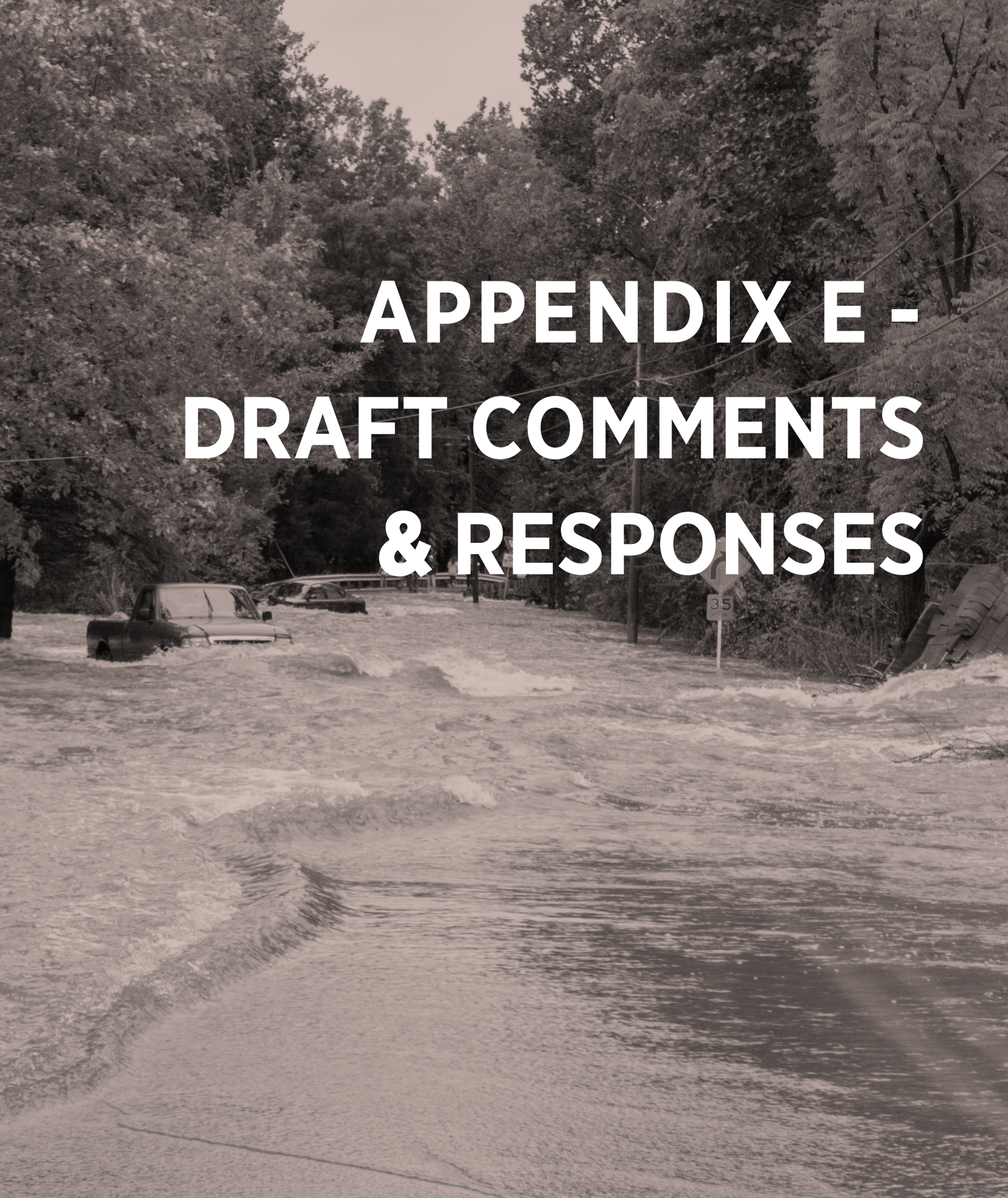

APPENDIX E - DRAFT COMMENTS & RESPONSES

Comments on the Draft Regional Flood Plan

The following comments were received from on the Lower Rio Grande Regional Flood Plan. Included in the Tables below are the comments received and the responses that were provided for the comments received. Copies of the original Letters are provided after these tables.

TWDB Comments

The following comments were received by the Regional Flood Planning Group via email on October 26, 2022. The comments received, as well as the provided responses are included in **Table E.1** below.

Table E.1 TWDB Comments on Region 15 Lower Rio Grande Regional Flood Planning Group's Draft Regional Flood Plan

Comment Received	RFPG Response
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.	A review of the "Submittal Requirements" identified in each of the Exhibit C Guidance document sections were checked for compliance prior to submittal of the Final Regional Flood Plan.
2. Please consider including bookmarks in the pdf of the reports to facilitate ease of navigation for readers.	Bookmarks were added to the pdf of the Final Regional Flood Plan prior to submittal.

Comment Received	RFPG Response
3. Several maps appear to be missing depictions of major roadways, major streams and rivers, major reservoirs, and other required features (e.g., Exhibit C Map 3 appears to be missing major streams and rivers). Exhibit C Section 3.10 requires all maps to contain certain base map information depicting the RFPG boundary, counties, HUCs as applicable, major streams or rivers, major reservoirs as appliable, major watershed boundaries as applicable, major roadways, major cities or urban areas, and other features identified by the RFPG. Please reconcile.	A template was created to address this comment for all maps.
SOW Task 1	
4. Entities GIS Feature Class, Entities: a. It appears that some fields contain invalid entries such as "Y" instead of "Yes" for the 'POLSUB_FLG' field. Please complete all required fields with valid entries per Exhibit D Table 3. b. It appears that some fields are missing entries, including 'ACTIVE'. Please complete all required fields with valid entries per Exhibit D Table 3 [31 TAC §361.30(4) & (5)].	Fields were updated to contain valid entries/ formatting or missing information.
5. Existing Flood Infrastructure Table (Exhibit C Table 1): Low water crossings (LWC) do not appear to be included in Table 1. A summary and location of all low water crossings in the region identified by local communities is required to be included in Table 1. At minimum, identified LWCs within the Low Water Crossing dataset provided in the TWDB Flood Planning Data Hub should be included. Please include all LWCs identified during the flood planning process in this table [Exhibit C Section 2.1].	TWDB-provided low water crossings were included in Table 1. Tables were updated to include missing information. Tables reconciled with GIS/Text.
6. Existing Flood Infrastructure GIS Feature Class, ExFldInfraPol: It appears that some fields contain invalid entries, including 'NAME' and 'DESCR'. Please complete all required fields with valid entries	Fields were updated to contain valid entries/ formatting or missing information.

Comment Received	RFPG Response
per Exhibit D Table 5 [31 TAC §361.31 & Exhibit D 3.3].	
7. Existing Flood Infrastructure GIS Feature Class, ExFldInfraLn: It appears that some fields contain invalid entries, including 'NATBUILT and 'NAME. Please complete all required fields with valid entries per Exhibit D Table 6 [31 TAC §361.31 & Exhibit D 3.3].	Fields were updated to contain valid entries/ formatting or missing information.
8. Existing Flood Infrastructure GIS Feature Class, ExFldInfraPt: a. Please include all low water crossings (LWCs) identified during the flood planning process in this feature layer. The ExFldExpAll feature class contains 240 LWCs, whereas the ExFldInfraPt feature class appears to contain no LWCs. Note: This is required in contrast to the optional LWC feature class [31 TAC §361.31 & Exhibit D 3.3]. b. All low water crossings (LWC) in the region identified by local communities are required to be included in the ExFldInfraPt feature class. At minimum, identified LWCs within the Low Water Crossing dataset provided in the TWDB Flood Planning Data Hub should be included. Please reconcile [31 TAC §361.31 & Exhibit D 3.3]. c. It appears that some fields contain invalid entries, including 'DESCR'. Please complete all required fields with valid entries as referenced in Exhibit D Table 7 [31 TAC §361.31 & Exhibit D 3.3].	Fields were updated to contain valid entries/ formatting or missing information.
9. Existing Flood Infrastructure Map (Exhibit C Map 1): Low water crossings (LWC) do not appear to be included in Map 1. All LWCs in the region identified by local communities are required to be included in the ExFldInfraPt feature class and this should be reflected in Map 1. At minimum, identified LWCs within the Low Water Crossing dataset provided in the TWDB Flood Planning Data Hub should be	LWCs provided by TWDB were included in EXFldInfraPt feature class and Maps 1 & 3.

Comment Received	RFPG Response
included. Please reconcile [31 TAC §361.31 & Exhibit C 2.1].	
10. Existing Flood Projects GIS Feature Class, ExFldProjs: The polygons representing proposed and ongoing flood mitigation projects appear to follow county boundaries in all instances. Please ensure polygons reflect actual project boundaries, service areas, and/or contributing drainage areas as applicable [31 TAC §361.32].	Fields were updated to contain valid entries/ formatting or missing information.
11. Existing Flood Projects Map (Exhibit C Map 2): The shaded areas representing proposed and ongoing flood mitigation projects appear to follow county boundaries in all instances. Please ensure these shaded areas align with the ExFldProjs feature class to reflect actual project boundaries, service areas, and/or contributing drainage areas as applicable [31 TAC §361.32].	Maps were updated to include the best project boundary we could find.
SOW Task 2A	
12. Existing Condition Flood Hazard Analysis, Text: a. Please include total land areas (square miles) of each flood risk by flood risk type, county, region, and frequency as per guidance document (Exhibit C page 24): Submittal requirement number 2. b. Please include a reference to Exhibit C Table 3 in the text, as per the guidance document (Exhibit C page 27). Once Task 2A Existing Condition Flood Risk Analyses is complete, RFPGs must include a summary table with findings summarizing flood risk by county. c. The Existing Hazard section does not appear to explicitly identify flood hazards specific to different types of flooding including riverine, coastal, urban, or other flooding. Please reconcile [31 TAC §361.33(a)].	The Existing Hazard Section of Chapter 2 was updated to include the total land areas, in square miles, of each flood risk by flood risk type, county, and frequency. A Reference to Table 3 in Appendix B is included in the text of Chapter 2.

Comment Received	RFPG Response
13. Existing Condition Flood Hazard Map (Exhibit C Map 4): It appears that flood hazards specific to different types of flooding are not depicted. Please include identification of each type of flooding including riverine, coastal, urban, or other flooding as per guidance document (Exhibit C page 24): Submittal requirement number 1. This may be included as a supplemental map.	Maps were updated to include missing information.
14. Existing Condition Flood Exposure, Text: The text of the Existing Condition Flood Exposure Analysis section does not appear to describe exposure of structures and populations explicitly in the 1% and 0.2% floodplains. Please reconcile [31 TAC 361.33(c)].	Chapter 2 was updated to include missing and more detailed information.
15. Existing Condition Flood Exposure Table (Exhibit C Table 3): a. It appears that the day population is duplicated in the night population field. Please correct these sets of population values as necessary. b. There appear to be inconsistencies between Table 3 and the ExFldExpAll feature class. For example, counts for Residential Structures and Total Structures do not appear to match. Please ensure data consistency between all related deliverables [31 TAC §361.33 & Exhibit C 2.2.A.3].	A population night column was added and all residential buildings match with Exhibit C tables. Updated fields to contain valid entries/ formatting or missing information. Tables were updated to include missing information. Tables reconciled with GIS/Text.
16. Existing Condition Flood Vulnerability GIS Feature Class, ExFldExpAll: a. It appears that some fields are missing entries, including 'CRITICAL' Please complete all required fields with valid entries per Exhibit D Table 14 [31 TAC §361.33(c), (d) & Exhibit C 2.2.A.2]. b. It appears that some fields contain invalid entries, including 'CRIT_TYPE'. Please use the updated 'CRIT_TYPE' valid entry list: "Medical, Police, Fire, EMS, Shelter, School,	Fields were updated to contain valid entries/ formatting or missing information.

Comment Received	RFPG Response
Infrastructure, Water Treatment, Wastewater Treatment, Power Generation, Other" per the Summary Update to Exhibit D document available on the TWDB website.	
17. Model Coverage GIS Feature Class, ModelCoverage: a. Please provide additional detail to the descriptions of the existing models (i.e. software, type, date completed, scenario modeled) in the 'MODEL_DESCR' field. b. Please ensure that all entries within the 'MODEL_ID' field are 12 digits long per the Summary Update to Exhibit D document available on the TWDB website [31 TAC §361.33(b)(2)].	Fields were updated to contain valid entries/ formatting or missing information.
SOW Task 2B	
18. Future Condition Flood Hazard Map (Exhibit C Map 8): It appears that flood hazards specific to different types of flooding are not depicted. Please include identification of each type of flooding including riverine, coastal, urban, or other flooding as per guidance document (Exhibit C page 33): Submittal requirement number 1. This may be included as a supplemental map.	Maps were updated to include missing information.
19. Future Condition Flood Hazard Analysis, Text: a. Please include total land areas (square miles) of each flood risk by flood risk type, county, region, and frequency as per guidance document (Exhibit C page 33): Submittal requirement number 3. b. Please include a reference to Exhibit C Table 5 in the text, as per the guidance document (Exhibit C page 35). Once Task 2B Future Condition Flood Risk Analyses is complete, RFPGs must include a summary table with findings summarizing flood risk by county. c. The Future Hazard section does not appear to explicitly identify flood hazards specific to different types of flooding including riverine,	The Future Hazard Section of Chapter 2 was updated to include the total land areas, in square miles, of each flood risk by flood risk type, county, and frequency. A Reference to Table 5 in Appendix B is included in the text of Chapter 2.

Comment Received	RFPG Response
coastal, urban, or other flooding. Please reconcile [31 TAC §361.33(a)].	
20. Future Condition Flood Exposure Table (Exhibit C Table 5): It appears that the table does not contain information in the Possible Flood Prone Areas section. Please verify that this is correct and, if necessary, add data as appropriate [31 TAC §361.34 & Exhibit C 2.2.B.3].	Tables were updated to include missing information. Tables were reconciled with GIS/Text
21. Future Condition Flood Vulnerability GIS Feature Class, FutFldExpAll: a. It appears that some fields contain invalid entries, including 'CRIT_TYPE'. Please use the updated 'CRIT_TYPE' valid entry list: "Medical, Police, Fire, EMS, Shelter, School, Infrastructure, Water Treatment, Wastewater Treatment, Power Generation, Other" per the Summary Update to Exhibit D document available on the TWDB website. b. It appears that some fields are missing entries, including 'FLOOD_FREQ' and 'CRITICAL'. Please complete all required fields with valid entries per Exhibit D Table 14 [31 TAC §361.34(c); Exhibit D 3.6.2].	Fields were updated to contain valid entries/ formatting or missing information.
22. Future Condition Flood Vulnerability Map (Exhibit C Map 12): The map legend does not appear to clearly indicate that the map is depicting SVI values. Please reconcile.	Added "SVI" under Key to Features. Maps were updated to include missing information/ labels.
SOW Task 3A	
23. Existing Floodplain Management Practices Map (Exhibit C Map 13): The map does not appear to depict entities that regulate and enforce floodplain practices. The map should depict the areas with established floodplain management practices, the entities that regulate and enforce those floodplain practices, and locations that lack floodplain management as per guidance document (Exhibit C	The map was updated to show entities that regulate and enforce floodplain practices.

Comment Received	RFPG Response
page 47): Submittal requirement number 4. Please reconcile [31 TAC §361.35 & Exhibit C 2.3.A].	
24. Existing Floodplain Management Practices Table (Exhibit C Table 6): The text appears to include cities that do not match Appendix B, Table 6. For example, the text states that the Cities of Granejo and Progreso are not NFIP participants. However, they are both listed as NFIP participants in Table 6. Please reconcile as appropriate.	Table 6 was updated to reflect Progreso as a community participating in the National Flood Program and not Granjeno. The text was updated accordingly.
SOW Task 4B	
25. Streams GIS Feature Class, Streams: a. It appears that some fields are missing entries, including 'STR_NAME'. Please complete all required fields with valid entries per Exhibit D Table 22. Please consider naming streams as "Tributary of XX" whenever the main channel is known. b. Please ensure that entries within the 'STREAM_ID' field are nine digits long consisting of a two-digit region number followed by seven digits. Unique IDs must be accurate for the database to connect and work properly. Please refer to Exhibit D Table 2 or more recent updates for Unique ID guidance [Exhibit D 3.9].	Entered names for tributaries where streams were known. STREAM_ID was updated to be 9 digits. Fields were updated to contain valid entries/ formatting or missing information.
26. Flood Management Evaluations (FME) Table (Exhibit C Table 12): The count of FMEs in the FME feature class (100) does not appear to match the count of FMEs in Table 12 (133). Please reconcile [31 TAC §361.38(i) & Exhibit D 3.10].	Tables were updated to include missing information. Tables were reconciled with GIS/Text
27. Flood Management Evaluations (FME) GIS Feature Class, FME: The count of FMEs in the FME feature class (100) does not appear to match the count of FMEs in Table 12 (133). Please reconcile [31 TAC §361.38(i) & Exhibit D 3.10].	Tables were reconciled with GIS/Text
28. Flood Management Evaluations (FME) Map (Exhibit C Map 16): Please revise the map based on	Maps were updated and reconciled with GIS/Text/Tables.

Comment Received	RFPG Response
revisions to the FME feature class and Table 12 as needed [31 TAC §361.38 & Exhibit D 3.10].	
29. Flood Mitigation Projects (FMP) Table (Exhibit C Table 13): a. The count of FMPs in Table 13 (38) does not appear to match the count in the FMP feature class (36). Please reconcile. b. The estimated project costs for some FMPs do not appear to match between the FMP feature class and Table 13. For example, FMP_IDs 153000001 and 153000003. Please reconcile.	Table 13 was reconciled with GIS/Text.
30. Flood Mitigation Projects (FMP) GIS Feature Class, FMP: a. The count of FMPs in Table 13 (38) does not appear to match the count in the FMP feature class (36). Please reconcile. b. The estimated project costs for some FMPs do not appear to match between the FMP feature class and Table 13. For example, FMP_IDs 153000001 and 153000003.Please reconcile. c. Please add the required field 'MODEL_ID' per the Summary Update to Exhibit D document available on the TWDB website. Leave NULL when the field is unknown. d. It appears that some fields contain invalid entries, including 'EMER_NEED' and 'FMP_TYPE'. For example, "yes" instead of "Yes". Note that valid entries are case sensitive. Please complete all required fields with valid entries per Exhibit D Table 24. e. It appears that some fields are missing entries, including 'RECUR_COST' and 'FUND'. Please complete all required fields with valid entries per Exhibit D Table 24. Leave NULL	The Feature class reconciled with Text and Tables. Fields were updated to contain valid entries/ formatting or missing information.

Comment Received	RFPG Response
when the field is not applicable or unknown [31 TAC §361.38(c-e) & Exhibit D 3.11.1].	
31. Flood Management Strategies (FMS) Table (Exhibit C Table 14): a. Table 14 should list "Non-Recurring, Non-Capital Costs" instead of "Reoccurring Non Capital Costs". Please revise. b. b. Non-recurring, non-capital costs in Table 14 do not appear to match what is included in the FMS feature class. Please reconcile [31 TAC §361.38(d) & Exhibit C 2.4.B].	Tables were updated to include missing information. Tables reconciled with GIS/Text.
32. Flood Management Strategies (FMS) GIS Feature Class, FMS: a. It appears that some fields contain invalid entries, including 'EMER_NEED'. For example, "yes" instead of "Yes". Note that valid entries are case sensitive. Please complete all required fields with valid entries per Exhibit D Table 26. b. It appears that some fields are missing entries, including 'RECUR_COST' and 'FUND', Please complete all required fields with valid entries per Exhibit D Table 24. Leave NULL when the field is not applicable or unknown [31 TAC §361.38(d) & Exhibit D]. c. c. There appears to be a duplicate entry for each FMS in the FMS feature class. Please review and remove all duplicates.	Fields were updated to contain valid entries/ formatting or missing information.
SOW Task 5	
33. Flood Management Evaluation (FME) Recommendations Table (Exhibit C Table 15): The count of FMEs in the FME feature class (100) does not appear to match the count of FMEs in Table 15 (133). Please reconcile [31 TAC §361.39 & Exhibit D 3.10].	Tables were updated to include missing information. Tables reconciled with GIS/Text.

Comment Received	RFPG Response
34. Flood Management Evaluation (FME) Recommendations GIS Feature Class, FME: The count of FMEs in the FME feature class (100) does not appear to match the count of FMEs in Table 15 (133). Please reconcile [31 TAC §361.39(c), (f) & Exhibit D 3.10].	The Feature class reconciled with Text and Tables. Fields were updated to contain valid entries/ formatting or missing information.
35. Flood Management Evaluation (FME) Recommendations Map (Exhibit C Map 19): Please revise the map based on revisions to the FME feature class and Table 15 as needed [31 TAC §361.39 & Exhibit D 3.10].	Maps were updated and reconciled with GIS/Text/Tables.
36. Flood Mitigation Project (FMP) Recommendations, Text: a. 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 5-8), "A comparative assessment of pre-project and post-project conditions for the 1 percent ACE (100-year flood) was performed for each potentially feasible FMP based on their associated H&H models. The floodplain boundary extents, resulting WSELs, and peak discharge values were compared at pertinent locations to determine if the FMP conforms 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. b. b. The name of FMP_ID 153000012 (Southwest Pharr Drainage Mitigation Project) does not appear to match the associated name in Table 16 and the FMP	Chapter 5 was updated to include a reference to Appendix F with the No negative Impacts analysis. Feature class was reconciled with the Table.

Comment Received	RFPG Response
feature class. Please reconcile [31 TAC §361.39 & Exhibit C 2.5.B].	
37. Flood Mitigation Project (FMP) Recommendations GIS Feature Class, FMP: a. It appears that some fields contain invalid entries, including 'EMER_NEED' and 'FMP_TYPE'. For example, "yes" instead of "Yes". Note that valid entries are case sensitive. Please complete all required fields with valid entries per Exhibit D Table 24. b. It appears that some fields are missing entries, including 'RECUR_COST', 'FUND', and 'PREPROJLOS'. Please complete all required fields with valid entries per Exhibit D Table 24. Leave NULL when the field is not applicable or unknown [31 TAC §361.39 & Exhibit D 3.11.1].	Feature Class was updated and with missing information and proper formatting.
38. Flood Mitigation Project (FMP) Details Geodatabase, FMP_Details: a. *FMP_Details* was not provided in the geodatabase. Please ensure this is provided with the geodatabase submittal with the final regional flood plan [31 TAC §361.39, Exhibit D 3.11.3 & Exhibit C 3.10.C].	Fields were updated to contain missing information.
39. Flood Management Strategy (FMS) Recommendations Table (Exhibit C Table 17): a. Table 17 should list "Non-Recurring, Non-Capital Costs" instead of "Reoccurring Non-Capital Costs". b. b. Non-recurring, non-capital costs in Table 17 do not appear to match what is included in the FMS feature class. Please review and reconcile accordingly [31 TAC §361.39 & Exhibit C 2.5.C].	Tables were updated to include missing information. Tables reconciled with GIS/Text.

Comment Received	RFPG Response
40. Flood Management Strategy (FMS) Recommendations GIS Feature Class, FMS: a. It appears that some fields contain invalid entries, including 'EMER_NEED'. For example, "yes" instead of "Yes". Note that valid entries are case sensitive. Please complete all required fields with valid entries per Exhibit D Table 26. b. It appears that some fields are missing entries, including 'RECUR_COST', 'FUND', and 'PREPROJLOS'. Please complete all required fields with valid entries per Exhibit D Table 24. Leave NULL when the field is not applicable or unknown [31 TAC §361.39 & Exhibit D 3.10].	Fields were updated to contain valid entries/ formatting or missing information.
SOW Task 6A	
41. Impacts of Regional Flood Plan, Text: a. Chapter 6 does not appear to explicitly state that the regional flood plan, when implemented, will not negatively affect neighboring areas located within or outside the flood planning region. Chapter 5 states "the local sponsor will ultimately be responsible for proving the final project design has no negative flood impacts before initiating construction." Please consider updating this statement or including additional statements to meet this requirement [31 TAC §361.40 & Exhibit C 2.6.A]. b. Chapter 6 does not appear to contain an analysis of overall impacts of the plan on the following required categories: environment, agriculture, erosion, and sedimentation. Please reconcile [31 TAC §361.40 & Exhibit C 2.6.A].	Chapter 6 was updated to include missing information and more detailed information.

Comment Received	RFPG Response
SOW Task 7	
42. Flood Response Information and Activities, Text: a. Please include where more detailed information is available regarding recovery, as required [31 TAC §361.42 & Exhibit C 2.7]. b. Please include a written summary of entities involved and actions taken or planned for recovery from past flood disasters in the region, as required [31 TAC §361.42 & Exhibit C 2.7].	Chapter 7 was updated to include more detailed information on recovery efforts in the region.
SOW Task 9	
43. Flood Infrastructure Financing, Text: a. Please include a description of the percentage of survey completions and whether an acceptable minimum survey completion was achieved, as required [Exhibit C Section 2.9]. b. Table 19 does not appear to be included. Please reconcile [§361.44 & Exhibit C 2.9].	Chapter 9 was updated to include missing information and more detailed information. Percentage calculated and included in the data. Tables were updated to include missing information. Tables reconciled with GIS/Text.
Level 2: Comments and suggestions for consideration that may improve the readability and overall understanding of the regional flood plan.	
General Comments	
44. Please consider including a complete table of contents for the entire regional flood plan.	A complete Table of Contents is included.
45. For maps that display large amounts of data (e.g., Maps 4, 6, 8, and 10), please consider a region-wide map and accompanying map index as well as inset maps, as appropriate.	Insets were included in some maps and other maps were broken into a series of maps.
46. Existing Flood Infrastructure, Text: Please consider providing a description of how Low Water Crossings were identified within the text of Chapter 1.	This is included in the amended plan, Section 1.8.b - Roadways.

Comment Received	RFPG Response
47. Existing Flood Infrastructure Map (Exhibit C Map 1): Please consider modifying the relative colors and/or line thickness (e.g., of "Levee") to improve map legibility.	Map has been updated to increase readability.
48. Existing Flood Projects Table (Exhibit C Table 2): a. Existing Project IDs 15000028 and 15000029 have been awarded HMGP funds, but do not appear to have HMGP listed as a project funding source. Please consider including HMGP in the "Source of Funding" field for these projects. b. Please consider including the City of McAllen's FMA Grant EMT-2018-FM-E002 drainage project that is currently in progress.	a. This is included in Exhibit C Table 2 of the Amended Plan. b. Project was not added, as GIS and project amount was not provided.
49. Existing Flood Projects GIS Feature Class, ExFldProjs: a. Existing Project IDs 15000028 and 15000029 have been awarded HMGP funds, but do not appear to have HMGP listed as a project source. Please consider including HMGP in the 'FUND_SRC' field for these projects. b. Please consider including the City of McAllen's FMA Grant EMT-2018-FM-E002 drainage project that is currently in progress.	a. This is included in Exhibit C Table 2 of the Amended Plan. b. Project was not added, as GIS and project amount was not provided.
SOW Task 2A	
50. Existing Condition Flood Hazard GIS Feature Class, *ExFldHazard:* There appears to be approximately 35 square miles of overlap in this feature class, particularly along the coast. Please verify accuracy of data and reconcile if necessary.	No reconciliation is necessary map is accurate.
51. Existing Condition Gaps Map (Exhibit C Map 5): Municipal boundaries do not appear visible on the map. Please consider modifying the map elements	Layers reordered and symbols changed

Comment Received	RFPG Response
(e.g., reordering the layers or changing symbology) to improve legibility.	
52. Existing Condition Flood Vulnerability Map (Exhibit C Map 7): a. Please consider increasing the size of the color dots within the legend to improve legibility. b. Municipal boundaries and major roadways do not appear visible on the map. Please consider modifying the map elements (e.g., reordering the layers or changing symbology) to improve legibility. c. Map 7 appears to depict all features within the SVI range of 0 to 1. Please consider only including features with SVI scores above 0.75 as required per guidance document (Exhibit C Page 27): Submittal requirement number 3. d. Please consider adding a separate point symbology class for LWCs to improve map legibility.	Maps were improved.
53. Model Coverage, Text: a. Please consider including a table with descriptions of local detailed studies shown in the ModelCoverage feature class and in Figure 2.4. b. Please consider describing what "Non-Modernized" indicates in Figure 2.7.	a. Table is included in Section 2A.1.c in the report. b. A definition for non-modernized is included in Section 2.A.1.D of the amended plan.
SOW Task 2B	
54. Future Condition Flood Vulnerability, Text: The text of the Future Condition Vulnerability Analysis section does not appear to provide detail of the resilience of communities located in flood-prone areas identified in the future condition flood exposure analysis, or the vulnerabilities of critical facilities to flooding by looking at factors such as	Section 2B.3 was revised to include this information

Comment Received	RFPG Response
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. The text section instead relies on referencing relevant maps in the appendices. Please consider providing more detail in the text section of this chapter.	
55. Future Condition Flood Vulnerability Map (Exhibit C Map 12): a. Please consider increasing the size of the color dots within the legend to improve legibility. b. Municipal boundaries and major roadways do not appear visible on the map. Please consider modifying the map elements (e.g., reordering the layers or changing symbology) to improve legibility. c. Map 12 appears to depict all features within the SVI range of 0 to 1. Please consider only including features with SVI scores above 0.75 as required per guidance document (Exhibit C Page 35): Submittal requirement number 3. d. d. Please consider adding a separate point symbology class for LWCs to improve map legibility.	Map corrected and enhanced
56. Existing Floodplain Management Practices Table (Exhibit C Table 6): a. a. The text appears to include cities that do not match Appendix B, Table 6. For example, the text states that the Cities of Granejo and Progreso are not NFIP participants. However, they are both listed as NFIP participants in Table 6. Please reconcile as appropriate.	Text and table are reconciled.
57. Flood Management Evaluations (FME), Text:	Within the Region, there are several Category 1 Flood Infrastructure Projects currently on-going. These are

Comment Received	RFPG Response
a. For FMEs that potentially overlap with an existing TWDB-funded, FIF Category 1, study, please state how the FME will expand on the existing study. b. For county-wide FMEs where most of the county falls outside of the RFPG boundary, please include justification of how the FME benefits the region and please coordinate with other RFPGs to make sure the efforts are not duplicated.	noted in Chapter 1 and in **Table 2** (included in **Appendix A**). The RFPG believes every entity has the right to study their jurisdiction to the degree of detail they deem is necessary for their needs. Sponsors will work with each other and any potential funding entity to determine scope and leverage any available information for their study.
58. Flood Management Evaluations (FME) Map (Exhibit C Map 16): Please consider providing an inset map, or using another method, for certain cities to improve legibility of potentially smaller FMEs.	Maps have an inset included.
SOW Task 5	
59. Flood Management Evaluation (FME) Recommendations, Text: a. For FMEs that potentially overlap with an existing TWDB-funded, FIF Category 1 study, please state how the FME will expand on the existing study. b. b. For county-wide FMEs where most of the county falls outside of the RFPG boundary, please include justification of how the FME benefits the region and please coordinate with other RFPGs to make sure the efforts are not duplicated.	Within the Region, there are several Category 1 Flood Infrastructure Projects currently on-going. These are noted in Chapter 1 and in **Table 2** (included in **Appendix A**). The RFPG believes every entity has the right to study their jurisdiction to the degree of detail they deem is necessary for their needs. Sponsors will work with each other and any potential funding entity to determine scope and leverage any available information for their study.
60. Flood Management Evaluation (FME) Recommendations Table (Exhibit C Table 15): Please consider documenting existing or ongoing BLE and TWDB-funded, FIF Category 1 studies.	Some FMPs include the FIF study name in the project Name.
61. Flood Management Evaluation (FME) Recommendations GIS Feature Class, FME:	Model populated and document corrected on Category studies

Comment Received	RFPG Response
a. Please consider populating 'MODEL_DESC' field for clarity on existing studies to be used. b. b. Please make sure to document existing or ongoing BLE and TWDB-funded, FIF, Category 1 studies.	
62. Flood Mitigation Project (FMP) Recommendations Map (Exhibit C Map 20): Please consider revising this map to more clearly depict the two recommended FMPs displayed on the map.	Map revised and inset added.
63. Flood Mitigation Project (FMP) Details Geodatabase, FMP_Details: a. Please ensure that all NULL values are correct and revise as appropriate.	Detail geodatabase corrected and revised
SOW Task 6B	
64. Contributions and Impacts to Water Supply, Text: The Hidalgo County Drainage District Delta Watershed Project included in the 2021 Region M Regional Water Plan appears to include proposed construction of a new reservoir. Please confirm that this project should not be included in the Region 15 Regional Flood Plan.	The Delta Reservoir is a separate facility than the Delta Detention Pond. These two facilities will ultimately be adjacent to one another but they are separate facilities and projects. The Delta Reservoir is not on the Regional Flood Plan.
SOW Task 9	
65. Flood Infrastructure Financing Analysis, Text: Please consider providing the supporting calculation and reference to supporting data for the following statement in the report "it is projected that $67,000,000 of state and federal funding is needed." (Page 9-11).	A statement was added to Chapter 9 that explains that most sponsors indicated they would need 90% assistance with funding their projects.

U.S. Army Corps of Engineers

The following comments were received by the Regional Flood Planning Group via email on October 26, 2022, from Sonia Sams, Project Coordinator with the Water Resources Branch of the U.S. Army Corps of Engineers in Fort Worth, Texas. The comments received, as well as the provided responses are included in **Table E.1** below.

Table E.2 U.S. Army Corps of Engineers Comments on Region 15 Lower Rio Grande Regional Flood Planning Group's Draft Regional Flood Plan

Comment Received	RFPG Response
1. *Non regulatory regional flood control or drainage districts should be established and funded for rapidly growing urban areas such as DFW, Houston, San Antonio, etc. Responsibility would be to provide consistency, technical resources, funding and reviews in support of FME's, FMS's. These organizations would also implement or support implementation of FMP's. These organizations would augment communities and counties that just don't have the resources and expertise to manage flooding.* Rapidly developing areas surrounding larger urban centers are at greater risk of having runoff patterns increasing because of development. These urban areas are comprised of many communities and unincorporated county areas. Many of the smaller communities are not funded or resourced to deal with the complexities of floodplain management and therefore there is a lack of or inconsistencies in floodplain management practices.	The Region 15 Regional Flood Planning Group appreciates you providing this suggestion for the Regional Flood Plan
2. *Clarify the early 2000's state legislation that provide counties the authority to regulate floodplains to explicitly allow and encourage activities associated with floodplain management such as development of land use plans, regulatory authorities, e.g. permitting.* Although state legislation was passed in the early 2000's which gave counties the ability to regulate	The Region 15 Regional Flood Planning Group appreciates you providing this suggestion for the Regional Flood Plan.

Comment Received	RFPG Response
floodplains, interpretation of these regulations varies widely from county to county. The legislate bill lacks implementation guidance in the form of administrative rules. If development is occurring in unincorporated areas, this development can dynamically impact flood risk.	
3. *Require the use of n-values and channel conditions which would likely result if the channel or project were not maintained. Exceptions would be golf courses or other areas where an organization exists which would maintain the channel in perpetuity. Disallow maintenance by marginal organizations such as home owners associations to justify acceptance of lower n-values as this is an unrealistic expectation.* When channels are constructed, most often channel bed, banks and overbanks are cleared; however; with many miles of these channels, it is often difficult for communities to maintain those beds, banks and overbanks at their design conditions. Generally, there is a lack of channel maintenance to ensure flood conveyance areas, established as part of a development or improvement projects, to retain their design level n-values. This results in unexpected changes in channel conveyance and increased flooding. Channel maintenance is very expensive activity that can trigger environmental permitting requirements.	The Region 15 Regional Flood Planning Group appreciates you providing this suggestion for the Regional Flood Plan.
4. *No loss of valley storage to the 500-year level. Communities could allow redistribution of valley storage to allow interactions with natural areas but no loss of storage.* Land development in upstream areas increases runoff in downstream areas. This happens because of increased impervious cover and decreased tree cover, and therefore less ability to absorb rainfall. Additionally, development, in most communities, encroaches into riparian areas and decreases the amount of storage available to accommodate flood	The Region 15 Regional Flood Planning Group appreciates you providing this suggestion for the Regional Flood Plan.

Comment Received	RFPG Response
waters. Just the main thread of the Trinity River though DFW stores more flood waters during of flood than any three of the USACE reservoirs that provide flood protection for DFW. The many other stream provide even more storage than the main stem. There is limited capacity in rivers and streams to convey floodwaters. This means that all areas above any given conveyance point have to store flood water until sufficient time has laps to pass the water away from the impacted area. The streams are where this water is stored and depleting these storage areas will impact DS areas.	
5. *Establish future land use plans for unincorporated areas associated with rapidly growing urban areas.* Land development in upstream areas increases runoff in downstream areas. This happens because of increased impervious cover and decreased tree cover, and therefore less ability to absorb rainfall. Additionally, development, in most communities, encroaches into riparian areas and decreases the amount of storage available to accommodate flood waters. Just the main thread of the Trinity River though DFW stores more flood waters during of flood than any three of the USACE reservoirs that provide flood protection for DFW. The many other stream provide even more storage than the main stem. There is limited capacity in rivers and streams to convey floodwaters. This means that all areas above any given conveyance point have to store flood water until sufficient time has laps to pass the water away from the impacted area. The streams are where this water is stored and depleting these storage areas will impact DS areas.	The Region 15 Regional Flood Planning Group appreciates you providing this suggestion for the Regional Flood Plan.
6. *Use of ultimate development land use conditions in the development of future flows. Require use of future flows for regulation of floodplains and development of FMP's.* Land development in upstream areas increases runoff in downstream areas. This happens because of increased impervious cover and decreased tree	The Region 15 Regional Flood Planning Group appreciates you providing this suggestion for the Regional Flood Plan.

Comment Received	RFPG Response
cover, and therefore less ability to absorb rainfall. Additionally, development, in most communities, encroaches into riparian areas and decreases the amount of storage available to accommodate flood waters. Just the main thread of the Trinity River though DFW stores more flood waters during of flood than any three of the USACE reservoirs that provide flood protection for DFW. The many other stream provide even more storage than the main stem. There is limited capacity in rivers and streams to convey floodwaters. This means that all areas above any given conveyance point have to store flood water until sufficient time has laps to pass the water away from the impacted area. The streams are where this water is stored and depleting these storage areas will impact DS areas.	
7. *Encourage storm shifting to validate 100-yr estimates and to provide a broader understanding of communities actual flood risk. Storms identified and cataloged as part of the GLO funded USACE led Texas Storm Study could be the primary source of storms to be shifted.* Notes: Great deal of uncertainty in 100-yr estimates. Use of observed storms that approximately match depth duration data from NOAA Atlas 14 or other precipitation frequency sources validates 100-yr estimates. Additionally wet, dry and average conditions as well as conditions at the time the storm occurred can be presented. Additionally, communities have and can experience storms that exceed the 100-yr. While not regulatory, this information will provide additional hazard mitigation data so communities can address critical infrastructure impacts and be better prepared.	The Region 15 Regional Flood Planning Group appreciates you providing this suggestion for the Regional Flood Plan.
8. *Add detail to Watershed Hydrology Assessments (WHA) for communities within basins with completed WHA's. The WHA for the Trinity has been completed.*	The Region 15 Regional Flood Planning Group appreciates you providing this suggestion for the Regional Flood Plan.

Comment Received	RFPG Response
The WHA's, funded by FEMA, are considered the best available flood flow frequency estimates, e.g. 100-yr. These estimates consider the latest precipitation frequencies, the variations in watershed response and determine critical flood drivers by employing a wide range of sensitivity analysis for each computation point.	
9. *Update WHA's when future precipitation frequency estimates become available. Efforts to develop future precipitation frequency estimates for Texas are starting.*	The Region 15 Regional Flood Planning Group appreciates you providing this suggestion for the Regional Flood Plan.
10. Establish regional efforts, for large urban centers to develop future land use data for all developing areas, not just incorporated areas, for use in developing future flood flow frequency estimates and future 100-yr (and other recurrence interval) hazard boundaries.	The Region 15 Regional Flood Planning Group appreciates you providing this suggestion for the Regional Flood Plan.

Texas Parks & Wildlife Comments

The following comments were received by the Regional Flood Planning Group via email on October 27, 2022 from Marty Kelly, Water Resources Program Coordinator for the Texas Parks &Wildlife. The comments received, as well as the provided responses are included in **Table E.13** below.

Table E.3 Texas Parks & Wildlife Comments on Region 15 Lower Rio Grande Regional Flood Planning Group's Draft Regional Flood Plan

Comment Received	RFPG Response
1. TPWD emphasizes that the following flood risk management (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 project strategies should include a comprehensive suite of measures spanning economical, operational, societal, and environmental advantages and disadvantages assessments focusing on	The Region 15 Regional Flood Planning Group appreciates you providing this suggestion for the Regional Flood Plan.

Comment Received	RFPG Response
economics alone (number of building, acres) should be avoided.	
2. Task 4B identification and evaluation of potential FMS's potentially feasible FMS and FMP's is meant to be part of chapter 5 rather than chapter 4.TPWD recommends moving task 4B to chapter 5.	The Region 15 Regional Flood Planning Group appreciates you providing this suggestion for the Regional Flood Plan.
3. Texas Conservation Act Plan (TCP) 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 Region 15 Regional Flood Planning Group appreciates you providing this suggestion for the Regional Flood Plan.
4. 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 allow for aquatic organism passage. These lower, recessed culverts should be	The Region 15 Regional Flood Planning Group appreciates you providing this suggestion for the Regional Flood Plan.

Comment Received	RFPG Response
installed in the thalweg or deepest part of the channel and be aligned with the low flow channel (Clarkin et al., 2006).	
5. The Draft Lower Rio Grande Regional Flood Plan includes a number of channel improvement projects which may include widening, deepening, and straightening streams. Channelization and over-widening of streams slows flow, which increases deposition of sediment, decreases fish habitat, increases water temperatures, and can result in channel erosion. Streams in good condition naturally reach 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 . The proposed Flood Management Evaluations, Plans, and Strategies (FMXs, all together) include numerous infrastructure projects that may affect the aquatic habitats that are prioritized in the TCAP for example the removal of low water crossings can benefit rare species such as mussels and fish if the crossing is replaced with a bridge or culvert that does not form a barrier to species movements conversely building dams and channelizing streams can conversely affect aquatic habitats and species.	The Region 15 Regional Flood Planning Group appreciates you providing this suggestion for the Regional Flood Plan.

Sierra Club Lone Star Chapter Comments

The following comments were received by the Regional Flood Planning Group via email on October 31, 2022, from Alex Ortiz, Water Specialist for the Sierra Club Lone Star Chapter, and Cyrus Reed, Conservation Director for the same chapter. The comments received, as well as the provided responses are included in **Table E.14** below.

Table E.4 Sierra Club Lone Star Chapter Comments on Region 15 Lower Rio Grande Regional Flood Planning Group's Draft Regional Flood Plan

Comment Received	RFPG Response
1. Increase the number of nature-based flood risk reduction projects (from 20% to 30 percent in short-term to 40% to 50% in long term). Note: we support higher goals and would suggest 30 percent in short term and 50 to 60 percent for long-term.	The Region 15 Regional Flood Planning Group appreciates your support higher nature-based food risk reduction project short and long-term goals. We will consider the target goals you propose as a board and will let you know if these target goals change.
2. Increase the acreage of publicly protected open space in critical flood risk areas that are reused for public benefit (from 300,000 acres in short term to 800,000 acres in long-term). Note: we would support higher goals.	The Region 15 Regional Flood Planning Group appreciates your support for increased acreage of publicly protected open space in critical flood risk areas that are reused for public benefit.
3. Increase the number of entities that adopt higher than NFIP minimum standards to 40-50% in short-term Note: we would support higher goals.	The Region 15 Regional Flood Planning Group appreciates your support for increased number of entities that adopt higher than NFIP minimum standards.
4. Reduce the number of structures within NFHL-Detailed Study Area and Existing Floodplain with 1% annual chance flood risk. *To their credit the region is contemplating reducing the number of newly constructed critical infrastructure facilities in this area by 70% in the medium term and 100% in the long-term, which we*	The Region 15 Regional Flood Planning Group appreciates you providing this flood protection goal for consideration.

Comment Received	RFPG Response
support, but some consideration to moving or buttressing existing structures is needed in the plan	
5. We would note that the RGV Region 15 might consider additional recommendation that many other regional groups are recommending, including: The RGVFPG should play a role in facilitating public information/public education activities in the Rio Grande Basin and provide support to local public agencies to promote a wider understanding of state and regional flood issues and the importance of flood preparedness and long-range regional flood planning and mitigation ***Increase the number of outreach and education activities, specifically targeting municipal floodplain managers throughout Region 15, hosted by Region 15 RFPG and available on the website.***	The Region 15 Regional Flood Planning Group appreciates you providing this administrative recommendation for consideration. This recommendation is closely aligned with one of our Education and Outreach Goals:
6. We would note that the RGV Region 15 might consider additional recommendation that many other regional groups are recommending, including: The TWDB should use the project list in the adopted RFP and state flood plan (SFP) to help connect local communities to grant programs administered by federal or other state agencies;	The Region 15 Regional Flood Planning Group appreciates you providing this administrative recommendation for consideration.
7. We would note that the RGV Region 15 might consider additional recommendation that many other regional groups are recommending, including: • The TWDB is encouraged to consider use of hybrid approaches that blend structural engineered projects and nature-based solutions for flood mitigation: o Incentivize voluntary buy-out programs, turning previously flooded properties/neighborhoods into stormwater parks as an alternative to large scale construction projects; and	The Region 15 Regional Flood Planning Group appreciates you providing this administrative recommendation for consideration.

	Comment Received	RFPG Response
	○ Provide training to state agencies, local governments, engineers, planners in the use of natural floodplain preservation/conservation.	
8.	The Texas Legislature is urged to support adoption of the 2021 versions of International Building Code and International Residential Code as State Building Standards, and other standards such as the 2021 IPC and 2021 IECC, which will ensure new construction is more resilient	The Region 15 Regional Flood Planning Group appreciates you providing this legislative recommendation for consideration.
9.	The Texas Legislature should provide counties with more powers to implement, enforce and inspect modern building codes to ensure new construction is meeting more resilient standards	The Region 15 Regional Flood Planning Group appreciates you providing this legislative recommendation for consideration
10.	The Texas Legislature is urged to expand the use of the Economically Distressed Areas Program (EDAP) Funds to include residential drainage as an eligible use of EDAP funds as has been previously proposed. Because EDAP has been used for water and wastewater service grants throughout the RGV, assuring that those projects are combined with proper drainage to avoid future flooding is a key flood-proof strategy that would be uniquely beneficial for this region	The Region 15 Regional Flood Planning Group appreciates you providing this legislative recommendation for consideration.
11.	The Texas Legislature should continue to provide funding to state agencies for flood planning initiatives, including providing technical support and assistance to county and city floodplain administrators or designees to support development of building standards, permitting support to verify new projects meet floodplain development requirements, and training	The Region 15 Regional Flood Planning Group appreciates you providing this legislative recommendation for consideration.
12.	The Texas Legislature is urged to make funds available to support nature-based practices through land conservation, restoration programs, and participation in landowner incentive programs to encourage voluntary land stewardship practices to	The Region 15 Regional Flood Planning Group appreciates you providing this legislative recommendation for consideration.

Comment Received	RFPG Response
manage floodwaters by slowing runoff and dissipating flood energy to include riparian, wetland, forest, upland, and other habitat protection programs. • Promote land coverage studies to effectively identify riparian corridors to protect for floodplain mitigation and erosion reduction. • Additional low interest programs to support voluntary city and county buy-back of lands for county parks and flood mitigation should also be included.	
13. We believe the region should consider expanding the definition of what is included in the definition of critical infrastructure	The Region 15 Regional Flood Planning Group appreciates you providing this suggestion for improving the Regional Flood Plan.
14. Prepare minimum flood management standards, including identifying operations and maintenance best practices to maintain drainage structures	The Region 15 Regional Flood Planning Group appreciates you providing this suggestion for improving the Regional Flood Plan.
15. Increase nature-based practices through land conservation and restoration programs and participation in landowner incentive programs to encourage voluntary land stewardship practices to manage floodwaters, slow runoff and dissipate flood energy to include riparian, wetland, forest, upland, and other habitat protection programs	The Region 15 Regional Flood Planning Group appreciates you providing this suggestion for improving the Regional Flood Plan
16. Develop public information campaigns to increase community knowledge of rules and regulations, flood-prone areas, and importance of protecting floodplains from encroachment.	The Region 15 Regional Flood Planning Group appreciates you providing this suggestion for improving the Regional Flood Plan
17. While we understand the use of this proxy method, which led to coastal and other buffers, as pointed out, there are large data gaps, and no hydrological or floodplain mapping exists in the LRGV, meaning it is a very inexact process. Thus, we would suggest that between now and the next flood plan, that	The Region 15 Regional Flood Planning Group appreciates you providing this suggestion for improving the Regional Flood Plan.

Comment Received	RFPG Response
these models be developed so that future plans can be more exact.	
18. Apply higher-end sea level rise projections to assess future conditions analysis for Coastal Zones • *We recommend using the intermediate-to-intermediate high projections for planning. We were unable to determine in the plan how sea level rise is being treated as it was not clear in the methodology*	The Region 15 Regional Flood Planning Group appreciates you providing this suggestion for improving the Regional Flood Plan.
19. Expand the types of structures included when assessing vulnerability of Critical Facilities and weigh these structures higher during the Flood Mitigation Needs assessment • *Region 15 included schools, hospitals, police stations, and fire stations, electric and gas lines, Superfund sites, water and wastewater supply sites as critical facilities when determining vulnerability to flood hazards. … Unlike some regions, Region 15 did not include chemical plants, refineries, chemical storage facilities, and oil and gas infrastructure as critical facilities…during the Flood Mitigation Needs Assessment in Chapter 4, Region 13 should weigh these additional facilities higher than hospitals, schools, fire stations, and police stations, as they can pose additional risks to the health and safety of communities when flooded.*	The Region 15 Regional Flood Planning Group appreciates you providing this suggestion for improving the Regional Flood Plan.
20. Region 15 should adopt Minimum Floodplain Management Regulations • *Region 15 should require at least two minimum floodplain management regulations:* • *Compliance with Texas Water Code Section 16.3145 and* • *FEMA's National Flood Insurance Program (NFIP) participation.*	The Region 15 Regional Flood Planning Group appreciates you providing this suggestion for improving the Regional Flood Plan

Comment Received	RFPG Response
• *As these regulations are widespread across the region, and create a strong foundation for the region, we support the inclusion of these as minimum floodplain management regulations.*	
21. Include a Goal to increase enforcement of Floodplain Ordinances *The level of enforcement of floodplain management practices varied across Region 15. However, for the vast majority of counties and municipalities, the Region was not able to determine level of enforcement. We believe that Region 15 should include a goal for the region to increase knowledge of enforcement across the region, and to increase levels of enforcement, region wide.*	The Region 15 Regional Flood Planning Group appreciates you providing this suggestion for improving the Regional Flood Plan.
22. Include impact to natural infrastructure in No Negative Impacts analysis *Natural features and nature-based infrastructure provide significant flood mitigation benefits to neighboring communities. The analysis of "No Negative Impacts" should include impacts to natural infrastructure.*	The Region 15 Regional Flood Planning Group appreciates you providing this suggestion for improving the Regional Flood Plan.
23. Include annual appropriations to FIF as a legislative recommendation • *We recommend that Region 15 include a legislative recommendation that the state should allocate funding for recurring biennial appropriations to the Flood Infrastructure Fund. Annual appropriations to FIF will ensure that the state can continue to invest in FMPs included in the regional flood plans. At least 7 regions analyzed have included this as a recommendation in their draft plans.*	The Region 15 Regional Flood Planning Group appreciates you providing this legislative recommendation for consideration.
24. Consider a specific section and measures on border security and minimizing the impacts of border security on flooding.	The Region 15 Regional Flood Planning Group appreciates you providing this recommendation for consideration.

Comment Received	RFPG Response
• *As is well documented, the decision by the federal government under multiple administrations (Bush, Obama, Trump, and Biden) to add border security, often without considering the impacts on local flooding has had devastating impacts along the US-Mexico border. It has also in some cases cut through important habitats and reduced the effectiveness of open space as a flood mitigation strategy. We believe that the Region 15 flood plan must address this issue which as is pointed out "disrupt preserves and natural areas, as well as the natural hydrology (Page 1-30)." However, the plan is silent on what actions need to be taken to mitigate these flood risks. Adding a plan - which of course must include new partners like Homeland Security - to address these risks, and require consultations for future border infrastructure will be important to the region.*	

Texas Parks & Wildlife Comments

The following comments were received by the Regional Flood Planning Group via email on October 27, 2022 from Marty Kelly, Water Resources Program Coordinator for the Texas Parks &Wildlife. The comments received, as well as the provided responses are included in **Table E.13** below.

Table E.3 Texas Parks & Wildlife Comments on Region 15 Lower Rio Grande Regional Flood Planning Group's Draft Regional Flood Plan

Comment Received	RFPG Response
1. TPWD emphasizes that the following flood risk management (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 project strategies should include a comprehensive suite of measures spanning economical, operational, societal, and environmental advantages and disadvantages assessments focusing on	The Region 15 Regional Flood Planning Group appreciates you providing this suggestion for the Regional Flood Plan.

Comment Received	RFPG Response
economics alone (number of building, acres) should be avoided.	
2. Task 4B identification and evaluation of potential FMS's potentially feasible FMS and FMP's is meant to be part of chapter 5 rather than chapter 4.TPWD recommends moving task 4B to chapter 5.	The Region 15 Regional Flood Planning Group appreciates you providing this suggestion for the Regional Flood Plan.
3. Texas Conservation Act Plan (TCP) 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 Region 15 Regional Flood Planning Group appreciates you providing this suggestion for the Regional Flood Plan.
4. 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 allow for aquatic organism passage. These lower, recessed culverts should be	The Region 15 Regional Flood Planning Group appreciates you providing this suggestion for the Regional Flood Plan.

Comment Received	RFPG Response
installed in the thalweg or deepest part of the channel and be aligned with the low flow channel (Clarkin et al., 2006).	
5. The Draft Lower Rio Grande Regional Flood Plan includes a number of channel improvement projects which may include widening, deepening, and straightening streams. Channelization and over-widening of streams slows flow, which increases deposition of sediment, decreases fish habitat, increases water temperatures, and can result in channel erosion. Streams in good condition naturally reach 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 . The proposed Flood Management Evaluations, Plans, and Strategies (FMXs, all together) include numerous infrastructure projects that may affect the aquatic habitats that are prioritized in the TCAP for example the removal of low water crossings can benefit rare species such as mussels and fish if the crossing is replaced with a bridge or culvert that does not form a barrier to species movements conversely building dams and channelizing streams can conversely affect aquatic habitats and species.	The Region 15 Regional Flood Planning Group appreciates you providing this suggestion for the Regional Flood Plan.

Sierra Club Lone Star Chapter Comments

The following comments were received by the Regional Flood Planning Group via email on October 31, 2022, from Alex Ortiz, Water Specialist for the Sierra Club Lone Star Chapter, and Cyrus Reed, Conservation Director for the same chapter. The comments received, as well as the provided responses are included in **Table E.14** below.

Table E.4 Sierra Club Lone Star Chapter Comments on Region 15 Lower Rio Grande Regional Flood Planning Group's Draft Regional Flood Plan

Comment Received	RFPG Response
2. Increase the acreage of publicly protected open space in critical flood risk areas that are reused for public benefit (from 300,000 acres in short term to 800,000 acres in long-term). Note: we would support higher goals.	The Region 15 Regional Flood Planning Group appreciates your support for increased acreage of publicly protected open space in critical flood risk areas that are reused for public benefit.
4. Reduce the number of structures within NFHL-Detailed Study Area and Existing Floodplain with 1% annual chance flood risk. *To their credit the region is contemplating reducing the number of newly constructed critical infrastructure facilities in this area by 70% in the medium term and 100% in the long-term, which we*	The Region 15 Regional Flood Planning Group appreciates you providing this flood protection goal for consideration.

Comment Received	RFPG Response
support, but some consideration to moving or buttressing existing structures is needed in the plan	
5. We would note that the RGV Region 15 might consider additional recommendation that many other regional groups are recommending, including: The RGVFPG should play a role in facilitating public information/public education activities in the Rio Grande Basin and provide support to local public agencies to promote a wider understanding of state and regional flood issues and the importance of flood preparedness and long-range regional flood planning and mitigation ***Increase the number of outreach and education activities, specifically targeting municipal floodplain managers throughout Region 15, hosted by Region 15 RFPG and available on the website.***	The Region 15 Regional Flood Planning Group appreciates you providing this administrative recommendation for consideration. This recommendation is closely aligned with one of our Education and Outreach Goals:
6. We would note that the RGV Region 15 might consider additional recommendation that many other regional groups are recommending, including: The TWDB should use the project list in the adopted RFP and state flood plan (SFP) to help connect local communities to grant programs administered by federal or other state agencies;	The Region 15 Regional Flood Planning Group appreciates you providing this administrative recommendation for consideration.
7. We would note that the RGV Region 15 might consider additional recommendation that many other regional groups are recommending, including: • The TWDB is encouraged to consider use of hybrid approaches that blend structural engineered projects and nature-based solutions for flood mitigation: ○ Incentivize voluntary buy-out programs, turning previously flooded properties/neighborhoods into stormwater parks as an alternative to large scale construction projects; and	The Region 15 Regional Flood Planning Group appreciates you providing this administrative recommendation for consideration.

Comment Received	RFPG Response
○ Provide training to state agencies, local governments, engineers, planners in the use of natural floodplain preservation/conservation.	
8. The Texas Legislature is urged to support adoption of the 2021 versions of International Building Code and International Residential Code as State Building Standards, and other standards such as the 2021 IPC and 2021 IECC, which will ensure new construction is more resilient	The Region 15 Regional Flood Planning Group appreciates you providing this legislative recommendation for consideration.
9. The Texas Legislature should provide counties with more powers to implement, enforce and inspect modern building codes to ensure new construction is meeting more resilient standards	The Region 15 Regional Flood Planning Group appreciates you providing this legislative recommendation for consideration
10. The Texas Legislature is urged to expand the use of the Economically Distressed Areas Program (EDAP) Funds to include residential drainage as an eligible use of EDAP funds as has been previously proposed. Because EDAP has been used for water and wastewater service grants throughout the RGV, assuring that those projects are combined with proper drainage to avoid future flooding is a key flood-proof strategy that would be uniquely beneficial for this region	The Region 15 Regional Flood Planning Group appreciates you providing this legislative recommendation for consideration.
11. The Texas Legislature should continue to provide funding to state agencies for flood planning initiatives, including providing technical support and assistance to county and city floodplain administrators or designees to support development of building standards, permitting support to verify new projects meet floodplain development requirements, and training	The Region 15 Regional Flood Planning Group appreciates you providing this legislative recommendation for consideration.
12. The Texas Legislature is urged to make funds available to support nature-based practices through land conservation, restoration programs, and participation in landowner incentive programs to encourage voluntary land stewardship practices to	The Region 15 Regional Flood Planning Group appreciates you providing this legislative recommendation for consideration.

Comment Received	RFPG Response
manage floodwaters by slowing runoff and dissipating flood energy to include riparian, wetland, forest, upland, and other habitat protection programs. • Promote land coverage studies to effectively identify riparian corridors to protect for floodplain mitigation and erosion reduction. • Additional low interest programs to support voluntary city and county buy-back of lands for county parks and flood mitigation should also be included.	
13. We believe the region should consider expanding the definition of what is included in the definition of critical infrastructure	
14. Prepare minimum flood management standards, including identifying operations and maintenance best practices to maintain drainage structures	The Region 15 Regional Flood Planning Group appreciates you providing this suggestion for improving the Regional Flood Plan.
16. Develop public information campaigns to increase community knowledge of rules and regulations, flood-prone areas, and importance of protecting floodplains from encroachment.	The Region 15 Regional Flood Planning Group appreciates you providing this suggestion for improving the Regional Flood Plan
	The Region 15 Regional Flood Planning Group appreciates you providing this suggestion for improving the Regional Flood Plan.

Comment Received	RFPG Response
these models be developed so that future plans can be more exact.	
18. Apply higher-end sea level rise projections to assess future conditions analysis for Coastal Zones • *We recommend using the intermediate-to-intermediate high projections for planning. We were unable to determine in the plan how sea level rise is being treated as it was not clear in the methodology*	The Region 15 Regional Flood Planning Group appreciates you providing this suggestion for improving the Regional Flood Plan.
19. Expand the types of structures included when assessing vulnerability of Critical Facilities and weigh these structures higher during the Flood Mitigation Needs assessment • *Region 15 included schools, hospitals, police stations, and fire stations, electric and gas lines, Superfund sites, water and wastewater supply sites as critical facilities when determining vulnerability to flood hazards. … Unlike some regions, Region 15 did not include chemical plants, refineries, chemical storage facilities, and oil and gas infrastructure as critical facilities…during the Flood Mitigation Needs Assessment in Chapter 4, Region 13 should weigh these additional facilities higher than hospitals, schools, fire stations, and police stations, as they can pose additional risks to the health and safety of communities when flooded.*	The Region 15 Regional Flood Planning Group appreciates you providing this suggestion for improving the Regional Flood Plan.
20. Region 15 should adopt Minimum Floodplain Management Regulations • *Region 15 should require at least two minimum floodplain management regulations:* • *Compliance with Texas Water Code Section 16.3145 and* • *FEMA's National Flood Insurance Program (NFIP) participation.*	The Region 15 Regional Flood Planning Group appreciates you providing this suggestion for improving the Regional Flood Plan

Comment Received	RFPG Response
• *As these regulations are widespread across the region, and create a strong foundation for the region, we support the inclusion of these as minimum floodplain management regulations.*	
21. Include a Goal to increase enforcement of Floodplain Ordinances *The level of enforcement of floodplain management practices varied across Region 15. However, for the vast majority of counties and municipalities, the Region was not able to determine level of enforcement. We believe that Region 15 should include a goal for the region to increase knowledge of enforcement across the region, and to increase levels of enforcement, region wide.*	The Region 15 Regional Flood Planning Group appreciates you providing this suggestion for improving the Regional Flood Plan.
22. Include impact to natural infrastructure in No Negative Impacts analysis *Natural features and nature-based infrastructure provide significant flood mitigation benefits to neighboring communities. The analysis of "No Negative Impacts" should include impacts to natural infrastructure.*	The Region 15 Regional Flood Planning Group appreciates you providing this suggestion for improving the Regional Flood Plan.
23. Include annual appropriations to FIF as a legislative recommendation • *We recommend that Region 15 include a legislative recommendation that the state should allocate funding for recurring biennial appropriations to the Flood Infrastructure Fund. Annual appropriations to FIF will ensure that the state can continue to invest in FMPs included in the regional flood plans. At least 7 regions analyzed have included this as a recommendation in their draft plans.*	The Region 15 Regional Flood Planning Group appreciates you providing this legislative recommendation for consideration.
24. Consider a specific section and measures on border security and minimizing the impacts of border security on flooding.	The Region 15 Regional Flood Planning Group appreciates you providing this recommendation for consideration.

Comment Received	RFPG Response
• *As is well documented, the decision by the federal government under multiple administrations (Bush, Obama, Trump, and Biden) to add border security, often without considering the impacts on local flooding has had devastating impacts along the US-Mexico border. It has also in some cases cut through important habitats and reduced the effectiveness of open space as a flood mitigation strategy. We believe that the Region 15 flood plan must address this issue which as is pointed out "disrupt preserves and natural areas, as well as the natural hydrology (Page 1-30)." However, the plan is silent on what actions need to be taken to mitigate these flood risks. Adding a plan - which of course must include new partners like Homeland Security - to address these risks, and require consultations for future border infrastructure will be important to the region.*	

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 25, 2022

Jaime Salazar
Operations Manager
Hidalgo County Drainage District No. 1
902 N. Doolittle
Edinburg, TX 78542

RE: Texas Water Development Board Comments on Region 15 Lower Rio Grande RFPG's Draft Regional Flood Plan Contract No. 2101792500

Dear Mr. Salazar,

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 15 Lower Rio Grande 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 with each other. 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 entire draft regional flood plan, and the 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.

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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 Megan Ingram at 512-475-1590 or via email at megan.ingram@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: Commissioner David Garza, RFPG Chair
Kristina Leal, Halff Associates, Inc.
Matt Nelson, TWDB
James Bronikowski, TWDB
Anita Machiavello, TWDB
Megan Ingram, TWDB

October 25, 2022

TWDB Comments on Region 15 Lower Rio Grande 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.
2. Please consider including bookmarks in the pdf of the reports to facilitate ease of navigation for readers.
3. Several maps appear to be missing depictions of major roadways, major streams and rivers, major reservoirs, and other required features (e.g., Exhibit C Map 3 appears to be missing major streams and rivers). Exhibit C Section 3.10 requires all maps to contain certain base map information depicting the RFPG boundary, counties, HUCs as applicable, major streams or rivers, major reservoirs as appliable, major watershed boundaries as applicable, major roadways, major cities or urban areas, and other features identified by the RFPG. Please reconcile.

SOW Task 1

4. Entities GIS Feature Class, *Entities*:
    a. It appears that some fields contain invalid entries such as "Y" instead of "Yes" for the 'POLSUB_FLG' field. Please complete all required fields with valid entries per Exhibit D Table 3.
    b. It appears that some fields are missing entries, including 'ACTIVE'. Please complete all required fields with valid entries per Exhibit D Table 3 [31 TAC §361.30(4) & (5)].
5. Existing Flood Infrastructure Table (Exhibit C Table 1): Low water crossings (LWC) do not appear to be included in Table 1. A summary and location of all low water crossings in the region identified by local communities is required to be included in Table 1. At minimum, identified LWCs within the Low Water Crossing dataset provided in the TWDB Flood Planning Data Hub should be included. Please include all LWCs identified during the flood planning process in this table [Exhibit C Section 2.1].
6. Existing Flood Infrastructure GIS Feature Class, *ExFldInfraPol*: It appears that some fields contain invalid entries, including 'NAME' and 'DESCR'. Please complete all required fields with valid entries per Exhibit D Table 5 [31 TAC §361.31 & Exhibit D 3.3].
7. Existing Flood Infrastructure GIS Feature Class, *ExFldInfraLn*: It appears that some fields contain invalid entries, including 'NATBUILT and 'NAME. Please complete all required fields with valid entries per Exhibit D Table 6 [31 TAC §361.31 & Exhibit D 3.3].
8. Existing Flood Infrastructure GIS Feature Class, *ExFldInfraPt*:
    a. Please include all low water crossings (LWCs) identified during the flood planning process in this feature layer. The *ExFldExpAll* feature class contains 240 LWCs, whereas the *ExFldInfraPt* feature class appears to contain no LWCs. Note: This is

required in contrast to the optional *LWC* feature class [31 TAC §361.31 & Exhibit D 3.3].

b. All low water crossings (LWC) in the region identified by local communities are required to be included in the *ExFldInfraPt* feature class. At minimum, identified LWCs within the Low Water Crossing dataset provided in the TWDB Flood Planning Data Hub should be included. Please reconcile [31 TAC §361.31 & Exhibit D 3.3].

c. It appears that some fields contain invalid entries, including 'DESCR'. Please complete all required fields with valid entries as referenced in Exhibit D Table 7 [31 TAC §361.31 & Exhibit D 3.3].

9. Existing Flood Infrastructure Map (Exhibit C Map 1): Low water crossings (LWC) do not appear to be included in Map 1. All LWCs in the region identified by local communities are required to be included in the *ExFldInfraPt* feature class and this should be reflected in Map 1. At minimum, identified LWCs within the Low Water Crossing dataset provided in the TWDB Flood Planning Data Hub should be included. Please reconcile [31 TAC §361.31 & Exhibit C 2.1].
10. Existing Flood Projects GIS Feature Class, *ExFldProjs*: The polygons representing proposed and ongoing flood mitigation projects appear to follow county boundaries in all instances. Please ensure polygons reflect actual project boundaries, service areas, and/or contributing drainage areas as applicable [31 TAC §361.32].
11. Existing Flood Projects Map (Exhibit C Map 2): The shaded areas representing proposed and ongoing flood mitigation projects appear to follow county boundaries in all instances. Please ensure these shaded areas align with the *ExFldProjs* feature class to reflect actual project boundaries, service areas, and/or contributing drainage areas as applicable [31 TAC §361.32].

SOW Task 2A

12. Existing Condition Flood Hazard Analysis, Text:
    a. Please include total land areas (square miles) of each flood risk by flood risk type, county, region, and frequency as per guidance document (Exhibit C page 24): Submittal requirement number 2.
    b. Please include a reference to Exhibit C Table 3 in the text, as per the guidance document (Exhibit C page 27). Once Task 2A Existing Condition Flood Risk Analyses is complete, RFPGs must include a summary table with findings summarizing flood risk by county.
    c. The Existing Hazard section does not appear to explicitly identify flood hazards specific to different types of flooding including riverine, coastal, urban, or other flooding. Please reconcile [31 TAC §361.33(a)].
13. Existing Condition Flood Hazard Map (Exhibit C Map 4): It appears that flood hazards specific to different types of flooding are not depicted. Please include identification of each type of flooding including riverine, coastal, urban, or other flooding as per guidance document (Exhibit C page 24): Submittal requirement number 1. This may be included as a supplemental map.
14. Existing Condition Flood Exposure, Text: The text of the Existing Condition Flood Exposure Analysis section does not appear to describe exposure of structures and populations explicitly in the 1% and 0.2% floodplains. Please reconcile [31 TAC §361.33(c)].
15. Existing Condition Flood Exposure Table (Exhibit C Table 3):

a. It appears that the day population is duplicated in the night population field. Please correct these sets of population values as necessary.
b. There appear to be inconsistencies between Table 3 and the *ExFldExpAll* feature class. For example, counts for Residential Structures and Total Structures do not appear to match. Please ensure data consistency between all related deliverables [31 TAC §361.33 & Exhibit C 2.2.A.3].

16. Existing Condition Flood Vulnerability GIS Feature Class, *ExFldExpAll*:
    a. It appears that some fields are missing entries, including 'CRITICAL' Please complete all required fields with valid entries per Exhibit D Table 14 [31 TAC §361.33(c), (d) & Exhibit C 2.2.A.2].
    b. It appears that some fields contain invalid entries, including 'CRIT_TYPE'. Please use the updated 'CRIT_TYPE' valid entry list: "Medical, Police, Fire, EMS, Shelter, School, Infrastructure, Water Treatment, Wastewater Treatment, Power Generation, Other" per the Summary Update to Exhibit D document available on the TWDB website.
17. Model Coverage GIS Feature Class, *ModelCoverage:*
    a. Please provide additional detail to the descriptions of the existing models (i.e. software, type, date completed, scenario modeled) in the 'MODEL_DESCR' field.
    b. Please ensure that all entries within the 'MODEL_ID' field are 12 digits long per the Summary Update to Exhibit D document available on the TWDB website [31 TAC §361.33(b)(2)].

SOW Task 2B

18. Future Condition Flood Hazard Map (Exhibit C Map 8): It appears that flood hazards specific to different types of flooding are not depicted. Please include identification of each type of flooding including riverine, coastal, urban, or other flooding as per guidance document (Exhibit C page 33): Submittal requirement number 1. This may be included as a supplemental map.
19. Future Condition Flood Hazard Analysis, Text:
    a. Please include total land areas (square miles) of each flood risk by flood risk type, county, region, and frequency as per guidance document (Exhibit C page 33): Submittal requirement number 3.
    b. Please include a reference to Exhibit C Table 5 in the text, as per the guidance document (Exhibit C page 35). Once Task 2B Future Condition Flood Risk Analyses is complete, RFPGs must include a summary table with findings summarizing flood risk by county.
    c. The Future Hazard section does not appear to explicitly identify flood hazards specific to different types of flooding including riverine, coastal, urban, or other flooding. Please reconcile [31 TAC §361.33(a)].
20. Future Condition Flood Exposure Table (Exhibit C Table 5): It appears that the table does not contain information in the Possible Flood Prone Areas section. Please verify that this is correct and, if necessary, add data as appropriate [31 TAC §361.34 & Exhibit C 2.2.B.3].
21. Future Condition Flood Vulnerability GIS Feature Class, *FutFldExpAll*:
    a. It appears that some fields contain invalid entries, including 'CRIT_TYPE'. Please use the updated 'CRIT_TYPE' valid entry list: "Medical, Police, Fire, EMS, Shelter, School, Infrastructure, Water Treatment, Wastewater Treatment, Power Generation, Other" per the Summary Update to Exhibit D document available on the TWDB website.

   b. It appears that some fields are missing entries, including 'FLOOD_FREQ' and 'CRITICAL'. Please complete all required fields with valid entries per Exhibit D Table 14 [31 TAC §361.34(c); Exhibit D 3.6.2].

22. Future Condition Flood Vulnerability Map (Exhibit C Map 12): The map legend does not appear to clearly indicate that the map is depicting SVI values. Please reconcile.

SOW Task 3A

23. Existing Floodplain Management Practices Map (Exhibit C Map 13): The map does not appear to depict entities that regulate and enforce floodplain practices. The map should depict the areas with established floodplain management practices, the entities that regulate and enforce those floodplain practices, and locations that lack floodplain management as per guidance document (Exhibit C page 47): Submittal requirement number 4. Please reconcile [31 TAC §361.35 & Exhibit C 2.3.A].
24. Existing Floodplain Management Practices Table (Exhibit C Table 6): The text appears to include cities that do not match Appendix B, Table 6. For example, the text states that the Cities of Granejo and Progreso are not NFIP participants. However, they are both listed as NFIP participants in Table 6. Please reconcile as appropriate.

SOW Task 4B

25. Streams GIS Feature Class, *Streams*:
    a. It appears that some fields are missing entries, including 'STR_NAME'. Please complete all required fields with valid entries per Exhibit D Table 22. Please consider naming streams as "Tributary of XX" whenever the main channel is known.
    b. Please ensure that entries within the 'STREAM_ID' field are nine digits long consisting of a two-digit region number followed by seven digits. Unique IDs must be accurate for the database to connect and work properly. Please refer to Exhibit D Table 2 or more recent updates for Unique ID guidance [Exhibit D 3.9].
26. Flood Management Evaluations (FME) Table (Exhibit C Table 12): The count of FMEs in the *FME* feature class (100) does not appear to match the count of FMEs in Table 12 (133). Please reconcile [31 TAC §361.38(i) & Exhibit D 3.10].
27. Flood Management Evaluations (FME) GIS Feature Class, *FME*: The count of FMEs in the *FME* feature class (100) does not appear to match the count of FMEs in Table 12 (133). Please reconcile [31 TAC §361.38(i) & Exhibit D 3.10].
28. Flood Management Evaluations (FME) Map (Exhibit C Map 16): Please revise the map based on revisions to the *FME* feature class and Table 12 as needed [31 TAC §361.38 & Exhibit D 3.10].
29. Flood Mitigation Projects (FMP) Table (Exhibit C Table 13):
    a. The count of FMPs in Table 13 (38) does not appear to match the count in the *FMP* feature class (36). Please reconcile.
    b. The estimated project costs for some FMPs do not appear to match between the *FMP* feature class and Table 13. For example, FMP_IDs 153000001 and 153000003. Please reconcile.
30. Flood Mitigation Projects (FMP) GIS Feature Class, *FMP*:
    a. The count of FMPs in Table 13 (38) does not appear to match the count in the *FMP* feature class (36). Please reconcile.

b. The estimated project costs for some FMPs do not appear to match between the *FMP* feature class and Table 13. For example, FMP_IDs 153000001 and 153000003. Please reconcile.
c. Please add the required field 'MODEL_ID' per the Summary Update to Exhibit D document available on the TWDB website. Leave NULL when the field is unknown.
d. It appears that some fields contain invalid entries, including 'EMER_NEED' and 'FMP_TYPE'. For example, "yes" instead of "Yes". Note that valid entries are case sensitive. Please complete all required fields with valid entries per Exhibit D Table 24.
e. It appears that some fields are missing entries, including 'RECUR_COST' and 'FUND'. Please complete all required fields with valid entries per Exhibit D Table 24. Leave NULL when the field is not applicable or unknown [31 TAC §361.38(c-e) & Exhibit D 3.11.1].

31. Flood Management Strategies (FMS) Table (Exhibit C Table 14):
    a. Table 14 should list "Non-Recurring, Non-Capital Costs" instead of "Reoccurring Non Capital Costs". Please revise.
    b. Non-recurring, non-capital costs in Table 14 do not appear to match what is included in the *FMS* feature class. Please reconcile [31 TAC §361.38(d) & Exhibit C 2.4.B].
32. Flood Management Strategies (FMS) GIS Feature Class, *FMS*:
    a. It appears that some fields contain invalid entries, including 'EMER_NEED'. For example, "yes" instead of "Yes". Note that valid entries are case sensitive. Please complete all required fields with valid entries per Exhibit D Table 26.
    b. It appears that some fields are missing entries, including 'RECUR_COST' and 'FUND', Please complete all required fields with valid entries per Exhibit D Table 24. Leave NULL when the field is not applicable or unknown [31 TAC §361.38(d) & Exhibit D].
    c. There appears to be a duplicate entry for each FMS in the *FMS* feature class. Please review and remove all duplicates.

SOW Task 5

33. Flood Management Evaluation (FME) Recommendations Table (Exhibit C Table 15): The count of FMEs in the *FME* feature class (100) does not appear to match the count of FMEs in Table 15 (133). Please reconcile [31 TAC §361.39 & Exhibit D 3.10].
34. Flood Management Evaluation (FME) Recommendations GIS Feature Class, *FME*: The count of FMEs in the *FME* feature class (100) does not appear to match the count of FMEs in Table 15 (133). Please reconcile [31 TAC §361.39(c), (f) & Exhibit D 3.10].
35. Flood Management Evaluation (FME) Recommendations Map (Exhibit C Map 19): Please revise the map based on revisions to the *FME* feature class and Table 15 as needed [31 TAC §361.39 & Exhibit D 3.10].
36. Flood Mitigation Project (FMP) Recommendations, Text:
    a. 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 5-8), "*A comparative assessment of pre-project and post-project conditions for the 1 percent ACE (100-year flood) was performed for each potentially feasible FMP based on their associated H&H models. The floodplain boundary extents, resulting WSELs,*

and peak discharge values were compared at pertinent locations to determine if the FMP conforms 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.

b. The name of FMP_ID 153000012 (Southwest Pharr Drainage Mitigation Project) does not appear to match the associated name in Table 16 and the *FMP* feature class. Please reconcile [31 TAC §361.39 & Exhibit C 2.5.B].

37. Flood Mitigation Project (FMP) Recommendations GIS Feature Class, *FMP*:
    a. It appears that some fields contain invalid entries, including 'EMER_NEED' and 'FMP_TYPE'. For example, "yes" instead of "Yes". Note that valid entries are case sensitive. Please complete all required fields with valid entries per Exhibit D Table 24.
    b. It appears that some fields are missing entries, including 'RECUR_COST', 'FUND', and 'PREPROJLOS'. Please complete all required fields with valid entries per Exhibit D Table 24. Leave NULL when the field is not applicable or unknown [31 TAC §361.39 & Exhibit D 3.11.1].
38. Flood Mitigation Project (FMP) Details Geodatabase, *FMP_Details*:
    a. *FMP_Details* was not provided in the geodatabase. Please ensure this is provided with the geodatabase submittal with the final regional flood plan [31 TAC §361.39, Exhibit D 3.11.3 & Exhibit C 3.10.C].
39. Flood Management Strategy (FMS) Recommendations Table (Exhibit C Table 17):
    a. Table 17 should list "Non-Recurring, Non-Capital Costs" instead of "Reoccurring Non Capital Costs".
    b. Non-recurring, non-capital costs in Table 17 do not appear to match what is included in the *FMS* feature class. Please review and reconcile accordingly [31 TAC §361.39 & Exhibit C 2.5.C].
40. Flood Management Strategy (FMS) Recommendations GIS Feature Class, *FMS*:
    a. It appears that some fields contain invalid entries, including 'EMER_NEED'. For example, "yes" instead of "Yes". Note that valid entries are case sensitive. Please complete all required fields with valid entries per Exhibit D Table 26.
    b. It appears that some fields are missing entries, including 'RECUR_COST', 'FUND', and 'PREPROJLOS'. Please complete all required fields with valid entries per Exhibit D Table 24. Leave NULL when the field is not applicable or unknown [31 TAC §361.39 & Exhibit D 3.10].

<u>SOW Task 6A</u>

41. Impacts of Regional Flood Plan, Text:
    a. Chapter 6 does not appear to explicitly state that the regional flood plan, when implemented, will not negatively affect neighboring areas located within or outside the flood planning region. Chapter 5 states "*the local sponsor will ultimately be responsible for proving the final project design has no negative flood impacts before initiating construction.*" Please consider updating this statement or including additional statements to meet this requirement [31 TAC §361.40 & Exhibit C 2.6.A].

b. Chapter 6 does not appear to contain an analysis of overall impacts of the plan on the following required categories: environment, agriculture, erosion, and sedimentation. Please reconcile [31 TAC §361.40 & Exhibit C 2.6.A].

SOW Task 7

42. Flood Response Information and Activities, Text:
    a. Please include where more detailed information is available regarding recovery, as required [31 TAC §361.42 & Exhibit C 2.7].
    b. Please include a written summary of entities involved and actions taken or planned for recovery from past flood disasters in the region, as required [31 TAC §361.42 & Exhibit C 2.7].

SOW Task 9

43. Flood Infrastructure Financing, Text:
    a. Please include a description of the percentage of survey completions and whether an acceptable minimum survey completion was achieved, as required [Exhibit C Section 2.9].
    b. Table 19 does not appear to be included. Please reconcile [§361.44 & Exhibit C 2.9].

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

General Comments

44. Please consider including a complete table of contents for the entire regional flood plan.
45. For maps that display large amounts of data (e.g., Maps 4, 6, 8, and 10), please consider a region-wide map and accompanying map index as well as inset maps, as appropriate.

SOW Task 1

46. Existing Flood Infrastructure, Text: Please consider providing a description of how Low Water Crossings were identified within the text of Chapter 1.
47. Existing Flood Infrastructure Map (Exhibit C Map 1): Please consider modifying the relative colors and/or line thickness (e.g., of "Levee") to improve map legibility.
48. Existing Flood Projects Table (Exhibit C Table 2):
    a. Existing Project IDs 15000028 and 15000029 have been awarded HMGP funds, but do not appear to have HMGP listed as a project funding source. Please consider including HMGP in the "Source of Funding" field for these projects.
    b. Please consider including the City of McAllen's FMA Grant EMT-2018-FM-E002 drainage project that is currently in progress.
49. Existing Flood Projects GIS Feature Class, *ExFldProjs*:
    a. Existing Project IDs 15000028 and 15000029 have been awarded HMGP funds, but do not appear to have HMGP listed as a project source. Please consider including HMGP in the 'FUND_SRC' field for these projects.

b. Please consider including the City of McAllen's FMA Grant EMT-2018-FM-E002 drainage project that is currently in progress.

SOW Task 2A

50. Existing Condition Flood Hazard GIS Feature Class, *ExFldHazard*: There appears to be approximately 35 square miles of overlap in this feature class, particularly along the coast. Please verify accuracy of data and reconcile if necessary.
51. Existing Condition Gaps Map (Exhibit C Map 5): Municipal boundaries do not appear visible on the map. Please consider modifying the map elements (e.g., reordering the layers or changing symbology) to improve legibility.
52. Existing Condition Flood Vulnerability Map (Exhibit C Map 7):
    a. Please consider increasing the size of the color dots within the legend to improve legibility.
    b. Municipal boundaries and major roadways do not appear visible on the map. Please consider modifying the map elements (e.g., reordering the layers or changing symbology) to improve legibility.
    c. Map 7 appears to depict all features within the SVI range of 0 to 1. Please consider only including features with SVI scores above 0.75 as required per guidance document (Exhibit C Page 27): Submittal requirement number 3.
    d. Please consider adding a separate point symbology class for LWCs to improve map legibility.
53. Model Coverage, Text:
    a. Please consider including a table with descriptions of local detailed studies shown in the *ModelCoverage* feature class and in Figure 2.4.
    b. Please consider describing what "Non-Modernized" indicates in Figure 2.7.

SOW Task 2B

54. Future Condition Flood Vulnerability, Text: The text of the Future Condition Vulnerability Analysis section does not appear to provide detail of the resilience of communities located in flood-prone areas identified in the future condition flood exposure analysis, or the vulnerabilities of critical facilities to flooding by looking at 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. The text section instead relies on referencing relevant maps in the appendices. Please consider providing more detail in the text section of this chapter.
55. Future Condition Flood Vulnerability Map (Exhibit C Map 12):
    a. Please consider increasing the size of the color dots within the legend to improve legibility.
    b. Municipal boundaries and major roadways do not appear visible on the map. Please consider modifying the map elements (e.g., reordering the layers or changing symbology) to improve legibility.
    c. Map 12 appears to depict all features within the SVI range of 0 to 1. Please consider only including features with SVI scores above 0.75 as required per guidance document (Exhibit C Page 35): Submittal requirement number 3.
    d. Please consider adding a separate point symbology class for LWCs to improve map legibility.

SOW Task 3A

56. Existing Floodplain Management Practices Table (Exhibit C Table 6):
    a. The text appears to include cities that do not match Appendix B, Table 6. For example, the text states that the Cities of Granejo and Progreso are not NFIP participants. However, they are both listed as NFIP participants in Table 6. Please reconcile as appropriate.

SOW Task 4B

57. Flood Management Evaluations (FME), Text:
    a. For FMEs that potentially overlap with an existing TWDB-funded, FIF Category 1 study, please state how the FME will expand on the existing study.
    b. For county-wide FMEs where most of the county falls outside of the RFPG boundary, please include justification of how the FME benefits the region and please coordinate with other RFPGs to make sure the efforts are not duplicated.
58. Flood Management Evaluations (FME) Map (Exhibit C Map 16): Please consider providing an inset map, or using another method, for certain cities to improve legibility of potentially smaller FMEs.

SOW Task 5

59. Flood Management Evaluation (FME) Recommendations, Text:
    a. For FMEs that potentially overlap with an existing TWDB-funded, FIF Category 1 study, please state how the FME will expand on the existing study.
    b. For county-wide FMEs where most of the county falls outside of the RFPG boundary, please include justification of how the FME benefits the region and please coordinate with other RFPGs to make sure the efforts are not duplicated.
60. Flood Management Evaluation (FME) Recommendations Table (Exhibit C Table 15): Please consider documenting existing or ongoing BLE and TWDB-funded, FIF Category 1 studies.
61. Flood Management Evaluation (FME) Recommendations GIS Feature Class, *FME*:
    a. Please consider populating 'MODEL_DESC' field for clarity on existing studies to be used.
    b. Please make sure to document existing or ongoing BLE and TWDB-funded, FIF Category 1 studies.
62. Flood Mitigation Project (FMP) Recommendations Map (Exhibit C Map 20): Please consider revising this map to more clearly depict the two recommended FMPs displayed on the map.
63. Flood Mitigation Project (FMP) Details Geodatabase, *FMP_Details*:
    a. Please ensure that all NULL values are correct and revise as appropriate.

SOW Task 6B

64. Contributions and Impacts to Water Supply, Text: The Hidalgo County Drainage District Delta Watershed Project included in the 2021 Region M Regional Water Plan appears to include proposed construction of a new reservoir. Please confirm that this project should not be included in the Region 15 Regional Flood Plan.

SOW Task 9

65. Flood Infrastructure Financing Analysis, Text: Please consider providing the supporting calculation and reference to supporting data for the following statement in the report “it is projected that $67,000,000 of state and federal funding is needed.” (Page 9-11).

RFPG Comments Regarding Legislative Recommendations, Regulatory and Administrative Recommendations and State Flood Planning Recommendations		
Name	**Flood Plan Recommendations**	**Comments**
Jerry Cotter	**Table 8.1 Legislative**	
	Non regulatory regional flood control or drainage districts should be established and funded for rapidly growing urban areas such as DFW, Houston, San Antonio, etc. Responsibility would be to provide consistency, technical resources, funding and reviews in support of FME's, FMS's. These organizations would also implement or support implementation of FMP's. These organizations would augment communities and counties that just don't have the resources and expertise to manage flooding.	Rapidly developing areas surrounding larger urban centers are at greater risk of having runoff patterns increasing because of development. These urban areas are comprised of many communities and unincorporated county areas. Many of the smaller communities are not funded o resourced to deal with the complexities of floodplain management and therefore there is a lack of or inconsistencies in floodplain management practices.
	Clarify the early 2000's state legislation that provide counties the authority to regulate floodplains to explicidly allow and encorage activiites associated with floodplain management such as development of land use plans, regulatory authorites, e.g. permitting.	Although state legislation was passed in the early 2000's which gave counties the ability to regulate floodplains, interpretation of these regulations varies widely from county to county. The legislate bill lacks implementation guidance in the form of administrative rules. If development is occuring in unincorporated areas, this development can dynamically impact flood risk.
Jerry Cotter	**Table 8.2 Regulatory**	
	Require the use of n-values and channel conditions which would likely result if the channel or project were not maintained. Exceptions would be golf courses or other areas where an organization exists which would maintain the channel in perpetuity. Disallow maintence by marginal organizations such as home owners associations to justify acceptance of lower n-values as this is an unrealistric expectation.	When channels are constructed, most often channel bed, banks and overbanks are cleared; however; with many miles of these channels, it is often difficult for communities to maintain those beds, banks and overbanks at their design conditions. Generally, there is a lack of channel maintenance to ensure flood conveyance areas, established as part of a development or improvement projects, to retain their design level n-values. This results in unexpected changes in channel conveyance and increased flooding. Channel maintenance is very expensive activity that can trigger environmenatl permitting requirements.
	No loss of valley storage to the 500-year level. Communities could allow redistribution of valley storage to allow interactions with natural areas but no loss of storage.	Land development in upstream areas increases runoff in downstream areas. This happens because of increased impervious cover and decreased tree cover, and therefore less ability to absorb rainfall. Additionally, development, in most communities, encroaches into riparian areas and decreases the amount of storage available to accommodate flood waters. Just the main thread of the Trinity River though DFW stors more flood waters during of flood than any three of the USACE reservoirs that provide flood protection for DFW. The many other stream provide even more storage than the main stem. There is limited capacity in rivers and streams to convey floodwaters. This means that all areas above any given conveyance point have to stor flood water until sufficient time has laps to pass the water away from the impacted area. The streams are where this water is stored and depleting these storage areas will impact DS areas.
	Establish future land use plans for unincorporated areas associated with rapidly growing urban areas.	"
	Use of ultimate development land use conditions in the development of future flows. Require use of future flows for regulation of floodplains anc development of FMP's.	"
Jerry Cotter	**Table 8.3 State Flood Planning Recommendations**	
	None	
	Potential FMS	
	Encorage storm shifting to validate 100-yr estimates and to provide a broader understanding of communities actual flood risk Storms identified and cataloged as part of the GLO funded USACE led Texas Storm Study could be the primary source of storms to be shifted.	Notes: Great deal of uncertainty in 100-yr estimates. Use of observed storms that approximately match depth duration data from NOAA Atlas 14 or other precipitation frequency sources validates 100-yr estimates. Additionally wet, dry and average conditions as well as conditions at the time the storm occured can be presented. Additionally, communities have and can experience storms that exceed the 100-yr. While not regulatory, this information will provide additional hazard mitigation data so communities can address critical infrastructure impacts and be better prepared.
	Add detail to Watersshed Hydrology Assessments (WHA) for communities within basins with completed WHA's. The WHA for the Trinity has been completed.	The WHA's, funded by FEMA, are considered the best available flood flow frequency estimates, e.g. 100-yr. These estimates consider the latest precipitation frequencies, the variations in watershed response and determine critical flood drivers by employing a wide range of sensitivity analysis for each computation point.
	Update WHA's when future precipitation frequency estimates become available. Efforts to develop future precipitation frequency estimates for Texas are starting.	
	Establish regional efforts, for large urban centers to develop future land use data for all developing areas, not just encorporated areas, for use in developing future flood flow frequency estimates and future 100-yr (and other recurrence interval) hazard boundaries.	

October 27, 2022

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Region 15 Lower Rio Grande Regional Flood Planning Group
Hidalgo County Drainage District No. 1
902 N Doolittle Road
Edinburg, TX 78242

Re: 2023 Lower Rio Grande Regional Flood Plan

Dear Mr. David A. 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 Lower Rio Grande Regional Flood Planning Group 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.

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.

Lower Rio Grande Regional Flood Plan Comments

Task 4B, Identification and Evaluation of Potential FMEs, Potentially Feasible FMSs, and FMPs, is meant to be part of Chapter 5 rather than Chapter 4. TPWD recommends moving Task 4B to Chapter 5.

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 Lower Rio Grande Regional Flood Plan (LRGFP) 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.

The goals of the Draft LRGRFP 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 LRGRFP.

The LRGRFP identified 38 potentially feasible Flood Management Projects (FMPs), 133 potentially feasible Flood Management Evaluations (FMEs), and 51 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 XXRFP 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 LRGRFP 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 Lower Rio Grande Regional Flood Plan includes a number of channel improvement projects which may include widening, deepening, and straightening streams. Channelization and over-widening of streams slows flow, which increases deposition of sediment, decreases fish habitat, increases water temperatures, and can result in channel erosion. Streams in good condition naturally reach 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.

The proposed Flood Management Evaluations, Plans, and Strategies (FMXs, all together) include numerous infrastructure projects that may affect the aquatic habitats that are prioritized in the TCAP. For example, the removal of low-water crossings can benefit rare species such as mussels and fish if the crossing is replaced with a bridge or culvert that does not form a barrier to species movement. Conversely, building dams and channelizing streams can adversely affect aquatic habitats and species.

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 but are also beneficial to the environment. Please contact me at (512) 389 – 8214 or at Marty.Kelly@TPWD.Texas.gov or Willy Cupit at (956)-350-4491 or at Willy.Cupit@TPWD.Texas.gov if you have any questions or comments.

Sincerely,

Marty Kelly
Water Resources Program Coordinator

MK:wc

References

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SIERRA CLUB
LONE STAR CHAPTER

To: Jaime Salazar, Hidalgo County Drainage District No. 1, Region 15 RFGP Sponsor

Delivered via email to Jaime.salazar@hcdd1.org

October 31st, 2022

Comments on Region 15 Regional Flood Planning Group

The Lone Star Chapter of the Sierra Club is pleased to offer these brief comments on the proposed Lower Rio Grande Valley Region 15 Regional Flood Plan. We are generally supportive of the plan, though we believe it could be strengthened with some additional attention to the need to incorporate open space-green infrastructure, adopt minimum floodplain regulations, consider improved enforcement, implementation of modern building codes, and focused legislative recommendations. We would also note that the plan ignores how to address the impacts of border security infrastructure on current and future flooding.

Stretching from West Texas and the Pecos River to the Confluence of the Conchos River in Mexico with the Rio Grande, to the Lower Rio Grande Valley proper, Region 15 is a "thin" stretch of generally arid lands, but that can be subject to flash flooding from upstream events, as well as Gulf hurricanes and tropical storms. Climate change and extremes are making this situation worse. Combined with a general urbanization of the landscape as farming land is converted to subdivisions, as well as recent efforts by the federal government (and state government in certain cases) to increase border securitization (often to the detriment of open space/native habitats) through the use of fences, walls, and other structures, flooding can be severe and deadly. Indeed, the plan finds that over 50,000 acres of cropland and 100,000 acres of rangeland have been converted from 1997 to 2017, in general to serve the growing population through urbanization and more rural subdivisions. Indeed, despite its rural nature, Region 15 is

now the state's sixth most populated area with nearly 2,000,000 persons. It is worth noting as the draft report does point out that this population has a high Social Vulnerability Index due largely to lower incomes, lower job opportunities, and worse health outcomes, meaning this population is particularly vulnerable to flooding and other disasters. Indeed, 12 of the 14 counties in the region had an SVI over 0.75 when overlaying CDC data. Since the TWDB considers a level over 0.75 as a threshold for areas highly vulnerable to natural disasters, it indicates a real issue of social vulnerability.

In addition, the increasing use of lands for transmission electric and gas lines and renewable energy power projects is another relatively new land use that can also impact flood events, particularly during construction, and having best management practices is key to flooding. It is also worth noting issues involving residential drainage in residential subdivisions, at times caused by the filling in of resacas and other native habitat features as well as the types of soils found in the region. This combination of generally semi-arid climatic conditions, punctuated by extreme weather events and upstream impacts makes the work of the Regional Flood Plan process of utmost importance. As a conservation organization with a local regional group located in the Rio Grande Valley as well as several staff members, we appreciate the hours of effort taken by the regional flood group, local governments and the TPWD and other state agency staff.

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 are 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 15, 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, the Lone Star Chapter are encouraged by the following recommendations and goals included in Region 15's draft Regional Flood Plan:

- *Administrative Recommendations:*
    - Flooding does not recognize jurisdictional boundaries. Remove barriers that prevent jurisdictions from working together to provide regional flood mitigation solutions and regional detention across jurisdictional boundaries.

- Flood planning alternatives should include options that do not cause irreparable damage to coastal habitats.
- The Regional Flood Plan should include tools and resources to continuously include all significant impacts on the watersheds and floodplain management.
- Funding for projects in Historically Disadvantaged Communities or Areas of Persistent Poverty should be allocated a minimum amount of future funding, so they are not competing against more fortunate communities.

Legislative Recommendations:

- Add legislative ability to allow counties the opportunity to establish and assess drainage (stormwater) utility fees. Legislation is needed to allow counties and others with flood control responsibilities to establish drainage (stormwater) utilities and collect fees for these services. Extend Local Government Code, Title 13, Subtitle A, Chapter 552 to allow counties the opportunity to establish and collect drainage utilities/fees.
- Provide alternative revenue-generating sources of funding. Expand eligibility for and use of funding for stormwater and flood mitigation solutions (Local, State, Federal, Public/Private Partnerships, etc.)
- Expand eligibility for and use of funding for stormwater and flood mitigation solutions (Local, State, Federal, Public/Private Partnerships, etc.).

Administrative Goals:

- Increase the number of nature-based flood risk reduction projects (from 20% to 30 percent in short-term to 40% to 50% in long term). ***Note: we support higher goals and would suggest 30 percent in short term and 50 to 60 percent for long-term***.
- Reduce the number of newly constructed vulnerable facilities within the existing future 1% annual chance floodplain event;
- Increase community access routes to critical facilities and evacuation routes
- Develop a regionally coordinated warning and emergency response program
- Increase the number of flood gauges in the region
- Decrease the average age of FEMA Flood Insurance Rate Maps used to define SFHS in the region
- Develop and maintain an operational stormwater asset management plan (by the percent of entities that utilize such plans to 40-50 percent in the short term)
- Reduce the number of structures that have been subject to repeated flooding events through property buyouts (to $10 million in short-term). Note - we support higher goals.

- Increase the acreage of publicly protected open space in critical flood risk areas that are reused for public benefit (from 300,000 acres in short term to 800,000 acres in long-term). ***Note: we would support higher goals.***
- Increase the number of entities that adopt higher than NFIP minimum standards to 40-50% in short-term (Note we would support higher goals)

While we are supportive of these administrative and legislative recommendations and administrative goals, we would note that the RGV Region 15 might consider additional recommendation that many other regional groups are recommending, including:

    - The RGVFPG should play a role in facilitating public information/public education activities in the Rio Grande Basin and provide support to local public agencies to promote a wider understanding of state and regional flood issues and the importance of flood preparedness and long-range regional flood planning and mitigation;
    - The TWDB should use the project list in the adopted RFP and state flood plan (SFP) to help connect local communities to grant programs administered by federal or other state agencies; and
    - The TWDB is encouraged to consider use of hybrid approaches that blend structural engineered projects and nature-based solutions for flood mitigation: a) Incentivize voluntary buy-out programs, turning previously flooded properties/neighborhoods into stormwater parks as an alternative to large scale construction projects; and b) Provide training to state agencies, local governments, engineers, planners in the use of natural floodplain preservation/conservation.

- *Legislative Recommendations. We would support additional recommendations to the legislature such as:*
    - *The Texas Legislature is urged to support adoption of the 2021 versions of International Building Code and International Residential Code as State Building Standards, and other standards such as the 2021 IPC and 2021 IECC, which will ensure new construction is more resilient;*
    - *The Texas Legislature should provide counties with more powers to implement, enforce and inspect modern building codes to ensure new construction is meeting more resilient standards;*
    - *The Texas Legislature is urged to expand the use of the Economically Distressed Areas Program (EDAP) Funds to include residential drainage as an eligible use of EDAP funds as has been previously proposed. Because EDAP has been used for water and wastewater service grants throughout the RGV, assuring that those*

projects are combined with proper drainage to avoid future flooding is a key flood-proof strategy that would be uniquely beneficial for this region.

- The Texas Legislature should continue to provide funding to state agencies for flood planning initiatives, including providing technical support and assistance to county and city floodplain administrators or designees to support development of building standards, permitting support to verify new projects meet floodplain development requirements, and training; and
- The Texas Legislature is urged to make funds available to support nature based practices through land conservation, restoration programs, and participation in landowner incentive programs to encourage voluntary land stewardship practices to manage floodwaters by slowing runoff and dissipating flood energy to include riparian, wetland, forest, upland, and other habitat protection programs. Promote land coverage studies to effectively identify riparian corridors to protect for floodplain mitigation and erosion reduction. Additional low interest programs to support voluntary city and county buy-back of lands for county parks and flood mitigation should also be included.

- *Adopted Flood Protection Goals*:
  - Reduce the number of structures within NFHL-Detailed Study Area and Existing Floodplain with 1% annual chance flood risk;

According to Table 2.10, the amount of land subject to a 1% flood risk is expected to increase by 29% in future years while the amount of area subject to a 0.2% flood risk is expected to increase by 24%. While the region can not protect all land from future flood risk, having a goal of limiting the number of structures subject to flood risk is imperative. To their credit the region is contemplating reducing the number of newly constructed critical infrastructure facilities in this area by 70% in the medium term and 100% in the longterm, which we support, but some consideration to moving or buttressing existing structures is needed in the plan. In addition, as discussed below, we believe the region should consider expanding the definition of what is included in the definition of critical infrastructure.

- Prepare minimum flood management standards, including identifying operations and maintenance best practices to maintain drainage structures;
- Increase nature-based practices through land conservation and restoration programs and participation in landowner incentive programs to encourage voluntary land stewardship practices to manage floodwaters, slow runoff and dissipate flood energy to include riparian, wetland, forest, upland, and other habitat protection programs; and

- Develop public information campaigns to increase community knowledge of rules and regulations, flood-prone areas, and importance of protecting floodplains from encroachment.

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 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 15** 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 in the current planning cycle, however it is our hope that during subsequent rounds these comments will be taken into consideration.

We would note that the plan in general relies principally on traditional flood control methods. As an example, of the 85 identified flood control projects listed in the draft flood plan, 77 of them are structural projects, and only 2 are stand-alone nature-based projects. While this is simply the reality of what is being proposed in the region, we would note that the benefits of incorporating nature-based solutions now will pay off in the long run.

I. *Consider alternative methodologies to assess future conditions analysis*

According to *Information included in rules and scope of work* subsection (pg. 29), RFPGs shall perform a future condition flood hazard analysis to determine the location of both 1% annual chance and 0.2% annual chance flood events. The TWDB allows several methods, and Region 15 chose Method 2, which utilizes the existing condition 0.2 percent ACE flood hazard area as a proxy for the future 1 percent ACE flood hazard area (using a horizontal buffer). While we understand the use of this proxy method, which led to coastal and other buffers, as pointed out, there are large data gaps, and no hydrological or floodplain mapping exists in the LRGV, meaning it is a very inexact process. Thus, we would suggest that between now and the next flood plan, that these models be developed so that future plans can be more exact.

II. *Apply higher-end sea level rise projections to assess future conditions analysis for Coastal Zones*

Currently, the future conditions for Region 15 are based on a relatively low scenario of sea level rise. Indeed, as reported, the Port Isabel gauge has already experienced a sea level rise of 9.87 inches. Adopting an expectation that sea level rise will only continue in the low range is inappropriate. This is an extremely conservative estimate, and most projections show confidence in an intermediate to intermediate high increase in sea levels. We recommend using the intermediate to intermediate high projections for planning. We were unable to determine in the plan how sea level rise is being treated as it was not clear in the methodology.

III. *Expand the types of structures included when assessing vulnerability of Critical Facilities and weigh these structures higher during the Flood Mitigation Needs assessment*

Region 15 included schools, hospitcals, police stations, and fire stations, electric and gas lines, Superfund sites, water and wastewater supply sites as critical facilities when determining vulnerability to flood hazards. We appreciate the inclusion of electric and gas lines and water and wastewater treatment plants. Unlike some regions, Region 15 did not include chemical plants, refineries, chemical storage facilities, and oil and gas infrastructure as critical facilities. We believe that these other facilities need to be included in order to have a proper understanding of the Region 15's flood risk. Additionally, during the Flood Mitigation Needs Assessment in Chapter 4, Region 13 should weigh these additional facilities higher than hospitals, schools, fire stations, and police stations, as they can pose additional risks to the health and safety of communities when flooded.

IV. *Region 15 should adopt Minimum Floodplain Management Regulations*

Region 15 should require at least two minimum floodplain management regulations:compliance with Texas Water Code Section 16.3145 and FEMA's National Flood Insurance Program (NFIP) participation. As these regulations are widespread across the region, and create a strong foundation for the region, we support the inclusion of these as minimum floodplain management regulations.

V. *Include a Goal to increase enforcement of Floodplain Ordinances*

The level of enforcement of floodplain management practices varied across Region 15. However, for the vast majority of counties and municipalities, the Region was not able to determine level of enforcement. We believe that Region 15 should include a goal for the region

to increase knowledge of enforcement across the region, and to increase levels of enforcement, region-wide.

VI. *Include impact to natural infrastructure in No Negative Impacts analysis*

Natural features and nature-based infrastructure provide significant flood mitigation benefits to neighboring communities. The analysis of "No Negative Impacts" should include impacts to natural infrastructure.

VII. *Include annual appropriations to FIF as a legislative recommendation*

We recommend that Region 15 include a legislative recommendation that the state should allocate funding for recurring biennial appropriations to the Flood Infrastructure Fund. Annual appropriations to FIF will ensure that the state can continue to invest in FMPs included in the regional flood plans. At least 7 regions analyzed have included this as a recommendation in their draft plans.

IX. Consider a specific section and measures on border security and minimizing the impacts of border security on flooding.

As is well documented, the decision by the federal government under multiple administrations (Bush, Obama, Trump and Biden) to add border security, often without considering the impacts on local flooding has had devastating impacts along the US-Mexico border. It has also in some cases cut through important habitats and reduced the effectiveness of open space as a flood mitigation strategy. We believe that the Region 15 flood plan must address this issue which as is pointed out "disrupt preserves and natural areas, as well as the natural hydrology (Page 1-30)." However, the plan is silent on what actions need to be taken to mitigate these flood risks. Adding a plan - which of course must include new partners like Homeland Security - to address these risks, and require consultations for future border infrastructure will be important to the region.

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.

Sincerely,

Alex Ortiz
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