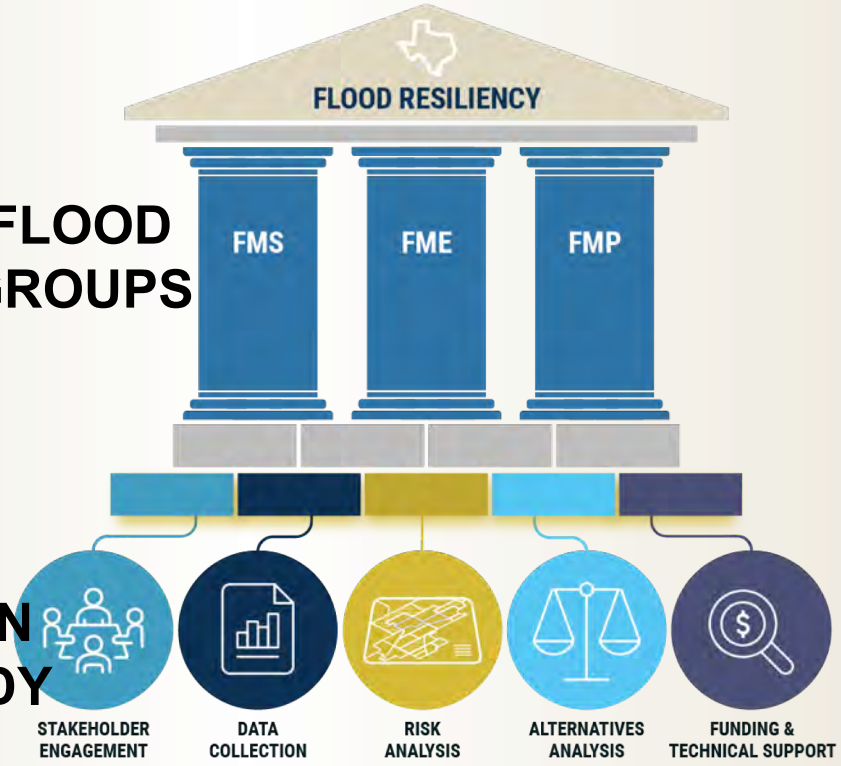
DELIVERABLE: Draft Plan – by August 1, 2022

December 2022: Once the Draft Final Plan is available, we will lead a workshop with you to review and collect final comments.

MAJOR DELIVERABLE: Final Plan – January 10, 2023

Additional Relevant Flood Studies and Coordination

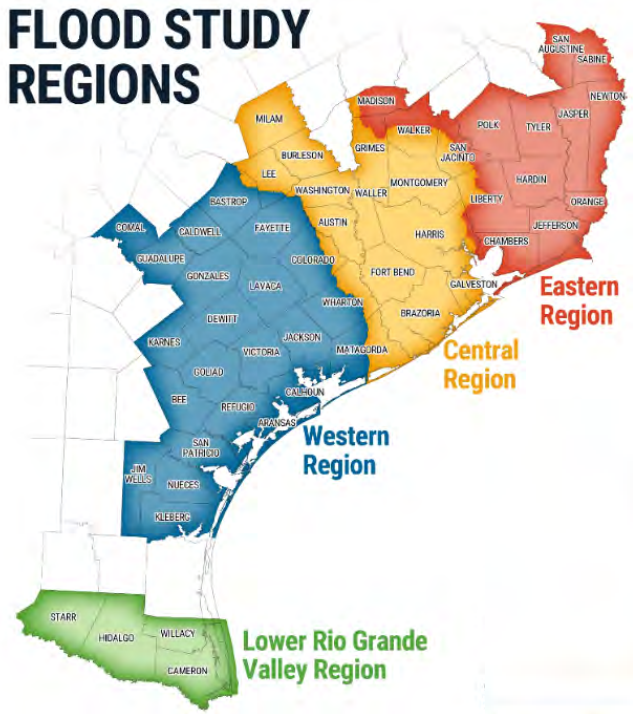
REGIONAL FLOOD PLANNING GROUPS



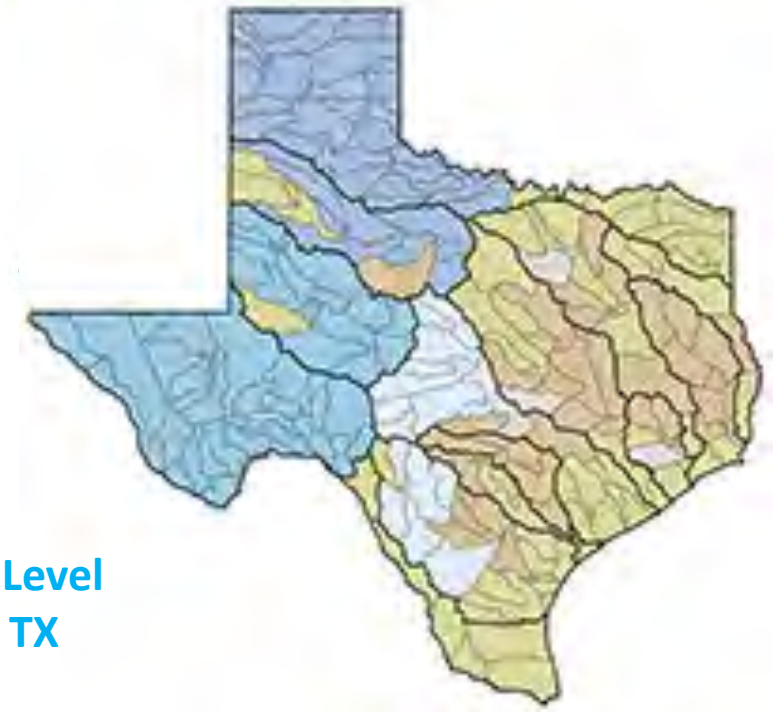
RIVER BASIN FLOOD STUDY

ACRONYMS

- FMS: Flood Management Strategies
- FME: Flood Management Evaluations
- FMP: Flood Mitigation Projects



GLO, Lower Rio Grande Valley Flood Study - TX

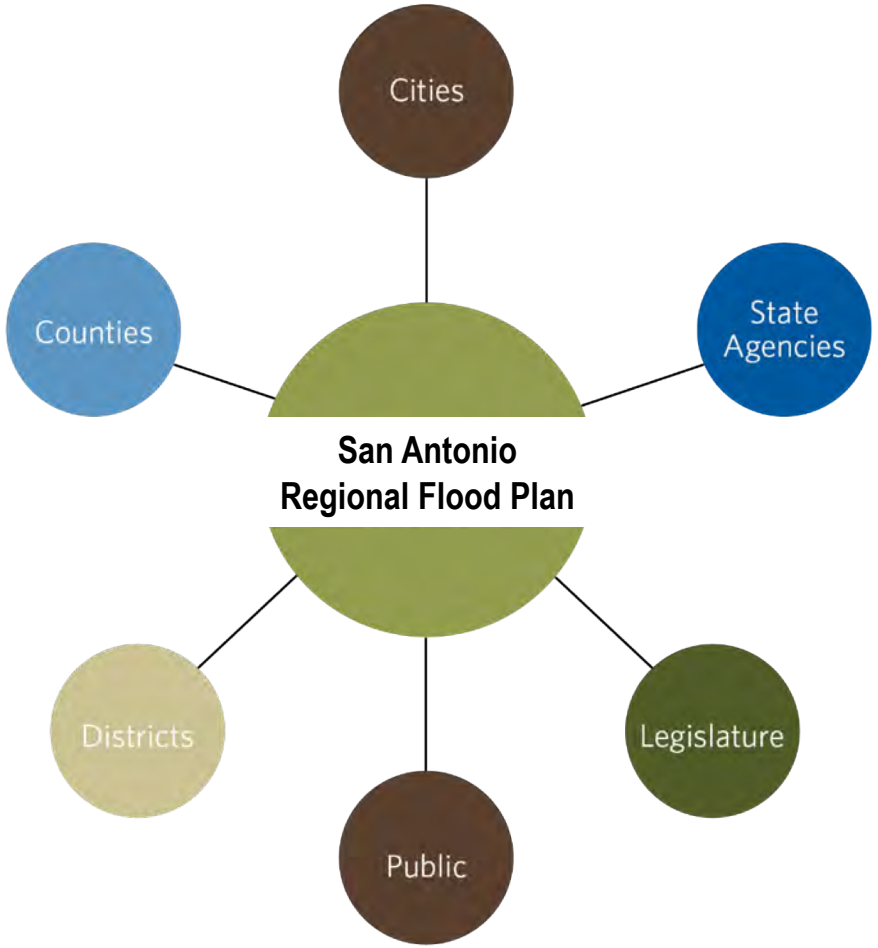


TWDB, Base Level Engineering- TX

Stakeholder Input

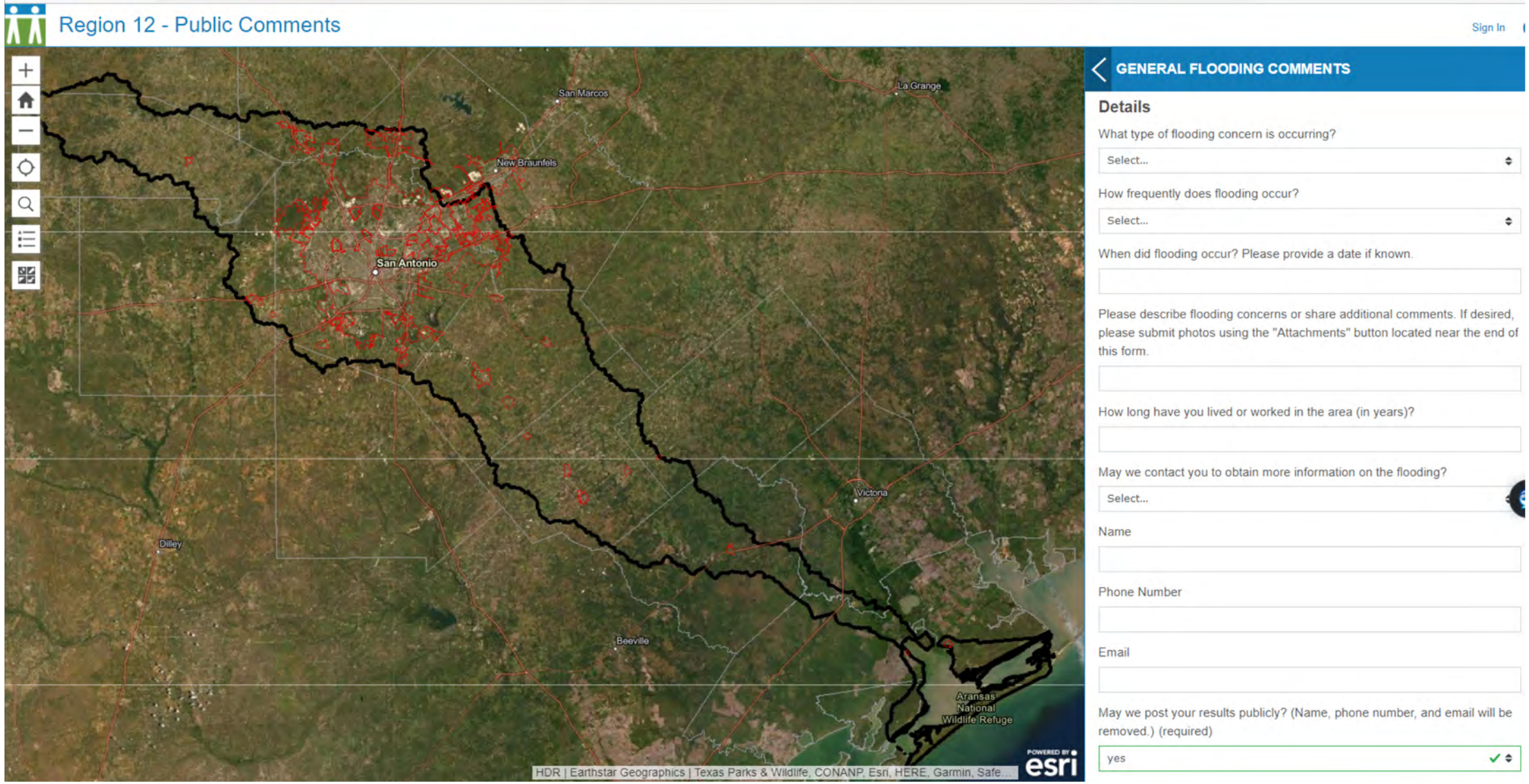
- Local knowledge, needs, and goals
  - **Flood Prone Areas**
  - Existing “Major” Flood Infrastructure
  - Proposed or Ongoing Flood Mitigation Projects
  - Existing flood management practices
  - Short- and long-term management goals
- Stay in touch through the Region 12 Website
- https://region12texas.org

  - *Anyone else that needs to be a part of this conversation?*



Interactive Comment Map

Region 12 - Public Comments (arcgis.com)



Stakeholder Input

- **Your insight is valuable**
  - Tell us your experience, where you have seen or know of flood concerns
  - A plan is only as good as the input
  - The flood plan needs to represent ALL community needs

- No one size fits all solutions, unique needs for each basin in the region

- **Funding opportunities for your much-needed projects**

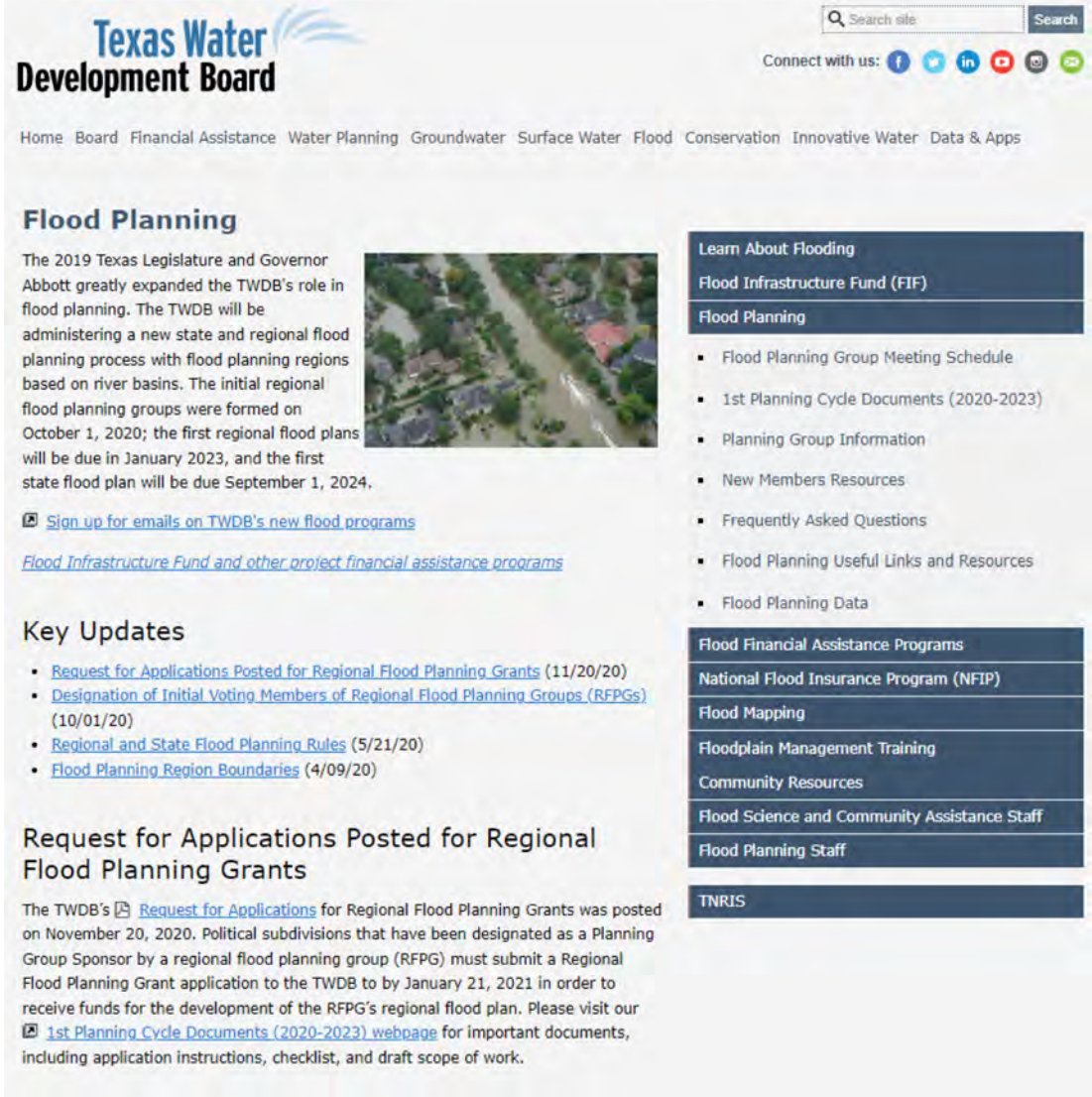
Stakeholder Input

HOW TO ENGAGE

- **Contact us- https://region12texas.wpengine.com/contact-us/**
- **Share the Region 12 Website https://www.region12texas.org**
- **Regional Flood Plan Meetings (all public)**
  - **Posted on Region 12 Website**
- **Stakeholder Surveys/ Interactive Map**

MORE INFORMATION ON STATE FLOOD PLANNING

https://www.twdb.texas.gov/flood/planning/index.asp



Any Questions

Contact info: Ron Branyon
Email: Ronald.branyon@hdrinc.com
Phone: 210.912.7105

Public Outreach
Flood Concerns Table

Comment Type	County	Flood Concern Type	Flood Freq	When Did It Start	Description	How Long (Yrs)
Feedback Form	Bandera		Frequently	8/2/2021	Frequent road and land that is getting worse every year	12
Feedback Form	Bandera				Attended to support low impact solutions to address water quality and flood oncerns while protecting natural infrastructure. Want county wide regulatory authority to manage just flood issues.	
Feedback Form	Bandera		Frequently	1997, 2002	Frequent Land flooding	30
Online Map	Bandera	Road	Few_Occasions	2016, 2015, 2002 - Major flood events	Closes the road down which is the main access for citizens	19
Online Map	Bandera	Road	Few_Occasions	2015, 2016, 2002 - Major Flood Events	Prevents access to citizens from the city	19
Online Map	Bandera	Road	Few_Occasions	Major storms	This low water crossing can sometimes remain flooded for months	12
Online Map	Bandera	Road	Few_Occasions	1978, 1998, 2002, 2015, and 2016	FM 2107 is the only path for residents to access community lifelines.	40
Online Map	Bandera	Road	Frequently	Minor and major flood events.	Impairs travel for citizens to reach community lifeline services.	40
Online Map	Bandera	Road	Frequently	Minor and major flood events	Lower Mason Creek and Bandera Creek contribute to flooding at SH 16.	40
Online Map	Bandera	Building	Frequently	Many minor and all major events	Wastewater treatment plant is in 100 yr floodplain	40
Online Map	Bandera	Building	Few_Occasions	Major flood events (1978)	Electrical sub-station	40
Online Map	Bandera	Road	Frequently	Rain, minor, and major flood events.	Bridge drainage is clogged.	40
Online Map	Bandera	Channel	Frequently	minor and major events	culverts are clogged at bridge.	40
Online Map	Bandera	Road	Frequently	Minor and Major Flood Events	blocks public access to lifelines in Bandera	40
Online Map	Bandera	Road	Frequently	Minor and Major Flood Events	Blocks people of Tarpley from EMS and other lifelines in the city of Bandera	40
Online Map	Kendall	Road	Frequently	<Null>	Road Overtops frequently in rain events at this low water crossing. In 2002 a fatality occurred at this location when car tried to drive thru the water.	20
Online Map	Kendall	Road	Frequently	overtops frequently. loss of life at his location in 2002	<Null>	20
Online Map	Kendall	Road	Few_Occasions	Memorial Day 2015	major intersection overtopped, limiting emergency response to area. see you tube video https://www.youtube.com/watch?v=qJJ6-2cFlNg	20
Online Map	Kendall	Other	Few_Occasions	<Null>	recent SARA studies show this location no longer providers 100-yr protection to City of Boerne.	20
Online Map	Kendall	Other	Few_Occasions	<Null>	recent SARA studies show this location no longer providers 100-yr protection to City of Boerne.	20
Online Map	Kendall	Other	<Null>	<Null>	recent SARA studies show this location no longer providers 100-yr protection to City of Boerne.	20
Online Map	Kendall	Other	Few_Occasions	<Null>	recent SARA studies show this location no longer providers 100-yr protection to City of Boerne.	20
Online Map	Kendall	Road	Frequently	<Null>	road overtops frequently after small rain events	20

Public Outreach
Flood Concerns Table

Comment Type	County	Flood Concern Type	Flood Freq	When Did It Start	Description	How Long (Yrs)
Online Map	Kendall	Road	Frequently	<Null>	road overtops frequently after small rain events	20
Online Map	Kendall	Road	Frequently	<Null>	road overtops frequently after small rain events	20
Online Map	Kendall	Road	Frequently	<Null>	road overtops frequently after small rain events	20
Online Map	Kendall	Road	Frequently	<Null>	road overtops frequently after small rain events	20
Online Map	Kendall	Road	Few_Occasions	<Null>	TxDOT structure undersized	20
Online Map	Kendall	Road	Few_Occasions	<Null>	TxDOT structure undersized	20
Online Map	Kendall	Road	Frequently	<Null>	road overtops frequently after small rain events	20
Online Map	Kendall	Road	Frequently	<Null>	road overtops frequently after small rain events	20
Online Map	Kendall	Road	Few_Occasions	<Null>	existing road structure undersized	20
Online Map	Kendall	Road	Few_Occasions	Memorial Day 2015	River Road (hwy46) is 6-8 feet underwater during rain event	20
Online Map	Kendall	Road	Frequently	<Null>	road overtops frequently after small rain events	20
Online Map	Kendall	Road	Frequently	<Null>	road overtops frequently after small rain events	20
Online Map	Kendall	Road	Frequently	<Null>	road overtops frequently after small rain events	20
Online Map	Kendall	Road	Few_Occasions	5 Year + Rain Events at Min	<Null>	8
Online Map	Kendall	Road	Few_Occasions	5 Year + Rain Events	In addition to going over the road, it is also flooding several homes near by.	8
Online Map	Kendall	Road	Frequently	5 Year + Rain Events	Flooding over the road, keeps BPD from being able to get to Boerne at fastest route.	8
Online Map	Bexar	Land	Few_Occasions	mid 2021	New development on old golf course causes flooding that affects the adjacent homes that are backing up to the course	17
Online Map	Kendall	Road	Frequently	<Null>	Old Fredericksburg Rd crosses Balcones Creek at the Kendall/Bexar County line. This low water crossing is frequently impacted.	14
Online Map	Bexar	Channel	Frequently	14-Oct-21	Our house and property are located in the southeast corner of Cedar springs neighborhood in Helotes. The tail and of the French Creek drainage project passes along 430 feet of our property line between our house and the ditch is a green belt approximately 60 to 80 ft wide. On October 13 or 14 The ditch overflowed and put about 6 in of water up on our driveway, One about 170 ft from the ditch. Our neighbors on the other side of the ditch the Fores received several feet of water in their house. This is the second or third time their house has flooded because of the ditch. I have submitted comments on January 11th at the region 12 flood planning public meeting held in St Hedwig the.	3

Public Outreach
Flood Concerns Table

Comment Type	County	Flood Concern Type	Flood Freq	When Did It Start	Description	How Long (Yrs)
Online Map	Bexar	Building	Frequently	Last date Oct 12.	We built our home in 2000. Since construction development and Frenchcreek flood project it occurred twice last year. When we built home their was only a small part of creek that was in flood zone. Since construction and especially being at the end of the Frenchcreek project the surface water has been directed at our home. The water is rushing and we have no way of escaping. The project did not consider the creek bottles necks below our property making the increase of water to rush at our home placing us in danger. We would appreciate any help you can give us to prevent flooding of our home and neighbors. We did not flood at all until county did land across the creek. Now that we have more water directed at us we fear for our lives. Please see attach pictures of last flood. We are pleading for help.	21 years
Online Map	Bexar	Channel	Few_Occasions	Oct-21	The flooding of Strong Cedar street in Helotes has caused the cul-de-sac street to fill up with water. The water from the French Creek drainage project has risen above the curbs and goes a few feet up past the sidewalks towards our houses. The flooding in the street is so high at points that if our cars were left in the street water would get inside.	20
Online Map	Wilson	Road	Frequently	last time was 9/10/2020	The Marcelinas Creek has caused erosion to progress close to the county road right of way threatening the loss of the roadway.	20 yrs
Online Map	Bexar	Road	Frequently	Oct-21	<Null>	35
Online Map	Bexar	Land	Few_Occasions	<Null>	flooding in heavy rain occasion	35
Online Map	Bexar	Road	Few_Occasions	<Null>	complete road flooding on heavy rain occasion	35
Online Map	Bexar	Road	Few_Occasions	<Null>	complete road flooding on heavy rain occasion	35
Online Map	Bexar	Building	Frequently	2001 - current	Alley runoff floods abutting garage and has crossed street to enter onto other property. Additional 18" of base added to drives to prevent water from entering home.e	27 years
Online Map	Medina	Channel	Frequently	<Null>	Widespread creek flooding.	<Null>
Online Map	Medina	Channel	Frequently	<Null>	Widespread creek flooding.	<Null>
Online Map	Medina	Building	Frequently	<Null>	Frequent localized flooding of structures	<Null>
Online Map	Medina	Building	Frequently	<Null>	Frequent flooding of structures	<Null>

Public Outreach
Flood Concerns Table

Comment Type	County	Flood Concern Type	Flood Freq	When Did It Start	Description	How Long (Yrs)
Online Map	Guadalupe	Road	Few_Occasions	After any significant rainfall	Green Valley and Creek roads in northern Guadalupe County flood from Santa Clara Creek during rainfall events	4-5 years
Online Map	Bexar	Road	Few_Occasions	1998 was most severe	Decades of illegal fill placement in Indian Creek north of 410 south has essentially dammed the stream and high flow times now flood Somerset Road as well as adjacent properties. This has significantly elevated the 100 year flood plane in these areas. IMPORTANTLY, Somerset Road is a major thoroughfare and rectifying this flooding in the future will be extremely expensive. Indian Creek should be rechannelized to its original state.	35 years
Online Map	Bexar	Land	Frequently	May-21	51 neighbor's property flood, water in houses and garages, 10 acres	12 years
Online Map	Guadalupe	Road	Frequently	Several times every year when it rains	Green Valley and Creek and parts of Weil roads flood frequently.	5 years
Online Map	Bexar	Land	Unknown	<Null>	The vegetation is overgrown causing it to slow the flow of stormwater. In the vicinity of 640 Meadow Arbor Lane, Universal City, TX. . . east branch of Salatrillo Creek, where it crosses under 1604 near Kitty Hawk, to Meadowland Drive (and beyond) is overgrown, slowing runoff of storm waters. Last major rains it almost overflowed to houses on Meadow Arbor. City of UC does not adequately mow and/or dredge this area. They claim they can't mow it because it is always wet. They need special equipment to help them clean up this area, or, for someone else to come in and gain control of it. It's not a "big" flood concern, unless, you live there! (I don't, but have friends who do!)	<Null>
Feedback Form	Refugio	Road	<Null>	<Null>	Culvert improvement on Hatch St in Tivoli. The bridge on Hatch Street in Tivoli was replaced with a culvert which drains slow and causes the water to breach the levee.	<Null>
Feedback Form	Refugio	Channel	Frequently	<Null>	Culvert Improvement on Highway 239 in Tivoli. Some culverts on Highway 239 in Tivoli are too small causing water to get in houses.	<Null>
Feedback Form	Refugio	Channel	Unknown	<Null>	Underground Drain Maintenance in Tivoli. Underground drains in Tivoli on Highway 239, William Street and Wilson Street need cleaning. The blockage causes water to drain slow and creates potential flooding hazards	<Null>
Feedback Form	Refugio	Channel	Frequently	<Null>	Ditches and culverts Maintenance in Tivoli. Ditches and culverts in Tivoli need cleaning on Scott Street, Dedear Road, Bissett Road, Oleander Avenue, Garza Street, Villarreal Street, Lee Street, Eugen Lane and Raymond Lane, Layton Lane, and Bickford Road	<Null>
Feedback Form	Refugio	Land	Frequently	<Null>	Miller Creek on the Smoky Creek Ranch Drainage Improvements	<Null>
Feedback Form	Refugio	Road	Unknown	<Null>	The bridge on J.W. Johnson in Tivoli is in bad shape and needs to be replaced.	<Null>
Online Map	Kendall				Old Fredericksburg Rd crosses Balcones Creek at the Kendall/Bexar County line. This low water crossing is frequently impacted.	14

Appendix D. Draft 2023 San Antonio Regional Flood Plan Comments

TWDB Draft Plan Comments

TWDB Draft Plan Comments Response Log

Public Draft Plan Comments

- Great Springs Project
- Texas Parks and Wildlife Department
- Greater Edwards Aquifer Alliance
- Camp Bullis Sentinel Landscape Partnership
- National Wildlife Federation
- Other

Public Draft Plan Comments Response Log

- Great Springs Project
- Texas Parks and Wildlife Department
- Greater Edwards Aquifer Alliance
- Camp Bullis Sentinel Landscape Partnership
- National Wildlife Federation
- Other

TWDB Final Plan Comments

TWDB Final Plan Comments Response Log

Texas Water Development Board

P.O. Box 13231, 1700 N. Congress Ave.
Austin, TX 78711-3231, www.twdb.texas.gov
Phone (512) 463-7847, Fax (512) 475-2053

October 21, 2022

Mr. Brian Mast
Manager of Government Affairs
San Antonio River Authority
100 E Guenther St,
San Antonio, TX 78204

RE: Texas Water Development Board Comments on Region 12 San Antonio RFPG's Draft Regional Flood Plan Contract No. 210792497

Dear Mr. Brian Mast:

Texas Water Development Board (TWDB) staff has performed a review of the draft regional flood plan submitted by August 1, 2022, on behalf of the Region 12 San Antonio Regional Flood Planning Group (RFPG). The attached comments will follow this format:

- **LEVEL 1**: Comments and questions that must be satisfactorily addressed to meet specific statute, rule, or contract requirements; and,
- **LEVEL 2**: Comments and suggestions for consideration that may improve the readability and/or overall understanding of the regional flood plan

Please note that while Level 2 comments are provided for the planning group's consideration, Level 1 comments must be addressed prior to the submission of final Regional Flood Plans by the January 10, 2023, deadline.

It is expected that the data contained in all written report sections, tables, excel spreadsheets, and the geodatabase will be consistent throughout. In cases where there are any discrepancies in data, the geodatabase dataset will supersede other data and the TWDB will utilize the geodatabase dataset when developing the state flood plan.

TWDB review of the draft regional flood plans is comprised of many spot checks of data across several deliverables and is not an all-encompassing review. Please note that TWDB's review does not imply accuracy of the data or draft regional flood plan. Each RFPG is responsible for ensuring the completeness and accuracy of all data.

To facilitate efficient and timely completion, and Board approval, of your final regional flood plan, please provide your TWDB Regional Flood Planner with a draft of your response to these comments (e.g., informally via email) on the draft RFP as soon as possible. This will allow TWDB staff to provide preliminary feedback on proposed RFPG responses to assist you in meeting your RFPG's timeline for approval and submission to TWDB of the final plan by the deadline. It will also help to minimize the need for subsequent follow-ups after final regional flood plan submission to TWDB.

Texas Water Development Board

P.O. Box 13231, 1700 N. Congress Ave.
Austin, TX 78711-3231, www.twdb.texas.gov
Phone (512) 463-7847, Fax (512) 475-2053

Title 31 TAC §361.50(c) requires the regional flood planning group to consider any written or oral Comment received from the public on the draft regional flood plan (RFP); and the EA's written comment on the draft RFP prior to adopting a final RFP. Section 361.50(d) requires the final adopted plan include summaries of all timely written and oral comments received, along with a response, for each, explaining any resulting revisions or why changes are not warranted. Copies of TWDB's Level 1 and 2 written comments and the RFPG's responses must be included in the final, adopted RFP. While the comments included in this letter represent TWDB's review to date, please anticipate the need to respond to additional comments or questions, as necessary, regarding data integrity related to the Board's State Flood Plan Database (that is built from the 15 regional databases), even after submission of the final plan to TWDB.

Standard to all RFPGs is the need to include certain content in the final RFPs that was not yet available at the time that drafts were prepared and submitted. In your final RFP, please be sure to incorporate in the final submitted plan, documentation, for example, that a public meeting to receive comments was held as required and that comments received on the draft RFP were considered in the development of the final plan [31 TAC §361.50(d)].

If you have any questions regarding these comments or would like to discuss your approach to addressing any of these comments, please do not hesitate to contact Anita Machiavello at (512) 463-5158 via email at anita.machiavello@twdb.texas.gov. TWDB staff are available to assist you in any way possible to ensure successful completion of your final regional flood plan.

Lastly, on behalf of TWDB, I would like to thank you, the sponsor, the RFPG members and the technical consultants for accomplishing this major milestone of a herculean effort and advancing the flood risk reduction mission in our state.

Sincerely,

Reem J. Zoun, PE, CFM, ENV SP
Director
Flood Planning

Attachment: TWDB Comments

Cc: Derek Boese, RFPG Chair
Ronald Branyon, HDR, Inc.
Troy Dorman, Halff Associates
Matt Nelson, TWDB
James Bronikowski, TWDB
Anita Machiavello, TWDB

October 21, 2022

TWDB Comments on Region 12 San Antonio Regional Flood Planning Group's Draft Regional Flood Plan

Level 1: Comments and questions must be satisfactorily addressed to meet statutory, agency rule, and/or contract requirements.

General Comments

1. Please ensure that all "Submittal requirements" identified in each of the Exhibit C Guidance document sections are submitted in the final flood plan.

SOW Task 1

2. Existing Infrastructure GIS Feature Class, ExFldInfraPt: Please include all low water crossings (LWCs) identified during the flood planning process in this feature layer. The ExFldExpAll feature class appears to contain LWCs that are not included in the ExFldInfraPt feature class. Note: This is required in contrast to the optional LWC feature class. See Exhibit D Table 7 for a list of valid entries [31 TAC §361.31].Existing Projects (Exhibit C Table 2): Some of the projects in Table 2 do not appear to include an Expected Year of Completion. Please populate the expected year of completion field for all ongoing projects. [31 TAC §361.32(3)].
3. Existing Projects GIS Feature Class, *ExFldProjs*: Some required fields appear to be missing entries, including 'EXHAZ_ID', 'COST', and 'COMP_YR'. For 'EXHAZ_ID', please leave NULL or '999999' if there is no data. Please complete all required fields with valid entries per [31 TAC §361.32 & Exhibit D Table 8].

SOW Task 2A

4. Existing Condition Flood Exposure (Exhibit C Table 3):
    a. The day and night populations in Table 3 do not appear to match the *ExFldExpAll* feature class counts. Please review and reconcile.
    b. The Structure and Residential Structure counts in Table 3 do not appear to match the *ExFldExpAll* feature class counts. Please review and reconcile. [31 TAC §361.33 & Exhibit C 2.2.A.3].
5. Existing Condition Flood Vulnerability GIS Feature Class, *ExFldExpAll*:
    a. The day and night populations in Table 3 do not appear to match the *ExFldExpAll* feature class counts. Please review and reconcile.
    b. The Structure and Residential Structure counts in Table 3 do not appear to match the *ExFldExpAll* feature class counts. Please review and reconcile. [31 TAC §361.33(c), (d) & Exhibit C 2.2.A.2].
6. Model Coverage GIS Feature Class, *ModelCoverage*: It appears that some fields are missing entries, including 'MODEL_DESCR'. Please complete all required fields with valid entries per TWDB email Jan 31, 2022. [31 TAC §361.33(b)(2)].

SOW Task 2B

7. Future Condition Flood Hazard Vulnerability, *Text*: Please expand the description of the future conditions vulnerability analysis by considering factors such as proximity to a floodplain, proximity to other bodies of water, past flooding issues, emergency management plans, and location of critical systems like primary and back-up power. [31 TAC §361.34 & Exhibit C 2.2.B.3].

SOW Task 3B

8. Goals, *Text*: Tables 3-5 through 3-9 in Chapter 3 contain 36 goals, while the Exhibit C Table 11 and *Goals* feature class appears to contain 33 goals. Please review and reconcile for consistency. [31 TAC §361.36 & Exhibit C 2.3.B].
9. Goals (Exhibit C Table 11):
    a. It appears that some fields are missing entries, including Residual Risk. Please complete all required fields with valid entries
    b. Tables 3-5 through 3-9 in Chapter 3 contain 36 goals, while the Exhibit C Table 11 and *Goals* feature class appears to contain 33 goals. Please review and reconcile for consistency. [31 TAC §361.36 & Exhibit C 2.3.B].
10. Goals GIS Feature Class, *Goals*:
    a. It appears that the required field 'RESIDUAL' contains only NULL values. Please ensure required fields are populated with valid entries per Exhibit D Table 21 [31 TAC §361.36].
    b. Tables 3-5 through 3-9 in Chapter 3 contain 36 goals, while the Exhibit C Table 11 and *Goals* feature class appears to contain 33 goals. Please review and reconcile for consistency. [31 TAC §361.36].

SOW Task 4B

11. Flood Management Evaluation (Exhibit C Table 12): Some FMEs list $0 for Estimated Study Cost (i.e., FME_IDs 121000015 and 121000033). Please review these FMEs for accuracy and reconcile as needed. [31 TAC §361.38(i) & Exhibit C 2.4.B].
12. Flood Management Evaluations GIS Feature Class, *FME*: It appears that some fields are missing entries, including 'NEW_MODEL', 'HUC8', 'FLD_TP_RIV', and 'FLD_TP_LOC'. Please complete all required fields with valid entries per Exhibit D Table 23.
13. Flood Management Evaluation (Exhibit C Map 16): Please indicate on the map whether the identified FME area is associated with a previously studied area that requires an update or if the identified study area does not have any existing or anticipated flood mapping, models, etc., and therefore requires an initial study. [31 TAC §361.38(m)].
14. Flood Mitigation Project GIS Feature Class, *FMP*: It appears that some fields are missing entries, including 'HUC8', 'FLD_TP_RIV', 'FLD_TP_LOC', and 'ASSOCIATED'. Please populate all required fields with valid entries per Exhibit D Table 24. [31 TAC §361.38(c-e) & Exhibit D 3.11.1].
15. Flood Mitigation Strategies GIS Feature Class, *FMS*: It appears that some fields are missing entries, including 'ENTITY_ID', 'NEG_IMPACT', and 'ASSOCIATED'. Please complete all required fields with valid entries per Exhibit D Table 26. For ENTITY_ID, leave NULL or '999999' if there is no data.

SOW Task 5

16. Flood Management Evaluation Recommendations (Exhibit C Table 15): Some FMEs list $0 for Estimated Study Cost (i.e., FME_IDs 121000015 and 121000033). Please review these FMEs for accuracy and reconcile as needed. [31 TAC §361.39(c), (f) & Exhibit C 2.5.A].
17. Flood Management Evaluation Recommendations GIS Feature Class, *FME*:
    a. It appears that some fields are missing entries, including 'NEW_MODEL', 'HUC8', 'FLD_TP_RIV', and 'FLD_TP_LOC'. Please complete all required fields with valid entries per Exhibit D Table 23.
18. Flood Mitigation Projects, *Text*:
    a. The description of No Negative Impact Determinations on pages 5-30 and 5-31 references Table 5-4 that would include "A general description of the scope of work and a summary of the expected impacts of the proposed improvements for each potentially feasible FMP", however, this table could not be located. Please reconcile. [31 TAC §361.39 & Exhibit C 2.5.B].
    b. Each recommended FMP must be accompanied with an associated model or supporting documentation to show no negative impact. Please confirm that this was done and provide reference to supporting materials. As per the draft report (page 5-31), "A comparative assessment of pre- and post-project conditions for the 1% annual chance event (100-yr flood) was performed for each potentially feasible FMP based on their reported hydrologic and hydraulic model results. Study results for floodplain boundary extents, resulting water surface elevations, and peak discharge values were reviewed to verify potential FMPs conform to the no negative impacts requirements." For each recommended FMP, please identify in the plan how no negative impact was determined as required by the Exhibit C Section 3.6.A (page 108), either via a model or a study, and submit the associated model or include the study name in tabular format.
19. Flood Mitigation Projects Recommendations (Exhibit C Table 16):
    a. FMP_ID 123000021 does not appear to include a BCR in Table 13, Table 16, FMP_Details table, and the *FMP* feature class. Please populate the BCR field Table 13, Table 16, and FMP Details table, and populate the 'BC_RATIO' field in the *FMP* feature class as required. If no BCR is available, please remove this FMP from the recommended FMP list in the plan.
    b. Twenty-seven recommended FMPs list "Y" for Negative Impact and are blank for Negative Impact Mitigation. Please review these FMPs to ensure accuracy of these data fields.§361.39
    c. It appears that some fields are missing entries, including Water Supply Benefit. Please complete all required fields with valid entries per Exhibit C Table 16. [31 TAC §361.39 & Exhibit C 2.5.B].
20. Flood Mitigation Project Recommendations GIS Feature Class, *FMP*:
    d. It appears that some fields are missing entries, including 'HUC8', 'FLD_TP_RIV', 'FLD_TP_LOC', and 'ASSOCIATED'. Please complete all required fields with valid entries per Exhibit D Table 24.
    e. Twenty-seven recommended FMPs list "Yes" for 'NEG_IMPACT' and "No" for 'NEG_MITIG'. Please review these FMPs to ensure accuracy of these data fields. [31 TAC §361.39 & Exhibit D 3.11.1].
21. Flood Mitigation Project Details Geodatabase, *FMP_Details*: The FMP Details table provided in the geodatabase appears blank. Please complete as required in §361.40

22. Flood Mitigation Strategies Recommendations GIS Feature Class, FMS: It appears that some fields are missing entries, including 'ENTITY_ID', 'NEG_IMPACT', and 'ASSOCIATED'. Please complete all required fields with valid entries per Exhibit D Table 26. For 'ENTITY_ID', leave NULL or 999999 if there is no data. [31 TAC §361.39 & Exhibit D 3.10].

Level 2: Comments and suggestions for consideration that may improve the readability and overall understanding of the regional flood plan.

General Comments

23. To better align with our agency's preferred nomenclature, please consider using the name, "Cursory Floodplain Data" instead of "Fathom" or Cursory Fathom Data" throughout the regional flood plan.

SOW Task 1

24. Watersheds GIS Feature Class, *Watersheds*: Please populate the applicable ID fields to associate the *Watersheds* feature class with identified FME/FMS/FMP.
25. Existing Infrastructure, Text: Please provide a description of how Low Water Crossings were identified within the text of Chapter 1.
26. Existing Infrastructure GIS Feature Class, *ExFldInfraPt*: There appear to be Low Water Crossings in the TNRIS dataset which do not appear to be included in the *ExFldInfraPt* feature class. Please consider reviewing the TNRIS dataset for potential inclusion.
27. Deficient Infrastructure (Exhibit C Map 3): Please consider renaming map to Non-Functional or Deficient Infrastructure since the map includes dams and levees.
28. Existing Projects, *Text*:
    a. Please refer to Table 2 in the text of Chapter 1.
    b. Please ensure Map 2 is referenced in a similar manner. Chapter 4 is referenced in the text of Chapter 1 (and Chapter 4 references Map 2), however, for the sake of ease and convenience, please consider providing the reference to the Map 2 in Chapter 1 (in addition to the map's reference in Chapter 4). It appears all of this can be accomplished by referencing Table 2 and Map 2 within the following sections: "1.12.4 Proposed or Ongoing Flood Mitigation Projects" and "1.12.5 Implementation of Nonstructural Flood Mitigation Projects" in Chapter 1 (as well as Chapters 4).
29. SOW Task 2AExisting Condition Flood Exposure GIS Feature Class, *ExFldExPol*:
    a. The agricultural coverage layers appear to have irregular triangle and rectangular features that may be a result of the conversion of a raster to polygon.
    b. The agricultural coverage layers appear to have irregular triangle and rectangular features that may be a result of the conversion of a raster to polygon. Please review and revise, as appropriate.
30. Existing Condition Flood Exposure Vulnerability GIS Feature Class, *ExFldExpAll*: It appears that some entries with 'EXP_TYPE' listed as "Other" may better fit in the provided 'EXP_TYPE' valid entries. Please consider reviewing and revising as appropriate using the updated 'CRIT_TYPE' valid entry list: "Medical, Police, Fire, EMS, Shelter, School, Infrastructure, Water Treatment, Wastewater Treatment, Power Generation, Other".
31. Existing Condition Vulnerability: Please consider modifying the map color scheme to enhance critical infrastructure legibility.

32. Model Coverage, *Text*: Please consider providing a table of models within Chapter 2 or appendix that includes the modeling information contained in the *ModelCoverage* feature class.

SOW Task 2B

33. Future Condition Flood Hazard Map Gaps (Exhibit C Map 9): Please consider changing the colors used for the Unknown future flood hazard and the areas where Cursory Floodplain Data (Fathom data) was used.
34. Future Condition Flood Exposure GIS Feature Class, FutFldExpPol:
    a. The agricultural coverage layers appear to have irregular triangle and rectangular features that may be a result of the conversion of a raster to polygon. Please review and revise.
    b. Bldg_IDs 6025014 and 6331393 both appear to be within the extent of the *FutFldHazard* layer but do not appear to be identified in the *FutFldExpPol* feature class.
    c. Bldg_ID 6080782 (A Hospital) appears to be within the extent of the extent of the *FutFldHazard* layer but does not appear to be identified in the *FutFldExpPol* feature class.
    d. Bldg_ID 6028788 (A power generating facility) appears to be within the extent of the extent of the *FutFldHazard* layer but does not appear to be identified in the *FutFldExpPol* feature class.
    e. Please review the FutFldHazard layer confirm that buildings within the extent are properly identified in the *FutFldExpPol* feature class. Some buildings do not appear to include the entire building footprints.
35. Future Condition Flood Exposure Vulnerability GIS Feature Class, FutFldExpALL: FTEXPALLID 156611 is the site of San Antonio Fire Department Station 49, however, it does not appear to be identified as critical infrastructure. Please consider reviewing all critical infrastructure layers and modify, as appropriate, to identify them in the *FutFldExpAll* feature class.

SOW Task 4B

36. Streams GIS Feature Class, Streams:
    a. Please consider linking this feature class to any relevant FMEs, FMSs, or FMPs when appropriate by populating the associated ID fields.
    b. Please ensure that identified streams are within the boundary of the associated FME, FMP, and FMS.
37. Flood Management Evaluation, *Text*: In areas where there is an ongoing TWDB-funded FIF Category 1 study, please consider describing how duplication of efforts would be avoided and how FIF Category 1 study data would be incorporated into the proposed FMEs. For example, several FMEs appear to overlap spatially with current FIF Category 1 funded Karnes County Flood Protection Planning Study (FIF ID 40011).
38. Flood Management Evaluation (Exhibit C Table 12) In areas where there is an ongoing TWDB-funded, FIF Category 1 study, please consider describing how duplication of efforts would be avoided and how FIF Category 1 study data would be incorporated into the proposed FMEs. For example, several FMEs appear to overlap spatially with current FIF Category 1 funded Karnes County Flood Protection Planning Study (FIF ID 40011).

39. Flood Management Evaluation (Exhibit C Map 16):
    a. Map 16 does not include region-wide FMEs. Please consider providing an additional map that would show all of the FMEs within the region.
    b. Please include TWDB-funded, FIF Category 1 studies in the indication of a previously studied area.
40. Flood Mitigation Projects (Exhibit C Table 13): Some FMPs list "0" for Project Area. Please review and ensure that these values are accurate.
41. Flood Mitigation Projects GIS Feature Class, *FMP_HazPost*: Please consider developing a *FMP_HazPost* feature class showing an updated hazard area that accounts for the impact of recommended FMPs.
42. Flood Mitigation Project (Exhibit C Map 17): Consider providing a zoomed in "inset" map of the San Antonio area to improve the legibility of the FMP extents.
43. Flood Mitigation Strategies GIS Feature Class, *FMS*: For county-wide watershed strategies where majority of the county falls outside of the RFPG boundary, please include justification how the strategy benefits the region and please coordinate with other RFPGs to make sure the efforts are not duplicated.

SOW Task 5

44. Flood Management Evaluation Recommendations, *Text*: In areas where there is an ongoing TWDB-funded, FIF Category 1 study, please consider describing how duplication of efforts would be avoided and how FIF Category 1 study data would be incorporated into the proposed FMEs. For example, several FMEs appear to overlap spatially with current FIF Category 1 funded Karnes County Flood Protection Planning Study (FIF ID 40011).
45. Flood Management Evaluation Recommendations (Exhibit C Table 15): In areas where there is an ongoing TWDB-funded, FIF Category 1 study, please consider describing how duplication of efforts would be avoided and how FIF Category 1 study data would be incorporated into the proposed FMEs. For example, several FMEs appear to overlap spatially with current FIF Category 1 funded Karnes County Flood Protection Planning Study (FIF ID 40011).Flood Management Evaluations GIS Feature Class, *FME*: Please consider adding the 'ASSOCIATED' field to the *FME* feature class and populating as applicable.

SOW Task 9

46. Please consider providing the supporting calculation and supporting data that is the basis for the statement: “Of this $1,184,840,000 it is projected that $1,005,017,000 in state and federal grant funding is needed for implementation of these projects”. (Page 9-16).
47. Flood Infrastructure Financing Analysis text: Please review section for language accuracy. Please consider revising "rant" to "grant" in the subtitle of Chapter 9.1.6.
48. Water Supply, *Text*:
    a. Table 6-6 in Section 6.6 does not appear to include the estimated, quantified annual volume of water associated with the three identified FMPs. Please review and reconcile. [31 TAC §361.41 & Exhibit C 2.6.B].
    b. On p. 6-6, there is a brief discussion about coordination with RWPGs to determine impacts on WMSs. The text states that the results of coordination are presented in "the following tables", but the tables appear to not be included. Please include a

summary and a table identifying any negative impacts to water supply. If no negative impacts are identified, please include a statement to that effect.

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Level 1	1	Plan	General Comment	1.Please ensure that all “Submittal requirements” identified in each of the Exhibit C Guidance document sections are submitted in the final flood plan.	Agree.
Level 1	2	GIS	SOW Task 1	2. a. Existing Infrastructure GIS Feature Class, ExFldInfraPt: Please include all low water crossings (LWCs) identified during the flood planning process in this feature layer. The ExFldExpAll feature class appears to contain LWCs that are not included in the ExFldInfraPt feature class. Note: This is required in contrast to the optional LWC feature class. See Exhibit D Table 7 for a list of valid entries [31 TAC §361.31]. b. Existing Projects (Exhibit C Table 2): Some of the projects in Table 2 do not appear to include an Expected Year of Completion. Please populate the expected year of completion field for all ongoing projects. [31 TAC §361.32(3)].	a. There are a total of 496 LWC's identified in the ExFldInraPt layer, this was reduced/modified from the original TNRIS LWC dataset based on the comment from March 7th about locations of the ExFldExpPt layer not lining up with Road and Stream CL. Of the 496 LWC identified in the ExFldInfraPt layer 443 were identified in the submittal ExFldExpPt layer. However after doing a select by location on the LWC in the ExFldInfraPt layer only 441 LWC's were selected. This indicated that there was a change that was not capture in the submittal. Reran the ExFldExpPt layer to fix. b. Agree. Years of completion have been updated based on the most up to date available information.
Level 1	3	GIS	SOW Task 1	3.Existing Projects GIS Feature Class, ExFldProjs: Some required fields appear to be missing entries, including 'EXHAZ_ID', 'COST', and ‘COMP_YR’. For 'EXHAZ_ID', please leave NULL or ‘999999’ if there is no data. Please complete all required fields with valid entries per [31 TAC §361.32 & Exhibit D Table 8].	Agree, attributes have been updated based on the most up to date available information. Some of the ExFldProjs do not intersect with the floodplains, the EXHAZ_ID for those will be NULL.
Level 1	4	Plan	SOW Task 2A	4.Existing Condition Flood Exposure (Exhibit C Table 3): a. The day and night populations in Table 3 do not appear to match the ExFldExpAll feature class counts. Please review and reconcile. b. The Structure and Residential Structure counts in Table 3 do not appear to match the ExFldExpAll feature class counts. Please review and reconcile. [31 TAC §361.33 & Exhibit C 2.2.A.3].	a. After spot checking some counties it does appear to match. b. However, there a instances where buildings are in more than one county and to prevent duplicate counting the location of the ExFldExpAll point is taken into account and only reported for whichever county it falls within.
Level 1	5	GIS	SOW Task 2A	5.Existing Condition Flood Vulnerability GIS Feature Class, ExFldExpAll: a. The day and night populations in Table 3 do not appear to match the ExFldExpAll feature class counts. Please review and reconcile. b. The Structure and Residential Structure counts in Table 3 do not appear to match the ExFldExpAll feature class counts. Please review and reconcile. [31 TAC §361.33(c), (d) & Exhibit C 2.2.A.2].	a. After spot checking some counties it does appear to match. b. However, there a instances where buildings are in more than one county and to prevent duplicate counting the location of the ExFldExpAll point is taken into account and only reported for whichever county it falls within.
Level 1	6	GIS	SOW Task 2A	6. Model Coverage GIS Feature Class, *ModelCoverage* : It appears that some fields are missing entries, including 'MODEL_DESCR'. Please complete all required fields with valid entries per TWDB email Jan 31, 2022. [31 TAC §361.33(b)(2)].	Agree, will update.

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Level 1	7	Plan	SOW Task 2B	7. Future Condition Flood Hazard Vulnerability, *Text* : Please expand the description of the future conditions vulnerability analysis by considering factors such as proximity to a floodplain, proximity to other bodies of water, past flooding issues, emergency management plans, and location of critical systems like primary and back-up power. [31 TAC §361.34 & Exhibit C 2.2.B.3].	Agree, added more explanation.
Level 1	8	Plan	SOW Task 3B	8. Goals, *Text* : Tables 3-5 through 3-9 in Chapter 3 contain 36 goals, while the Exhibit C Table 11 and *Goals* feature class appears to contain 33 goals. Please review and reconcile for consistency. [31 TAC §361.36 & Exhibit C 2.3.B].	Agree, updated Goal IDs.
Level 1	9	Plan	SOW Task 3B	9.Goals (Exhibit C Table 11): a. It appears that some fields are missing entries, including Residual Risk. Please complete all required fields with valid entries b. Tables 3-5 through 3-9 in Chapter 3 contain 36 goals, while the Exhibit C Table 11 and Goals feature class appears to contain 33 goals. Please review and reconcile for consistency. [31 TAC §361.36 & Exhibit C 2.3.B].	a. Filled in "Unknown" for Residual Risk field, per additional guidance. b. Agree, will update to match.
Level 1	10	Plan	SOW Task 3B	10.Goals GIS Feature Class, Goals: a. It appears that the required field 'RESIDUAL' contains only NULL values. Please ensure required fields are populated with valid entries per Exhibit D Table 21 [31 TAC §361.36]. b. Tables 3-5 through 3-9 in Chapter 3 contain 36 goals, while the Exhibit C Table 11 and Goals feature class appears to contain 33 goals. Please review and reconcile for consistency. [31 TAC §361.36].	a. Filled in "Unknown" for Residual Risk field, per additional guidance. b. Agree, will update to match.
Level 1	11	Plan	SOW Task 4B	11.Flood Management Evaluation (Exhibit C Table 12): Some FMEs list $0 for Estimated Study Cost (i.e., FME_IDs 121000015 and 121000033). Please review these FMEs for accuracy and reconcile as needed. [31 TAC §361.38(i) & Exhibit C 2.4.B].	Agree, will update.
Level 1	12	Plan	SOW Task 4B	12.Flood Management Evaluations GIS Feature Class, FME: It appears that some fields are missing entries, including 'NEW_MODEL', 'HUC8', 'FLD_TP_RIV', and 'FLD_TP_LOC'. Please complete all required fields with valid entries per Exhibit D Table 23.	Agree, will update.
Level 1	13	Plan	SOW Task 4B	13.Flood Management Evaluation (Exhibit C Map 16): Please indicate on the map whether the identified FME area is associated with a previously studied area that requires an update or if the identified study area does not have any existing or anticipated flood mapping, models, etc., and therefore requires an initial study. [31 TAC §361.38(m)].	Agree, will update.

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Level 1	14	Plan	SOW Task 4B	14.Flood Mitigation Project GIS Feature Class, FMP: It appears that some fields are missing entries, including 'HUC8', 'FLD_TP_RIV', 'FLD_TP_LOC', and 'ASSOCIATED'. Please populate all required fields with valid entries per Exhibit D Table 24. [31 TAC §361.38(c-e) & Exhibit D 3.11.1].	Agree, will update.
Level 1	15	Plan	SOW Task 4B	15.Flood Mitigation Strategies GIS Feature Class, FMS: It appears that some fields are missing entries, including 'ENTITY_ID', 'NEG_IMPACT', and 'ASSOCIATED'. Please complete all required fields with valid entries per Exhibit D Table 26. For ENTITY_ID, leave NULL or '999999' if there is no data.	Agree, will update.
Level 1	16	Plan	SOW Task 5	16.Flood Management Evaluation Recommendations (Exhibit C Table 15): Some FMEs list $0 for Estimated Study Cost (i.e., FME_IDs 121000015 and 121000033). Please review these FMEs for accuracy and reconcile as needed. [31 TAC §361.39(c), (f) & Exhibit C 2.5.A].	Agree, will update.
Level 1	17	Plan	SOW Task 5	17.Flood Management Evaluation Recommendations GIS Feature Class, FME: a. It appears that some fields are missing entries, including 'NEW_MODEL', 'HUC8', 'FLD_TP_RIV', and 'FLD_TP_LOC'. Please complete all required fields with valid entries per Exhibit D Table 23.	Agree, will update.
Level 1	18	Plan	SOW Task 5	18.Flood Mitigation Projects, Text: a.The description of No Negative Impact Determinations on pages 5-30 and 5-31 references Table 5-4 that would include "A general description of the scope of work and a summary of the expected impacts of the proposed improvements for each potentially feasible FMP", however, this table could not be located. Please reconcile. [31 TAC §361.39 & Exhibit C 2.5.B]. b. Each recommended FMP must be accompanied with an associated model or supporting documentation to show no negative impact. Please confirm that this was done and provide reference to supporting materials. As per the draft report (page 5- 31), "A comparative assessment of pre- and post-project conditions for the 1% annual chance event (100-yr flood) was performed for each potentially feasible FMP based on their reported hydrologic and hydraulic model results. Study results for floodplain boundary extents, resulting water surface elevations, and peak discharge values were reviewed to verify potential FMPs conform to the no negative impacts requirements." For each recommended FMP, please identify in the plan how no negative impact was determined as required by the Exhibit C Section 3.6.A (page 108), either via a model or a study, and submit the associated model or include the study name in tabular format.	a. Corrected to "Table 5-5". Scope descriptions are included. b. Agree, per TWDB guidance added a column "No Negative Impacts Designation".
Level 1	19	Plan	SOW Task 5	19.Flood Mitigation Projects Recommendations (Exhibit C Table 16): a. FMP_ID 123000021 does not appear to include a BCR in Table 13, Table 16, FMP_Details table, and the FMP feature class. Please populate the BCR field Table 13, Table 16, and FMP Details table, and populate the 'BC_RATIO' field in the FMP feature class as required. If no BCR is available, please remove this FMP from the recommended FMP list in the plan. b. Twenty-seven recommended FMPs list "Y" for Negative Impact and are blank for Negative Impact Mitigation. Please review these FMPs to ensure accuracy of these data fields.§361.39 c. It appears that some fields are missing entries, including Water Supply Benefit. Please complete all required fields with valid entries per Exhibit C Table 16. [31 TAC §361.39 & Exhibit C 2.5.B].	Agree, will update. Agree, will update. Agree, will update.

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Level 1	20	Plan	SOW Task 5	20.Flood Mitigation Project Recommendations GIS Feature Class, FMP: d. It appears that some fields are missing entries, including 'HUC8', 'FLD_TP_RIV', 'FLD_TP_LOC', and 'ASSOCIATED'. Please complete all required fields with valid entries per Exhibit D Table 24. e. Twenty-seven recommended FMPs list "Yes" for 'NEG_IMPACT' and "No" for 'NEG_MITIG'. Please review these FMPs to ensure accuracy of these data fields. [31 TAC §361.39 & Exhibit D 3.11.1].	Agree, will update. Agree, will update.
Level 1	21	Plan	SOW Task 5	21.Flood Mitigation Project Details Geodatabase, FMP_Details: The FMP Details table provided in the geodatabase appears blank. Please complete as required in §361.40	Agree, will update.
Level 1	22	Plan	SOW Task 5	22.Flood Mitigation Strategies Recommendations GIS Feature Class, FMS: It appears that some fields are missing entries, including 'ENTITY_ID', 'NEG_IMPACT', and 'ASSOCIATED'. Please complete all required fields with valid entries per Exhibit D Table 26. For 'ENTITY_ID', leave NULL or 999999 if there is no data. [31 TAC §361.39 & Exhibit D 3.10].	Agree, will update.
Level 2	23	Plan	General Comment	23.To better align with our agency's preferred nomenclature, please consider using the name, "Cursory Floodplain Data" instead of "Fathom" or Cursory Fathom Data" throughout the regional flood plan.	Agree The regional flood plan will be updated in the report and associated maps to reflect TWDBs preferred nomenclature. No changes will be made to the GIS feature classes, specifically ExFldHazard and FutFldHazards layers.
Level 2	24	Plan	SOW Task 1	24.Watersheds GIS Feature Class, Watersheds: Please populate the applicable ID fields to associate the Watersheds feature class with identified FME/FMS/FMP.	Agree, these fields have been updated.
Level 2	25	Plan	SOW Task 1	25.Existing Infrastructure, Text: Please provide a description of how Low Water Crossings were identified within the text of Chapter 1.	Agree - Expanded on how some LWCs were evaluated. Added "Low-water crossings were all evaluated, some were moved to be more in line with the stream centerline and road centerline, and some were removed that did not correlate with a road that was overtopping."
Level 2	26	Plan	SOW Task 1	26.Existing Infrastructure GIS Feature Class, ExFldInfraPt: There appear to be Low Water Crossings in the TNRIS dataset which do not appear to be included in the ExFldInfraPt feature class. Please consider reviewing the TNRIS dataset for potential inclusion.	LWC's were all evaluated, some were moved to be more in line with the stream CL and road CL, and some were removed that did not seem to be correct based on road overtopping, based on the March 7th TM comments. In short, ExFldInfraPt layer was modified which was used to identify LWC's that intersected the ExFldHazard layer to produce the ExFldExpPt layer that then fed into the ExFldExpAll (vulnerability) layer.
Level 2	27	Plan	SOW Task 1	27.Deficient Infrastructure (Exhibit C Map 3): Please consider renaming map to Non- Functional or Deficient Infrastructure since the map includes dams and levees.	Agree, will update.

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Level 2	28	Plan	SOW Task 1	28.Existing Projects, Text: a. Please refer to Table 2 in the text of Chapter 1. b. Please ensure Map 2 is referenced in a similar manner. Chapter 4 is referenced in the text of Chapter 1 (and Chapter 4 references Map 2), however, for the sake of ease and convenience, please consider providing the reference to the Map 2 in Chapter 1 (in addition to the map's reference in Chapter 4). It appears all of this can be accomplished by referencing Table 2 and Map 2 within the following sections: "1.12.4 Proposed or Ongoing Flood Mitigation Projects" and "1.12.5 Implementation of Nonstructural Flood Mitigation Projects" in Chapter 1 (as well as Chapters 4).	a. Agree, updated to Table 2. b. Agree, will update.
Level 2	29	Plan	SOW Task 2A	29. Existing Condition Flood Exposure GIS Feature Class, ExFldExPol: a. The agricultural coverage layers appear to have irregular triangle and rectangular features that may be a result of the conversion of a raster to polygon. b. The agricultural coverage layers appear to have irregular triangle and rectangular features that may be a result of the conversion of a raster to polygon. Please review and revise, as appropriate.	a. Based on the March/April comments we reprocessed the Agricultural raster into polygons that were rectangles as opposed to triangles. The August submittal had the rectangles. b. Same comment
Level 2	30	Plan	SOW Task 2A	30.Existing Condition Flood Exposure Vulnerability GIS Feature Class, ExFldExpAll: It appears that some entries with 'EXP_TYPE' listed as "Other" may better fit in the provided 'EXP_TYPE' valid entries. Please consider reviewing and revising as appropriate using the updated 'CRIT_TYPE' valid entry list: "Medical, Police, Fire, EMS, Shelter, School, Infrastructure, Water Treatment, Wastewater Treatment, Power Generation, Other".	a. "Other" was used in EXP_TYPE for Gas pipelines, Electrical Transmission lines and Railroad Segments. There did not seem to be a better category available for this field. However we categorized Gas and Transmission line as "Yes" in the CRITICAL field and used the "Infrastructure" classification in the CRIT_TYPE field. For the Railroad segments we did not consider as critical similar to the logic for the Roadway segments.
Level 2	31	Plan	SOW Task 2A	31.Existing Condition Vulnerability: Please consider modifying the map color scheme to enhance critical infrastructure legibility.	Agree, changed the infrastructure to orange.
Level 2	32	Plan	SOW Task 2A	32.Model Coverage, Text: Please consider providing a table of models within Chapter 2 or appendix that includes the modeling information contained in the ModelCoverage feature class.	Agree, due to the amount of H&H models available, we will provided a link to the D2MR website in the section 2.1.1 Existing H&H Model Availability.
Level 2	33	Plan	SOW Task 2B	33.Future Condition Flood Hazard Map Gaps (Exhibit C Map 9): Please consider changing the colors used for the Unknown future flood hazard and the areas where Cursory Floodplain Data (Fathom data) was used.	Agree, updated color to red.

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Level 2	34	Plan	SOW Task 2B	34.Future Condition Flood Exposure GIS Feature Class, FutFldExpPol: a. The agricultural coverage layers appear to have irregular triangle and rectangular features that may be a result of the conversion of a raster to polygon. Please review and revise. b. Bldg_IDs 6025014 and 6331393 both appear to be within the extent of the FutFldHazard layer but do not appear to be identified in the FutFldExpPol feature class. c. Bldg_ID 6080782 (A Hospital) appears to be within the extent of the extent of the FutFldHazard layer but does not appear to be identified in the FutFldExpPol feature class. d. Bldg_ID 6028788 (A power generating facility) appears to be within the extent of the extent of the FutFldHazard layer but does not appear to be identified in the FutFldExpPol feature class. e. Please review the FutFldHazard layer confirm that buildings within the extent are properly identified in the FutFldExpPol feature class. Some buildings do not appear to include the entire building footprints.	a. Based on the March/April comments we reprocessed the Agricultural raster into polygons that were rectangles as opposed to triangles. The August submittal had the rectangles. b. After rechecking the August submittal these buildings do appear to be shown in the FutFldExpPol layer as is expected. c. After rechecking the August submittal this building does appear to be shown in the FutFldExpPol layer as is expected and classified as a critical Medical facility in the FutFldExpAll layer. d. After rechecking the August submittal this building does appear to be shown in the FutFldExpPol layer as is expected and classified as a critical Power Generation facility in the FutFldExpAll layer.
Level 2	35	Plan	SOW Task 2B	35.Future Condition Flood Exposure Vulnerability GIS Feature Class, FutFldExpALL: FTEXPALLID 156611 is the site of San Antonio Fire Department Station 49, however, it does not appear to be identified as critical infrastructure. Please consider reviewing all critical infrastructure layers and modify, as appropriate, to identify them in the FutFldExpAll feature class.	This is captured in the FutFldExpAll layer as a Fire facility but the ID's don't match up. The issue could be from reviewing potentially out dated data and not the August submittal. The ID I see is FTEXPALLID 120176170
Level 2	36	Plan	SOW Task 4B	36.Streams GIS Feature Class, Streams: a. Please consider linking this feature class to any relevant FMEs, FMSs, or FMPs when appropriate by populating the associated ID fields. b. Please ensure that identified streams are within the boundary of the associated FME, FMP, and FMS.	a. Agree, this was previously done. b. Agree, done.
Level 2	37	Plan	SOW Task 4B	37.Flood Management Evaluation, Text: In areas where there is an ongoing TWDB-funded FIF Category 1 study, please consider describing how duplication of efforts would be avoided and how FIF Category 1 study data would be incorporated into the proposed FMEs. For example, several FMEs appear to overlap spatially with current FIF Category 1 funded Karnes County Flood Protection Planning Study (FIF ID 40011).	Agree, will expand on the on the text in section 5.1.3. We are also working with the TWDB contractors to coordinate any developing studies in future amendments.
Level 2	38	Plan	SOW Task 4B	38.Flood Management Evaluation (Exhibit C Table 12) In areas where there is an ongoing TWDB-funded, FIF Category 1 study, please consider describing how duplication of efforts would be avoided and how FIF Category 1 study data would be incorporated into the proposed FMEs. For example, several FMEs appear to overlap spatially with current FIF Category 1 funded Karnes County Flood Protection Planning Study (FIF ID 40011).	Agree, added the “ASSC_FIF” field to the FME/FMP/FMS layers and have spatially joined the overlapping FIF projects using the FIF ID.
Level 2	39	Plan	SOW Task 4B	39.Flood Management Evaluation (Exhibit C Map 16): a.Map 16 does not include region-wide FMEs. Please consider providing an additional map that would show all of the FMEs within the region. b.Please include TWDB-funded, FIF Category 1 studies in the indication of a previously studied area.	a. Agree, added table to Map 16.A a list of Region wide FMEs. b. Agree, FIF Category 1 studies will be added to the FME map (Exhibit C Map 16) prior to submittal of the final plan.
Level 2	40	Plan	SOW Task 4B	40.Flood Mitigation Projects (Exhibit C Table 13): Some FMPs list "0" for Project Area. Please review and ensure that these values are accurate.	Agree, will add.
Level 2	41	Plan	SOW Task 4B	41.Flood Mitigation Projects GIS Feature Class, FMP_HazPost: Please consider developing a FMP_HazPost feature class showing an updated hazard area that accounts for the impact of recommended FMPs.	Agree, will add.
Level 2	42	Plan	SOW Task 4B	42.Flood Mitigation Project (Exhibit C Map 17): Consider providing a zoomed in "inset" map of the San Antonio area to improve the legibility of the FMP extents.	Agree, updated map.

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Level 2	43	Plan	SOW Task 4B	43.Flood Mitigation Strategies GIS Feature Class, FMS: For county-wide watershed strategies where majority of the county falls outside of the RFPG boundary, please include justification how the strategy benefits the region and please coordinate with other RFPGs to make sure the efforts are not duplicated.	Agree, There was coordination with other Regions, see text in Chapter 10. Only one FMS identified has the majority of the boundary outside of the SAFPR, see description for strategy benefits.
Level 2	44	Plan	SOW Task 5	44.Flood Management Evaluation Recommendations, Text: In areas where there is an ongoing TWDB-funded, FIF Category 1 study, please consider describing how duplication of efforts would be avoided and how FIF Category 1 study data would be incorporated into the proposed FMEs. For example, several FMEs appear to overlap spatially with current FIF Category 1 funded Karnes County Flood Protection Planning Study (FIF ID 40011).	Agree, will expand on the on the text in section 5.1.3. We are also working with the TWDB contractors to coordinate any developing studies in future amendments.
Level 2	45	Plan	SOW Task 5	45.Flood Management Evaluation Recommendations (Exhibit C Table 15): In areas where there is an ongoing TWDB-funded, FIF Category 1 study, please consider describing how duplication of efforts would be avoided and how FIF Category 1 study data would be incorporated into the proposed FMEs. For example, several FMEs appear to overlap spatially with current FIF Category 1 funded Karnes County Flood Protection Planning Study (FIF ID 40011).Flood Management Evaluations GIS Feature Class, FME: Please consider adding the 'ASSOCIATED' field to the FME feature class and populating as applicable.	Agree, added the “ASSC_FIF” field to the FME/FMP/FMS layers and have spatially joined the overlapping FIF projects using the FIF ID.
Level 2	46	Plan	SOW Task 9	46.Please consider providing the supporting calculation and supporting data that is the basis for the statement: “Of this $1,184,840,000 it is projected that $1,005,017,000 in state and federal grant funding is needed for implementation of these projects”. (Page 9-16).	Agree, expanded on.
Level 2	47	Plan	SOW Task 9	47.Flood Infrastructure Financing Analysis text: Please review section for language accuracy. Please consider revising "rant" to "grant" in the subtitle of Chapter 9.1.6.	Agree, corrected.
Level 2	48	Plan	SOW Task 9	48.Water Supply, Text: a. Table 6-6 in Section 6.6 does not appear to include the estimated, quantified annual volume of water associated with the three identified FMPs. Please review and reconcile. [31 TAC §361.41 & Exhibit C 2.6.B]. b. On p. 6-6, there is a brief discussion about coordination with RWPGs to determine impacts on WMSs. The text states that the results of coordination are presented in "the following tables", but the tables appear to not be included. Please include a summary and a table identifying any negative impacts to water supply. If no negative impacts are identified, please include a statement to that effect.	Agree, will add.

Proposed Flood Management Evaluation (FME) of Great Springs Project

Submitted to: San Antonio Regional Flood Planning Group
c/o San Antonio River Authority
100 East Guenther St.
San Antonio, Texas 78283-9980
Ludivine.Varga@hdrinc.com.

Submitted by: Great Springs Project
Attn: Lyda Creus Molanphy
Chief Strategy & Operations Officer
Great Springs Project
(512) 751-1636
PO Box 12331
Austin, TX 78711
lyda@greatspringsproject.org

Submitted on: September 16, 2022

Purpose

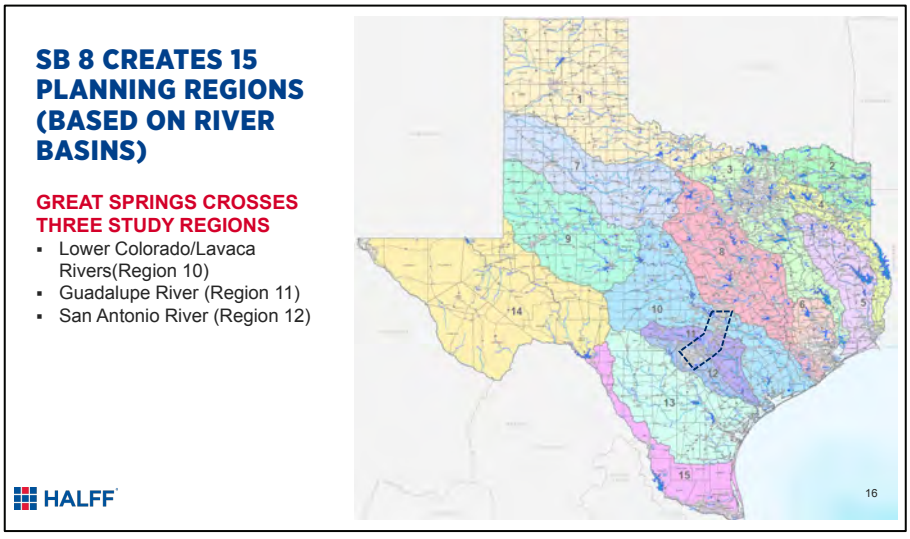
The purpose of this proposed Flood Management Evaluation (FME) is to:

1. Assess the flood mitigation potential and benefits of the Great Springs Project in the Region 12 Flood Plan,
2. Identify opportunities to enhance the flood mitigation features of the Great Springs Project and to increase the benefit-cost ratio of related flood mitigation efforts by others,
3. Quantify the flood mitigation and other associated benefits of the Great Springs Project,
4. Identify potential collaboration with flood mitigation efforts by local governments, regional authorities and state agencies,
5. Quantify the added benefits of collaborative efforts, and
6. Recommend subsequent Flood Management Strategies (FMSs) and Flood Management Projects (FMPs) to cost-effectively reduce flood risk in the San Antonio Flood Planning Region.

Background

Established as a 501(c)3 organization in 2018, the Great Springs Project (GSP) is conserving an additional 50,000 acres of sensitive land in the Austin-San Antonio corridor and building a spring-to-spring trail.[1] As shown in Figure 1, the GSP geography of interest overlaps with the Region 12 area in northern Bexar, southern Comal, and southwestern Guadalupe County.

Figure 1. Overlap of Region 12 and GSP areas. Courtesy of Jim Carrillo, FAICP, Halff Associates.



Land conservation is generally recognized as contributing to flood mitigation[2] and has been identified as such in the draft of Chapter 3 of the Draft 2023 San Antonio Regional Flood Plan.

[1] See the GSP website for more information: https://greatspringsproject.org/

[2] Johnson, Kris A., et al. "A benefit–cost analysis of floodplain land acquisition for US flood damage reduction." *Nature Sustainability* 3.1 (2020): 56-62.

In fact, the draft Region 12 Flood Plan has goals of a 10% increase in protected open space by 2033 and an unspecified increase by 2053.

Great Springs Project intends to acquire aquifer recharge and contributing land which is strategically valuable for flood mitigation purposes since this would simultaneously reduce flood risk while enhancing the recharge of the Edwards Aquifer. In addition, the trail portion of GSP can reinforce and enhance the benefits of the land conservation by:

1. Incorporating swales and other features to facilitate the infiltration of stormwater,
2. Stabilizing creek and river banks,
3. Providing connected segments of conserved lands to enhance the value of the habitat for native species,
4. Potentially providing access to flood monitoring equipment and other facilities, and
5. Generally adding recreational, public health, transportation, education, carbon sequestration, economic development, wildfire mitigation, and other benefits to flood mitigation efforts in the Region 12 flood planning area.

Chapter 6 of the Draft 2023 San Antonio Regional Flood Plan states that conserved lands for flood plains are often utilized for hiking and biking trails and that the San Antonio RFPG will encourage secondary benefits, such as recreational opportunities. This proposed FME would bring these opportunities into focus.

Scope of Work

Great Springs Project would recruit and manage consultants to conduct the following tasks as part of the FME:

1. Assemble relevant information about the land parcels that are, or may be, included in GSP and related trail development as well as adjacent, relevant flood planning FMEs, FMSs and FMPs,
2. Determine the flood risks involved in the affected area,
3. Assess and quantify the flood mitigation impacts of GSP land conservation and trail development as well as how GSP may contribute to adjacent flood mitigation efforts,
4. Identify possible and appropriate modifications to open space and trail features that would enhance the flood mitigation of GSP and adjacent flood mitigation efforts,
5. Quantify the added benefits of combining GSP efforts with Region 12 flood mitigation projects,
6. In cooperation with the affected local governments, develop appropriate proposals for FMS(s) and FMP(s) for inclusion in the San Antonio Regional Flood Plan, and
7. Submit a final report within one year of FME funding.

Note that, based on this FME, GSP would, in cooperation with relevant local governments, apply for funding of the resulting FMSs and/or FMPs.

Budget

The budget for this FME is estimated to be $250,000 which includes administrative overhead by GSP.

September 30, 2022

TEXAS PARKS & WILDLIFE

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Nefi Garza, Chair
San Antonio Flood Planning Region c/o
San Antonio River Authority
100 E. Gunter Street
San Antonio, Texas 78283

Re: 2023 San Antonio Regional Flood Plan

Dear Mr. Garza,

In 2019 Senate Bills 7 and 8 established a regional and state flood planning process for Texas, aimed at better managing flood risk to reduce loss of life and property. As part of the process, Texas Parks and Wildlife Department (TPWD) was identified as a member of the regional flood planning groups (Texas Water Code Sec. 16.062). The mission of TPWD is to manage and conserve the natural and cultural resources of Texas and its ability to provide opportunities of hunting, fishing, and outdoor recreation for the use and enjoyment of present and future generations. TPWD values this opportunity to contribute to the flood planning process with the goal of enhancing flood risk management and achieving beneficial flood mitigation outcomes. Toward this effort TPWD members serve a dual role of supporting the voting membership in development of the plans and representing the natural resource interests of the state.

TPWD applauds the San Antonio Regional Flood Planning Group (SARFPG) for their efforts in completing the inaugural regional flood plan (RFP) especially considering the abbreviated timeline. Through the exceptional efforts of the RFPG, this plan will be a meaningful tool for reducing flood impacts to society, especially in those disastrous events that cause loss of life and injury. Because this represents the initial region-wide plan, it has the potential to be precedent setting for subsequent iterations. As such, it is important this plan recognizes the role nature and nature-based solutions can play in flood risk management and promotes opportunities to protect, enhance and restore the flood mitigation benefits provided by natural landforms.

TPWD is supportive of the planning process outlined by the Texas Water Development Board (TWDB) because it aims to achieve an integrative flood risk management (FRM) approach that prioritizes risk reduction through implementation of floodplain management, land use regulations, policy, and a balanced use of grey and natural and nature-based (NNBS) flood mitigation measures that are formed by inclusive participation at all levels of society. TPWD believes this integrative approach when implemented holistically will achieve the maximum benefits for society and natural ecosystems while minimizing environmental impacts. Recent published works on FRM and NNBS (Bridges et al 2021, Glick et al 2020, World Wildlife Fund 2016, Sayers et al 2013) support TWDB integrative flood management approach and provide extensive resources for flood planners.

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In the interest of achieving the state's flood risk management goals while protecting the state's fish and wildlife resources, TPWD reviewed regional flood plans based on the TWDB guidance principals as described in 31 Texas Administrative Code Chapters 361 and 362. Special focus was provided on the following subset of guidance principals due to its relevance to fish and wildlife management.

- Does the draft flood plan use the best available science, data, models, and flood risk mapping?
- Does the draft flood plan consider the potential upstream and downstream effects, including environmental, of potential flood management strategies (and associated projects) of neighboring areas?
- Does the draft flood plan include strategies and projects that provide for a balance of structural and non-structural flood mitigation measures, including projects that use nature-based features that lead to long-term mitigation of flood risk?
- Does the draft flood plan consider natural systems and beneficial functions of floodplains, including flood peak attenuation and ecosystem services?
- Does the draft flood plan encourage flood mitigation design approaches that work with, rather than against, natural patterns and conditions of floodplains?
- Does the draft flood plan seek to not cause long-term impairment to the designated water quality as shown in the state water quality management plan as a result of a recommended flood management strategy or project?
- Does the draft flood plan consider benefits of flood management strategies to water quality, fish and wildlife, ecosystem function, and recreation, as appropriate?
- Does the draft flood plan minimize adverse environmental impacts and conform with adopted environmental flow standards?
- Does the draft flood plan consider multi-use opportunities such as green space, parks, water quality, or recreation, portions of which could be funded, constructed, and or maintained by additional, third-party project participants?

Additionally, TPWD emphasizes that the following FRM concepts identified in the forementioned literature be incorporated into the RFP.

- Flood is a natural process that has many benefits to human and natural systems.
- Promoting some flooding as desirable and making room for water promotes native species, maintains vital ecosystem services, and reduces the chance of flooding elsewhere.
- Natural landscapes and watersheds provide flood mitigation functions that should be promoted, protected, enhanced, and restored.
- Prioritize risk reduction over flood control by focusing first on reducing loss of life and injury.
- Utilize limited resources fairly.

- Address flood risk using a portfolio approach to first implement non-structural (policy, land management, emergency management) followed by structural (grey and natural and nature-based) strategies.
- Criteria for assessing projects strategies should include a comprehensive suite of measures spanning economical, operational, societal, and environmental advantages and disadvantages. Assessments focusing on economics alone (number of buildings, acres) should be avoided.

San Antonio Regional Flood Plan Comments

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 Draft San Antonio Regional Flood Plan (SARFP) calculated and mapped flood risk analysis for both 1% and 0.2% annual chance storm events for current and future conditions. A model of the current conditions risk of flooding was created by compiling local knowledge, United States Geological Survey (USGS) gage information, San Antonio River Authority (SARA) data, National Flood Hazard Layer (NFHL) data, FEMA Base Level Engineering data, Fathom data, and National Oceanic and Atmospheric Administration (NOAA) Atlas-14 rainfall data. TPWD appreciates and supports the use of the best available science and most relevant data and encourages the consideration of environmental flow standards for the San Antonio River, Medina River, Mission River, Cibolo Creek, and San Antonio Bay. These environmental flow standards were established by the Texas Commission on Environmental Quality to ensure that natural flow regimes are maintained which include large seasonal pulse flows.

The goals of the Draft SARFP include education and outreach, improving flood warning and readiness, increasing the number of flood studies, increasing the prevention of flooding, and supporting flood infrastructure projects. TPWD encourages the inclusion of the ecological and societal benefits of flooding in any education program and appreciates the repeated mention of nature-based solutions in the education and outreach goals of the SARFP.

The SARFP identified 29 potentially feasible Flood Management Projects (FMPs), 165 potentially feasible Flood Management Evaluations (FMEs), and 20 potentially feasible Flood Management Strategies (FMSs). It appears that most of the recommended FMPs are infrastructure based with only one nature-based solution being put forward. TPWD appreciates that the Draft SARFP acknowledges the gap in flood risk and mitigation in relation to nature-based infrastructure in the region. TPWD understands that the goal of

the RFP is to mitigate floods to reduce risk to life and property but would like to encourage the use of nature-based solutions where possible. The Draft SARFP states that none of the projects or strategies are anticipated to have negative downstream effects.

TPWD would like to encourage all the FMX (an FMP, FME, or FMS) 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).

The Draft SARFP 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 bankfull 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.

Thank you for your consideration of these comments. TPWD looks forward to continuing to work with the planning group to develop flood plans that protect life and property that are also beneficial to the environment. Please contact me at (512) 389 – 8214 or at Marty.Kelly@TPWD.Texas.gov if you have any questions or comments.

Sincerely,

Marty Kelly
Water Resources Program Coordinator

References

Bridges, T. S., J. K. King, J. D. Simm, M. W. Beck, G. Collins, Q. Lodder, and R. K. Mohan, eds. 2021. International Guidelines on Natural and Nature-Based Features for Flood Risk Management. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

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World Wildlife Fund. 2016. Natural and Nature-based Flood Management: A Green Guide. Washington, DC: World Wildlife Fund. Http://envirodm.org/flood-managment 2016 WWF.

Greater Edwards Aquifer Alliance

Member Organizations

Alamo, Austin, and Lone Star chapters of the Sierra Club
Bexar Audubon Society
Austin, Bexar and Travis Green Parties
Bexar Grotto
Boerne Together
Bulverde Neighborhood Alliance
Bulverde Neighbors for Clean Water
Cibolo Center for Conservation
Citizens for the Protection of Cibolo Creek
Comal County Conservation Alliance
Environment Texas
First Universalist Unitarian Church of SA
Friends of Canyon Lake
Friends of Dry Comal Creek
Friends of Government Canyon
Fuerza Unida
Green Society of UTSA
Guadalupe River Road Alliance
Guardians of Lick Creek
Headwaters at Incarnate Word
Helotes Heritage Association
Hill Country Alliance
Kendall County Well Owners Association
Kinney County Ground Zero
Leon Springs Business Association
Native Plant Society of Texas – SA
Northwest Interstate Coalition of Neighborhoods
Pedernales River Alliance – Gillespie Co.
Preserve Castroville
Preserve Lake Dunlop Association
Preserve Our Hill Country Environment
RiverAid San Antonio
San Antonio Audubon Society
San Antonio Conservation Society
San Geronimo Valley Alliance
San Marcos Greenbelt Alliance
San Marcos River Foundation
Save Barton Creek Association
Save Our Springs Alliance
Scenic Loop/Boerne Stage Alliance
Securing a Future Environment
SEED Coalition
Signal Hill Area Alliance
Sisters of the Divine Providence
Solar San Antonio
Texas Cave Management Association
Trinity Edwards Spring Protection Assoc.
Water Aid – Texas State University
Wildlife Rescue & Rehabilitation
Wimberley Valley Watershed Association

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October 7, 2022

Chairman Derek Boese and Stakeholders
Regional Flood Planning Group 12

Re: Recommendations to the TWDB Promoting the Protection of Natural Flood Mitigation Features and Use of Nature Based Flood Mitigation Solutions

Dear Chairman Boese and Appointed Stakeholders of RFPG 12,

These comments are submitted on behalf of the fifty-five member groups of the Greater Edwards Aquifer Alliance and the undersigned supporting organizations.

Background

State legislation enabling the Regional Flood Plan process provided guidelines and deliverables to be accomplished by each flood planning group, with regional plans becoming the basis of a state flood plan. Included in deliverable was the request for proposed flood mitigation projects to be considered for future funding. Enabling legislation also directed the Texas Water Development Board (TWDB) to identify and evaluate natural flood mitigation features and include Nature Based Solutions (NBS) within proposed flood mitigation projects.

While TWDB has been very responsive to the questions and concerns expressed by the various Regional Flood Planning Groups (RFPG), the process highlighted several areas of concern regarding the evaluation of natural flood mitigation features for their level of function and use in flood mitigation. This process highlighted the current lack of data specific to Texas regions needed to accurately evaluate natural flood mitigation features and, therefore, the need for methods beyond a traditional Hydrologic Engineering Center's - River Analysis System (HEC-RAS) approach. In addition, Technical Consultant outreach to communities demonstrated the need to increase knowledge on incorporating not only the protection and restoration of natural flood mitigation features but also in general, NBS into flood control strategies.

Nature Based Solutions will need to be woven into every facet of this program and incorporated into future policies and strategies in order to empower community collaboration and leveraging the state's vast network of natural ecosystems in building resilient communities.

Recommendations

Broad and specific recommendations have been collected across the state from RFPG committee members and collaborators, including:

1. Increase funding for and use of Nature Based Solutions, and reduce hurdles to their incorporation into the Regional Flood Plans as Flood Mitigation Strategies, Evaluations and Projects by:
    a. Increasing number of trainings and workshops on accurate cost benefit analysis and use of NBS;

b. Improving modeling methods to provide greater sensitivity beyond traditional hydrological models to include soil porosity and moisture holding capacity, plant interception, evaporation, and transpiration; and other processes that affect flows and interactions with groundwater; as well as water quality improvements and groundwater recharge that can be realized with NBS;
c. Expanding the TWDB's concept of "adverse impact" to include loss of functioning floodplains and the resiliency that they provide;
d. Incentivizing collaboration across watersheds and jurisdictions towards a regional approach to floodplain management using NBS by prioritizing such projects.

2. Ensure that the TWDB's cost benefit analysis appropriately weights projects offering:
    a. Increased social and environmental benefits,
    b. Reduced negative environmental impact,
    c. Reduced cost avoidance for infrastructure replacement (for data on gray infrastructure replacement costs: https://mediaspace.du.edu/media/David+Skuodas+-+Seeing+the+Forest+and+the+Trees/1_g90zp1xz), and
    d. Increased flood prevention for future conditions while also creating resiliency to recover after natural disasters.

3. Recognize the role that land development codes and location of infrastructure have on flood impacts:
    a. Educate on the need for counties to use their ability provided by the State to exert authority to influence development and reduce negative impacts to natural features that mitigate flooding and enable counties to levy stormwater/drainage utility fees to retrofit and maintain natural flood infrastructure,
    b. Promote and fund the use of NBS throughout watersheds with the understanding that most natural flood mitigation features, including floodplains, are in some state of degradation and can be improved with appropriate land use policies,
    c. Recommend policy changes that enable Counties or Groundwater Conservation Districts to protect Natural Aquifer Storage and Recovery features (e.g., karst, fracture zones, and sinkholes) that help mitigate flood severity while transferring potential flood water into aquifers, and
    d. Partner with other agencies to incorporate flood considerations into applicable agency activities (e.g., ensure TxDOT builds to 1% annual probability ("100-year") standards and uses updated flood maps defined by the National Oceanic and Atmospheric Administration (currently the Atlas 14 data) and that such infrastructure does not increase downstream flooding nor damage floodplains and riparian corridors.

4. Specific project recommendations:
    a. Fund a Texas Watershed Initiative similar to Louisiana's[1] with a robust program on use and adoption of NBS,

[1] https://watershed.la.gov/nature-based-solutions

b. Provide training and technical resources to flood districts, river authorities, municipal utility districts, water control and improvement districts, and municipal and county floodplain managers to advance understanding and adoption of NBS and best practices for maintaining floodplains and other natural flood mitigation features to fully realize potential benefits,
c. Use all available federal and state programs to prioritize the preservation and restoration of natural flood mitigation features throughout watersheds,
d. Develop a compendium of Nature-Based resources for non-coastal communities, and
e. Review submitted FMPs, FMEs and FMSs submitted for this first 5-year cycle to determine the feasibility to augment with NBS aspects.

Conclusions

If preventative flood mitigation strategies are not prioritized for funding, then flood events will be more frequent and cause greater harm, leading to much higher costs for Texas taxpayers. Similarly, if natural infrastructure that mitigates flooding is degraded, undoing the damage to some of these features may be cost-prohibitive. Retrofitting with flood control projects is also not cost-effective, given pathways for prevention already in use in many other states. Conversely, strategically protecting natural infrastructure and placing Nature Based Solutions throughout a watershed can significantly reduce flood risks along tributaries and major riverine systems alike.

Thank you for the opportunity to submit these comments.

Respectfully,

Annalisa Peace
Executive Director
Greater Edwards Aquifer Alliance

Luke Metzger
Executive Director
Environment Texas

Suzanne Scott
State Director, Texas Chapter
The Nature Conservancy

Antonio Diaz
Spokesperson Texas Indigenous Council
Co-Chair Bexar County Green Party

Britt Coleman
President
Bexar Audubon Society

education
conservation
cooperation

hill country alliance

San Antonio Regional Flood Planning Group c/o San Antonio River Authority
100 East Guenther St.
San Antonio, Texas 78283-9980

October 11, 2022

Dear Regional Flood Planning Group 12,

Thank you for your ongoing work to create a comprehensive flood plan for the San Antonio River Basin planning area. I am writing to encourage the Planning Group (i) to consider use of nature-based solutions as a primary tool for mitigating flooding and extreme weather events, as well as (ii) to engage the Camp Bullis Sentinel Landscape Partnership as we implement and learn from nature-based solutions in a multi-county focal area around Joint Base San Antonio's Camp Bullis, in the Upper San Antonio River Basin.

JBSA-Camp Bullis provides training for 266 partners, including the institutional and field training component for all Department of Defense enlisted and officer medical training. The continuation and protection of the Camp Bullis training mission directly and significantly affect strategic national defense initiatives as articulated in the National Defense Strategy. Several stressors to the military installation, including encroachment, drought, and flooding, threaten the training mission.

In 2020, the Camp Bullis Sentinel Landscape Partnership—a collaborative now of over 50 organizations—was created to address these and other stressors by enhancing natural resources conservation, agricultural productivity, military readiness, and resilience to extreme weather events such as drought and flooding. Camp Bullis is drained by several creeks, including Cibolo and Salado Creeks, subject to flooding during high rainfall periods. Several personnel have been killed on base from flash floods. The CBSL Partnership is advancing nature-based solutions to enhance groundwater replenishment and mitigate inland flooding to benefit Camp Bullis and surrounding communities.

For example, Texas A&M Natural Resources Institute recently secured an $8.57 million grant from the USDA on behalf of the CBSL Partnership to work with volunteering private landowners to advance nature-based solutions (e.g. enhancing soil health and infiltration). The City of Boerne is protecting and quantifying impacts of riparian stewardship for flood mitigation and groundwater recharge; the University of Texas-San Antonio is assessing how four different permeable pavement designs can mitigate the water quality and quantity of stormwater runoff compared to impermeable pavement surfaces over the Edwards Aquifer Recharge Zone; and the Edwards Aquifer Authority, along with the University of Texas at San Antonio, is studying the impacts of land stewardship practices (e.g. on-contour berms and swales, as well as log and rock structures) on soil infiltration, surface water runoff, and aquifer recharge at the Authority's new Field Research Park.

We invite the RFPG to learn with and support us on how we can most effectively implement nature-based solutions to mitigate flooding, while achieving other co-benefits such as groundwater

replenishment, habitat, agricultural productivity, and public recreation in the Upper San Antonio River Basin.

We appreciate your efforts to protect the people and places that define this region. Please let me know if you have any questions or would like to discuss the CBSL Partnership at your convenience. I can be reached by cell phone at 210-287-0478 or by e-mail at Daniel@HillCountryAlliance.Org.

Respectfully,

Daniel Oppenheimer
HCA Land Program Director &
Camp Bullis Sentinel Landscape Partnership Coordinator

CC:

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National Wildlife Federation's Letter of Recommendations to Region 12 Regional Flood Planning Group Promoting an Equitable Regional Flood Plan, the Protection of Natural Flood Mitigation Features, and Use of Nature Based Flood Mitigation Solutions

Background

State legislation enabling the Regional Flood Plan process provided guidelines and deliverables to be accomplished by each flood planning group, with regional plans becoming the basis of a state flood plan. These plans would be developed through the creation and identification of projects to be considered for future funding. Enabling legislation also directed the Texas Water Development Board (TWDB) to identify and evaluate natural flood mitigation features and include Nature Based Solutions (NBS) among proposed flood mitigation projects.

Region 12, along with all the other Regional Flood Planning Groups (RFPGs) have had to work under a tight timeline during the initial planning round – and we appreciate the work the Region has put into making a holistic flood plan. In particular, in addition to the various flood mitigation evaluations, strategies, and projects that incorporate nature-based solutions, we are encouraged by the following items included in Region 12's draft Regional Flood Plan:

- Regulatory and Administrative Recommendations:
    - 8.1.3. (TxDOT should employ roadway design criteria to require all new and reconstructed state roadways to be designed and constructed, to the extent practicable, at elevations at or above the 1.0% annual chance event water surface elevation. TxDOT should also consider future conditions, such as urbanization and changing rainfall, in its roadway design criteria for drainage and flood risk reduction);
    - 8.1.4 (Establish programs and funding to evaluate and update development code and educate local and regional officials to the floodplain management tools they have available along with nature-based solutions);
    - 8.1.7 (Revise the scoring criteria for funding associated with stormwater and flood-related projects that benefit nature based solutions and agricultural activities);
    - 8.1.8 (Provide financial or technical assistance and training to smaller/rural jurisdictions to help educate them on implementing flood mitigation policy, practices, and funding opportunities);
- *Legislative Recommendations*:
    - 8.2.1 (Direct state funding to counties to maintain drainage and stormwater infrastructure in unincorporated areas);

    - 8.2.2. (Provide funding and/or technical assistance to develop regulatory floodplain maps)
    - 8.2.3. (Provide funding and/or technical assistance to update drainage criteria and development standards that prevents development in or impacts to the Effective FEMA floodplain); and
    - 8.2.9 (Establish perpetual and dedicated funding to implement projects identified in the state flood plan).
- *Regional Flood Planning Process Recommendations:*
    - *8.3.2 (Develop a fact sheet and/or other publicity measures to encourage entities to participate in the SAFPR effort);*
    - *8.3.4 (Develop a process to efficiently amend approved regional flood plans to incorporate additional recommended FMEs, FMSs, and FMPs, and to allow the San Antonio RFPG to advance the recommended FMEs to FMPs);*
    - *8.3.6 Revise the criteria for the "No Adverse Impact" certification required for FMPs.*
    - *8.3.14 Develop guidance and a standardized evaluation criteria for the benefits of nature-based solutions.*
- *Adopted Flood Protection Goals*:
    - *Increase the number of participating Community Rating System (CRS) entities in the FPR by 5 (short term) and 100% (long term);*
    - *Increase the number of entities which regulate to the 1% annual chance future conditions floodplains as part of new development and redevelopment by 10% (short term) and 50% (long term);*
    - *Increase the number of entities above the established baseline that have adopted a holistic watershed approach using existing Natural Flood Mitigation Features (NFMF) such as headwaters, buffers, and conservation easements for flood risk reduction as a basis for comprehensive subdivision regulations;*
    - *Establish a baseline and increase the number of acres of publicly protected open space by 10 % as part of land conservation and acquisitions to reduce future impacts of flooding;*
    - *Reduce the number of NFIP repetitive-loss properties in the FPR by 25% (short term) and 75% (long term);*
    - *Reduce the number of vulnerable critical facilities located within the existing and future 1% annual chance (100-year) floodplain by 50%;*
    - *Increase the number of structural projects by 10% (short term) and 50% (long term) that include a NBS or Green Infrastructure (GI) component.*

While Region 12 and the TWDB has been very responsive to the questions and concerns expressed by the public and various RFPGs, the process and initial regional planning round has highlighted several areas of concern regarding the evaluation of natural flood mitigation features for their level of function and the incorporation of NBS into flood control strategies.

This process highlighted the current lack of data specific to Texas regions needed to accurately evaluate natural flood mitigation features and, therefore, the need for methods beyond a traditional Hydrologic Engineering Center's - River Analysis System (HEC-RAS) approach. In addition, Technical Consultant outreach to communities demonstrated the need to increase knowledge on incorporating Nature Based Solutions into flood control strategies.

Equity and nature-based solutions will need to be woven into every facet of this program and incorporated into future policies and strategies in order to empower community collaboration and leverage the state's vast network of natural ecosystems in building resilient communities.

The following **comments and recommendations specific to Region 12** seek to better ensure an equitable flood plan, and one that centers natural infrastructure and nature-based projects. We recognize that the region will not be able to address some comments provided, however it is our hope that during subsequent rounds, these comments will be taken into consideration.

I. *Adopt NFIP participation as a minimum floodplain management standard*

Region 12 did not adopt any minimum 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.

We encourage Region 12 to consider NFIP participation as a minimum floodplain management standard. 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 communities to participate in the NFIP seems like an appropriate baseline, before entities can potentially receive funding for flood mitigation projects. We recommend that the Region uses its power to adopt minimum floodplain standards, by requiring NFIP participation as a minimum standard.

II. *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.

III. *Revise description of Nature-Based Features under section 5.1*

Section 5.1 defines multiple structural and nonstructural strategies to mitigate flooding. Nature-based features is defined in the structural section as the following:

> "FMPs can include nature-based features as part of flood mitigation solutions where applicable including, but not limited to, stream and coastal restorations, wetlands, natural channel design, other green infrastructure elements, and land preservation. Although nature-based solutions generally do not provide significant flood risk reduction to 1% annual chance flood hazards (100-year floods), they can improve stormwater quality, provide ecological function uplift, and reduce riverine and coastal erosion risk."[1]

We disagree with the statement that "nature-based solutions generally do not provide significant flood risk reduction to 1% annual chance flood hazards." Nature-based solutions can provide significant benefits to communities, and can provide risk reduction to the 1% annual chance flood. Numerous reports and studies continue to show the benefits of nature-based solutions for flood mitigation – including the U.S. Army Corps of Engineer's International Guidelines on NNBF for Flood Risk Management report released earlier this year. In addition to their ability to provide significant flood mitigation benefits, nature-based solutions are also not associated with negative downstream impacts, commonly associated with traditional gray infrastructure approaches, such as channelization. The description of nature-based features should be revised to acknowledge the considerable mitigation these techniques can have.

IV. *Consider discretion when analyzing nature-based FMPs and provide an administrative recommendations to the TWDB on how to apply potential FMP requirements to nature-based projects*

Only projects with significant amounts of detail are incorporated as Flood Management Projects in the Draft Regional Flood Plans. We are concerned that since no nature-based projects were recommended by the RFPG, natural infrastructure projects may have been downgraded to FMSs due to lack of data provided to the Region. It is important to note that analyses like the BCR are not always tailored for natural infrastructure projects. For example, while preserving open space within the floodplain helps protect land from development which could negatively impact

[1] Region 12, Draft Regional Flood Plan at 5-10.

flooding, a traditional BCR may not adequately account for protection of development that hasn't occurred yet. Since we are unsure where to view which projects were submitted to the Region, but subsequently removed because it didn't align with a goal or other reason, or downgraded to a strategy, we recommend the RFPG to provide discretion to potential FMPs that are largely nature-based. We also encourage the Region to provide an administrative recommendation to the TWDB to provide guidance to the Regions on how to apply potential FMP requirements to nature-based projects.

V. *Recommend that the Flood Planning Process be revised to remove the TWDB minimum screening requirement of "the evaluation /strategy/project addresses a flood problem with drainage area of 1 square mile or greater. "*

Many small, distributed projects can provide significant benefits to the floodplain. For example, multiple green stormwater infrastructure projects across a city can reduce runoff. It can also act as a demonstration so that other applicants can implement their own projects. We do not, therefore, believe that the 1 square mile requirement should be included in this criteria. We appreciate that Region 12 did not exclude good flood reduction projects that had a drainage area less than 1 mile.[2]

VI. *Include impact to natural infrastructure when analyzing "No Negative Impacts"*

There seemed to be considerable discretion from the Region on which projects to incorporate, using engineering judgment. Open spaces, such as parks, provide significant flood mitigation benefits to neighboring communities. The analysis of "No Negative Impacts"should therefore include impacts to natural infrastructure, which should be mitigated to the greatest extent possible.

VII. *Add a Flood Protection Goal to decrease number of FMPs that have negative impacts associated with the project and add an administrative recommendation to provide best management practices to local entities on how to avoid negative impacts*

In the draft Flood Plan, the majority of recommended FMPs showed "#N/A" under the negative impacts analysis. TThe region, therefore, should strive to better analyze negative impacts, and decrease the amount of projects with negative impacts over time – which could be reflected in a Flood Protection Goal. Further, Region 12 can provide an administrative recommendation to the TWDB to provide best management practices to local entities on how to reduce negative impacts associated with projects.

VIII. *Add a Flood Protection Goal to have increased enforcement of floodplain ordinances*

[2] Region 12, Draft Regional Flood Plan at 5-22.

Region 12 noted that approximately 10 out of 14 entities within the region have moderate, low, or no enforcement of floodplain regulations. These entities have a significant opportunity to improve the effectiveness of their ordinance or court order by increasing the enforcement of their existing floodplain ordinances. In order to address this shortfall, we recommend that Region 12 adopt a Goal to increase enforcement of floodplain ordinances.

IX. We applaud Region 12's use of local studies to determine "future conditions analysis"

For Region 12, the existing 0.2% flood risk areas were used as a proxy for the future 1% flood risk areas in areas where future 1% flood risk areas did not exist, per Method 2 in TWDB's guidance. Method 3, a San Antonio RFPG method, was used to calculate the 0.2% future storm event risk area given as a buffer value utilizing the 2018 San Antonio River Basin Future Precipitation Study, developed by SARA. This analysis showed the average increase in the 0.2% annual chance storm event peak flows throughout the basin were between 30% and 40% for the 20- and 40-year future projections, respectively. From this data, HDR estimated a 35% increase in 0.2% annual chance storm event peak flows for a 30-year future event. While we applaud Region 12 for utilizing local studies to determine future 500 year floodplain, we believe there should be some discussion of whether this methodology comports with the State Climatologist's recommendations to determine the extent of the future 500 year floodplain.[3]

We appreciate the work the Region is doing to help better plan for and protect our communities from flooding. Further, we appreciate the opportunity to submit these comments. In addition to the comments, above, we've attached a letter providing additional comments for consideration by the region during future planning cycles.

Sincerely,

Arsum Pathak
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Danielle Goshen
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National Wildlife Federation

[3] John Nielsen-Gammon and Savannah Jorgensen, Climate Change Recommendations for Regional Flood Planning Group (April 16, 2021), available at: https://climatexas.tamu.edu/files/CliChFlood.pdf.

GoshenD@NWF.org

Draft 2023 San Antonio Regional Flood Plan
Comments

Other Public Comments

Type	Submission Date	Comments
Feedback Form	Aug 22, 2022	Yes, we would be interested in funding some of our problem areas that we have here at the city.
Feedback Form	Aug 18, 2022	I am expressing an interest in the flood prevention meeting. I don't think I will make it there but I've lived in Bexar County since 1979. I would agree that the county should do something about the bridges around here and of course it will take tax dollars. **For example the bridge going over Salado which is on Fort Sam Houston was very smallish and the water went right over it!** Uncle Sam must've created a really good bridge using tax dollars. And I think more of those bridges should be forthcoming because it saves lives. It's not likely that anyone died on this particular bridge but I know a family who died in Comanche Park in 98, And I'm not opposed to building new bridges and I'm not opposed to new infrastructure. Thank you for reading my message Julie M
Feedback Form	Aug 17, 2022	I have two homes one here in Bexar and one in NUECES county, the city of San Antonio has undoubtedly the dirtiest roads and streets I watch the main expressway's here the trash that builds up on the sides O watched this one object for 9 months!! on I-10!! Do we not have sweepers Corpus sweeps their main roads and streets weekly cause we are prone to flooding by them sweeping keeps us from flooding . I never see sweepers in San Antonio anymore and why is that if San Antonio would sweep their streets and roads just maybe there would not be so much flooding cause Texas has a lot of inconsiderate trashy people who cares less which is SAD. I would like to see San Antonio get clean. Thank you

Draft 2023 San Antonio Regional Flood Plan
Comments

Other Public Comments

Type	Submission Date	Comments
Feedback Form	Sep 20, 2022	On page 1-54 of the Draft Flood plan here https://www.region12texas.org/wp-content/uploads/2022/08/RFP_Region-12_R.pdf, one of the goals of the SA River Watershed master plan is: "Identify needs and opportunities related to flood risk, water quality issues, low impact development, stream restoration, nature based park planning, mitigation banking, and conservation easements." **But in the proposed projects from the 9/20 Technical Committee meeting, there are very few projects involving low impact development, stream restoration, nature based park planning, mitigation banking, and conservation easements. Most projects aim to reduce the floodplain through enhanced conveyance or channelization.** I was surprised to see on the last page of the agenda packet from the 9/20 meeting, **a project aimed at channelizing the SA River through the River Road neighborhood south of Mulberry**, in an area that contains a natural section of the San Antonio River within the city itself (a rarity). **Hopefully this one isn't implemented.**
Feedback Form	Sep 17, 2022	Excellent work being done here. The work done at Padre Park in San Antonio, at the Tamöx Talöm food forest is of particular interest in relation to non-structural infrastructure. **A food forest being introduced on the flood zone will help to sequester carbon, build healthy souls that can better fight erosion, and offer an opportunity to grow food, which brings additional opportunities for education, commerce, and culture.** The success, and mere idea can be replicated as needed throughout the state. A set it and forget it strategy while engineers come up with additional solutions. Thank you for your considerations.
Feedback Form	15-Sep-22	(from in-person public meeting on 9/15/22) Concern of impact to San Antonio watershed south of projects 121000080 and 121000092 to SA watershed from E Mulbery Ave. to E Craig Ave San Antonio Tx. Flood Impact: "CLOMAR's and LOMAR's" are better than the south of proposed projects 121000080 and 121000092

Draft 2023 San Antonio Regional Flood Plan
Comments

Other Public Comments

Type	Submission Date	Comments
Emailed	17-Sep-22	I'm sending you a few photos of Dreamland between Lockhill-selma and Vance Jackson. It will go many feet sbive road during serious flood. I will try to send photos during next big flood. There may have been a death and at least rescue within last 35 years. Actually there was an entire VIA bus stalled duting the flood of October 25 2019—8 people had to be rescued through hatch. Check it out on internet!
Emailed	6-Oct-22	Nelson Wolfe stopped his **Frenchcreek flood project** right at the start of our property line. He directed all flood waters at our house and neighbors across the creek. We have flooded twice in our house twice last year since the finish of his project. He did not take notice the creek narrows and is blocked right below us to 1604 which make our home a lake. Our lives have been endangered. We have no way out to egress. We have called his office with no return calls. Can you help us, please

Draft 2023 San Antonio Regional Flood Plan
Comment Response

Organization	Great Springs Project

Type	**Comment**	**Response**
Proposed Projects	In order to identify and quantify the possible synergies of the GSP effort combined with the individual flood mitigation projects in the regional flood plan, GSP suggests the inclusion of the attached Flood Management Evaluation (FME) in the updated regional flood plan. Thank you for the opportunity to provide input to this important work. **Great Springs Project would recruit and manage consultants to conduct the following tasks as part of the FME:** 1. Assemble relevant information about the land parcels that are, or may be, included in GSP and related trail development as well as adjacent, relevant flood planning FMEs, FMSs and FMPs, 2. Determine the flood risks involved in the affected area, 3. Assess and quantify the flood mitigation impacts of GSP land conservation and trail development as well as how GSP may contribute to adjacent flood mitigation efforts, 4. Identify possible and appropriate modifications to open space and trail features that would enhance the flood mitigation of GSP and adjacent flood mitigation efforts, 5. Quantify the added benefits of combining GSP efforts with Region 12 flood mitigation projects, 6. In cooperation with the affected local governments, develop appropriate proposals for FMS(s) and FMP(s) for inclusion in the San Antonio Regional Flood Plan, and 7. Submit a final report within one year of FME funding.	This FME will be considered in the amended plan.

Draft 2023 San Antonio Regional Flood Plan
Comment Response

Organization	Texas Parks and Wildlife Department

Type	Comment	Response
San Antonio Regional Flood Plan Comments	The goals of the Draft SARFP include education and outreach, improving flood warning and readiness, increasing the number of flood studies, increasing the prevention of flooding, and supporting flood infrastructure projects. **TPWD encourages the inclusion of the ecological and societal benefits of flooding in any education program and appreciates the repeated mention of nature-based solutions in the education and outreach goals of the SARFP.**	Noted, will consideration in future flood plan goals.
San Antonio Regional Flood Plan Comments	The SARFP identified 29 potentially feasible Flood Management Projects (FMPs), 165 potentially feasible Flood Management Evaluations (FMEs), and 20 potentially feasible Flood Management Strategies (FMSs). It appears that most of the recommended FMPs are infrastructure based with only one nature-based solution being put forward. TPWD appreciates that the Draft SARFP acknowledges the gap in flood risk and mitigation in relation to nature-based infrastructure in the region. TPWD understands that the goal of the RFP is to mitigate floods to reduce risk to life and property **but would like to encourage the use of nature-based solutions where possible.** The Draft SARFP states that none of the projects or strategies are anticipated to have negative downstream effects.	The Region 12 FPG encourages the use of natural design features during the design phase of the project.
San Antonio Regional Flood Plan Comments	**TPWD would like to encourage all the FMX (an FMP, FME, or FMS) 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 (Clark in et at., 2006).	Will encourage this during the design phase.
San Antonio Regional Flood Plan Comments	The Draft SARFP 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.**	Encourages the consideration of these topics during the design phase.

Draft 2023 San Antonio Regional Flood Plan
Comment Response

Organization	Greater Edwards Aquifer Alliance

Type	**Comment**	**Response**
1. *Increase funding for and use of Nature Based Solutions, and reduce hurdles to their incorporation into the Regional Flood Plans as Flood Mitigation Strategies, Evaluations and Projects by:*		
1	a. Increasing number of trainings and workshops on accurate cost benefit analysis and use of NBS;	This is captured in the Goals of the RFPG
1	b. Improving modeling methods to provide greater sensitivity beyond traditional hydrological models to include soil porosity and moisture holding capacity, plant interception, evaporation, and transpiration; and other processes that affect flows and interactions with groundwater; as well as water quality improvements and groundwater recharge that can be realized with NBS;	Improved accepted floodplain modeling and mapping methodology by SARA/FEMA is being release next year. TWDB is also developing guidance on NBS.
1	c. Expanding the TWDB's concept of "adverse impact" to include loss of functioning floodplains and the resiliency that they provide;	Will provide this comment to the TWDB.
1	d. Incentivizing collaboration across watersheds and jurisdictions towards a regional approach to floodplain management using NBS by prioritizing such projects.	Will provide this comment to the TWDB.
2. *Ensure that the TWDB's cost benefit analysis appropriately weights projects offering:*		
2	a. Increased social and environmental benefits,	Will provide this comment to the TWDB.
2	b. Reduced negative environmental impact,	Will provide this comment to the TWDB.
2	c. Reduced cost avoidance for infrastructure replacement (for data on gray infrastructure replacement costs: https://mediaspace.du.edu/media/David+Skuodas+-+Seeing+the+Forest+and+the+Trees/1_g90zp1xz), and	Will provide this comment to the TWDB.
2	d. Increased flood prevention for future conditions while also creating resiliency to recover after natural disasters.	Will provide this comment to the TWDB.

Draft 2023 San Antonio Regional Flood Plan
Comment Response

Organization	Greater Edwards Aquifer Alliance

Type	**Comment**	**Response**
	3. *Recognize the role that land development codes and location of infrastructure have on flood impacts:*	
3	a. Educate on the need for counties to use their ability provided by the State to exert authority to influence development and reduce negative impacts to natural features that mitigate flooding and enable counties to levy stormwater/drainage utility fees to retrofit and maintain natural flood infrastructure,	These topics were included in chapter 8 Legislative Recommendations
3	b. Promote and fund the use of NBS throughout watersheds with the understanding that most natural flood mitigation features, including floodplains, are in some state of degradation and can be improved with appropriate land use policies,	These topics were included in chapter 8 Legislative Recommendations
3	c. Recommend policy changes that enable Counties or Groundwater Conservation Districts to protect Natural Aquifer Storage and Recovery features (e.g., karst, fracture zones, and sinkholes) that help mitigate flood severity while transferring potential flood water into aquifers, and	These topics were included in chapter 8 Legislative Recommendations
3	d. Partner with other agencies to incorporate flood considerations into applicable agency activities (e.g., ensure TxDOT builds to 1% annual probability ("100-year") standards and uses updated flood maps defined by the National Oceanic and Atmospheric Administration (currently the Atlas 14 data) and that such infrastructure does not increase downstream flooding nor damage floodplains and riparian corridors.	These topics were included in chapter 8 Legislative Recommendations

Draft 2023 San Antonio Regional Flood Plan
Comment Response

Organization	Greater Edwards Aquifer Alliance

Type	**Comment**	**Response**
	4. *Specific project recommendations:*	
4	a. Fund a Texas Watershed Initiative similar to Louisiana's with a robust program on use and adoption of NBS,	Will provide this comment to the TWDB.
4	b. Provide training and technical resources to flood districts, river authorities, municipal utility districts, water control and improvement districts, and municipal and county floodplain managers to advance understanding and adoption of NBS and best practices for maintaining floodplains and other natural flood mitigation features to fully realize potential benefits,	This is part of the Region 12 flood planning goals.
4	c. Use all available federal and state programs to prioritize the preservation and restoration of natural flood mitigation features throughout watersheds,	Will provide this comment to the TWDB.
4	d. Develop a compendium of Nature-Based resources for non-coastal communities, and	TWDB is also developing guidance on NBS.
4	e. Review submitted FMPs, FMEs and FMSs submitted for this first 5-year cycle to determine the feasibility to augment with NBS aspects.	The Region 12 FPG encourages the use of natural design features during the design phase of the project.

Draft 2023 San Antonio Regional Flood Plan
Comment Response

Organization	Camp Bullis Sentinel Landscape Partnership

Type	**Comment**	**Response**
General	(i) to consider use of nature-based solutions as a primary tool for mitigating flooding and extreme weather events	The Plan does consider Nature-Based solutions when searching for eligible FMXs.
General	(ii) to engage the Camp Bullis Sentinel Landscape Partnership as we implement and learn from nature-based solutions in a multi-county focal area around Joint Base San Antonio's Camp Bullis, in the Upper San Antonio River Basin	We will continue to engage CBSL as the flood planning process continues and thereon future flood plans by including them on in the stakeholders.

Draft 2023 San Antonio Regional Flood Plan
Comment Response

Organization	National Wildlife Federation

Type	**Comment**	**Response**
	The following comments and recommendations specific to Region 12	
I. Adopt NFIP participation as a minimum floodplain management standard	Region 12 did not adopt any minimum 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. **We encourage Region 12 to consider NFIP participation as a minimum floodplain management standard.** 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 communities to participate in the NFIP seems like an appropriate baseline, before entities can potentially receive funding for flood mitigation projects. We recommend that the Region uses its power to adopt minimum floodplain standards, by requiring NFIP participation as a minimum standard.	We do; "The San Antonio RFPG recommends that entities that are not currently NFIP participants should adopt at least the minimum standards and take the necessary steps in order to become active NFIP participants."
II. 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 fence line 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.	TWDB sets the criteria
III. Revise description of Nature-Based Features under section 5.1	Section 5.1 defines multiple structural and nonstructural strategies to mitigate flooding. Nature-based features is defined in the structural section as the following: "FMPs can include nature-based features as part of flood mitigation solutions where applicable including, but not limited to, stream and coastal restorations, wetlands, natural channel design, other green infrastructure elements, and land preservation. Although nature-based solutions generally do not provide significant flood risk reduction to 1% annual chance flood hazards (100-year floods), they can improve stormwater quality, provide ecological function uplift, and reduce riverine and coastal erosion risk." **We disagree with the statement that "nature-based solutions generally do not provide significant flood risk reduction to 1% annual chance flood hazards.**" Nature-based solutions can provide significant benefits to communities, and can provide risk reduction to the 1% annual chance flood. Numerous reports and studies continue to show the benefits of nature-based solutions for flood mitigation – including the U.S. Army Corps of Engineer's International Guidelines on NNBF for Flood Risk Management report released earlier this year. In addition to their ability to provide significant flood mitigation benefits, nature-based solutions are also not associated with negative downstream impacts, commonly associated with traditional gray infrastructure approaches, such as channelization. The description of nature-based features should be revised to acknowledge the considerable mitigation these techniques can have.	We will update the wording in this chapter.

Draft 2023 San Antonio Regional Flood Plan
Comment Response

Organization	National Wildlife Federation

Type	**Comment**	**Response**
IV. Consider discretion when analyzing nature-based FMPs and provide an administrative recommendations to the TWDB on how to apply potential FMP requirements to nature-based projects	Only projects with significant amounts of detail are incorporated as Flood Management Projects in the Draft Regional Flood Plans. We are concerned that since no nature-based projects were recommended by the RFPG, natural infrastructure projects may have been downgraded to FMSs due to lack of data provided to the Region. It is important to note that analyses like the BCR are not always tailored for natural infrastructure projects. For example, while preserving open space within the floodplain helps protect land from development which could negatively impact flooding, a traditional BCR may not adequately account for protection of development that hasn't occurred yet. Since we are unsure where to view which projects were submitted to the Region, but subsequently removed because it didn't align with a goal or other reason, or downgraded to a strategy, we recommend the RFPG to provide discretion to potential FMPs that are largely nature-based. **We also encourage the Region to provide an administrative recommendation to the TWDB to provide guidance to the Regions on how to apply potential FMP requirements to nature-based projects.**	The Region 12 Flood Plan has several goals that encourage the use of Nature Based Solutions. In addition, we have included an FME that will develop the metrics to evaluate existing NBS and provide a flood prevention value and economic value.
V. Recommend that the Flood Planning Process be revised to remove the TWDB minimum screening requirement of "the evaluation /strategy/project addresses a flood problem with drainage area of 1 square mile or greater. "	Many small, distributed projects can provide significant benefits to the floodplain. For example, multiple green stormwater infrastructure projects across a city can reduce runoff. It can also act as a demonstration so that other applicants can implement their own projects. **We do not, therefore, believe that the 1 square mile requirement should be included in this criteria.** We appreciate that Region 12 did not exclude good flood reduction projects that had a drainage area less than 1 mile.	Will provide this comment to the TWDB.

Draft 2023 San Antonio Regional Flood Plan
Comment Response

Organization	National Wildlife Federation

Type	**Comment**	**Response**
VI. Include impact to natural infrastructure when analyzing "No Negative Impacts"	There seemed to be considerable discretion from the Region on which projects to incorporate, using engineering judgment. Open spaces, such as parks, provide significant flood mitigation benefits to neighboring communities. **The analysis of "No Negative Impacts "should therefore include impacts to natural infrastructure, which should be mitigated to the greatest extent possible.**	Will provide this comment to the TWDB.
VII. Add a Flood Protection Goal to decrease number of FMPs that have negative impacts associated with the project and add an administrative recommendation to provide best management practices to local entities on how to avoid negative impacts	In the draft Flood Plan, the majority of recommended FMPs showed "#N/A" under the negative impacts analysis. **The region, therefore, should strive to better analyze negative impacts**, and decrease the amount of projects with negative impacts over time – which could be reflected in a Flood Protection Goal. Further, Region 12 can provide an administrative recommendation to the TWDB to provide best management practices to local entities on how to reduce negative impacts associated with projects.	No negative impact was evaluated for all projects as part of the TWDB required criteria. This field was inadvertently entered as #N/A in the draft plan but has been corrected.
VIII. Add a Flood Protection Goal to have increased enforcement of floodplain ordinances	Region 12 noted that approximately 10 out of 14 entities within the region have moderate, low, or no enforcement of floodplain regulations. These entities have a significant opportunity to improve the effectiveness of their ordinance or court order by increasing the enforcement of their existing floodplain ordinances. In order to address this shortfall, **we recommend that Region 12 adopt a Goal to increase enforcement of floodplain ordinances.**	Several of the Region 12 goals promote increased floodplain regulations and ordinances, see section 3 of the Plan.
IX. We applaud Region 12's use of local studies to determine "future conditions analysis"	For Region 12, the existing 0.2% flood risk areas were used as a proxy for the future 1% flood risk areas in areas where future 1% flood risk areas did not exist, per Method 2 in TWDB's guidance. Method 3, a San Antonio RFPG method, was used to calculate the 0.2% future storm event risk area given as a buffer value utilizing the 2018 San Antonio River Basin Future Precipitation Study, developed by SARA. This analysis showed the average increase in the 0.2% annual chance storm event peak flows throughout the basin were between 30% and 40% for the 20- and 40-year future projections, respectively. From this data, HDR estimated a 35% increase in 0.2% annual chance storm event peak flows for a 30-year future event. While we applaud Region 12 for utilizing local studies to determine future 500 year floodplain, **we believe there should be some discussion of whether this methodology comports with the State Climatologist's recommendations to determine the extent of the future 500 year floodplain.**	This methodology was identified by the TWDB guidelines and is believed to be the best available data for the region at the time. Future floodplain analysis will be updated in each of the planning cycles as more data becomes available.

Draft 2023 San Antonio Regional Flood Plan
Comment Responses

Other Public Comment Responses

Type	Submission Date	Comments	Response
Feedback Form	Aug 22, 2022	Yes, we would be interested in funding some of our problem areas that we have here at the city.	From City of Schertz. Follow up with the city with no response.
Feedback Form	Aug 18, 2022	I am expressing an interest in the flood prevention meeting. I don't think I will make it there but I've lived in Bexar County since 1979. I would agree that the county should do something about the bridges around here and of course it will take tax dollars. **For example the bridge going over Salado which is on Fort Sam Houston was very smallish and the water went right over it!** Uncle Sam must've created a really good bridge using tax dollars. And I think more of those bridges should be forthcoming because it saves lives. It's not likely that anyone died on this particular bridge but I know a family who died in Comanche Park in 98, And I'm not opposed to building new bridges and I'm not opposed to new infrastructure. Thank you for reading my message Julie M	Bexar County is proposing various FMXs to upgrade structures. Area has been studied.
Feedback Form	Aug 17, 2022	I have two homes one here in Bexar and one in NUECES county, the city of San Antonio has undoubtedly the dirtiest roads and streets I watch the main expressway's here the trash that builds up on the sides O watched this one object for 9 months!! on I-10!! Do we not have sweepers Corpus sweeps their main roads and streets weekly cause we are prone to flooding by them sweeping keeps us from flooding . I never see sweepers in San Antonio anymore and why is that if San Antonio would sweep their streets and roads just maybe there would not be so much flooding cause Texas has a lot of inconsiderate trashy people who cares less which is SAD. I would like to see San Antonio get clean. Thank you	Equipment not flood control related.
Feedback Form	Sep 20, 2022	On page 1-54 of the Draft Flood plan here https://www.region12texas.org/wp-content/uploads/2022/08/RFP_Region-12_R.pdf, one of the goals of the SA River Watershed master plan is: "Identify needs and opportunities related to flood risk, water quality issues, low impact development, stream restoration, nature based park planning, mitigation banking, and conservation easements." **But in the proposed projects from the 9/20 Technical Committee meeting, there are very few projects involving low impact development, stream restoration, nature based park planning, mitigation banking, and conservation easements. Most projects aim to reduce the floodplain through enhanced conveyance or channelization.** I was surprised to see on the last page of the agenda packet from the 9/20 meeting, **a project aimed at channelizing the SA River through the River Road neighborhood south of Mulberry**, in an area that contains a natural section of the San Antonio River within the city itself (a rarity). **Hopefully this one isn't implemented.**	An FME is proposed to determine feasibility.

Draft 2023 San Antonio Regional Flood Plan
Comment Responses

Other Public Comment Responses

Type	Submission Date	Comments	Response
Feedback Form	Sep 17, 2022	Excellent work being done here. The work done at Padre Park in San Antonio, at the Tamöx Talöm food forest is of particular interest in relation to non-structural infrastructure. **A food forest being introduced on the flood zone will help to sequester carbon, build healthy souls that can better fight erosion, and offer an opportunity to grow food, which brings additional opportunities for education, commerce, and culture.** The success, and mere idea can be replicated as needed throughout the state. A set it and forget it strategy while engineers come up with additional solutions. Thank you for your considerations.	NBS are encouraged on the Plan.
Feedback Form	15-Sep-22	(from in-person public meeting on 9/15/22) Concern of impact to San Antonio watershed south of projects 121000080 and 121000092 to SA watershed from E Mulbery Ave. to E Craig Ave San Antonio Tx. Flood Impact: "CLOMAR's and LOMAR's" are better than the south of proposed projects 121000080 and 121000092	An FME is proposed to determine feasibility.

Draft 2023 San Antonio Regional Flood Plan
Comment Responses

Other Public Comment Responses

Type	Submission Date	Comments	Response
Emailed	17-Sep-22	I'm sending you a few photos of Dreamland between Lockhill-selma and Vance Jackson. It will go many feet sbive road during serious flood. I will try to send photos during next big flood. There may have been a death and at least rescue within last 35 years. Actually there was an entire VIA bus stalled duting the flood of October 25 2019—8 people had to be rescued through hatch. Check it out on internet!	FME 121000072 is being proposed for this site.
Emailed	6-Oct-22	Nelson Wolfe stopped his **Frenchcreek flood project** right at the start of our property line. He directed all flood waters at our house and neighbors across the creek. We have flooded twice in our house twice last year since the finish of his project. He did not take notice the creek narrows and is blocked right below us to 1604 which make our home a lake. Our lives have been endangered. We have no way out to egress. We have called his office with no return calls. Can you help us, please	Coordinated with City. Flood Prone Area Added, detailed modeling present.

Texas Water Development Board

P.O. Box 13231, 1700 N. Congress Ave.
Austin, TX 78711-3231, www.twdb.texas.gov
Phone (512) 463-7847, Fax (512) 475-2053

March 13, 2023

Mr. Brian Mast:
Manager of Government Affairs
San Antonio River Authority
100 E Guenther St,
San Antonio, TX 78204

RE: Request for Information: Regional Flood Planning Grant Contract with San Antonio River Authority; Contract No. 210792497, Final Regional Flood Plan

Dear Mr. Brian Mast:

Thank you for submitting the 2023 Region 12 San Antonio Regional Flood Plan (RFP) to the Texas Water Development Board (TWDB) under the above referenced contract.

During our review we noticed some deficiencies that need to be addressed before the regional flood plan will be considered acceptable by TWDB. Please see the attached spreadsheet that contains a listing of these issues.

It is expected that the data presented within and across all written report sections, tables, excel spreadsheets, and the geodatabase which constitute the single RFP submission will be consistent. In cases where there are any discrepancies between equivalent data, the submitted geodatabase dataset shall supersede other data and the TWDB shall utilize the geodatabase dataset when developing the state flood plan.

For Level 1 comments:
Staff members have completed their initial review and have found these items either missing or not sufficient for our review. These Level 1 comments must be addressed with all relevant files resubmitted before our final plan review may continue.

For Level 2 comments:
We noted several issues that will require attention. Note that these issues are not required to be resolved and resubmitted. However, we do request that you work to address these issues as part of the Amended Regional Flood Plan due by July 14, 2023.

Please email your Planner with a response, including resubmission of all relevant files, to the above information request(s) no later than March 27, 2023.

If you have any questions, please do not hesitate to contact Anita Machiavello of our Flood Planning staff at (512) 463-5158 via email at anita.machiavello@twdb.texas.gov.

Sincerely,

Reem Zoun, PE, CFM
Director, Flood Planning
Office of Planning

Attachment: TWDB Final Regional Flood Plan Review Comments

cc: Derek Boese, RFPG Chair
Kendall Hayes, San Antonio River Authority
Ronald Branyon, HDR, Inc.
Troy Dorman, Halff Associates
Anita Machiavello, TWDB
James Bronikowski, TWDB
Matt Nelson, TWDB

Region 12 San Antonio Regional Flood Plan

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	2A	Existing Exposure	Table	Table 3			Roadway Stream Crossings in 1% annual risk is 1,570 in the geodatabase as opposed to 2,767 in the Exhibit C Table 3. Please reconcile.		
2	2A	Existing Exposure	Table	Table 3			Critical Facilities in 1% annual risk is 4,077 in the geodatabase as opposed to 191 in the Exhibit C Table 3. Please reconcile.		
3	2A	Existing Exposure	Table	Table 3			Roadway Stream Crossings in Unknown% annual risk is 3 in the geodatabase as opposed to 0 in the Exhibit C Table 3. Please reconcile.		
4	2A	Existing Exposure	Table	Table 3				Structures in 1% annual risk is 19,110 in the geodatabase as opposed to 19,120 in the Exhibit C Table 3. Please reconcile.	
5	2A	Existing Exposure + Vulnerability	GIS feature class		14	ExFldExpAll	Roadway Stream Crossings in 1% annual risk is 1,570 in the geodatabase as opposed to 2,767 in the Exhibit C Table 3. Please reconcile.		
6	2A	Existing Exposure + Vulnerability	GIS feature class		14	ExFldExpAll	Critical Facilities in 1% annual risk is 4,077 in the geodatabase as opposed to 191 in the Exhibit C Table 3. Please reconcile.		
7	2A	Existing Exposure + Vulnerability	GIS feature class		14	ExFldExpAll	Roadway Stream Crossings in Unknown% annual risk is 3 in the geodatabase as opposed to 0 in the Exhibit C Table 3. Please reconcile.		
8	2A	Existing Exposure + Vulnerability	GIS feature class		14	ExFldExpAll		Structures in 1% annual risk is 19,110 in the geodatabase as opposed to 19,120 in the Exhibit C table. Please reconcile.	
9	2A	Existing Exposure + Vulnerability	GIS feature class		14	ExFldExpAll		Critical infrastructure type 'EMS' appears to be missing, but may be included as 'Fire'. Please confirm if correct.	
10	2A	Model Coverage	GIS feature class		N/A	ModelCoverage		There appears to be one model type mismatch between the submitted HHModels spreadsheet and TDIS for MODEL ID 120000000017. Please reconcile.	
11	2B	Future Exposure	Table	Table 5			Critical Facilities in 1% annual risk is 4,275 in the geodatabase as opposed to 220 in the Exhibit C Table 3. Please reconcile.		
12	2B	Future Exposure + Vulnerability	GIS feature class		19	FutFldExpAll	Critical Facilities in 1% annual risk is 4,275 in the geodatabase as opposed to 220 in the Exhibit C Table 3. Please reconcile.		
13	4B	FME	GIS feature class		23	FME		In the FME feature class, 1 FME has a higher total population than the max of day and night populations. Please reconcile.	
14	5	FMP Recs	Table	Table 16			Projects with Negative Impact may not be included in the plan. The FMP feature class lists 27 projects with negative impact and Excel lists 27. Please review and reconcile as needed.		
15	5	FMP Recs	GIS feature class		24	FMP	Projects with Negative Impact may not be included in the plan. The FMP feature class lists 27 projects with negative impact and Excel lists 27. Please review and reconile as needed.		
16	5	FMP Details	Table	Section 3.9 Tables 23-40				Please consider including FMP Project Details scoring information within the appendices.	
17	5	FMP Details	GDB	3.10.C		3.11.3 [FMP_Details]	The sum of Project Cost is $464,746,881 in FMP as opposed to $439,710,464 in FMP_Details. Please reconcile.		
18	5	FMP Details	GDB	3.10.C		3.11.3 [FMP_Details]	# of Structures with Reduced 1% Annual Chance Flood Risk is 2772 in FMP as opposed to 606 in FMP_Details (negative values). Please reconcile.		
19	5	FMP Details	GDB	3.10.C		3.11.3 [FMP_Details]	Cost per Structure Removed is $6,797,987 in FMP as opposed to $6,286,090 in FMP_Details (negative values). Please reconcile.		
20	5	FMP Details	GDB	3.10.C		3.11.3 [FMP_Details]	# of Structures in 1% Annual Chance FP (Pre-Project) is 657 as opposed to 4,575 in FMP_Details. Please reconcile.		

Region 12 San Antonio Regional Flood Plan

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
21	5	FMP Details	GDB	3.10.C		3.11.3 [FMP_Details]	There appear to be BCR discrepancies between the FMP feature class and FMP_Details gdb table. Please reconcile.		
22	5	FMP Details	GDB	3.10.C		3.11.3 [FMP_Details]	Eleven projects appear to have population discrepancies. Please reconcile.		
23	5	FMP Recs	Table				Summary table of No Negative Impact: Table 5-5 on page 5-31 of RFP: Please include unique Model_ID of associated models that were utilized to determine no negative impact.		
24	All	Accessibility			Section 2.2			Figures alternative text and other elements alternative text failed in accessibility check. Please consider adding alternative text as appropriate.	
25	All	Accessibility			Section 2.2		We noted 9 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.		

Final 2023 San Antonio Regional Plan
TWDB Comment Response

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	2A	Existing Exposure	Table	Table 3			Roadway Stream Crossings in 1% annual risk is 1,570 in the geodatabase as opposed to 2,767 in the Exhibit C Table 3. Please reconcile		Agree, Table 3 updated to match geodatabase.
2	2A	Existing Exposure	Table	Table 3			Critical Facilities in 1% annual risk is 4,077 in the geodatabase as opposed to 191 in the Exhibit C Table 3. Please reconcile		Agree, Table 3 updated to match geodatabase.
3	2A	Existing Exposure	Table	Table 3			Roadway Stream Crossings in Unknown% annual risk is 3 in the geodatabase as opposed to 0 in the Exhibit C Table 3. Please reconcile		Agree, Table 3 updated to match geodatabase.
4	2A	Existing Exposure	Table	Table 3				Structures in 1% annual risk is 19,110 in the geodatabase as opposed to 19,120 in the Exhibit C Table 3. Please reconcile	The GDB shows 19,120 (See image 1 tab below), TWDB is not taking into account the "Power Generation" category of buildings
5	2A	Existing Exposure + Vulnerability	GIS feature class		14	ExFldExpAll	Roadway Stream Crossings in 1% annual risk is 1,570 in the geodatabase as opposed to 2,767 in the Exhibit C Table 3. Please reconcile		Agree, Table 3 updated to match geodatabase.
6	2A	Existing Exposure + Vulnerability	GIS feature class		14	ExFldExpAll	Critical Facilities in 1% annual risk is 4,077 in the geodatabase as opposed to 191 in the Exhibit C Table 3. Please reconcile		Agree, Table 3 updated to match geodatabase.
7	2A	Existing Exposure + Vulnerability	GIS feature class		14	ExFldExpAll	Roadway Stream Crossings in Unknown% annual risk is 3 in the geodatabase as opposed to 0 in the Exhibit C Table 3. Please reconcile		Agree, Table 3 updated to match geodatabase.
8	2A	Existing Exposure + Vulnerability	GIS feature class		14	ExFldExpAll		Structures in 1% annual risk is 19,110 in the geodatabase as opposed to 19,120 in the Exhibit C table. Please reconcile	The GDB shows 19,120 (See image 1 tab below), TWDB is not taking into account the "Power Generation" category of buildings
9	2A	Existing Exposure + Vulnerability	GIS feature class		14	ExFldExpAll		Critical infrastructure type 'EMS' appears to be missing, but may be included as 'Fire'. Please confirm if correct.	Correct. Received data from HIFLD that had a combination of Fire Department, Emergency Services, and Emergency Medical Services. These were all categorized under the term "Fire".
10	2A	Model Coverage	GIS feature class		N/A	ModelCoverage		There appears to be one model type mismatch between the submitted HHModels spreadsheet and TDIS for MODEL ID 120000000017. Please reconcile	Agree, TDIS ID updated to match the HHModels spreadsheet.
11	2B	Future Exposure	Table	Table 5			Critical Facilities in 1% annual risk is 4,275 in the geodatabase as opposed to 220 in the Exhibit C Table 3. Please reconcile		Agree, Table 5 updated to match geodatabase.
12	2B	Future Exposure + Vulnerability	GIS feature class		19	FutFldExpAll	Critical Facilities in 1% annual risk is 4,275 in the geodatabase as opposed to 220 in the Exhibit C Table 3. Please reconcile		Agree, Table 5 updated to match geodatabase.
13	4B	FME	GIS feature class		23	FME		In the FME feature class, 1 FME has a higher total population than the max of day and night populations. Please reconcile	FME ID 121000096 and FME 121000069 had a incorrect POP100, these have been adjusted.
14	5	FMP Recs	Table	Table 16			Projects with Negative Impact may not be included in the plan. The FMP feature class lists 27 projects with negative impact and Excel lists 27. Please review and reconcile as needed		Corrected, no projects have negative impact and geodatabase and tables have been updated.
15	5	FMP Recs	GIS feature class		24	FMP	Projects with Negative Impact may not be included in the plan. The FMP feature class lists 27 projects with negative impact and Excel lists 27. Please review and reconcile as needed		Corrected, no projects have negative impact and geodatabase tables been updated.
16	5	FMP Details	Table	Section 3.9 Tables 23-40				Please consider including FMP Project Details scoring information within the appendices.	Agree, will add in the July deliverable.
17	5	FMP Details	GDB	3.10.C		3.11.3 [FMP_Details]	The sum of Project Cost is $464,746,881 in FMP as opposed to $439,710,464 in FMP_Details. Please reconcile.		Corrected, Project Details and GIS now match.
18	5	FMP Details	GDB	3.10.C		3.11.3 [FMP_Details]	# of Structures with Reduced 1% Annual Chance Flood Risk is 2772 in FMP as opposed to 606 in FMP_Details (negative values). Please reconcile		Corrected, Project Details and GIS now match.
19	5	FMP Details	GDB	3.10.C		3.11.3 [FMP_Details]	Cost per Structure Removed is $6,797,987 in FMP as opposed to $6,286,090 in FMP_Details (negative values). Please reconcile		Corrected, Project Details and GIS now match.
20	5	FMP Details	GDB	3.10.C		3.11.3 [FMP_Details]	# of Structures in 1% Annual Chance FP (Pre-Project) is 657 as opposed to 4,575 in FMP_Details. Please reconcile.		Corrected, Project Details and GIS now match.
21	5	FMP Details	GDB	3.10.C		3.11.3 [FMP_Details]	There appear to be BCR discrepancies between the FMP feature class and FMP_Details gdb table. Please reconcile.		Corrected, Project Details and GIS now match.
22	5	FMP Details	GDB	3.10.C		3.11.3 [FMP_Details]	Eleven projects appear to have population discrepancies. Please reconcile.		Corrected, Project Details and GIS now match.

Final 2023 San Antonio Regional Plan
TWDB Comment Response

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
23	5	FMP Recs	Table				Summary table of No Negative Impact: Table 5-5 on page 5-31 of RFP: Please include unique Model_ID of associated models that were utilized to determine no negative impact.		Agree, Table updated to include No Negative Impact Model ID.
24	All	Accessibility			Section 2.2			Figures alternative text and other elements alternative text failed in accessibility check. Please consider adding alternative text as appropriate.	The PAC 2021 checker was use to verify the document passed the acessibilty requirements. We will insure that the final document passes both the Adobe Acrobat full check and PAC 2021 checker
25	All	Accessibility			Section 2.2		We noted 9 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		The PAC 2021 checker was use to verify the document passed the acessibilty requirements. We will insure that the final document passes both the Adobe Acrobat full check and PAC 2021 checker.

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Appendix E. 2023 San Antonio Regional Flood Plan Amended Projects

Task 12 – Actions Further Evaluated Summary Table

Task 12 – Methodologies and Procedures Memorandum

FMPs Summary Reports

FMEs Summary Reports

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Community	Flood Mitigation Action	HDR/Halff	FMP	FME	Notes
Bexar	Abbott Road and Graytown at Martinez Creek Study	HDR		x	Stayed an FME (need a more in-depth study)
Bexar	Abbott Road at Tributary A to Salitrillo Creek and at Salitrillo Creek Bridge	HDR	x		Moved FME to FMP
Bexar	Abbott Road at Unnamed Tributary 1 to Salitrillo Creek LWC Improvement	HDR	x		Moved FME to FMP
Bexar/Guadalupe County line	Bexar Bowling Way at Cibolo Creek Bridge	HDR	x		Moved FME to FMP
Bexar/Comal County line	Blanco Road at Cibolo Creek	Halff	x		Moved FME to FMP
Bexar/Kendal County line	Boerne Stage Road at Balcones Creek	Halff	x		Moved FME to FMP
City of Poth	Build Detention Pond	Halff			Removed - duplicate of Damage Center 1 Project 1 - Detention in East Branch Poth Creek
Guadalupe	Cibolo Creek Spill Study	HDR		x	Added (due to Task 12 analysis)
City of San Antonio	Concepcion	HDR	x		Stayed FMP - updated BCA
City of Poth	Damage Center 1 Project 1 – Detention in East Branch Poth Creek	Halff	x		Moved FME to FMP
City of Floresville	Damage Center 1: Project 1A, 1B, 1C	HDR	x		Moved FME to FMP
City of San Antonio	Damage Center 14- Airport Trib	Halff		x	To remain as FME
City of Poth	Damage Center 2- Project 2 Road connection from Mosspoint to Sunshine	Halff	x		Moved FME to FMP
City of Poth	Damage Center 2-Project 1 Culvert Improvements at Manchaca	Halff	x		Moved FME to FMP
City of San Antonio	Damage Center 38-Olmos Creek Lower Reach Near Montview	Halff		x	To remain as FME
City of San Antonio	Damage Center 39-Olmos Creek and Olmos Creek East Channel	Halff			Removed per City of San Antonio
City of San Antonio	Damage Center 40-San Antonio River DS Reach near Roosevelt	Halff		x	To remain as FME
City of San Antonio	Damage Center 44-San Antonio River Near Center Road	Halff			Removed per City of San Antonio
City of Shavano Park	De Zavala/ Ripple Creek	Halff - KFW	x		Added per City of Shavano Park
City of Shavano Park	Elm Spring	Halff - KFW	x		Added per City of Shavano Park
Bexar/Wilson County line	Felix Road at Dry Hollow Creek Barrier Arms	HDR	x		Moved FME to FMP

Community	Flood Mitigation Action	HDR/Halff	FMP	FME	Notes
City of Bulverde	FM 1863 at Cibolo Creek LWC	Halff		x	Stayed as FME 121000098 per Bexar County
Bexar County	FM1346 Crossing Upgrade Study	HDR		x	Added (due to Task 12 analysis)
Bexar	Freudenburg Road at Salitrillo Creek Barrier Arms	HDR	x		Moved FME to FMP
Bexar	Gass Road at Culebra Creek Tributary D Bridge	HDR	x		Moved FME to FMP
City of San Antonio	Huebner Creek Flood Protection Barrier	Halff			Removed per City of San Antonio
Bexar County	Live Oak at Salitrillo Creek Improvements	HDR		x	Stayed an FME (need a more in-depth study)
Von Ormy	Live Oak Slough Creek Improvements Study	HDR		x	Added per Von Ormy
Kendall/Bexar County line	LWC at Old Fredericksburg Rd and Balcones Creek	Halff	x		Moved FME to FMP
Von Ormy	North Benton City Road Improvements Study	HDR		x	Added per Von Ormy
Bexar/Atascosa County line	Old Frio City Road at North Prong Creek Bridge	HDR	x		Moved FME to FMP - Moved to R13 based on location
Von Ormy	Quintana Road Drainage Improvements Study	HDR		x	Added per Von Ormy
Von Ormy	South Evans Road Improvements Study	HDR		x	Added per Von Ormy
Bexar/Atascosa County line	Smith Road at Unnamed Trib 75 to Elm Creek	HDR			Removed - No issue present in existing conditions. Bexar Co instructed us to remove 3/23.
Bexar/Comal County line	Smithson Valley Road at Cibolo Creek	Halff			Removed - RFPG meeting 2/9 Dave W. said funding was acquired.
Von Ormy	South Benton City Road Improvements Study	HDR		x	Added per Von Ormy
Bexar/Comal County line	Specht/Obst Road at Cibolo Creek	Halff	x		Moved FME to FMP
Bexar/Kendal County line	Toutant Beauregard at Balcones Creek	Halff	x		Moved FME to FMP
Bexar/Guadalupe County lin	Trainer Hale at Cibolo Creek	Halff		x	Remain as FME

2023 San Antonio Regional Flood Plan Amended Projects Task 12 - Actions Further Evaluated Summary Table

Community	Flood Mitigation Action	HDR/Halff	FMP	FME	Notes
Bexar/Guadalupe County line	Ullrich Road at Cibolo Creek Barrier Arms	HDR	x		Moved FME to FMP
Wilson County	Wilson 10 - Acquisitions of Flooded Structures	HDR	x		Moved FME to FMP
City of Balcones Heights	Woodlawn Lawn Lake Option 1(Phase 1-3)	Halff			Removed existing FME 121000070; no longer feasible
City of Balcones Heights	Woodlawn Lawn Lake Option 1(Phase 1-3) or Option 2	Halff	x		Moved FME to FMP

Task 12 - Methodologies and Procedures Memorandum

2023 San Antonio Regional Flood Plan
Amended Projects

July 14, 2023

This report was released for review purposes only on July 14, 2023, by HDR Engineering, Inc., Texas Board of Professional Engineers, and Land Surveyors Registered Firm F-754, Texas Board of Professional Geoscientists Firm No. 50226.

It is not to be used for any other purpose.

7/14/2023
Ron Branyon, P.E.
HDR Engineering, Inc.

1 Background

As part of the amended 2023 San Antonio Regional Flood Plan (the Plan), Task 12 expands on previously identified projects from the Plan dated January 10th, 2023. HDR Engineering, Inc. (HDR) advanced Flood Mitigation Projects (FMPs) for several communities within the San Antonio flood planning region. This analysis was done to provide data for the 2023 San Antonio Regional Flood Plan concerning potential FMPs to be recommended in the 2023 Plan.

This memorandum documents the assumptions, methodologies and processes used to advance the FMP in accordance with the Texas Water Development Board (TWDB) Exhibit C Technical Guidelines for Regional Flood Planning FMPs.

2 TWDB Requirements

The TWDB FMP requirements include the following components and are discussed later in this document –

- Hydrologic and Hydraulic (H&H) Modeling
- Impact Analysis
- Costs Estimates
- Benefit Cost Analysis (BCA)

Table 1 summarizes the type of work completed for each recommended FMPs to meet the TWDB requirements. Additional supporting documentation for each FMP are located in the digital submittal of the Plan including Summary Sheets, Narratives, Cost Estimates, and Exhibits.

Table 1: Task 12 Work Completed Per Project

Project	Task 12 Work			
	H&H Modeling	Cost Estimate	Impact Analysis	BCA
Abbott Road at Tributary A to Salitrillo Creek and at Salitrillo Creek Bridge	✓	✓	✓	✓
Abbott Road at Unnamed Tributary 1 to Salitrillo Creek LWC Improvement	✓	✓	✓	✓
Bexar Bowling Way at Cibolo Creek Bridge	✓	✓	✓	✓
Blanco Road at Cibolo Creek	✓	✓	✓	✓
Boerne Stage Road at Balcones Creek	✓	✓	✓	✓
Concepcion				✓
Damage Center 1: Project 1A, B, C		✓	✓	✓
Damage Center 1 – Project 1 – Detention in East Branch Poth Creek	✓	✓	✓	✓

Damage Center 2 – Project 1 Culvert Improvements at Manchaca	✓	✓	✓	✓
Damage Center 2- Project 2 Road connection from Mosspoint to Sunshine	✓	✓		✓
De Zavala/ Ripple Creek				✓
Elm Spring				✓
Felix Road at Dry Hollow Creek Barrier Arms	✓	✓		✓
Freudenburg Road at Salitrillo Creek Barrier Arms	✓	✓		✓
Gass Road at Culebra Creek Tributary D Bridge	✓	✓	✓	✓
LWC at Old Fredericksburg Rd and Balcones Creek	✓	✓	✓	✓
Old Frio City Road at North Prong Creek Bridge	✓	✓	✓	✓
Specht/Obst Road at Cibolo Creek	✓	✓	✓	✓
Toutant Beauregard at Balcones Creek	✓	✓	✓	✓
Ullrich Road at Cibolo Creek Barrier Arms		✓		✓
Wilson 10 - Acquisitions of Flooded Structures	✓	✓	✓	✓
Woodlawn Lake Option 2	✓		✓	✓

3 Data Collection

Data used in the FMP evaluation included previously collected information under Task 4B, as well as additional data collected from other sources.

Previous community engagement and data collection efforts are documented in the Plan under Chapter 5 - *Identification and Evaluation of Potential Flood Management Evaluations and Potentially Feasible Flood Management Strategies and Flood Mitigation Projects* and Chapter 10 - *Public Participation and Adoption of Plan*. Previously collected data can also be found in the digital submittal of the Plan.

Data gathered from other sources are summarized below. All data were obtained as digital files.

- San Antonio River Authority (SARA) Digital Data and Model Repository (D2MR) website – the SARA D2MR serves as a centralized location for the storage, management, and dissemination of H&H models and data related to the Federal Emergency Management Agency (FEMA) Digital Flood Insurance Rate Maps (DFIRM) and subsequent updates. Most of the H&H models found on the D2MR website use Hydrologic Engineering Center Hydrologic Modeling System (HEC-HMS) and Hydrologic Engineering Center River Analysis System (HEC-RAS) software. The models collected from this source are summarized below.
- Texas Natural Resources Information System (TNRIS) – United States Geological Survey (USGS) 1-meter resolution 2018 and 2019 LiDAR-based digital elevation models (DEMs)

- TWDB – 2021 Texas Buildings with Social Vulnerability Index (SVI) and Estimated Population (TWDB, Centers for Disease Control and Prevention [CDC], Oak Ridge National Laboratory [ORNL])

Table 2 summarizes the hydraulic and hydrologic models collected for the Task 12 FMPs.

Table 2: Data Sources Per Project

Project	FEMA Effective Model*			Other Source	
	HEC-HMS	HEC-RAS	Other	Modeling Software	Notes
Abbott Road at Tributary A to Salitrillo Creek and at Salitrillo Creek Bridge	✓	✓			
Abbott Road at Unnamed Tributary 1 to Salitrillo Creek LWC Improvement	✓	✓			
Bexar Bowling Way at Cibolo Creek Bridge	✓	✓			
Blanco Road at Cibolo Creek		✓			
Boerne Stage Road at Balcones Creek		✓			
Concepcion				XPSWMM	City of San Antonio
Damage Center 1: Project 1A, B, C				HEC-HMS HEC-RAS	San Antonio River Authority
Damage Center 1 – Project 1 – Detention in East Branch Poth Creek	✓	✓			
Damage Center 2 – Project 1 Culvert Improvements at Manchaca	✓	✓			
Damage Center 2- Project 2 Road connection from Mosspoint to Sunshine	✓	✓			
De Zavala/ Ripple Creek				XPStorm	City of Shavano Park
Elm Spring				XPStorm	City of Shavano Park
Felix Road at Dry Hollow Creek Barrier Arms	✓	✓			
Freudenburg Road at Salitrillo Creek Barrier Arms	✓	✓			
Gass Road at Culebra Creek Tributary D Bridge	✓	✓			
LWC at Old Fredericksburg Rd and Balcones Creek		✓			
Old Frio City Road at North Prong Creek Bridge	✓	✓			
Specht/Obst Road at Cibolo Creek		✓			
Toutant Beauregard at Balcones Creek		✓			
Ullrich Road at Cibolo Creek Barrier Arms	✓	✓			

Wilson 10 - Acquisitions of Flooded Structures					N/A for type for FMP
Woodlawn Lake Option 2				XPSWMM	From City of San Antonio

*Please refer to the Flood Insurance Study (FIS) reports for discussions on the following topics: General Study Information, Terrain Data, Land Cover, Rainfall, Hydrologic Methodologies, Hydraulic Methodologies

4 Hydrologic and Hydraulic Modeling

4.1 Hydrologic Modeling

In most cases, hydrologic models collected for the Task 12 FMP evaluation were used without modification. These models were unmodified because they met the TWDB hydrologic model criteria and are considered best available. Two FMP hydrologic models were updated as described below.

Poth Creek

The hydrologic model named Poth Creek was updated to account for precipitation changes. Updates were made to the 10-, 25-, 50- and 100- year frequency storm events for the Meteorological Models in HEC-HMS using NOAA Atlas 14 precipitation frequency estimates for Poth, Texas. The Poth Creek hydrology model is used for Damage Center 2-Project 1 Culvert Improvements at Manchaca.

East Branch Poth Creek

The hydrologic model named East Branch Poth Creek was updated to account for precipitation changes. Updates were made to the 10-, 25-, 50- and 100- year frequency storm events for the Meteorological Models in HEC-HMS using NOAA Atlas 14 precipitation frequency estimates for Poth, Texas. The East Branch Poth Creek hydrology model is for the Damage Center 1 – Project 1 – Detention in East Branch Poth Creek project. A proposed Basin Model was created to analyze impacts of the proposed detention pond on East Branch Poth Creek.

4.2 Hydraulic Modeling

Hydraulic models collected for Task 12 were used to evaluate baseline and proposed hydraulic conditions. These models were modified to conduct the drainage analysis and help with the other requirements (Impact Analysis and BCA). Updates for these models included:

- Adding, adjusting, or extending cross sections for more creek definition,
- Adjusting/extending the center line,
- Adding terrain, and
- Refining the Manning's values

In addition, HDR developed a new hydraulic model to study FMP impacts as described below.

Abbott Road at Salitrillo Creek and at Tributary A to Salitrillo Creek

The floodplains of Tributary A to Salitrillo Creek (Trib A) and Salitrillo Creek converge at Abbott Road where they are assumed to share the same water surface elevation (WSE). In the effective models both streams are modeled separately, which may result in an underestimation of flows crossing Abbott Road. To better evaluate the crossing conveyance capacity and assess potential improvements a new 1D model was created that includes flows for both creek segments as they cross Abbott Road.

5 Impact Analysis

An FMP is required to have no negative impacts in the neighboring area, either upstream or downstream of the project. No negative impact means that a project will not increase flood risk of surrounding properties. The increase in flood risk must be measured by the 100-year frequency storm water surface elevation and peak discharge using the best available data. No rise in water surface elevation or discharge is permissible, and the study area must be sufficiently large to demonstrate that proposed project conditions are equal to or less than the existing (baseline) conditions.

For the purposes of regional flood planning efforts, a determination of no negative impacts can be established if stormwater runoff does not increase inundation of infrastructure such as residential and commercial structures or exceed the design capacity of stormwater systems. According to the TWDB Exhibit C Technical Guidelines, all of the following requirements should be met to establish no negative impact, as applicable:

1. Stormwater does not increase inundation in areas beyond the public right-of-way, project property, or easement.

2. Stormwater does not increase inundation of storm drainage networks, channels, and roadways beyond design capacity.

3. Maximum increase of 1D Water Surface Elevation must round to 0.0 feet (<0.05 ft) measured along the hydraulic cross-section.

4. Maximum increase of 2D Water Surface Elevations must round to 0.3 feet (<0.35 ft) measured at each computation cell.

5. Maximum increase in hydrologic peak discharge must be <0.5 percent measured at computation nodes (sub-basins, junctions, reaches, reservoirs, etc.). This discharge restriction does not apply to a 2D overland analysis.

If the analysis was performed using 1D modeling software, requirements #1, #2, and #3 are applicable. If the analysis was performed using a 2D modeling software, requirements #1, #2, and #4 are applicable. Please refer to the project Narratives for specific reported numbers to support these requirements.

6 Cost Estimate

Estimated project costs for all FMPs were calculated using 2020 prices. The cost estimates contain all the required applicable TWDB FMP costs including basic engineering fees, special services such as surveying, environmental, and geotech, other

costs such as land/easement acquisition and administration, fiscal services, and contingency. The following assumptions were applied in estimating costs:

- Design – Design costs were estimated using the City of San Antonio 2020 Planning Studies fee table. Depending on estimated construction costs, the design fee percentage ranges between 9.5% to 20%.
- Engineering Contingency – Estimated as 10% of the estimated construction costs.
- Environmental, Archaeological, and Historical Resources – Estimated as $10,000.
- Permit Requirements Costs – Estimated as $8,000.
- Material Testing – Estimated as 1.5% or 2% of the estimated construction costs for projects with construction costs greater than $3M or less than $3M, respectively.
- Construction Contingency – Estimated as 10% of the estimated construction costs.

Utility relocation costs were not included in the FMP cost estimation, so estimated costs may increase if utility relocations are found to be required during later project design phases. For a detailed cost breakdown of each FMP, refer to the project's Cost Summary Sheet in the digital submittal of the Plan.

7 Benefit Cost Analysis

Per the TWDB, each FMP included in the Plan is required to have a benefit cost analysis (BCA) performed. Some flood mitigation studies document a computed benefit cost ratio (BCR) and those can be incorporated into the Plan. For situations where a BCR is not available for a project, TWDB has developed the BCA Input Tool to facilitate the calculation of costs and benefits. The tool estimates flood impacts before and after implementation of the FMP for up to three recurrence interval flood events. Impacts that could be evaluated include impacts to residential buildings, commercial structures, street flooding, low water crossing (LWC) ponding, and recreational benefits.

In addition to the TWDB tool assumptions, the following section describes other assumptions which were applied during the BCA.

7.1 BCA Cost

The 2023 estimated total costs were used in the BCA. A Construction Cost Index (CCI) factor 1.14 was applied to convert the costs from 2020 to 2023 dollars. Costs were input as noted in the FMP reporting tables.

7.2 Construction Year

Construction is assumed to start in the near future, dependent on funding and the community. The construction year start and end dates are set per project and can be found in the BCA in the digital submittal of the Plan.

7.3 Residential

Residential structures are evaluated by the size and amount flooded for the existing (baseline) and proposed project conditions. Based on the BCA Input Tool, size

categories for residential structures are designated as “Small Home” (1000 sq. ft.), “Average Home” (2,500 sq. ft.), and “Large Home” (5,000 sq. ft.). For the analysis, the following refinements to the BCA size assumptions were made:

- Small: x <2500 sq.ft.
- Average: 2500 sq.ft.< x <5000 sq.ft.
- Large: x >5000 sq.ft.

The TWDB tool limits the total amount of residential buildings that can be assessed per project to 100 structures. For some projects, more than 100 structures were impacted. Instead of looking at each individual structure’s damages for existing (baseline) and proposed conditions, the total amount of impacted structures within the same size categories and inundation depths (rounded to the nearest inch) were totaled per analyzed flood event.

7.4 Commercial

Commercial building damages are determined by business type and size (square footage). Due to limited available data on commercial building types, all commercial buildings were assumed to be of “Retail-Clothing” type since this type is closest in “damages per sq.ft.” to the average “damages per sq.ft.” value of all BCA commercial types. To calculate building damages from flood depth data, inundation depths were rounded to the nearest inch.

7.5 Flooded Streets

Streets are considered impassable if the flood depth is above 6 inches. The daily traffic count was estimated based on the TxDOT daily traffic count or the nearest adjacent road, as provided by the TxDOT TPP District Traffic Web Viewer (https://txdot.maps.arcgis.com/apps/webappviewer/index.html?id=06fea0307dda42c1976194bf5a98b3a1). The additional time that the longest detour takes for an individual is calculated assuming a speed limit of 35 miles per hour (mph). The Normal Emergency Medical Services (EMS) response time for both existing (baseline) and proposed conditions is assumed to be 14.5 minutes, based on the rural mean value from Table 2 of the NIH JAMA Surgery study (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5831456/). The EMS response time during a storm event is assumed to double for existing (baseline) conditions compared to the normal response time. For proposed conditions, the EMS response time is scaled to match the difference between detour routes (existing [baseline] and post-project). The number of households impacted by EMS delay due to flooded streets is assumed to be equal to the total number of residential buildings inundated during the given storm event. Similarly, the number of commercial buildings impacted by EMS delay due to flooded streets is assumed to be the total number of commercial buildings inundated during the given storm event.

7.6 Low water crossings

Low water crossings (LWC) are considered impassable if the flood depth is above 6 inches. Projects with LWC benefits are also assumed to have Flooded Streets benefits, both of these benefits were considered in the BCA. LWC benefits are based on reduced

rescues/injuries/fatalities associated with people attempting to cross, whereas Flooded Streets benefits are based on reduced detours.

If there are multiple LWCs in a project that are all in close proximity to one another, it was assumed to evaluate the benefits as one LWC. Aggregate all costs and all benefits to compute one BCA for the multiple LWCs for flood planning purposes.

7.7 Acquisitions and Raising Elevations

Some proposed projects include residential and commercial structures be bought out or raised out of the floodplain by raising the finished floor elevations (FFE) of the structure. To calculate the BCR, pre-calculated benefits were assumed based on the FEMA memorandum with subject titled “Update to ‘Cost-Effectiveness Determinations for Acquisitions and Elevations in Special Flood Hazard Areas Using Pre-Calculated Benefits”. According to this memorandum, the pre-calculated benefits of acquisitions and elevations are:

- Acquisitions: $323,000 per structure
- Elevations: $205,000 per structure

7.8 Benefit Result

The BCA Input Tool is intended to be used in conjunction with the FEMA BCA Toolkit 6.0, which calculates annual benefits from the information compiled in the TWDB BCA Input Tool. The annual benefits data are then entered back into the TWDB BCA Input Tool to compute the resulting BCR for the project. The results table summarizes the impacts as well as the estimated BCR for each FMP per flood event. FMP BCA results are provided in the digital submittal of the Plan.

2023 San Antonio Regional Flood Plan
Project Summary Sheet

Project Name: Abbott Road at Tributary A to Salitrillo Creek and at Salitrillo Creek Bridge

FMP ID: 123000053

Project Sponsor: Bexar County

Project Source: 2022 Bexar County Drainage Needs

Cost Information

Category	Cost*
Design	$748,247
Real Estate	$0
Environmental	$30,000
Construction	$4,689,635
Total Cost**	**$5,468,000**

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

Benefit Cost Analysis (BCA)

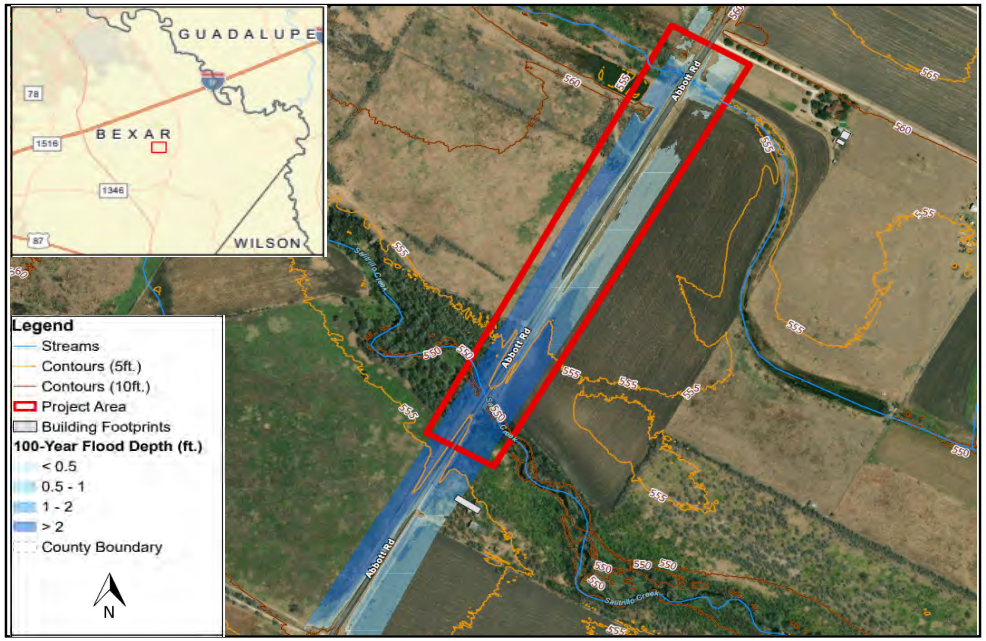
Event Damages	Baseline	Project
10-year storm	$154,238	-
25-year storm	$231,357	-
100-year storm	$223,628	-
Total Benefits	**$ 253,070**	
BCA	**0.05**	

Impact Analysis

Post-Project Total Removed	Storm Event		
	10-year	25-year	100-year
Residential	-	-	-
Commercial	-	-	-
Critical	-	-	-
Flooded Roads (miles)	0.3	0.3	0.3
Others Note	N/A	N/A	N/A
SVI Score			0.280

LWC Level of Service Existing Vs. Proposed

Condition	Level of Service	50-Yr Depth Over Road (ft)	100-Yr Depth Over Road (ft)
Existing	< 10-Yr	3.2 ft	3.4 ft
Proposed	50-Yr	0 ft	0.3 ft



Project Description:

This project will eliminate overtopping of Abbott Road and provide 50-year conveyance design, removing structures from the existing conditions floodplain extents. Proposed improvements consist of channel regrading, increasing the road elevation, upgrading culverts, and adding a bridge. The proposed road profile will increase 3ft from existing. The existing six 24" RCP will be replaced with three 5ft x 2ft culverts and the four 48" RCP will be replaced with a 300ft wide bridge with a 5.5ft high opening. Salitrillo Creek is a stream on an inventory that will require a mussel survey based on requirements by TPWD, an additional cost of $20K was added to account for this.

2023 San Antonio Regional Flood Plan
Project Summary Sheet

Project Name: Abbott Road at Unnamed Tributary 1 to Salitrillo Creek LWC Improvement

FMP ID: 123000054

Project Sponsor: Bexar County

Project Source: 2022 Bexar County Drainage Needs

Cost Information

Category	Cost*
Design	$121,440
Real Estate	$0
Environmental	$10,000
Construction	$607,908
Total Cost**	**$740,000**

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

Benefit Cost Analysis (BCA)

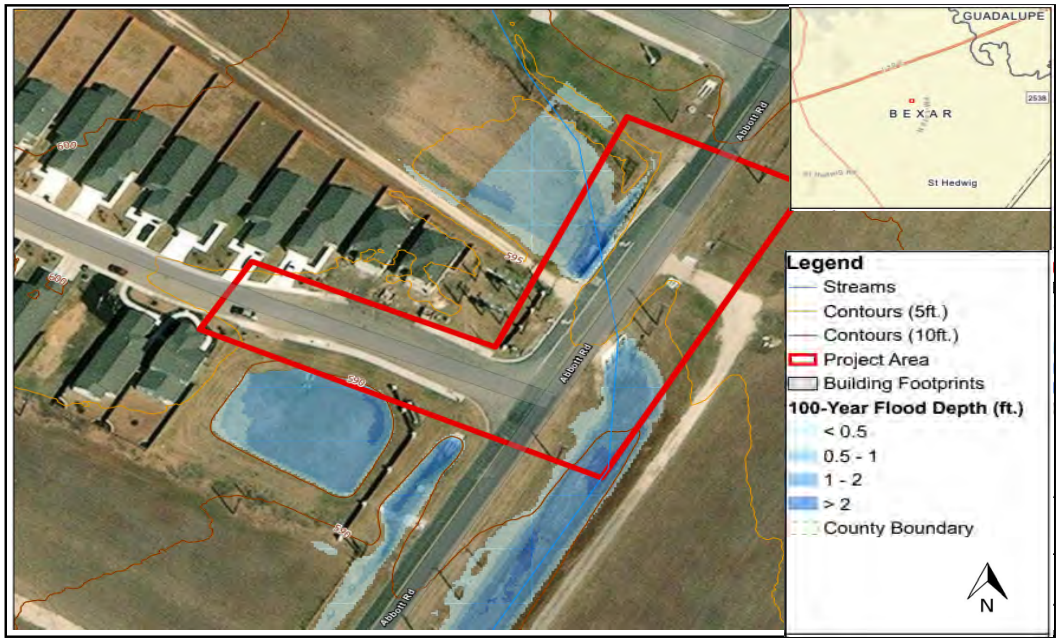
Event Damages	Baseline	Project
10-year storm	$ 112,943	$ -
25-year storm	$ 169,415	$ -
100-year storm	$ 254,122	$ -
Total Benefits	**$ 211,773**	
BCA	**0.3**	

Impact Analysis

Post-Project Total Removed	Storm Event		
	10-year	25-year	100-year
Residential	-	-	-
Commercial	-	-	-
Flooded Road (miles)	0.25	0.25	0.25
Critical	-	-	-
Others Note	N/A	N/A	N/A
SVI Score			0.2803

LWC Level of Service Existing Vs. Proposed

Condition	Level of Service	100-Yr Depth Over
Existing	< 10-Yr	2.1 ft
Proposed	100-Yr	0 ft



Project Description:

This project will eliminate overtopping of Abbott Road and provide 100-year conveyance design, removing structures from the existing conditions floodplain extents. Proposed improvements consist of channel regrading and culvert upgrades. The existing two 36” RCP will be replaced by three 10ft x 3ft reinforced concrete boxes.

2023 San Antonio Regional Flood Plan
Project Summary Sheet

Project Name: Bexar Bowling Way at Cibolo Creek Bridge

FMP ID: 123000055

Project Sponsor: Bexar County and Guadalupe County

Project Source: 2022 Bexar County Drainage Needs

Cost Information

Category	Cost*
Design	$1,711,296
Real Estate	$0
Environmental	$30,000
Construction	$11,510,150
Total Cost**	**$13,252,000**

Benefit Cost Analysis (BCA)

Event Damages	Baseline	Project
10-year storm	$ 34,370	$ -
25-year storm	$ 51,554	$ -
100-year storm	$ 68,739	$ -
Total Benefits	**$ 69,900**	
BCA	**$ 0.01**	

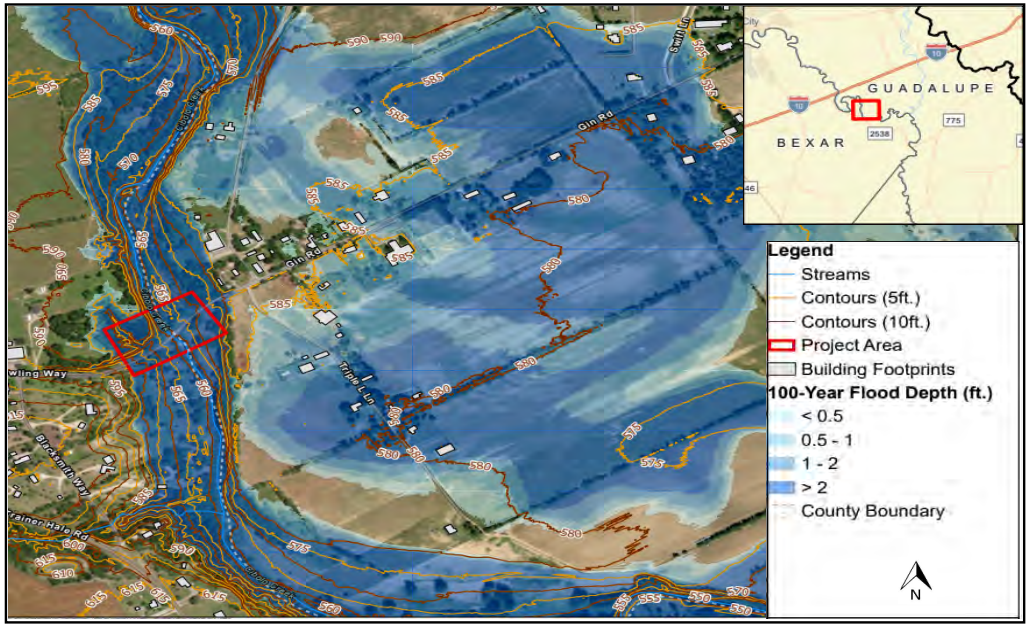
*Costs are using 2020 prices
**Rounded up to the nearest thousand

Impact Analysis

Post-Project Total Removed	Storm Event		
	10-year	25-year	100-year
Residential	-	-	-
Commercial	-	-	-
Critical	-	-	-
Flooded Road(miles)	0.25	0.25	0.25
Others Note	N/A	N/A	N/A
SVI Score			0.2696

LWC Level of Service Existing Vs. Proposed

Condition	Level of Service	100-Yr Depth Over Road (ft)
Existing	< 10-Yr	22ft
Proposed	100-Yr	0



Project Description:

This project will eliminate overtopping of Bexar Bowling Way and provide conveyance for the 100-year storm event, removing the crossing from the existing conditions 100-year floodplain. Proposed improvements consist of removing the existing culvert and adding a bridge. The existing eight 27" corrugated metal pipes will be replaced with an 800ft bridge with a 25ft high opening. Cibolo Creek is a stream that will require a mussel survey based on requirements by TPWD, an additional $20K cost was added to account for this.

The project is on the border of Bexar and Guadalupe County, these counties will need to coordinate on cost and construction phasing.

During the analysis of crossings at Bexar Bowling Way and Ullrich Road at Cibolo Creek, it was determined that a 2D hydraulic study flood study would be needed to evaluate spill flow from the creek.

2023 San Antonio Regional Flood Plan
Project Summary Sheet

Project Name: Blanco Road at Cibolo Creek

FMP ID: 123000036

Project Sponsor: Bexar County/Comal County

Project Source: Bexar County

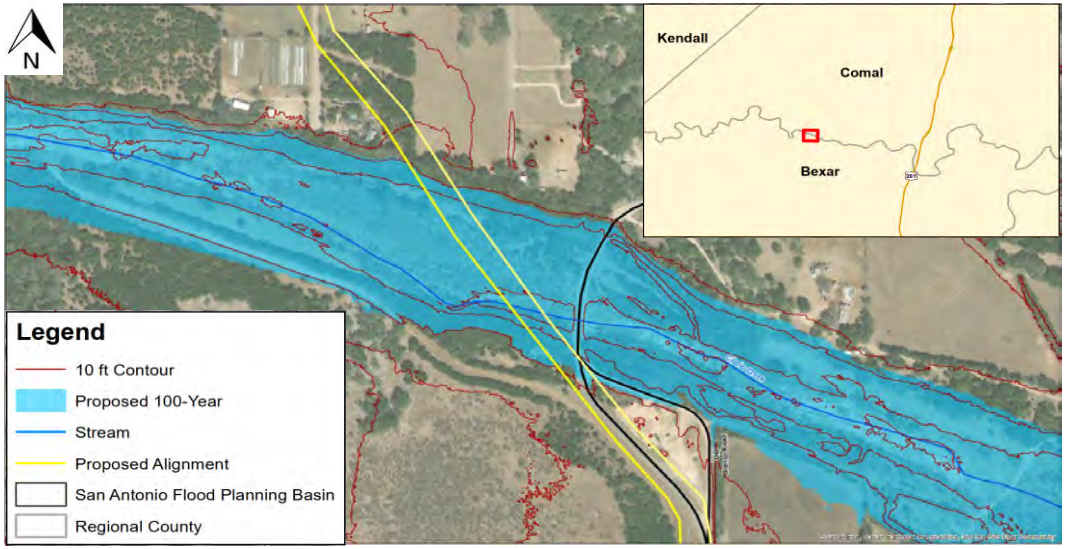
Cost Information

Category	Cost*
Design	$2,871,815
Real Estate	$126,054
Environmental	$10,000
Construction	$18,709,033
Total Cost**	**$21,717,000**

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

Benefit Cost Analysis (BCA)

Event Damages	Baseline	Project
10-year storm	$ 1,082,941	$ -
50-year storm	$ 1,285,885	$ -
100-year storm	$ 1,615,172	$ -
Total Benefits	**$ 1,560,152**	
BCA	**0.1**	



Impact Analysis

Post-Project Total Removed	Storm Event		
	10-year	50-year	100-year
Residential	-	-	-
Commercial	-	-	-
Flooded Roads (miles)	0.111	0.129	0.143
Critical	-	-	-
Others Note	N/A	N/A	N/A
SVI Score			0.20

LWC Level of Service Existing Vs. Proposed

Condition	Level of Service	100-Yr Depth Over Road (ft)
Existing	< 10-Yr	16
Proposed	100-Yr	0

Project Description:

The low water crossing of Blanco Road at Cibolo Creek along the Bexar/Comal County line is undersized and results in it being overtopped during the 2-year storm event. The existing structure consists of 4 corrugated metal pipe culverts. The 100-year storm event overtops Blanco Road by a max depth of 16 ft. When the structure overtops, it cuts off the main route for the nearby neighborhood. The proposed project at Blanco Road and Cibolo Creek is designed to convey the 100-year storm event by completely replacing the existing culvert system with a 550 ft long by 144 ft wide bridge. The proposed bridge will require increasing the road elevation by 20 ft above the existing road elevation. The future expansion of Blanco Road will require roadway realignment and the bridge is intended to align with future expansion plans for Blanco Road by Comal and Bexar County. While a final alignment has not been determined, this study makes assumptions on bridge alignment and property acquisition that would accommodate the future roadway project. The design removes the roadway/bridge from Cibolo Creek's floodplain, which provides access to a main road. The project location is also adjacent to the Air Force Base property "Camp Bullis", a critical facility.

2023 San Antonio Regional Flood Plan
Project Summary Sheet

Project Name: Boerne Stage Road at Balcones Creek

FMP ID: 123000038

Project Sponsor: Kendall County (borders with Bexar County)

Project Source: Kendall County (borders with Bexar County)

Cost Information

Category	Cost*
Design	$833,545
Real Estate	$493,470
Environmental	$10,000
Construction	$4,517,301
Total Cost**	**$5,855,000**

Benefit Cost Analysis (BCA)

Event Damages	Baseline	Project
10-year storm	$ 376,840	$ -
Total Benefits	**$ 467,622**	
BCA	**0.1**	

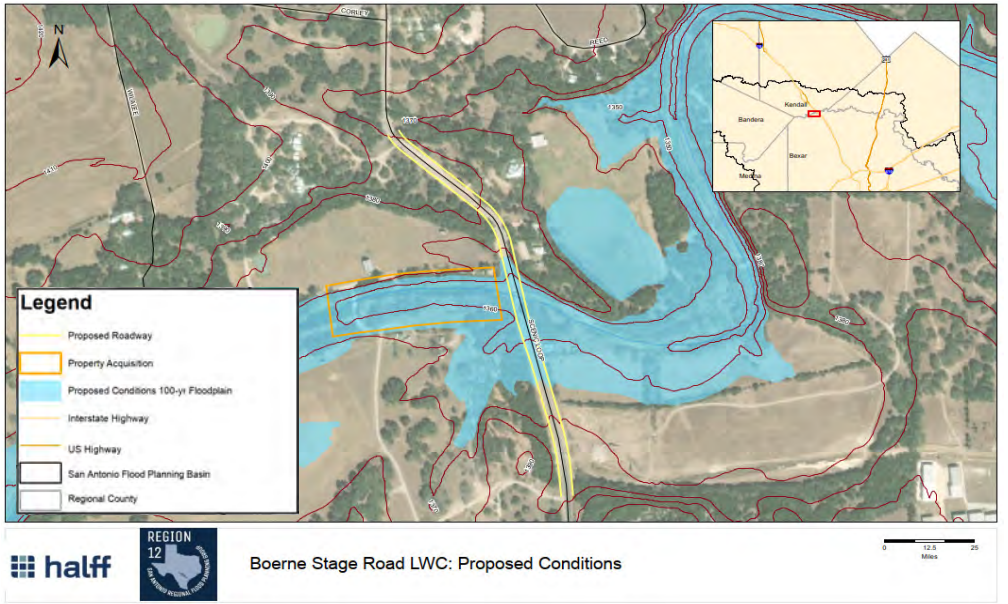
* Costs use September 2020 pricing
**Rounded up to the nearest thousand

Impact Analysis

Post-Project Total Removed	Storm Event		
	10-year	50-year	100-year
Residential	-	-	-
Commercial	-	-	-
Flooded Roads (miles	0.083	-	-
Critical	-	-	-
Others Note	N/A	N/A	N/A
SVI Score			0.35

LWC Level of Service Existing Vs. Proposed

Condition	Level of Service	10-Yr Depth Over Road (ft)
Existing	< 10-Yr	6.7
Proposed	10-Yr	0



Project Description:

At the Boerne Stage Road crossing with Balcones Creek, the road is overtopped by the 10-year flood event at a maximum depth of 6.5 ft. The length of roadway flooded is approximately 0.13 miles. The proposed project is a bridge that will raise the roadway over the low water crossing at the intersection of Balcones Creek and Boerne Stage Road. The proposed bridge will convey the 10-year flood event and lower the depth of water overtopping the roadway for larger flood events. Due to right of way and topography constraints, the 100-year design was not considered for this proposed improvement. The proposed roadway and bridge alignment will straighten the sharp curves that currently exist in Boerne Stage Road within the proximity of the Balcones Creek crossing. The proposed bridge will be approximately 280' in length with an elevated roadway approach of 250' that ties into the existing road. In addition, the project will remove 2 inline structures directly upstream of the proposed structure, which will require property access or acquisition. A flood beacon will be installed for safety at higher flood events. For this study, the most conservative estimate assumes acquisition for a public right of way easement. This project is located at the Kendall County/Bexar County line.

2023 San Antonio Regional Flood Plan
Project Summary Sheet

Project Name: Damage Center 1: Project 1A, B, C

FMP ID: 123000056

Project Sponsor: Floresville

Project Source: 2012 Wilson County Watershed Master Plan

Cost Information

Category	Cost*
Design	$1,082,552
Real Estate	$287,334
Environmental	$10,000
Construction	$2,928,368
Total Cost**	**$4,309,000**

Benefit Cost Analysis (BCA)

Event Damages	Baseline	Project
10-year storm	$ 1,374,634	$ 948,149
50-year storm	$ 2,360,181	$ 1,672,657
100-year storm	$ 6,189,177	$ 2,083,814
Total Benefits	**$ 1,354,496**	
BCA	**0.3**	

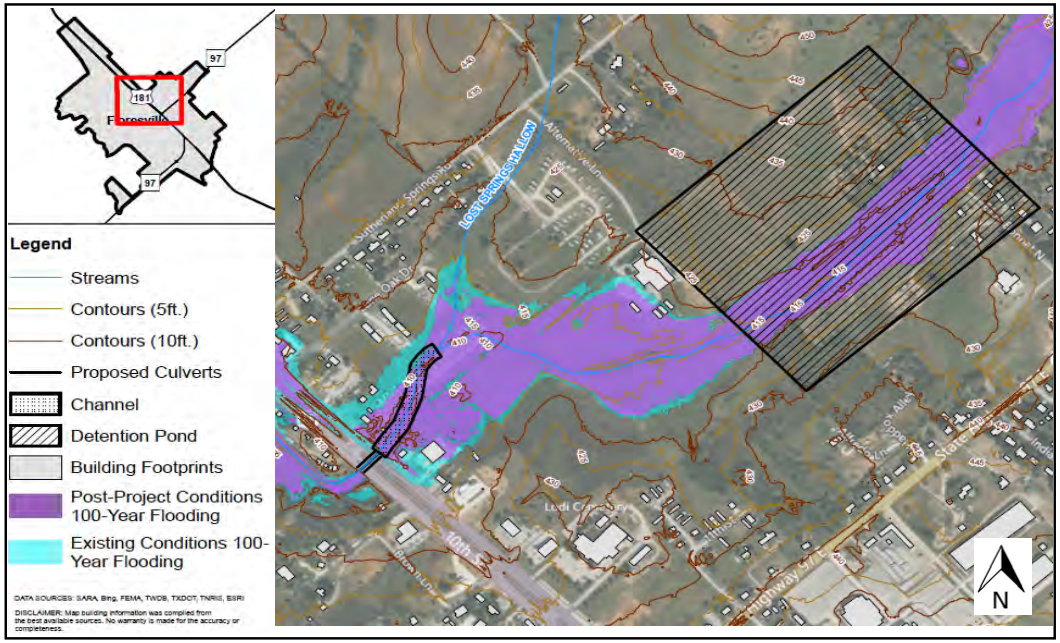
*Costs Adjusted from 2012 to 2020 using CCI
**Rounded up to the nearest thousand

Impact Analysis

Post-Project Total Removed	Storm Event		
	10-year	50-year	100-year
Residential	4	6	6
Commercial	5	3	4
Critical	-	-	1
Road (miles)	-	-	0.25
Others Note	N/A	N/A	N/A
SVI Score			0.84

LWC Level of Service Existing Vs. Proposed

Condition	Level of Service	100-Yr Depth Over Road (ft)
Existing	< 100-Yr	0.4 ft
Proposed	100-Yr	0 ft



Project Description:

Detention pond, channel improvements, and additional culverts are required to reduce the downstream flooding, aid in removing the majority of the existing structures from the FEMA floodplain and convey the 100-Yr flow. The proposed detention pond will be located along Lodi Branch north of Haddox Alley and store approximately 60-acres-ft. The proposed channel improvements run along Lodi Branch, from the confluence with Lost Springs Hallow to US Highway 181. The proposed channel will be 1,200ft long with a bottom width of 100ft. Currently there are nine 4-ft by 7-ft culverts under Highway 181, this project proposes to add three additional 4-ft by 7-ft. A USACE 404 permit and a TxDOT ROW Permit will be required.
The cost estimate for landscaping was increased to 10% to allow for potential water quality components.

2023 San Antonio Regional Flood Plan
Project Summary Sheet

Project Name: Damage Center 1 Project 1 – Detention in East Branch Poth Creek

FMP ID: 123000029

Project Sponsor: City of Poth

Project Source: 2012 Wilson County Watershed Master Plan (San Antonio River Authority)

Cost Information

Category	Cost*
Design	$270,224
Real Estate	$724,998
Environmental	$30,000
Construction	$889,348
Total Cost**	**$1,915,000**

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

Benefit Cost Analysis (BCA)

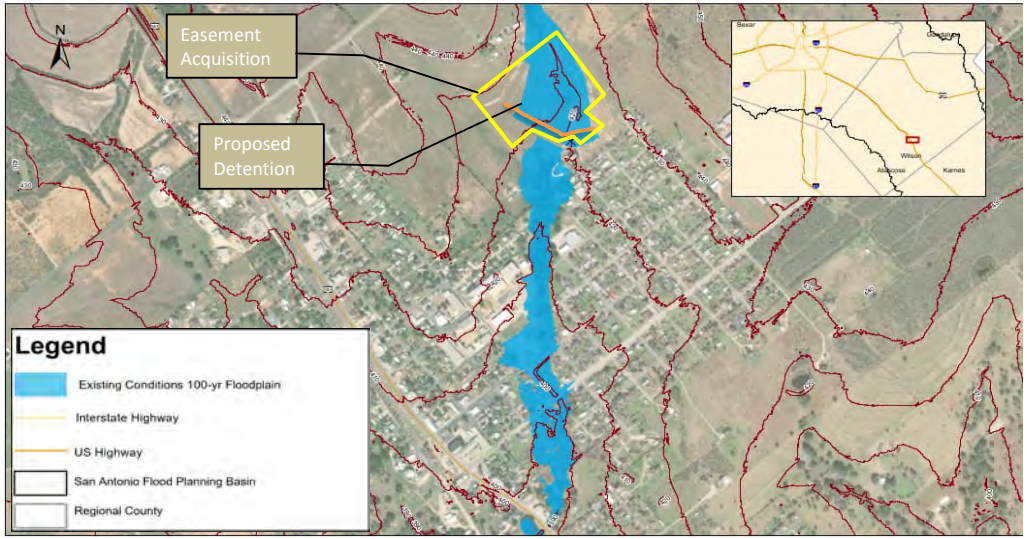
Event Damages	Baseline	Project
10-year storm	$ 2,125,754	$ -
25-year storm	$ 3,160,196	$ 2,092,187
100-year storm	$ 3,766,602	$ 2,598,603
Total Benefits	**$ 2,558,946**	
BCA	**1.6**	

Impact Analysis

Post-Project Total Removed	Storm Event		
	10-year	25-year	100-year
Residential	2	6	9
Commercial	-	-	-
Flooded Roads (miles)	0	0.02	0.026
Critical	-	-	-
Others Note	N/A	N/A	N/A
SVI Score			0.36

LWC Level of Service Existing Vs. Proposed

Condition	Level of Service	50-Yr Depth Over Road (ft)
Existing	25-Yr	0.6
Proposed	50-Yr	0



Project Description:

The problem area is in Wilson County in the City of Poth. The 2012 Master Plan explored detention as an alternative for relieving property and infrastructure flooding throughout the City of Poth. The proposed detention pond will be located along East Branch of Poth Creek upstream of the intersection of Eschenburg Street and Welhausen Street. While the Master Plan proposed a 27-acre pond, based on topography and the location of several structures, the updated analysis included a 17-acre pond. The detention pond could hold 52 ac-ft of water and reduce flows by 400 cfs. The proposed improvements will reduce the depth of flooding for several structures and improve access at US Highway 181 for the 50-year flood event. This project will require acquisition of inundation easements for the area of impoundment and property acquisition for the detention ponds berm.

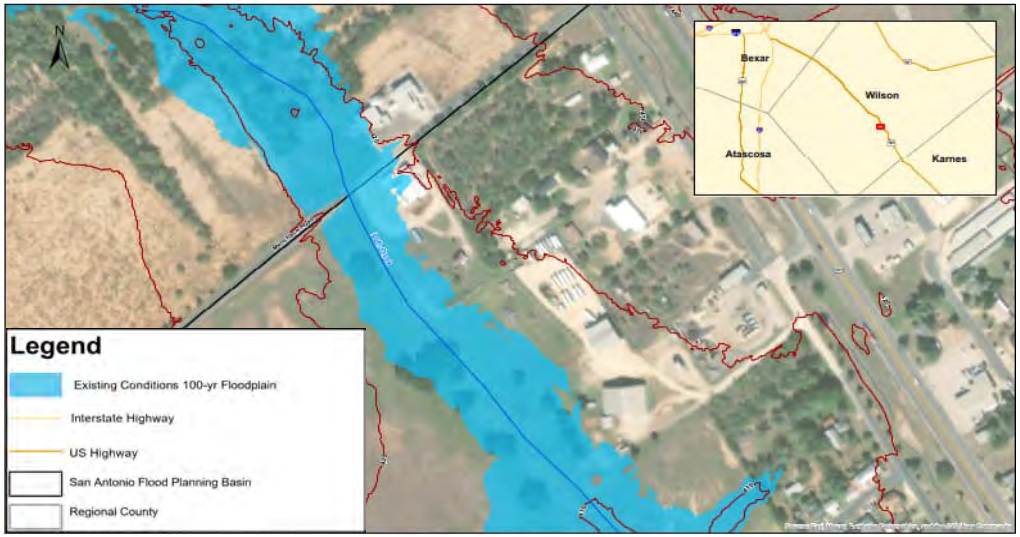
2023 San Antonio Regional Flood Plan
Project Summary Sheet

Project Name: Damage Center 2-Project 1 Culvert Improvements at Menchaca

FMP ID: 123000030

Project Sponsor: City of Poth

Project Source: 2012 Wilson County Watershed Master Plan (San Antonio River Authority)



Cost Information

Category	Cost*
Design	$367,872
Real Estate	$0
Environmental	$10,000
Construction	$1,825,973
Total Cost**	**$2,204,000**

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

Benefit Cost Analysis (BCA)

Event Damages	Baseline	Project
10-year storm	$390,698	-
25-year storm	$468,852	-
100-year storm	$520,947	-
Total Benefits	**$550,850**	-
BCA	**0.3**	

Impact Analysis

Post-Project Total Removed	Storm Event		
	10-year	25-year	100-year
Residential	-	-	-
Commercial	-	-	-
Flooded Roads (miles)	0.0275	0.044	0.0465
Critical	-	-	-
Others Note	N/A	N/A	**N/A**
SVI Score			0.36

LWC Level of Service Existing vs. Proposed

Condition	Level of Service	100-Yr Depth Over Road (ft)
Existing	< 10-Yr	2 ft
Proposed	100-Yr	0

Project Description:

The existing crossing at Menchaca (County Road 220) consists of one 3 ft by 5 ft box culvert. This box culvert is unable to pass the 10 year flood event without significant overtopping. Results of the hydraulic analysis indicate that flooding for up to the 100-year flood event could be alleviated by the addition of a 250 ft long bridge. Improving this crossing would provide emergency access to the areas of Poth west of Poth Creek and allow the school district to utilize their property more effectively. Citizens would also have a safe route to the existing schools and town center.

2023 San Antonio Regional Flood Plan
Project Summary Sheet

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

FMP ID: 121000051

Project Sponsor: City of Poth

Project Source: 2012 Wilson County Watershed Master Plan

Cost Information

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

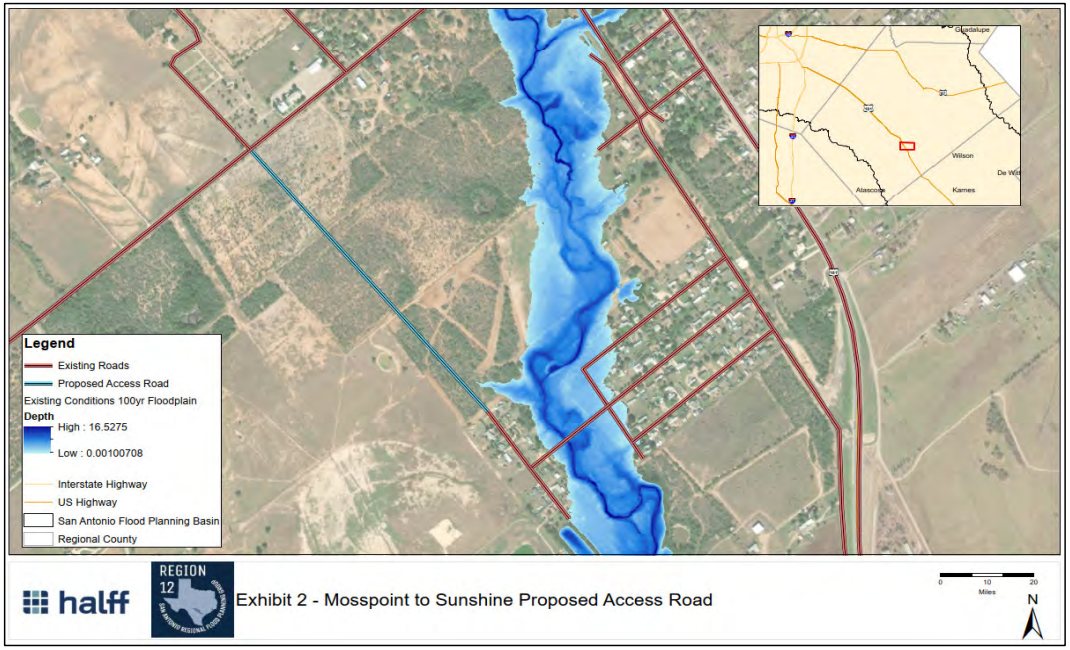
Benefit Cost Analysis (BCA)

Event Damages	Baseline	Project
10-year storm	$ 3,920	$ -
50-year storm	$ 3,924	$ -
100-year storm	$ 3,928	$ -
Total Benifits	**$ 4,864**	
BCA	**0.02**	

* Cost set to September 2020 values
**Rounded up to the nearest thousand

Impact Analysis

Post-Project Total Removed	Storm Event		
	10-year	50-year	100-year
Residential			
Commercial			
Critical	-	-	-
Road (miles)	0.09	0.11	0.14
Others Note			
SVI Score			0.36



Project Description:

Residents along Moss Point Street in Poth, Texas to no have a safe route of travel for evacuation during a flood event. In addtion, emergency vehicles are unable to access the area, cutting off police, fire and EMS. At Moss Point Drive, the only outlet, Oakland Street, becomes overtopped starting at the 10-year flood event and flood waters cover up to 0.09 miles of Oakland Street at depths of up to 3 feet. This project will provide unflooded access from Moss Point Street to Sunshine Drive. Adding a new roadway from the dead end of Moss Point, north towards FM 541 at Sunshine Dr, will provide safe access in the event of a 100-year flood. Under current conditions, they will remain trapped during the 10-year, 50-year, 100-year flood events. In addition to safe passage for residents, this additional access will allow emergency vehicles to access the are during a flood event. The proposed access road will be approximately 3000 feet in length with a width of 28 feet that will tie to both FM 541 and Sunshine Drive.

2023 San Antonio Regional Flood Plan
Project Summary Sheet

Project Name: DeZavala/Ripple Creek

FMP ID: 123000035

Project Sponsor: City of Shavano Park

Project Source: 2020 Preliminary Engineering Report

Cost Information

Category	Cost*
Design	$280,861.58
Real Estate	$0.00
Environmental	$10,000.00
Construction	$1,496,394.73
Total Cost**	**$1,788,000.00**

*Costs Adjusted using CCI

**Rounded up to the nearest thousand

Benefit Cost Analysis (BCA)

Event Damages	Baseline	Project
25-year storm	$ 420,818	$ 297,492.00
100-year storm	$ 140,032	$ 126,140.00
Total Benefits	**$ 31,577**	
BCA	**0.0**	

Impact Analysis

Post-Project Total Removed	Storm Event		
	25-year	100-year	
Residential	4.00	1.00	
Commercial			
Critical			
Road (miles)	0.10	0.11	
Others Note			
SVI Score		0.01	

Project Description:

Currently a significant amount of runoff collects in a low spot along De Zavala Rd, northeast of Ripple Creek Rd. This pooled up storm water is then conveyed through a natural low which traverses behind almost two dozen homes towards Olmos Creek subjecting at least nine homes to varying degrees of flooding. The natural channel also crosses Ripple Creek Rd, rendering the roadway unnavigable by nearby residents during any storm event and relegating residents to alternative access points.

This project proposes an underground storm drain system that intercepts much of the runoff from the low at De Zavala Rd through a 4-way inlet and conveys it southwest towards an existing culvert crossing on De Zavala Rd where it then discharges into Olmos Creek.

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

2023 San Antonio Regional Flood Plan
Project Summary Sheet

Project Name: Elm Spring

FMP ID: 123000034

Project Sponsor: City of Shavano Park

Project Source: Shavano Park Preliminary Engineering Report'

Cost Information

Category		Cost*
Design		$340,048.99
Real Estate		$0.00
Environmental		$10,000.00
Construction	$	1,679,059.39
Total Cost**	**$**	**2,030,000.00**

*Costs Adjusted using CCI

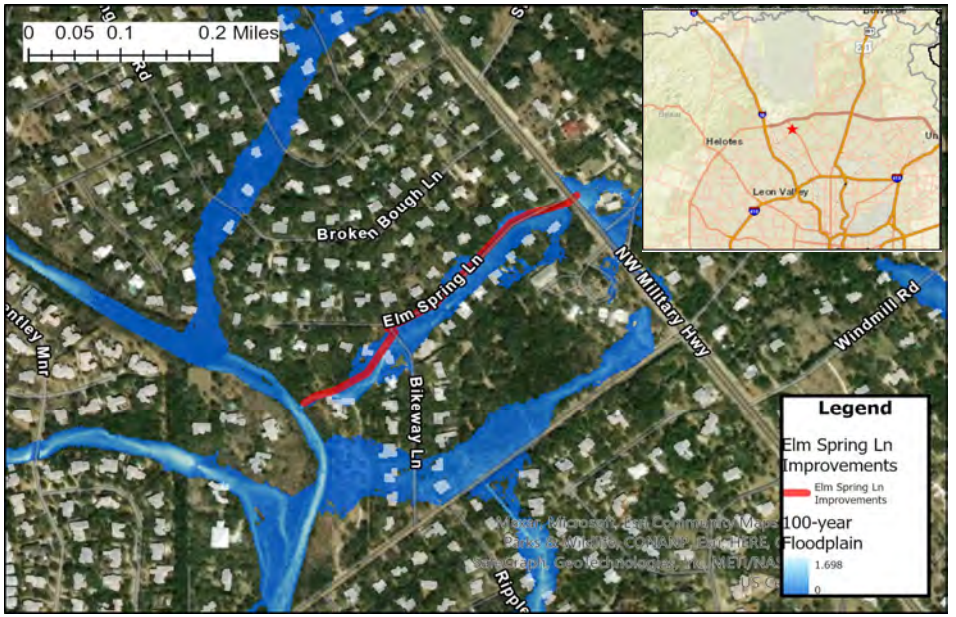
**Rounded up to the nearest thousand

Benefit Cost Analysis (BCA)

Event Damages		Baseline		Project
25-year storm	$	205,491	$	-
100-year storm	$	663,007	$	-
Total Benefits	**$**	**219,677**		
BCA		**0.1**		

Impact Analysis

Post-Project Total Removed	Storm Event		
	25-year	100-year	
Residential	2.00	4.00	
Commercial			
Critical			
Road (miles)	0.06	0.09	
Others Note			
SVI Score		0.01	



Project Description:

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

An underground storm drain system has been proposed to alleviate roadway flooding by intercepting water near NW Military with a 4-way inlet, conveying it through the underground system and discharging into an earthen channel that flows downstream into Olmos Creek.

The project is anticipated to remove at least two of the ten homes from the limits of the 25-year floodplain and four from the 100-year floodplain.

2023 San Antonio Regional Flood Plan
Project Summary Sheet

Project Name: Felix Road at Dry Hollow Creek Barrier Arms

FMP ID: 123000057

Project Sponsor: Bexar County and Wilson County

Project Source: 2022 Bexar County Drainage Needs

Cost Information

Category	Cost*
Design	$30,636
Real Estate	$0
Environmental	$0
Construction	$133,199
Total Cost**	**$164,000**

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

Benefit Cost Analysis (BCA)

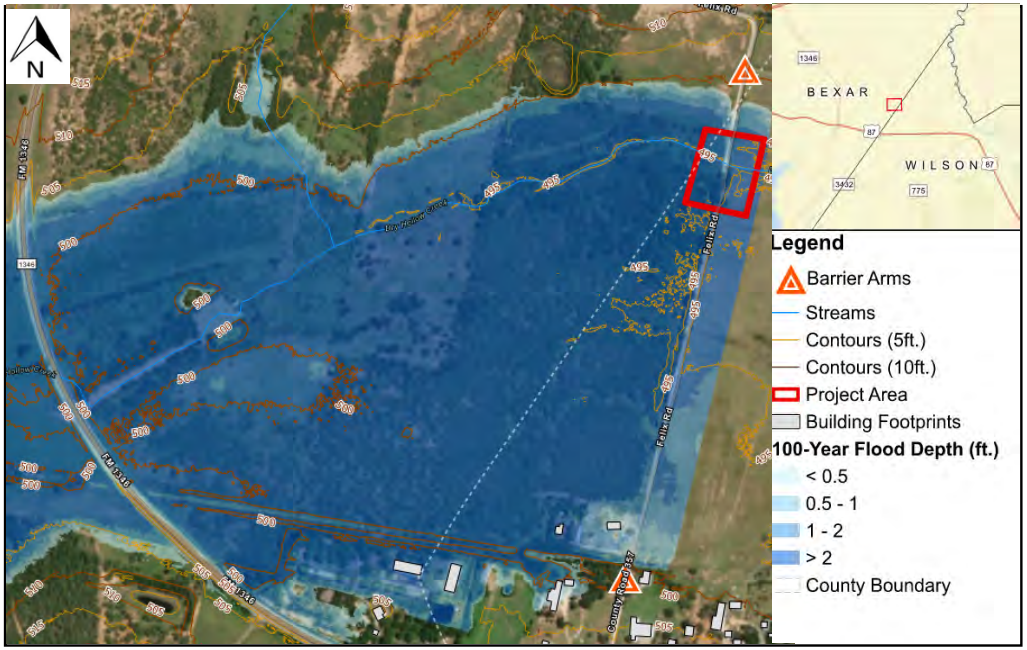
Event Damages	Baseline	Project
10-year storm	$ 14,452	-
25-year storm	$ 26,289	-
100-year storm	$ 25,455	-
Total Benefits	**$ 27,313**	
BCA	**$ 0.17**	

Impact Analysis

Post-Project Total Removed	Storm Event		
	10-year	25-year	100-year
Residential	-	-	-
Commercial	-	-	-
Flooded Roads (miles)	0.4	0.4	0.4
Critical	-	-	-
Others Note	N/A	N/A	N/A
SVI Score			0.4472

LWC Level of Service Existing Vs. Proposed

Condition	Level of Service	100-Yr Depth Over Road (ft)
Existing	< 10-Yr	3 ft



Project Description:

This project will reduce potential danger at the LWC by discouraging vehicles from crossing the road during a flood event. The proposed improvements consist of adding flashing lights and an automatic barrier arm on each side of the LWC that will be lowered when the road is overtopped. The LWC is on the border of Bexar and Wilson County, an automatic barrier arm is anticipated to be placed in each county. It is recommended that these counties coordinate on cost and construction.

Other alternatives were considered, such as upgrading the LWC to a bridge. These alternatives were deemed infeasible due to high construction costs and few estimated benefits associated with raising this non-critical road out of the floodplain.

A more crucial crossing to improve is FM 1346. This crossing is 3,000ft upstream of Felix Road and is overtopped during the 10% flood event. This is the main road for residents and the detour route would take 13mins.

2023 San Antonio Regional Flood Plan
Project Summary Sheet

Project Name: Freudenburg Road at Salitrillo Creek Barrier Arms

FMP ID: 123000058

Project Sponsor: Bexar County

Project Source: 2022 Bexar County Drainage Needs

Cost Information

Category	Cost*
Design	$30,636
Real Estate	$0
Environmental	$0
Construction	$133,199
Total Cost**	**$164,000**

Benefit Cost Analysis (BCA)

Event Damages	Baseline	Project
10-year storm	$ 15,041	-
25-year storm	$ 22,561	-
100-year storm	$ 106,197	-
Total Benefits	**$ 45,107**	
BCA	**0.3**	

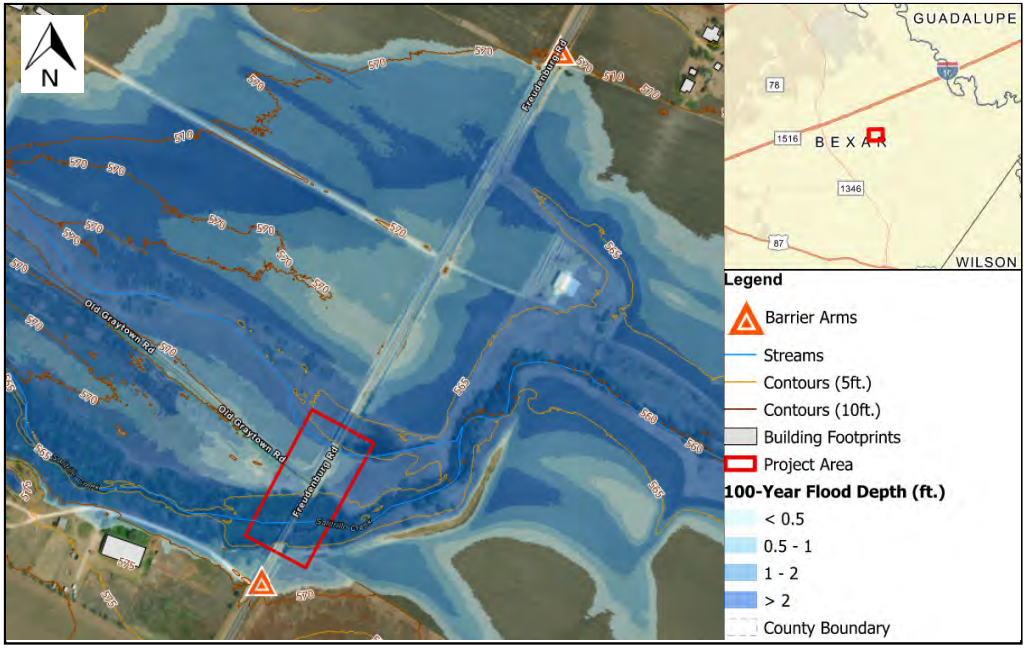
*Costs are using 2020 prices
**Rounded up to the nearest thousand

Impact Analysis

Post-Project Total Removed	Storm Event		
	10-year	25-year	100-year
Residential	-	-	-
Commercial	-	-	-
Flooded Roads (miles)	0.4	0.4	0.4
Critical	-	-	-
Others Note	N/A	N/A	N/A
SVI Score			0.2803

LWC Level of Service Existing Vs. Proposed

Condition	Level of Service	100-Yr Depth Over Road (ft)
Existing	< 25-Yr	1-3 ft



Project Description:

This project will reduce potential danger at the LWC by discouraging vehicles from crossing the road during a flood event. The proposed improvements consist of adding flashing lights and an automatic barrier arm on each side of the LWC that will be lowered when the road is overtopped. Other alternatives were considered, such as upgrading the LWC to two 250ft span bridges and six 6ft x 5ft concrete boxes. These alternatives were deemed infeasible due to high construction costs and few estimated benefits associated with raising this non-critical road out of the floodplain.

2023 San Antonio Regional Flood Plan
Project Summary Sheet

Project Name: Gass Road at Culebra Creek Tributary D Bridge

FMP ID: 123000059

Project Sponsor: Bexar County

Project Source: 2022 Bexar County Drainage Needs

Cost Information

Category	Cost*
Design	$536,927
Real Estate	$0
Environmental	$10,000
Construction	$3,350,875
Total Cost**	**$3,898,000**

Benefit Cost Analysis (BCA)

Event Damages	Baseline	Project
10-year storm	$ 4,655,612	$ -
25-year storm	$ 5,603,250	$ -
100-year storm	$ 5,761,320	$ -
Total Benefits	**$ 6,281,841**	
BCA	**1.7**	

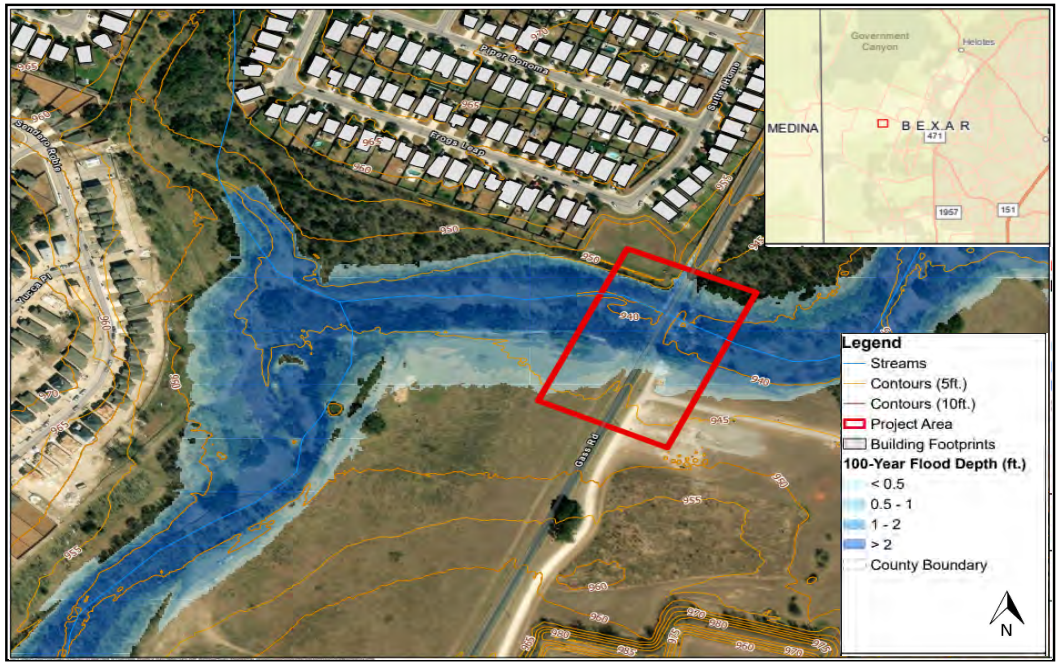
*Costs are using 2020 prices
**Rounded up to the nearest thousand

Impact Analysis

Post-Project Total Removed	Storm Event		
	10-year	25-year	100-year
Residential	-	-	-
Commercial	-	-	-
Flooded Road (miles)	0.25	0.25	0.25
Critical	-	-	-
Others Note	N/A	N/A	N/A
SVI Score			0.211

LWC Level of Service Existing Vs. Proposed

Condition	Level of Service	100-Yr Depth Over Road (ft)
Existing	< 10-Yr	3.3 ft
Proposed	100-Yr	0



Project Description:

This project will eliminate overtopping of Gass Road and provide 100-year conveyance design, removing structures from the existing conditions floodplain extents. Proposed improvements consist of channel regrading, increasing the road elevation and adding a bridge. The proposed road profile will increase 8ft from existing. The existing one 2.25" arch pipe will be replaced with a 300ft wide bridge with a 6ft high opening.
Note that when this road floods, there is no detour route present.

2023 San Antonio Regional Flood Plan
Project Summary Sheet

Project Name: Old Fredericksburg Road at Balcones Creek

FMP ID: 123000033

Project Sponsor: Kendall County/Bexar County

Project Source: Kendall County/Bexar County

Cost Information

Category	Cost*
Design	$1,412,860
Real Estate	$264,039
Environmental	$10,000
Construction	$8,582,295
Total Cost**	**$10,270,000**

Benefit Cost Analysis (BCA)

Event Damages	Baseline	Project
10-year storm	$ 105,699	$ -
50-year storm	$ 106,160	$ -
Total Benefits	**$ 131,511**	
BCA	**0**	

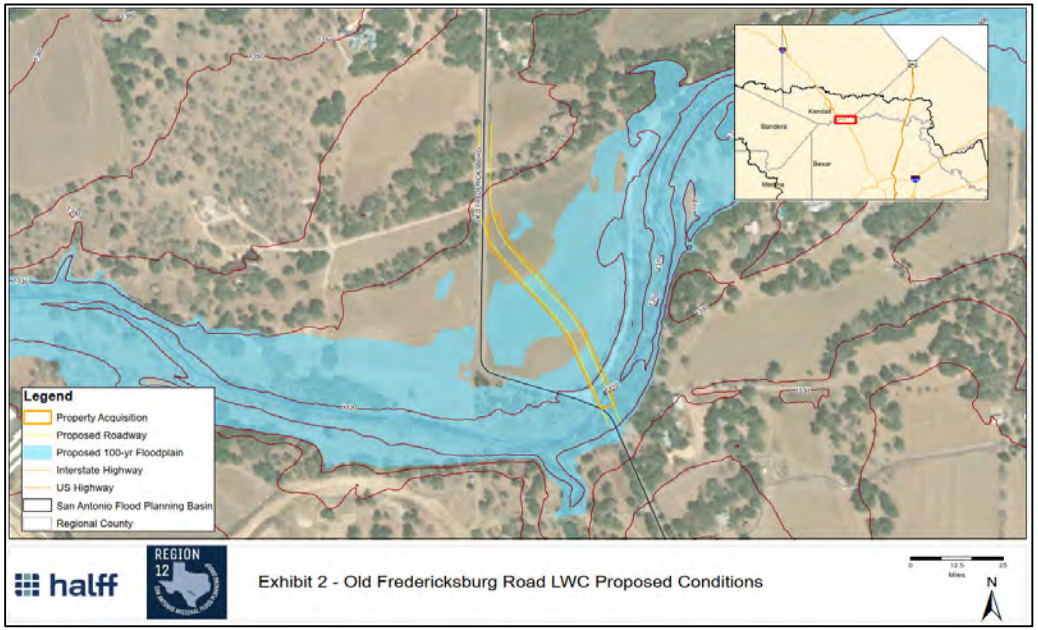
**Rounded up to the nearest thousand

Impact Analysis

Post-Project Total Removed	Storm Event		
	10-year	50-year	100-year
Residential	-	-	-
Commercial	-	-	-
Flooded Roads (miles)	0.067	0.087	-
Critical	-	-	-
Others Note	N/A	N/A	N/A
SVI Score			0.35

LWC Level of Service Existing Vs. Proposed

Condition	Level of Service	50-Yr Depth Over Road (ft)
Existing	< 10-Yr	10.45
Proposed	50-Yr	0



Project Description:

At the Old Fredericksburg Road crossing with Balcones Creek, the road is currently overtopped by the 10-year flood event and flood waters reach a maximum depth of 10 feet. The length of roadway flooded is approximately 0.12 miles at the 100-year flood event. The proposed improvements include constructing a bridge to raise the roadway over the low water crossing at the intersection of Balcones Creek and Old Fredericksburg Road and roadway realignment to straighten the sharp curves that currently exist on Old Fredericksburg Road near the Balcones Creek crossing. The proposed bridge will safely pass the 50-year flood event and lower the depth of water overtopping the roadway during larger flood events. In addition, a flood beacon will be added for safety. The proposed bridge will be approximately 400 feet in length with a connecting roadway realignment of 1350 feet that ties into the existing road. This project is near the county boundary of Bexar and Kendall Counties.

2023 San Antonio Regional Flood Plan
Project Summary Sheet

Project Name: Specht & Obst Road at Cibolo Creek

FMP ID: 123000037

Project Sponsor: Bexar County/Comal County

Project Source: Bexar County/Comal County

Cost Information

Category	Cost*
Design	$695,091
Real Estate	$21,182
Environmental	$10,000
Construction	$3,766,868
Total Cost**	**$4,494,000**

*Costs from 2020 prices
**Rounded up to the nearest thousand

Benefit Cost Analysis (BCA)

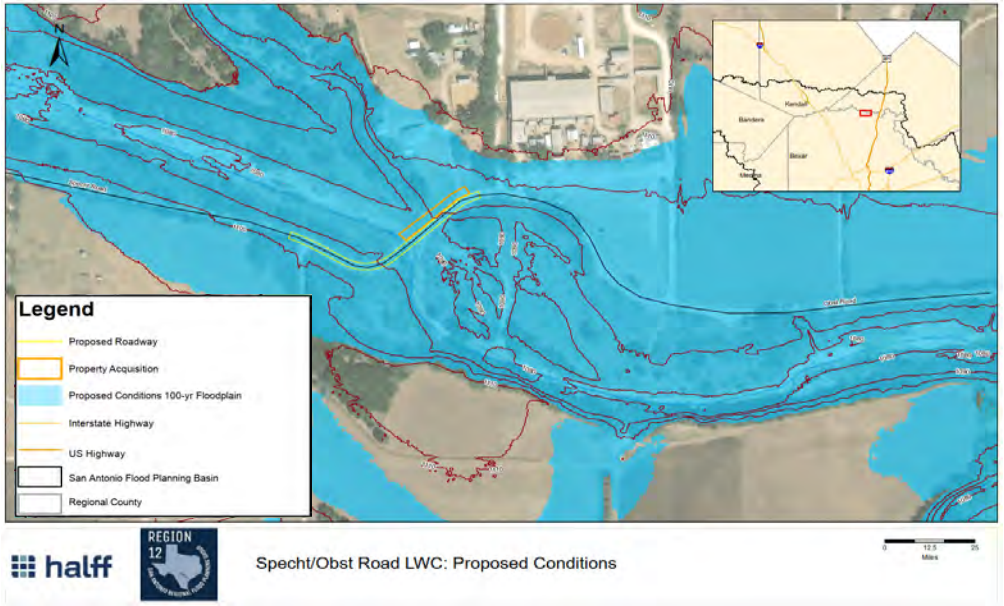
Event Damages	Baseline	Project
2-year storm	$ 378,726	$ 1,494
10-year storm	$ 378,726	$ 189,363
100-year storm	$ 378,726	$ 189,363
Total Benefits	**$ 2,031,323**	
BCA	**0.5**	

Impact Analysis

Post-Project Total Removed	Storm Event		
	2-year	10-year	100-year
Residential	-	-	-
Commercial	-	-	-
Flooded Roads (miles)	0.08	-	-
Critical	-	-	-
Others Note	1 Death		
SVI Score			0.20

LWC Level of Service Existing Vs. Proposed

Condition	Level of Service	2-Yr Depth Over Road (ft)
Existing	< 2-Yr	8
Proposed	2-Yr	0



Project Description:

At the Specht and Obst Road crossing with Cibolo Creek, the road is currently being overtopped by the 2-year flood event at a maximum depth of 7.8 ft. In 2010, there was a fatality at this crossing during a flash flood event. The length of roadway being flooded is approximately 2.2 miles. This project proposed construction of a bridge to raise the roadway over the low water crossing at the intersection of Cibolo Creek and Specht and Obst Road. The proposed bridge will safely pass the 2-year flood event and lower the depth of water overtopping the roadway for larger flood events. The proposed roadway and bridge alignment will raise the road for residents in the proximity of Cibolo Creek crossing and access will be required to properly tie in adjoining driveways to the proposed raised roadway. In addition, a flood beacon will be added for safety at higher flood events. The proposed bridge will be approximately 270' in length with a connecting roadway realignment of 470' that ties into the existing road. This project is located at the Bexar County/Comal County line.

2023 San Antonio Regional Flood Plan
Project Summary Sheet

Project Name: Toutant Beauregard at Balcones Creek

FMP ID: 123000038

Project Sponsor: Kendall County/Bexar County Kendall

Project Source: County/Bexar County

Cost Information

Category	Cost*
Design	$577,048
Real Estate	$118,550
Environmental	$10,000
Construction	$2,940,681
Total Cost**	**$3,647,000**

Benefit Cost Analysis (BCA)

Event Damages	Baseline	Project
10-year storm	$ 209,868	$ -
50-year storm	$ 209,868	$ 66,145
Total Benefits	**$ 243,677**	
BCA	**0.1**	

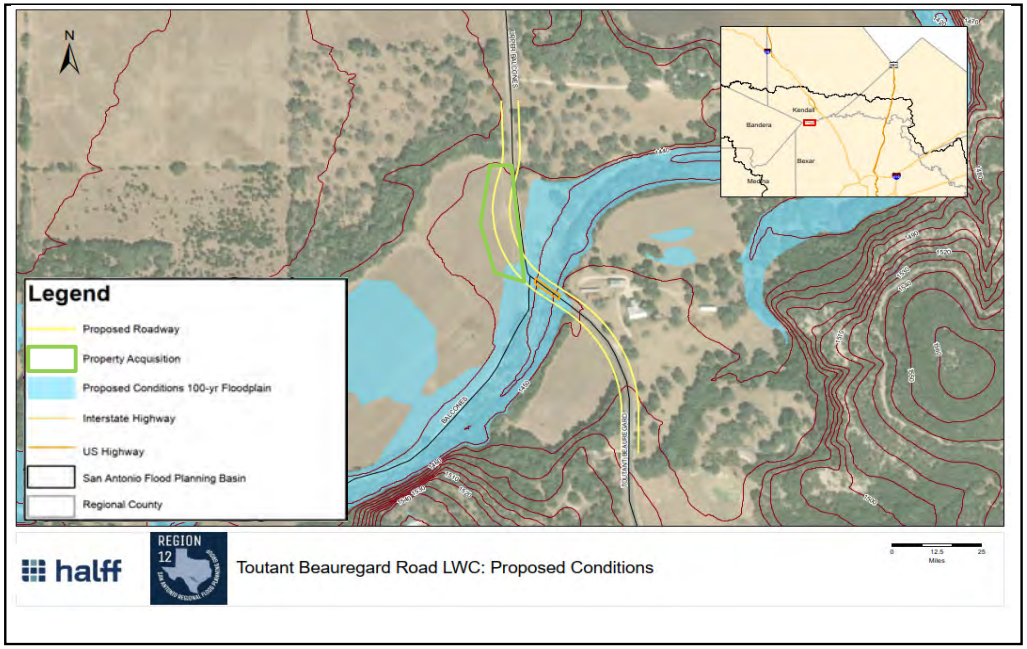
**Rounded up to the nearest thousand

Impact Analysis

Post-Project Total Removed	Storm Event		
	10-year	50-year	100-year
Residential	-	-	-
Commercial	-	-	-
Flooded Roads (miles)	0.045	-	-
Critical	-	-	-
Others Note	N/A	N/A	N/A
SVI Score			0.13

LWC Level of Service Existing Vs. Proposed

Condition	Level of Service	10-Yr Depth Over Road (ft)
Existing	< 10-Yr	7.5
Proposed	10-Yr	0



Project Description:

At the Toutant Beauregard crossing with Balcones Creek, the road is currently being overtopped by the 10-year flood event at a maximum depth of 7.5 ft. The length of roadway being flooded is approximately 0.065 miles at the 100-year flood event. Constructing a bridge to raise the roadway over the low water crossing at the intersection of Balcones Creek and Toutant Beauregard. In addition, a flood beacon will be added for safety. The proposed bridge will overtop the 10-year flood event and lower the depth of water overtopping the roadway for larger flood events. The proposed roadway and bridge alignment will straighten the sharp curves that currently exist in Toutant Beauregard over the Balcones Creek crossing and move the curve or the road out to the abutting property. The proposed bridge will be approximately 150' in length with a connecting roadway realignment of 450' that ties into the existing road. Project is located at the Kendall County/Bexar County line.

2023 San Antonio Regional Flood Plan
Project Summary Sheet

Project Name: Ullrich Road at Cibolo Creek Barrier Arms

FMP ID: 123000061

Project Sponsor: Bexar County and Guadalupe County

Project Source: 2022 Bexar County Drainage Needs

Cost Information

Category	Cost*
Design	$43,956
Real Estate	$0
Environmental	$0
Construction	$199,799
Total Cost**	**$244,000**

Benefit Cost Analysis (BCA)

Event Damages		Baseline	Project
10-year storm	$	6,494	-
25-year storm	$	9,741	-
100-year storm	$	12,988	-
Total Benefits	**$**	**11,714**	
BCA	**$**	**0.05**	

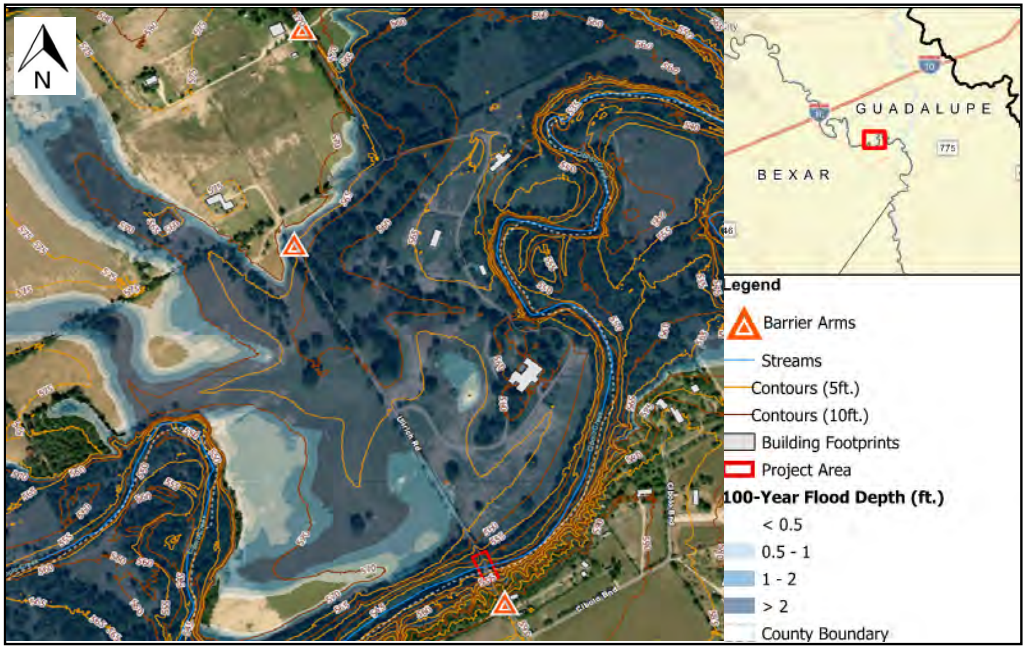
*Costs are using 2020 prices
**Rounded up to the nearest thousand

Impact Analysis

Post-Project Total Removed	Storm Event		
	10-year	25-year	100-year
Residential	-	-	-
Commercial	-	-	-
Flooded Roads (miles)	0.4	0.4	0.4
Critical	-	-	-
Others Note	N/A	N/A	N/A
SVI Score			0.1371

LWC Level of Service Existing Vs. Proposed

Condition	Level of Service	100-Yr Depth Over Road (ft)
Existing	< 10-Yr	27 ft



Project Description:

This project will reduce potential danger at the LWC by discouraging vehicles from crossing the road during a flood event. The proposed improvements consist of adding flashing lights and an automatic barrier arm on each side of the LWC that will be lowered when the road is overtopped. The LWC is on the border of Bexar and Guadalupe County, an automatic barrier arm is anticipated to be placed in each county. It is recommended that these counties coordinate on cost and construction.

Approximately 0.5 miles north of the LWC, Cibolo Creek overtops the roadway at an additional location near the intersection of Ullrich Road and Rio Cibolo Way. Based on best available hydraulic modeling, the floodplain is estimated to overtop this location during the 25-year storm event with a depth of nearly 4-ft. A third single-lane barrier arm is recommended at this location to discourage southbound traffic while still allowing northbound traffic (i.e., from Rio Cibolo Way) to exit.

Other alternatives were considered, such as upgrading the LWC to a bridge. These alternatives were deemed infeasible due to high construction costs and few estimated benefits associated with raising this non-critical road out of the floodplain.

During the analysis of crossings at Bexar Bowling Way and Ullrich Road at Cibolo Creek, it was determined that a 2D hydraulic study flood study would be needed to evaluate spill flow from the creek.

2023 San Antonio Regional Flood Plan
Project Summary Sheet

Project Name: Wilson 10 - Acquisitions of Flooded Structures

FMP ID: 123000062

Project Sponsor: Wilson County

Project Source: 2012 Karnes and Wilson County Hazard Mitigation Action Plan

Cost Information

Category	Cost*
Coordination/Documents	$98,432
Real Estate	$492,161
Environmental	-
Construction	-
Total Cost**	**$591,000**

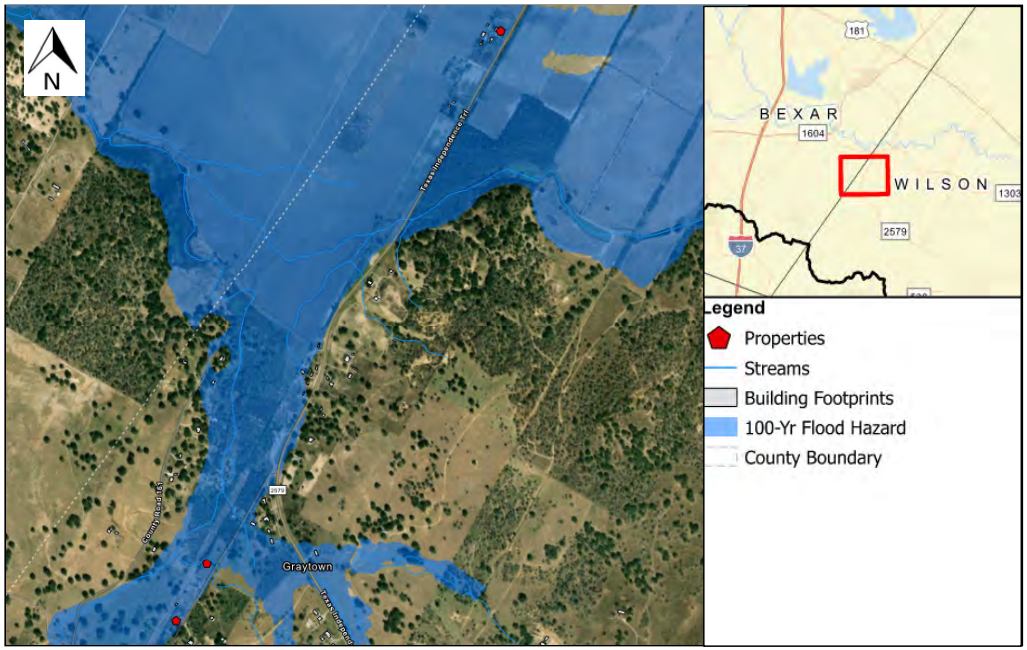
Benefit Cost Analysis (BCA)

Event Damages	Baseline	Project
10-year storm	-	-
25-year storm	-	-
100-year storm	$ 969,900	-
Total Benefits	**$ 969,900**	
BCA	**1.4**	

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

Impact Analysis

Post-Project Total Removed	Storm Event		
	10-year	25-year	100-year
Residential	-	-	3
Commercial	-	-	-
Flooded Roads (miles)	-	-	-
Critical	-	-	-
Others Note	N/A	N/A	N/A
SVI Score			0.5776



Project Description:

This project proposes to acquire the three frequently flooded properties and remove the structures from the existing conditions floodplain extents through demolition or relocation. Properties that will be purchased are the following:
•Mobile Home - 246 CR 126, Floresville, TX 78114; PID#13127
•Single Family Home - 8185 FM 2579, Floresville, TX 78114; PID#13165
•Mobile Home - 366 CR 126, Floresville, TX 78114; PID#13119
Based on the FEMA memorandum with subject titled "Update to 'Cost-Effectiveness Determinations for Acquisitions and Elevations in Special Flood Hazard Areas Using Pre-Calculated Benefits", HDR used the pre-calculated benefits listed in the memorandum to calculate the BCA. For an acquisition, the pre-calculated benefit value is $323,000 per structure.

2023 San Antonio Regional Flood Plan
Project Summary Sheet

Project Name: Woodlawn Lake Option 2

FMP ID: 123000032

Project Sponsor: City of Balcones Heights

Project Source: San Antonio River Authority

Cost Information

Category	Cost*
Design	$1,302,147
Real Estate	$0
Environmental	$117,000
Construction	$7,776,532
Total Cost**	**$9,196,000**

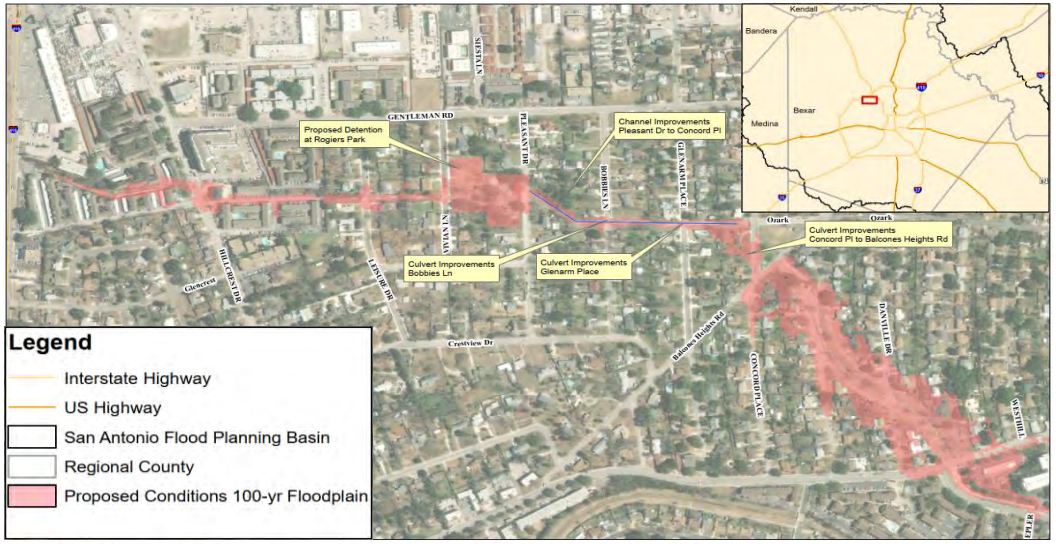
*Costs are using 2020 prices
**Rounded up to the nearest thousand

Benefit Cost Analysis (BCA)

Event Damages	Baseline	Project
10-year storm	$ 882,219	$ -
25-year storm	$ 966,414	$ -
100-year storm	$ 1,008,694	$ 195,993
Total Benefits	**$ 1,140,006**	
BCA	**0.1**	

Impact Analysis

Post-Project Total Removed	Storm Event		
	10-year	50-year	100-year
Residential	9	9	7
Commercial	-	-	-
Flooded Roads (miles)	0.21	0.2	0.17
Critical	-	-	-
Others Note	N/A	N/A	N/A
SVI Score			0.72



Project Description:

Flooding occurs in the City of Balcones Heights from an Unnamed Tributary of Alazan Creek. The Upper Woodlawn Lake Drainage Study created for the San Antonio River Authority in 2014 proposed two options for flood mitigation through the City. Option 2 is the only viable option since land scoped for detention in Option 1 has since been developed. The Option 2 improvements include channel widening, 3 culvert upgrades, and development of a detention pond in the City of Balcones' Rogiers Park. Channel improvements include concrete-lining in high velocity areas or where ROW constraints limited the top width of the proposed channel. The proposed culvert upgrades are at Concord Place, Glenarm Place and Bobbies Lane. The proposed pond at Rogiers Park has two chambers with a total storage capacity of 8.6 acre-feet and a maximum depth of 6 feet. The pond was divided into two chambers; each chamber had a 36-inch concrete pipe outfall connecting to the existing storm drains upstream of Pleasant Drive. Mapping of the proposed improvements show a decrease the floodplain from Pleasant Drive to Balcones Heights Rd, however, flooding still occurs over Concord Pl to Balcones Heights Road. 7 homes would be removed from the 100-year annual chance rain event. Downstream impacts are mitigated by the proposed detention pond.

2023 San Antonio Regional Flood Plan
Project Summary Sheet

Project Name: Abbott Road and Graytown Road at Martinez Creek Study

FME ID: 121000164

Project Sponsor: Bexar County

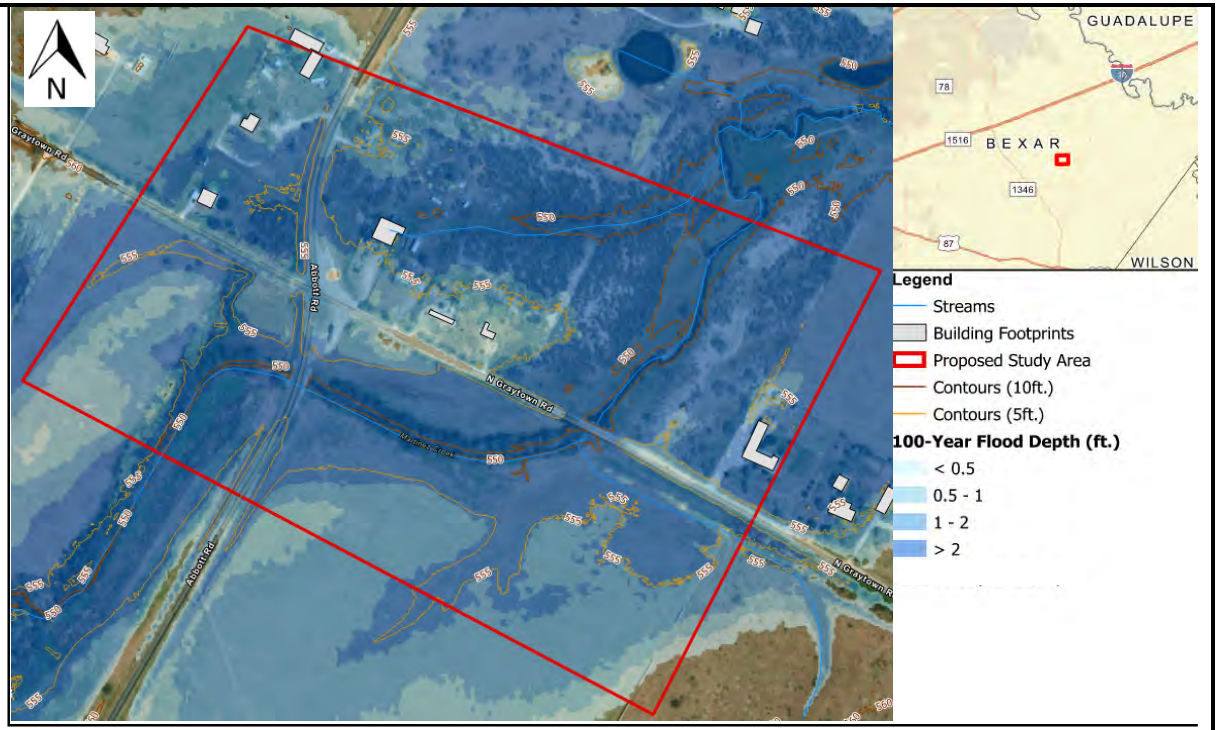
Project Source: 2022 Bexar County Drainage Needs

Study Type: Project Planning

Project Cost: (2020 Prices) $ 300,000

Project Description:

During the analysis of crossings Abbott Road and Graytown Road at Martinez Creek, it was determined that a 2D hydraulic study flood study would be needed to evaluate alternatives to remove these roads from overtopping. Priority should be placed on this study due to the recent flood-related death that occurred on Graytown Road in 2021.
The project cost was developed using FME Planning Cost Estimates found in section 5.2.1.1 of the San Antonio Regional Flood Plan for Project Planning.



2023 San Antonio Regional Flood Plan
Project Summary Sheet

Project Name: Cibolo Creek Spill Study

FME ID: 121000165

Project Sponsor: Guadalupe County

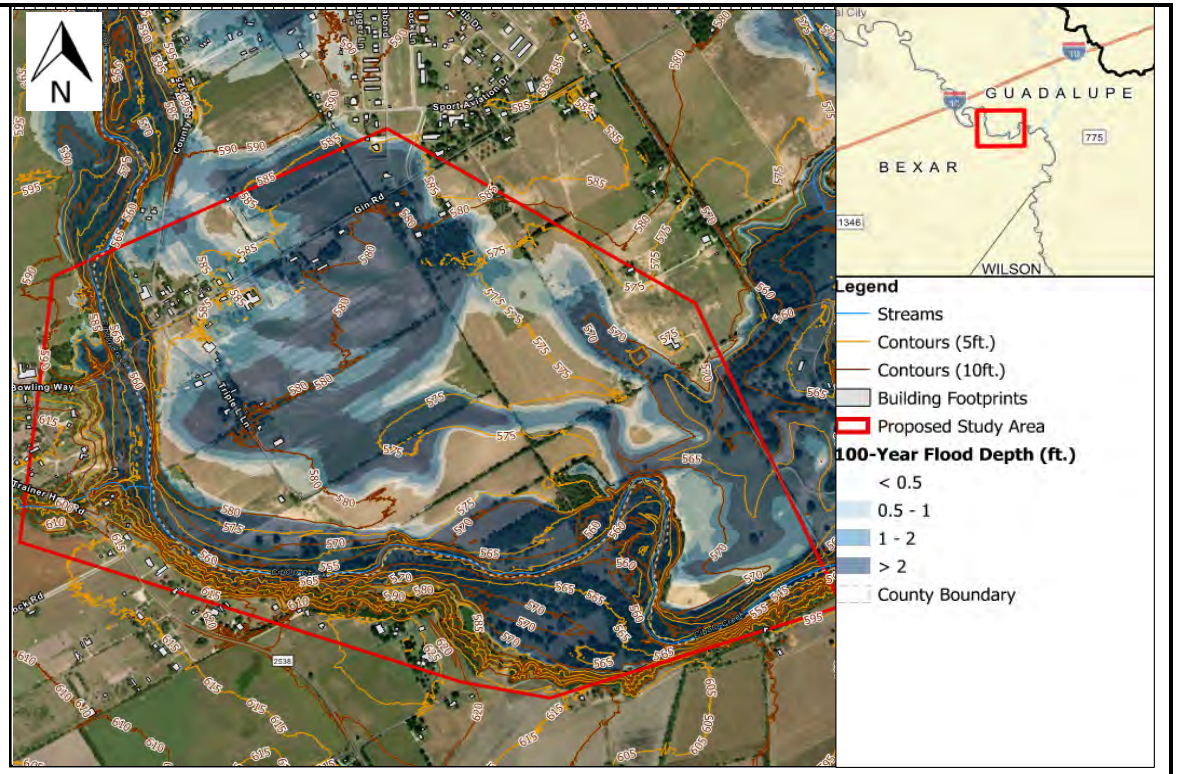
Project Source: 2022 Bexar County Drainage Needs

Study Type: Watershed Planning

Project Cost: (2020 Prices) $ 250,000

Project Description:

During the analysis of crossings at Bexar Bowling Way and Ullrich Road at Cibolo Creek, it was determined that a 2D hydraulic study flood study would be needed to evaluate spill flow from the creek. The spill starts 2,500ft upstream of the Bexar Bowling Way Crossing to 2,000ft north of Ullrich Road Crossing.
The project cost was developed using FME Planning Cost Estimates found in section 5.2.1.1 of the San Antonio Regional Flood Plan for Watershed Planning.
The study areas covers 1.2 square miles.



2023 San Antonio Regional Flood Plan
Project Summary Sheet

Project Name: FM1346 Crossing Upgrade Study

FME ID: 121000166

Project Sponsor: Bexar County

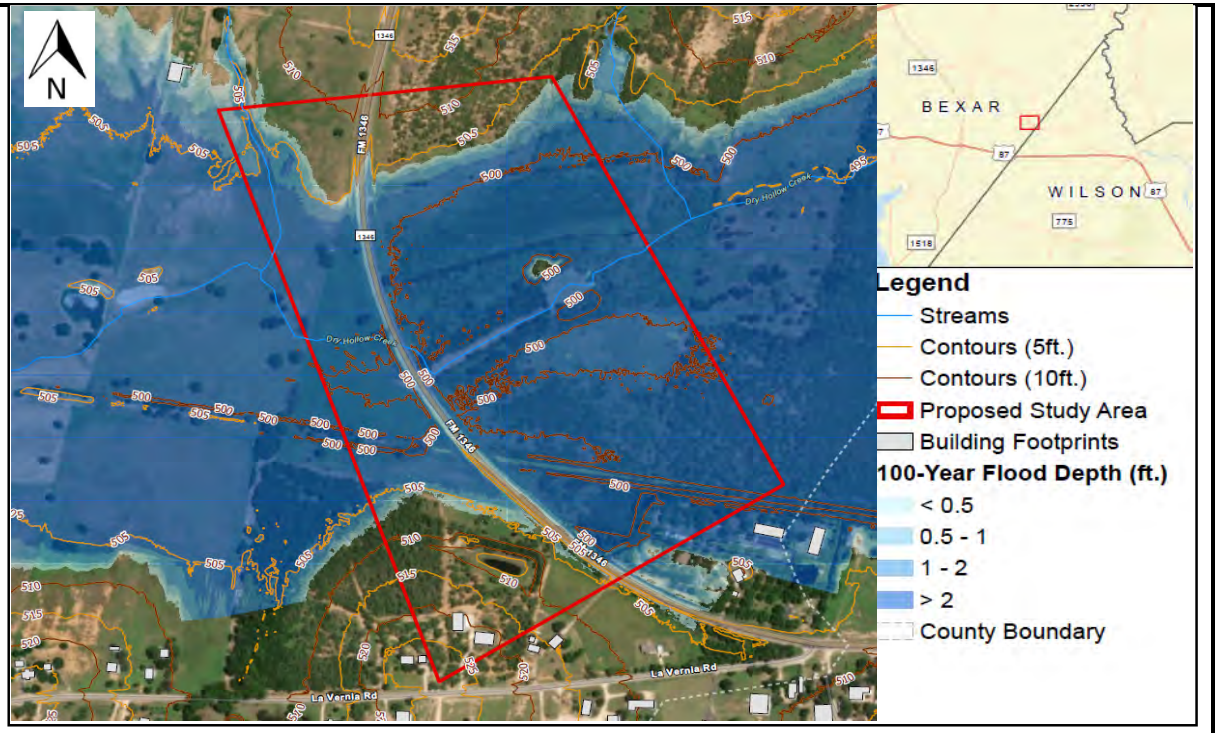
Project Source: 2022 Bexar County Drainage Needs

Study Type: Project Planning

Project Cost: (2020 Prices) $ 150,000

Project Description:

During the analysis of crossings Felix Road at Dry Hollow Creek, it was determined that an additional hydraulic study is needed to evaluate alternatives to removing the FM1346 crossing from overtopping. Improvements to this road are important due to limited detour routes available.
The project cost was developed using FME Planning Cost Estimates found in section 5.2.1.1 of the San Antonio Regional Flood Plan for Project Planning.



2023 San Antonio Regional Flood Plan
Project Summary Sheet

Project Name: FM 1863 at Cibolo Creek Low Water Crossing

FME ID: 121000095

Project Sponsor: Comal County/Bexar County

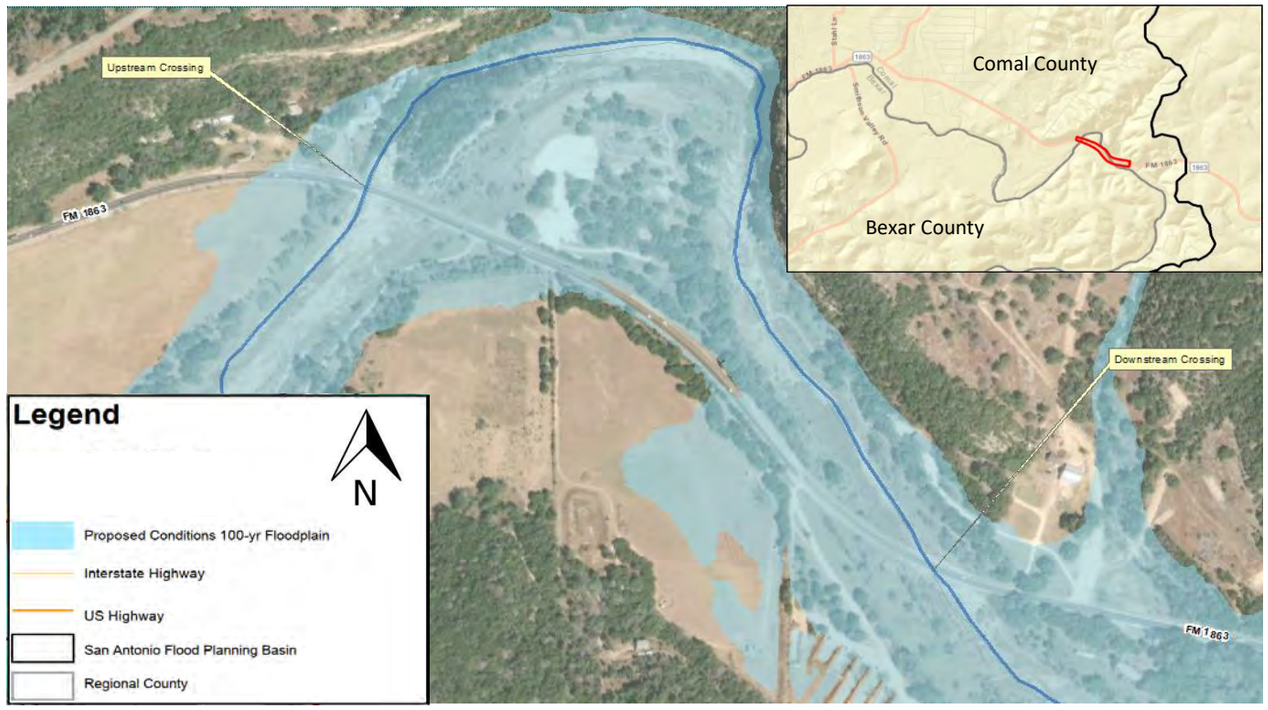
Project Source: Cibolo Creek Watershed Holistic Master Plan

Study Type: Engineering Project Plan

Project Cost: (2020 Prices) $ 150,000

Project Description:

This project has been identified on Table 12 - Potential Flood Management Evaluations Identified by RFPG. There are two low water crossings on FM 1863 at Cibolo Creek on the Comal/Bexar County line that are overtopped by the 2-year annual chance flood event. In addition, a tributary confluences with Cibolo Creek just downstream of the second crossing, where an additional crossing upgrade is required. A major realignment and possible private property encroachment would be required to provide a level of service greater than a 2-year annual chance flood event. A more detailed study is required. Additionally, TxDOT coordination would be required as FM 1863 is a TxDOT operated and maintained asset. Project cost was developed using FME Planning Cost Estimates found in section 5.2.1.1 of the San Antonio Regional Flood Plan for Engineering Project Planning - $150,000.



2023 San Antonio Regional Flood Plan
Project Summary Sheet

Project Name: Live Oak at Salitrillo Creek Improvements

FME ID: 121000158

Project Sponsor: Bexar County

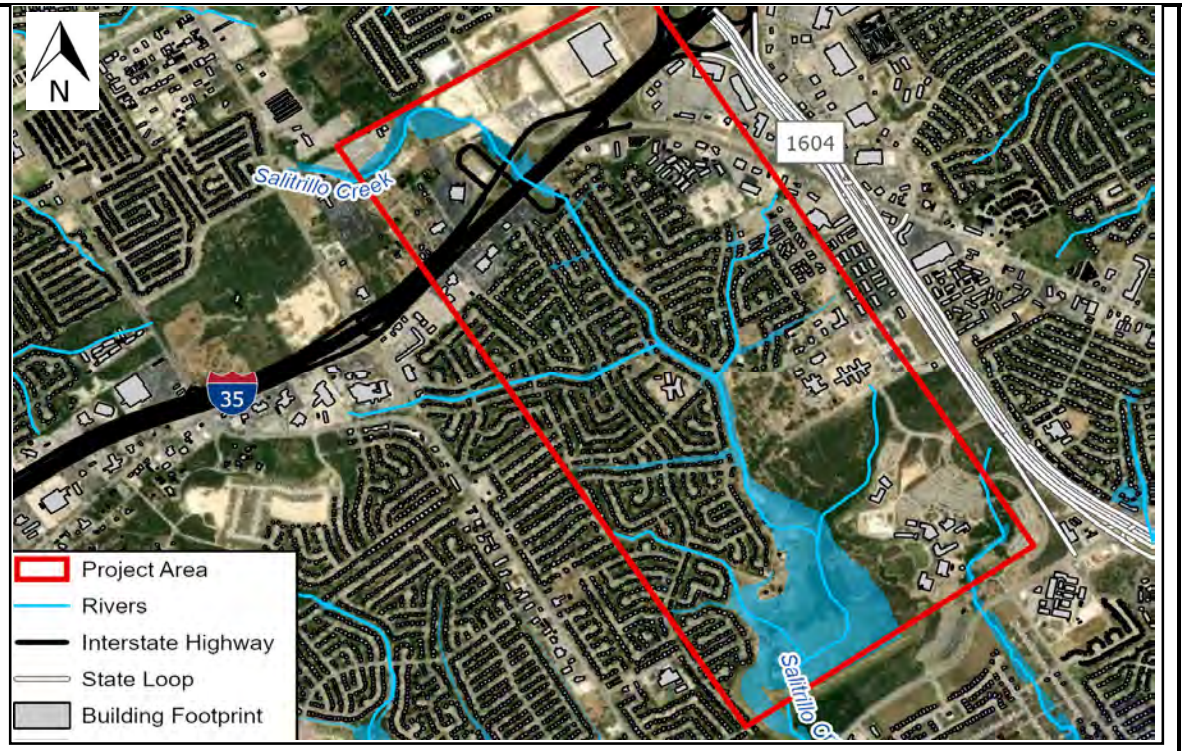
Project Source: 2022 Bexar County Drainage Needs

Study Type: Project Planning

Project Cost: (2020 Prices) $ 250,000

Project Description:

Engineering study to assess removal of residential structures from the Salitrillo Creek 100-Yr flood plain upstream of Martinez Creek Dam No. 5.
The project cost was developed using FME Planning Cost Estimates found in section 5.2.1.1 of the San Antonio Regional Flood Plan for Project Planning.



2023 San Antonio Regional Flood Plan
Project Summary Sheet

Project Name: Live Oak Slough Creek Improvements Study

FME ID: 121000167

Project Sponsor: City of Von Ormy

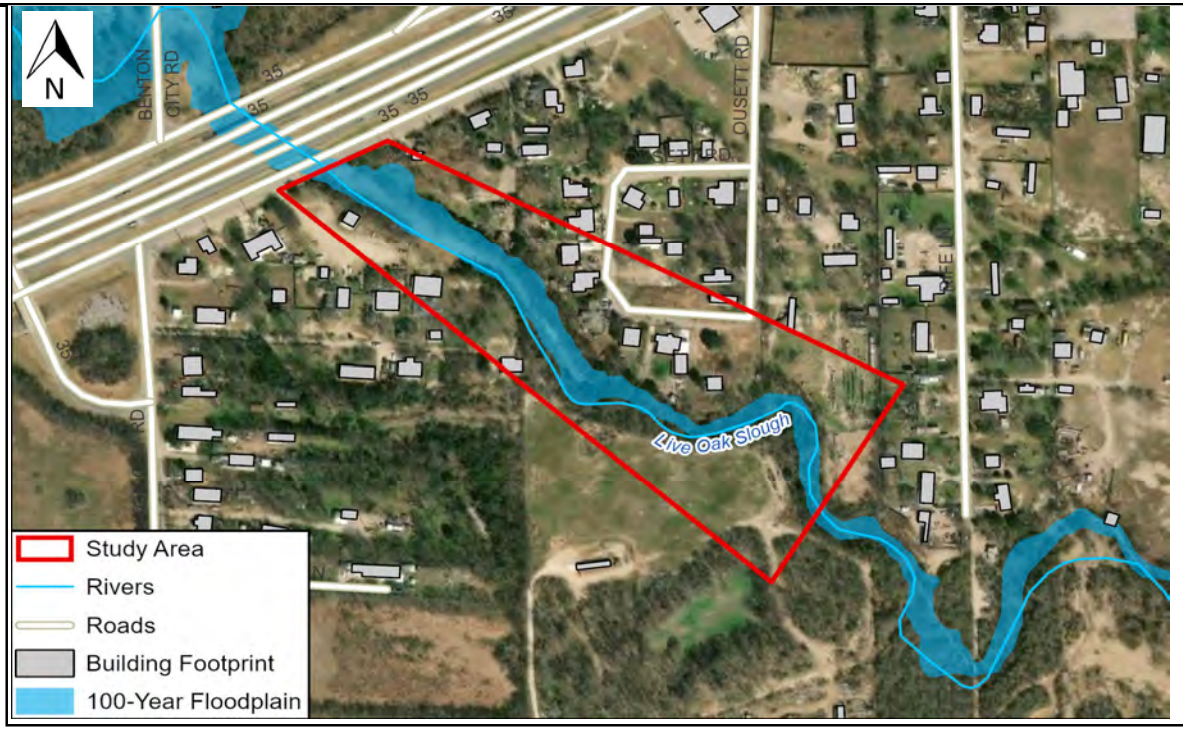
Project Source: 2022 Von Ormy Drainage Needs

Study Type: Project Planning

Project Cost: $ 250,000
(2020 Prices)

Project Description:

The residents living along this slough are experiencing run-off water damage to their land causing the Live Oak Slough Creek to widened, and leaving them with less land usage. The project cost was developed using FME Planning Cost Estimates found in section 5.2.1.1 of the San Antonio Regional Flood Plan for Project Planning.



2023 San Antonio Regional Flood Plan
Project Summary Sheet

Project Name: North Benton City Road Improvements Study

FME ID: 121000168

Project Sponsor: City of Von Ormy

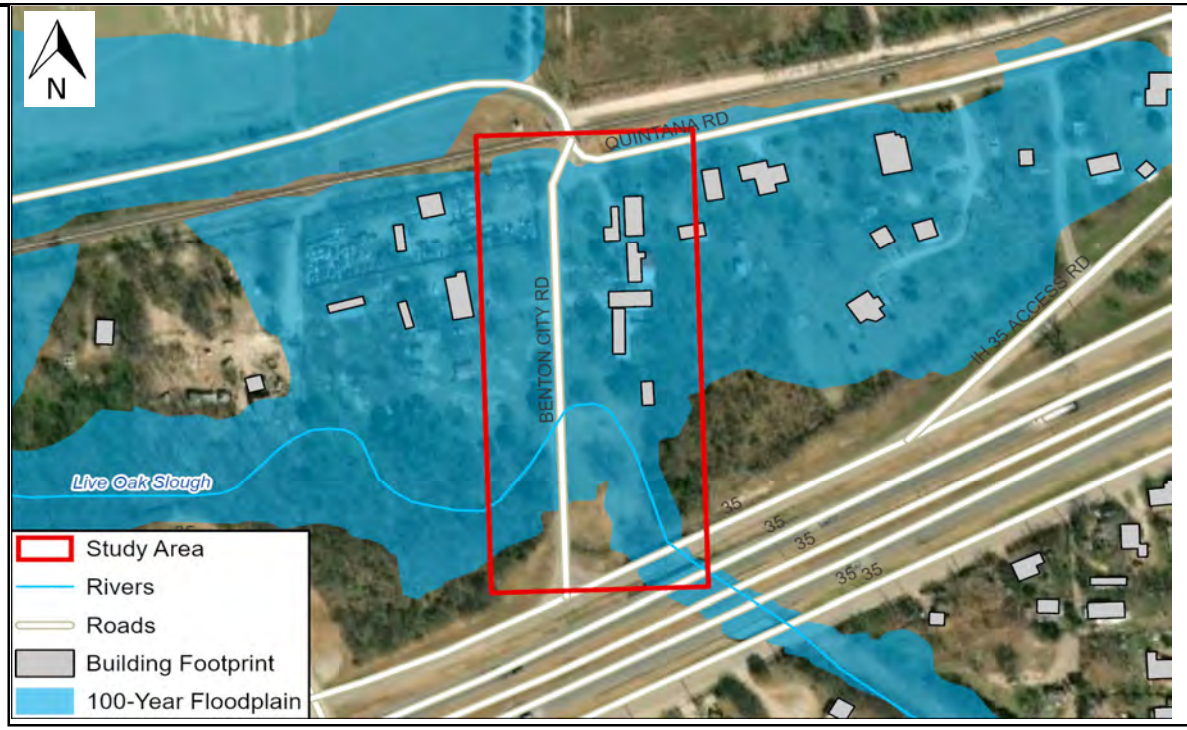
Project Source: 2022 Von Ormy Drainage Needs

Study Type: Project Planning

Project Cost: (2020 Prices) $ 150,000

Project Description:

Study to improve the road and remove it from being flooded during heavy rains. The project cost was developed using FME Planning Cost Estimates found in section 5.2.1.1 of the San Antonio Regional Flood Plan for Project Planning.



2023 San Antonio Regional Flood Plan
Project Summary Sheet

Project Name: Quintana Road Drainage Improvements Study

FME ID: 121000169

Project Sponsor: City of Von Ormy

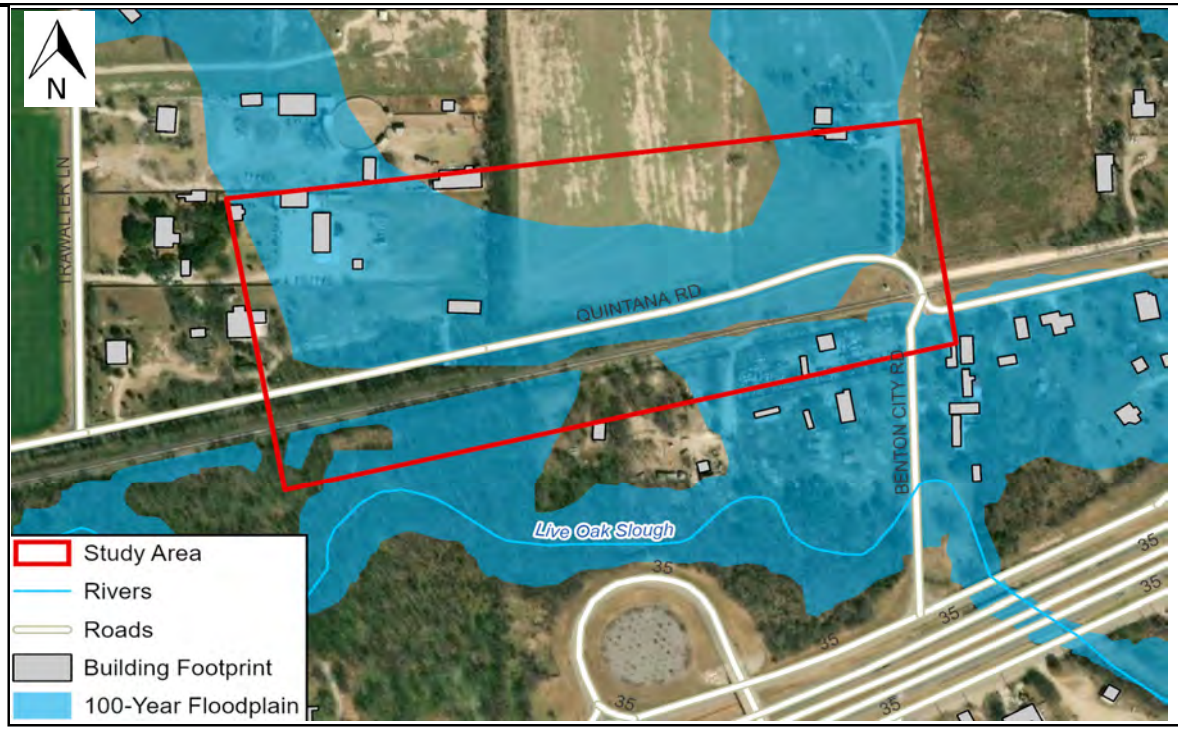
Project Source: 2022 Von Ormy Drainage Needs

Study Type: Project Planning

Project Cost: (2020 Prices) $ 250,000

Project Description:

Study to improve the drainage around Quintana Road and remove it from being flooded during heavy rains.
The project cost was developed using FME Planning Cost Estimates found in section 5.2.1.1 of the San Antonio Regional Flood Plan for Project Planning.



2023 San Antonio Regional Flood Plan
Project Summary Sheet

Project Name: South Benton City Road Improvements Study

FME ID: 121000170

Project Sponsor: City of Von Ormy

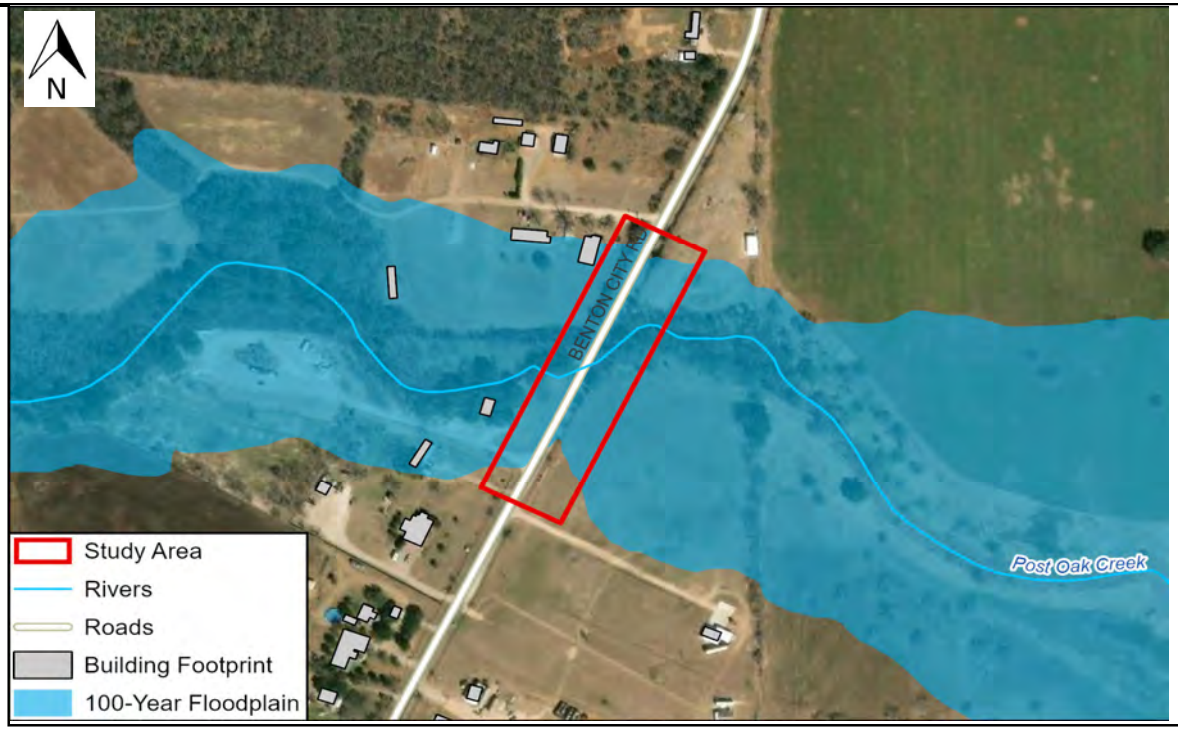
Project Source: 2022 Von Ormy Drainage Needs

Study Type: Project Planning

Project Cost: (2020 Prices) $ 150,000

Project Description:

Study to improve the road and remove it from being flooded during heavy rains. The project cost was developed using FME Planning Cost Estimates found in section 5.2.1.1 of the San Antonio Regional Flood Plan for Project Planning.



2023 San Antonio Regional Flood Plan
Project Summary Sheet

Project Name: South Evans Road Improvements Study

FME ID: 121000171

Project Sponsor: City of Von Ormy

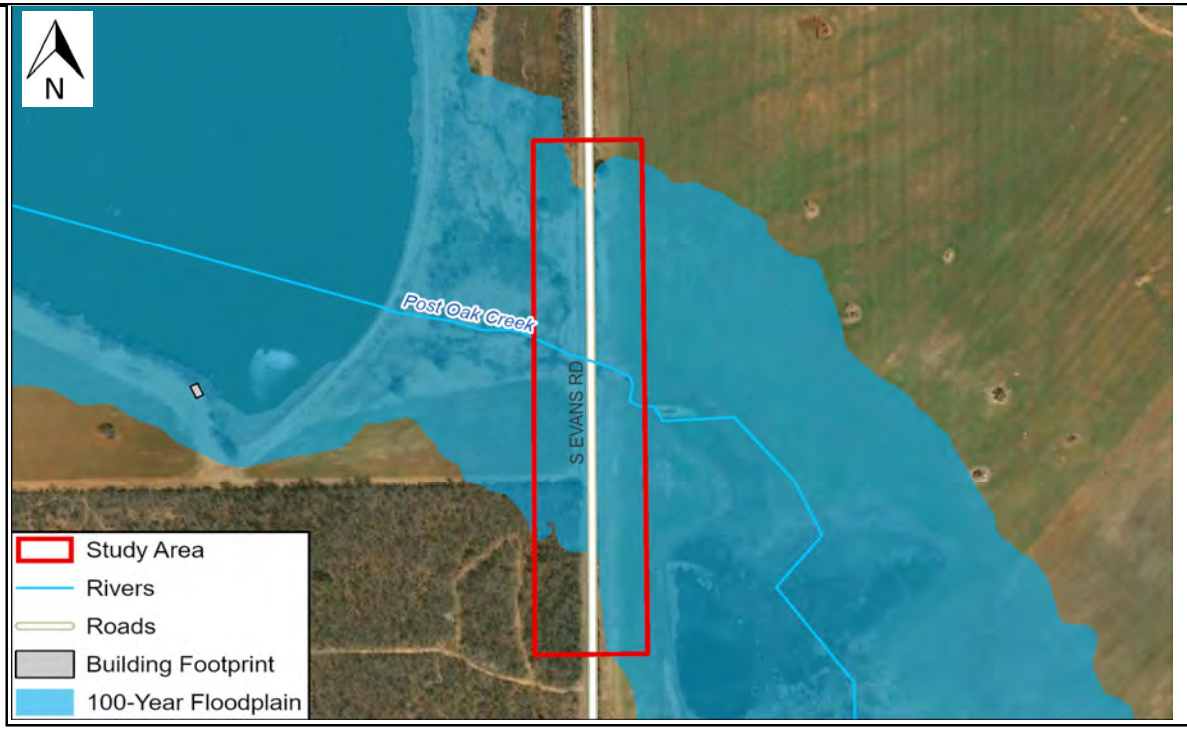
Project Source: 2022 Von Ormy Drainage Needs

Study Type: Project Planning

Project Cost: (2020 Prices) $ 150,000

Project Description:

Study to improve the road and remove it from being flooded during heavy rains. The project cost was developed using FME Planning Cost Estimates found in section 5.2.1.1 of the San Antonio Regional Flood Plan for Project Planning.



2023 San Antonio Regional Flood Plan
Project Summary Sheet

Project Name: Trainer Hale at Cibolo Creek

FME ID: 121000164

Project Sponsor: Bexar County/Guadalupe County

Project Source: Bexar County

Study Type: Engineering Project Plan

Project Cost: (2020 Prices) $ 150,000

Project Description:

At the Trainer Hale Rd (FM 2538) crossing with Cibolo Creek, the road is currently overtopped by the 10-year flood event at a maximum depth of 21 ft. Trainer Hale Rd crossing is along Bexar/Guadalupe County line and within TxDOT's right-of-way. The bridge is a TxDOT maintained asset. Major realignment and property access considerations should be evaluated in addition to increasing the bridges level of service, therefore, a more detailed study is required. Additionally, TxDOT coordination would be required as FM 2538 is a TxDOT operated and maintained asset.

Project cost was developed using FME Planning Cost Estimates found in section 5.2.1.1 of the San Antonio Regional Flood Plan for Engineering Project Planning - $150,000.