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

Region 12 San Antonio RFPG

12/19/2022
2:30 PM

TAKE NOTICE that a meeting of the San Antonio Regional Flood Planning Group as established by the Texas Water Development Board, will be held on Monday, December 19, 2022 at 2:30 PM, in-person at the San Antonio River Authority located at 201 W. Sheridan St. and virtually on GotoMeeting at https://meet.goto.com/932673701.

Agenda:

1. (2:30 PM) Roll-Call
2. Public Comments – limit 3 minutes per person
3. Approval of the Minutes from the Previous San Antonio Regional Flood Planning Group Meeting (Region 12)
4. Communications from the Texas Water Development Board (TWDB)
5. Chair Report
6. Review Public Comments on the Draft San Antonio Regional Flood Plan
7. Discussion and Appropriate Action to Approve the Final San Antonio Regional Flood Plan
8. Regional Liaison Update
9. Public Comments - limit 3 minutes per person
10. Date and Potential Agenda Items for Next Meeting
11. Adjourn

If you wish to provide written comments prior to or after the meeting, please email your comments to khayes@sariverauthority.org or physically mail them to the attention of Kendall Hayes at San Antonio River Authority, 201 W. Sheridan, San Antonio, TX, 78204 and include "Region 12 San Antonio Flood Planning Group Meeting" in the subject line of the email.

Additional information may be obtained from: Kendall Hayes (210) 302-3641, khayes@sariverauthority.org, San Antonio River Authority, 201 W. Sheridan, San Antonio, TX.

AGENDA ITEM NO.3 – APPROVAL OF THE MINUTES FROM THE PREVIOUS SARFPG MEETING

Meeting Minutes
Region 12 San Antonio Regional Flood Planning Group Meeting
Thursday, November 17, 2022
2:00 PM
San Antonio River Authority

Roll Call:

Voting Member	Interest Category	Present (x) /Absent ( ) / Alternate Present (*)
Brian Yanta	*Agricultural interests*	X
David Wegmann	*Counties*	X
Derek Boese	*River authorities*	X
Doris Cooksey	*Electric generating utilities*	X
Deborah (Debbie) Reid	*Environmental interests*	X
Nefi M. Garza	*Flood districts*	
Cara C. Tackett	*Industries*	X
Jeffrey Carroll	*Municipalities*	X
John Paul Beasley	*Public*	
Suzanne B. Scott	*Nonprofit*	X
David Mauk	*Water districts*	X
Steve Clouse	*Water utilities*	

Non-voting Member	Agency	Present(x)/Absent( )/ Alternate Present (*)
Marty Kelly	Texas Parks and Wildlife Department	*Adam Whisenant
James Blount	Texas Division of Emergency Management	X
Jami McCool	Texas Department of Agriculture	X
Jarod Bowen	Texas State Soil and Water Conservation Board	
Kris Robles	General Land Office	X
Anita Machiavello	Texas Water Development Board (TWDB)	X
Susan Roberts	Texas Commission on Environmental Quality	

Quorum:
Quorum: **Yes**
Number of voting members or alternates representing voting members present: **9**
Number required for quorum per current voting positions of 12: 7

All meeting materials are available for the public at: http://www.region12texas.org.

AGENDA ITEM NO.1: ROLL CALL

Ms. Kendall Hayes, San Antonio River Authority, called the role and confirmed a quorum.

AGENDA ITEM NO.2: PUBLIC COMMENT – LIMIT 3 MINUTES PER PERSON

No public comments.

AGENDA ITEM NO.3: APPROVAL OF THE MINUTES FROM THE PREVIOUS SAN ANTONIO REGIONAL FLOOD PLANNING GROUP MEETING (REGION 12)

Mr. Wegmann motioned to approve the minutes. Ms. Scott seconded the motion, motion passed

AGENDA ITEM NO.4: COMMUNICATIONS FROM THE TEXAS WATER DEVELOPMENT BOARD (TWDB)

Ms. Anita Machiavello provided an update from TWDB. Surveys are due tomorrow, TWDB is requesting feedback as they prepare for Cycle II.

AGENDA ITEM NO.5: CHAIR REPORT

Chair Boese reminded the RFPG that January 10th is the deliverable deadline for the Final Flood Plan. He also announced that Mr. Clouse will be retiring from SAWS and subsequently resigning from the RFPG. The solicitation will be sent out immediately for the Water Utilities interest group.

AGENDA ITEM NO.6: DISCUSSION AND APPROPRIATE ACTION REGARDING FILLING THE EXISTING VACANCIES FOR MUNICIPALITIES AND SMALL BUSINESSES INTEREST GROUPS

Chair Boese introduced Mr. Jose Reyes as the nominee for the Small Businesses interest group. He explained that the Executive Committee chose to forgo meeting as there was one nominee per interest group. Mr. Reyes introduced himself to the RFPG.

Mr. Wegmann motioned to elect Mr. Jose Reyes to sit on the SARFPG in the Small Business interest group. Mr. Mauk seconded the motion, motion passed.

Chair Boese introduced Mr. Robert Reyna as the nominee for the Municipalities interest group. Mr. Reyna introduced himself to the RFPG.

Ms. Reid motioned to elect Mr. Robert Reyna to sit on the SARFPG in the second seat for the Municipalities interest group. Mr. Wegmann seconded the motion, motion passed.

AGENDA ITEM NO.7: PRESENTATION ON TASK 12 PROGRESS

Mr. Ron Branyon, Technical Consultant, provided an update on the consultant team's progress on Task 12. His briefing is available on the Region 12 website at region12texas.org.

AGENDA ITEM NO.8: REVIEW FORMAL COMMENTS FROM TWDB ON THE REGION 12 DRAFT FLOOD PLAN

Mr. Ron Branyon presented the list of comments received by TWDB with the team's responses to said comments as well as their plan for implementation. He also provided a brief update on the public comments received during the comment period. Region 12 received 29 unique public comments on the draft flood plan. The RFPG will review these in more detail at the December RFPG meeting.

AGENDA ITEM NO.9: REGIONAL LIAISON UPDATE

No updates.

AGENDA ITEM NO.10: PUBLIC COMMENTS – LIMIT 3 MINUTES PER PERSON

No public comments

AGENDA ITEM NO.11: DATE AND POTENTIAL AGENDA ITEMS FOR NEXT MEETING

Technical Committee will meet on December 7th at 2:00 PM. The RFPG will meet on December 19th at 2:30 PM.

AGENDA ITEM NO.12: ADJOURN

Ms. Tackett motioned to adjourn. Mr. Wegmann seconded the motion, motion passed.

AGENDA ITEM NO.6 – REVIEW PUBLIC COMMENTS ON THE DRAFT SAN ANTONIO REGIONAL FLOOD PLAN

Includes: Compiled Public Comments

Camp Bullis Sentinel Landscape Partnership Comments

Greater Edwards Aquifer Alliance Comments

Greater Springs Project Comments

National Wildlife Federation Comments

Texas Parks & Wildlife Comments

Texas Water Development Board Comments – Updated

Combined Public Comments Draft Plan

Type	Comments:	Final Response
Feedback Form	Yes, we would be interested in funding some of our problem areas that we have here at the city.	From City of Schertz. Follow up with the city with no response. (maybe add a master drainage plan)
Feedback Form	I am expressing an interest in the flood prevention meeting. I don't think I will make it there but I've lived in Bexar County since 1979. I would agree that the county should do something about the bridges around here and of course it will take tax dollars. **For example the bridge going over Salado which is on Fort Sam Houston was very smallish and the water went right over it!** Uncle Sam must've created a really good bridge using tax dollars. And I think more of those bridges should be forthcoming because it saves lives. It's not likely that anyone died on this particular bridge but I know a family who died in Comanche Park in 98, And I'm not opposed to building new bridges and I'm not opposed to new infrastructure. Thank you for reading my message Julie M	Bexar County is proposing various FMXs to upgrade structures. Area has been studied.
Feedback Form	I have two homes one here in Bexar and one in NUECES county, the city of San Antonio has undoubtedly the dirtiest roads and streets I watch the main expressway's here the trash that builds up on the sides O watched this one object for 9 months!! on I-10!! Do we not have sweepers Corpus sweeps their main roads and streets weekly cause we are prone to flooding by them sweeping keeps us from flooding . I never see sweepers in San Antonio anymore and why is that if San Antonio would sweep their streets and roads just maybe there would not be so much flooding cause Texas has a lot of inconsiderate trashy people who cares less which is SAD. I would like to see San Antonio get clean. Thank you	Equipment not flood control related.

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

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

education
conservation
cooperation

hill country alliance

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

October 11, 2022

Dear Regional Flood Planning Group 12,

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

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

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

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

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

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

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

Respectfully,

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

CC:

John Anderson, JBSA Community Initiatives, john.anderson.127@us.af.mil
Richard King, JBSA Community Initiatives, richard.king.44@us.af.mil
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Karen Bishop, San Antonio River Authority, kbishop@sariverauthority.org
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Diane Rath, Alamo Area Council of Governments, drath@aacog.com
Ryan Bass, City of Boerne, rbass@boerne-tx.gov
Jeff Carroll, City of Boerne, jcarroll@boerne-tx.gov
Hollie Bierbauer, Texas Division of Emergency Management, Hollie.Bierbauer@tdem.texas.gov
Jim Blount, Texas Division of Emergency Management, james.blount@tdem.texas.gov
John Foster, Texas State Soil & Water Conservation Board, jfoster@tsswcb.texas.gov
Rob Ziehr, USDA Natural Resources Conservation Service, robert.ziehr@usda.gov
Roel Lopez, Texas A&M Natural Resources Institute, roel.lopez@ag.tamu.edu
Alison Lund, Texas A&M Natural Resources Institute, alison.lund@ag.tamu.edu
David Mauk, Bandera County River Authority & Groundwater District, dmauk@bcragd.org
Luke Whitmire, Bandera County River Authority & Groundwater District, whitmire@bcragd.org
Annalisa Peace, Greater Edwards Aquifer Alliance, annalisa@aquiferalliance.org
Debbie Read, Greater Edwards Aquifer Alliance, deborah@aquiferalliance.org
Katherine Romans, Hill Country Alliance, katherine@hillcountryalliance.org
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Suzanne Scott, The Nature Conservancy, suzanne.scott@tnc.org
Brock Curry, Edwards Aquifer Authority, bcurry@edwardsaquifer.org
Jim Boenig, Edwards Aquifer Authority, jboenig@edwardsaquifer.org
Lani May, University of Texas San Antonio, lani.may@utsa.edu
Saugata Datta, University of Texas San Antonio, saugata.datta@utsa.edu
Troy Dorman, Halff Associates, tdorman@halff.com

Organization	Camp Bullis Sentinial Landscape
Submitted by	Daniel Oppenheimer
Submitted on	10/12/2022

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

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

Background

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

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

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

Recommendations

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

1. Increase funding for and use of Nature Based Solutions, and reduce hurdles to their incorporation into the Regional Flood Plans as Flood Mitigation Strategies, Evaluations and Projects by:
    a. Increasing number of trainings and workshops on accurate cost benefit analysis and use of NBS;
    b. Improving modeling methods to provide greater sensitivity beyond traditional hydrological models to include soil porosity and moisture holding capacity, plant interception, evaporation, and transpiration; and other processes that affect flows and interactions with groundwater; as well as water quality improvements and groundwater recharge that can be realized with NBS;
    c. Expanding the TWDB's concept of "adverse impact" to include loss of functioning floodplains and the resiliency that they provide;
    d. Incentivizing collaboration across watersheds and jurisdictions towards a regional approach to floodplain management using NBS by prioritizing such projects.

2. Ensure that the TWDB's cost benefit analysis appropriately weights projects offering:
    a. Increased social and environmental benefits,
    b. Reduced negative environmental impact,

c. Reduced cost avoidance for infrastructure replacement (for data on gray infrastructure replacement costs: https://mediaspace.du.edu/media/David+Skuodas+-+Seeing+the+Forest+and+the+Trees/1_g90zp1xz), and
d. Increased flood prevention for future conditions while also creating resiliency to recover after natural disasters.

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

4. Specific project recommendations:
    a. Fund a Texas Watershed Initiative similar to Louisiana's[1] with a robust program on use and adoption of NBS,
    b. Provide training and technical resources to flood districts, river authorities, municipal utility districts, water control and improvement districts, and municipal and county floodplain managers to advance understanding and adoption of NBS and best practices for maintaining floodplains and other natural flood mitigation features to fully realize potential benefits,
    c. Use all available federal and state programs to prioritize the preservation and restoration of natural flood mitigation features throughout watersheds,
    d. Develop a compendium of Nature-Based resources for non-coastal communities, and
    e. Review submitted FMPs, FMEs and FMSs submitted for this first 5-year cycle to determine the feasibility to augment with NBS aspects.

Conclusions

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

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

Organization	Greater Edwards Aquifer Alliance
Submitted by	Annalisa Peace
Submitted on	10/11/2022

Type	Comment	Final Response
	1. *Increase funding for and use of Nature Based Solutions, and reduce hurdles to their incorporation into the Regional Flood Plans as Flood Mitigation Strategies, Evaluations and Projects by:*	
1	a. Increasing number of trainings and workshops on accurate cost benefit analysis and use of NBS;	This is captured in the Goals of the RFPG
1	b. Improving modeling methods to provide greater sensitivity beyond traditional hydrological models to include soil porosity and moisture holding capacity, plant interception, evaporation, and transpiration; and other processes that affect flows and interactions with groundwater; as well as water quality improvements and groundwater recharge that can be realized with NBS;	Improved accepted floodplain modeling and mapping methodology by SARA/FEMA is being release next year. TWDB is also developing guidance on NBS.
1	c. Expanding the TWDB's concept of "adverse impact" to include loss of functioning floodplains and the resiliency that they provide;	Will provide this comment to the TWDB.
1	d. Incentivizing collaboration across watersheds and jurisdictions towards a regional approach to floodplain management using NBS by prioritizing such projects.	Will provide this comment to the TWDB.
	2. *Ensure that the TWDB's cost benefit analysis appropriately weights projects offering:*	
2	a. Increased social and environmental benefits,	Will provide this comment to the TWDB.
2	b. Reduced negative environmental impact,	Will provide this comment to the TWDB.
2	c. Reduced cost avoidance for infrastructure replacement (for data on gray infrastructure replacement costs: https://mediaspace.du.edu/media/David+Skuodas+-+Seeing+the+Forest+and+the+Trees/1_g90zp1xz), and	Will provide this comment to the TWDB.
2	d. Increased flood prevention for future conditions while also creating resiliency to recover after natural disasters.	Will provide this comment to the TWDB.
	3. *Recognize the role that land development codes and location of infrastructure have on flood impacts:*	
3	a. Educate on the need for counties to use their ability provided by the State to exert authority to influence development and reduce negative impacts to natural features that mitigate flooding and enable counties to levy stormwater/drainage utility fees to retrofit and maintain natural flood infrastructure,	These topics were included in chapter 8 Legislative Recommendations

3	b. Promote and fund the use of NBS throughout watersheds with the understanding that most natural flood mitigation features, including floodplains, are in some state of degradation and can be improved with appropriate land use policies,	These topics were included in chapter 8 Legislative Recommendations
3	c. Recommend policy changes that enable Counties or Groundwater Conservation Districts to protect Natural Aquifer Storage and Recovery features (e.g., karst, fracture zones, and sinkholes) that help mitigate flood severity while transferring potential flood water into aquifers, and	These topics were included in chapter 8 Legislative Recommendations
3	d. Partner with other agencies to incorporate flood considerations into applicable agency activities (e.g., ensure TxDOT builds to 1% annual probability ("100-year") standards and uses updated flood maps defined by the National Oceanic and Atmospheric Administration (currently the Atlas 14 data) and that such infrastructure does not increase downstream flooding nor damage floodplains and riparian corridors.	These topics were included in chapter 8 Legislative Recommendations
4. *Specific project recommendations:*		
4	a. Fund a Texas Watershed Initiative similar to Louisiana's with a robust program on use and adoption of NBS,	Will provide this comment to the TWDB.
4	b. Provide training and technical resources to flood districts, river authorities, municipal utility districts, water control and improvement districts, and municipal and county floodplain managers to advance understanding and adoption of NBS and best practices for maintaining floodplains and other natural flood mitigation features to fully realize potential benefits,	This is part of the Region 12 flood planning goals.
4	c. Use all available federal and state programs to prioritize the preservation and restoration of natural flood mitigation features throughout watersheds,	Will provide this comment to the TWDB.
4	d. Develop a compendium of Nature-Based resources for non-coastal communities, and	TWDB is also developing guidance on NBS.
4	e. Review submitted FMPs, FMEs and FMSs submitted for this first 5 year cycle to determine the feasibility to augment with NBS aspects.	The Region 12 FPG encourages the use of natural design features during the design phase of the project.

Proposed Flood Management Evaluation (FME) of Great Springs Project

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

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

Submitted on: September 16, 2022

Purpose

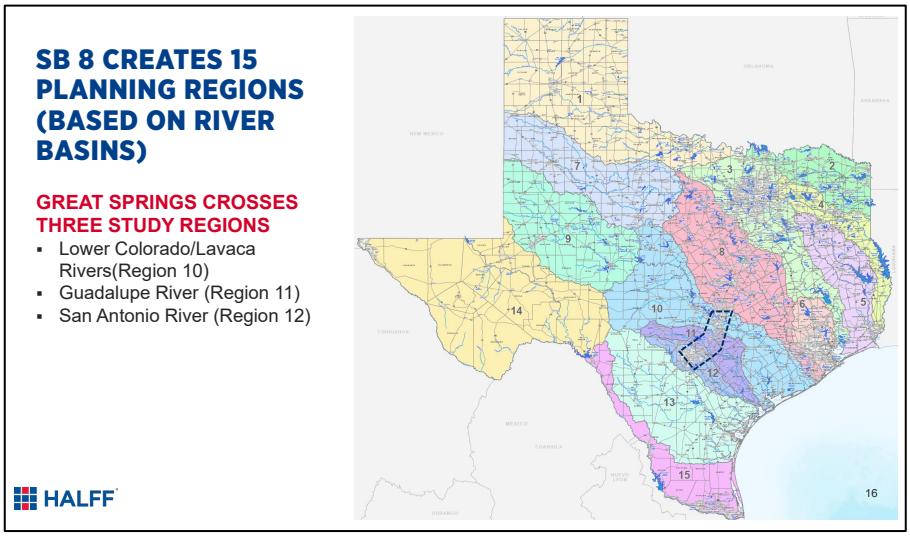
The purpose of this proposed Flood Management Evaluation (FME) is to:

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

Background

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

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



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

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

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

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

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

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

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

Scope of Work

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

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

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

Budget

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

Organization	Great Springs Alliance
Submitted by	Lyda Creus Molanphy
Submitted on	9/16/2022

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

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

Background

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

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

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

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

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

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

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

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

I. Adopt NFIP participation as a minimum floodplain management standard

Region 12 did not adopt any minimum floodplain management standards into its draft plan. Minimum floodplain management standards can be adopted by the region, which local entities must adopt before a FME, FMS, or FMP is included under the Regional Flood Plan, and therefore eligible for funding under FIF.

We encourage Region 12 to consider NFIP participation as a minimum floodplain management standard. Participation in the NFIP requires participants to adopt a floodplain management ordinance and to designate a floodplain administrator who is responsible for understanding and interpreting local floodplain management regulations and reviewing them for compliance with NFIP standards.

Since floodplain management ordinances and designation of a floodplain administrator are essential to proper flood planning at the local level, requiring the remaining communities to participate in the NFIP seems like an appropriate baseline, before entities can potentially receive funding for flood mitigation projects. We recommend that the Region uses its power to adopt minimum floodplain standards, by requiring NFIP participation as a minimum standard.

II. Refine Assessment and Identification of Flood Mitigation Needs

Critical facilities in particular need additional attention when assessing and identifying flood mitigation needs. Certain critical facilities pose higher risk to surrounding communities during flooding, such as superfund sites and refineries. We recommend that the Region include in its weighted approach risks based on the number of industrial facilities that pose environmental

justice risks to neighboring and fenceline communities. If facilities are identified that are within floodplains and are not adequately protected, the region should propose legislative, administrative, and regulatory recommendations to better ensure facilities do not pose a risk to neighboring communities during flooding.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Sincerely,

Arsum Pathak
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National Wildlife Federation
PathakA@NWF.org

Danielle Goshen
Policy Specialist/Counsel, Texas Coast and Water Program
National Wildlife Federation

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

Organization	National Wildlife Federation
Submitted by	Danielle Goshen
Submitted on	10/15/2022

Type	Comment	Final Response
	The following comments and recommendations specific to Region 12	
I. Adopt NFIP participation as a minimum floodplain management standard	Region 12 did not adopt any minimum floodplain management standards into its draft plan. Minimum floodplain management standards can be adopted by the region, which local entities must adopt before a FME, FMS, or FMP is included under the Regional Flood Plan, and therefore eligible for funding under FIF. **We encourage Region 12 to consider NFIP participation as a minimum floodplain management standard.** Participation in the NFIP requires participants to adopt a floodplain management ordinance and to designate a floodplain administrator who is responsible for understanding and interpreting local floodplain management regulations and reviewing them for compliance with NFIP standards. Since floodplain management ordinances and designation of a floodplain administrator are essential to proper flood planning at the local level, requiring the remaining communities to participate in the NFIP seems like an appropriate baseline, before entities can potentially receive funding for flood mitigation projects. We recommend that the Region uses its power to adopt minimum floodplain standards, by requiring NFIP participation as a minimum standard.	We do; "The San Antonio RFPG recommends that entities that are not currently NFIP participants should adopt at least the minimum standards and take the necessary steps in order to become active NFIP participants."
II. Refine Assessment and Identification of Flood Mitigation Needs	Critical facilities in particular need additional attention when assessing and identifying flood mitigation needs. Certain critical facilities pose higher risk to surrounding communities during flooding, such as superfund sites and refineries. **We recommend that the Region include in its weighted approach risks based on the number of industrial facilities that pose environmental justice risks to neighboring and fence line communities.** If facilities are identified that are within floodplains and are not adequately protected, the region should propose legislative, administrative, and regulatory recommendations to better ensure facilities do not pose a risk to neighboring communities during flooding.	TWDB sets the criteria
III. Revise description of Nature-Based Features under section 5.1	Section 5.1 defines multiple structural and nonstructural strategies to mitigate flooding. Nature-based features is defined in the structural section as the following: "FMPs can include nature-based features as part of flood mitigation solutions where applicable including, but not limited to, stream and coastal restorations, wetlands, natural channel design, other green infrastructure elements, and land preservation. Although nature-based solutions generally do not provide significant flood risk reduction to 1% annual chance flood hazards (100-year floods), they can improve stormwater quality, provide ecological function uplift, and reduce riverine and coastal erosion risk." **We disagree with the statement that "nature-based solutions generally do not provide significant flood risk reduction to 1% annual chance flood hazards.**" Nature-based solutions can provide significant benefits to communities, and can provide risk reduction to the 1% annual chance flood. Numerous reports and studies continue to show the benefits of nature-based solutions for flood mitigation – including the U.S. Army Corps of Engineer's International Guidelines on NNBF for Flood Risk Management report released earlier this year. In addition to their ability to provide significant flood mitigation benefits, nature-based solutions are also not associated with negative downstream impacts, commonly associated with traditional gray infrastructure approaches, such as channelization. The description of nature-based features should be revised to acknowledge the considerable mitigation these techniques can have.	We will update the wording in this chapter.

IV. Consider discretion when analyzing nature-based FMPs and provide an administrative recommendations to the TWDB on how to apply potential FMP requirements to nature-based projects	Only projects with significant amounts of detail are incorporated as Flood Management Projects in the Draft Regional Flood Plans. We are concerned that since no nature-based projects were recommended by the RFPG, natural infrastructure projects may have been downgraded to FMSs due to lack of data provided to the Region. It is important to note that analyses like the BCR are not always tailored for natural infrastructure projects. For example, while preserving open space within the floodplain helps protect land from development which could negatively impact flooding, a traditional BCR may not adequately account for protection of development that hasn't occurred yet. Since we are unsure where to view which projects were submitted to the Region, but subsequently removed because it didn't align with a goal or other reason, or downgraded to a strategy, we recommend the RFPG to provide discretion to potential FMPs that are largely nature-based. **We also encourage the Region to provide an administrative recommendation to the TWDB to provide guidance to the Regions on how to apply potential FMP requirements to nature-based projects.**	The Region 12 Flood Plan has several goals that encourage the use of Nature Based Solutions. In addition, we have included an FME that will develop the metrics to evaluate existing NBS and provide a flood prevention value and economic value.
V. Recommend that the Flood Planning Process be revised to remove the TWDB minimum screening requirement of "the evaluation /strategy/project addresses a flood problem with drainage area of 1 square mile or greater. "	Many small, distributed projects can provide significant benefits to the floodplain. For example, multiple green stormwater infrastructure projects across a city can reduce runoff. It can also act as a demonstration so that other applicants can implement their own projects. **We do not, therefore, believe that the 1 square mile requirement should be included in this criteria.** We appreciate that Region 12 did not exclude good flood reduction projects that had a drainage area less than 1 mile.	Will provide this comment to the TWDB.
VI. Include impact to natural infrastructure when analyzing "No Negative Impacts"	There seemed to be considerable discretion from the Region on which projects to incorporate, using engineering judgment. Open spaces, such as parks, provide significant flood mitigation benefits to neighboring communities. **The analysis of "No Negative Impacts "should therefore include impacts to natural infrastructure, which should be mitigated to the greatest extent possible.**	Will provide this comment to the TWDB.
VII. Add a Flood Protection Goal to decrease number of FMPs that have negative impacts associated with the project and add an administrative recommendation to provide best management practices to local entities on how to avoid negative impacts	In the draft Flood Plan, the majority of recommended FMPs showed "#N/A" under the negative impacts analysis. **The region, therefore, should strive to better analyze negative impacts**, and decrease the amount of projects with negative impacts over time – which could be reflected in a Flood Protection Goal. Further, Region 12 can provide an administrative recommendation to the TWDB to provide best management practices to local entities on how to reduce negative impacts associated with projects.	No negative impact was evaluated for all projects as part of the TWDB required criteria. This field was inadvertently entered as #N/A in the draft plan but has been corrected.
VIII. Add a Flood Protection Goal to have increased enforcement of floodplain ordinances	Region 12 noted that approximately 10 out of 14 entities within the region have moderate, low, or no enforcement of floodplain regulations. These entities have a significant opportunity to improve the effectiveness of their ordinance or court order by increasing the enforcement of their existing floodplain ordinances. In order to address this shortfall, **we recommend that Region 12 adopt a Goal to increase enforcement of floodplain ordinances.**	Several of the Region 12 goals promote increased floodplain regulations and ordinances, see section 3 of the Plan.

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

September 30, 2022

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

Re: 2023 San Antonio Regional Flood Plan

Dear Mr. Garza,

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

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

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

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

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

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

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

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

San Antonio Regional Flood Plan Comments

Texas Conservation Action Plan (TCAP) is a guiding document for conservation in the state of Texas, with the goals of realizing conservation benefits, preventing species listings, and preserving our natural heritage for future generations. Species of Greatest Conservation Need (SGCN) include numerous aquatic species such as fish, freshwater mussels, and salamanders. The TCAP handbook (Texas Parks and Wildlife Department, 2012) includes six types of priority habitats, three of which are aquatic: water resources;

riparian and floodplains; and caves and karst. Issues affecting these environments include environmental flows, impoundments and dam operations, and water quality issues (including stormwater runoff).

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

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

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

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

TPWD would like to encourage all the FMX (an FMP, FME, or FMS) proponents to consider stream crossing designs that allow for sediment transport and passage of aquatic organisms and do not impound water. Basically, designs that are invisible to the creek. This includes bridges that span the creek where possible or culverted crossings designed with the culvert(s) in the active channel area lower than those in the floodplain benches so that the flow in the channel is not overly spread out. The central/low-flow culvert(s) should be large enough to handle a 1.5-year flow without backing up water. The bottoms of these lower culverts should be set at least a foot below grade (i.e., recessed) to allow natural substrate to cover the culvert bottom and to allow for aquatic organism passage. These lower, recessed culverts should be installed in the thalweg or deepest part of the channel and be aligned with the low flow channel (Clarkin et al., 2006).

The Draft SARFP includes a number of channel improvement projects which may include widening, deepening, and straightening streams. Channelization and over-widening of streams slows flow, which increases deposition of sediment, decreases fish habitat, increases water temperatures, and can result in channel erosion. Streams in good condition naturally reach bankfull and start spilling onto the floodplain during a 1.5 to 2-year flood event. Widening and deepening a stream channel to force it to contain the 100-year flow negatively impacts the adjacent water table and riparian area and has geomorphic effects upstream and downstream of the modification. If channelization is necessary, constructing a two-stage channel with a low-flow channel and a floodplain allows for the continued transport of sediment, habitat for aquatic wildlife, and can reduce maintenance (Rosgen 1996). TPWD encourages the RFPG to protect existing streams, riparian areas, and floodplains.

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

Sincerely,

Marty Kelly
Water Resources Program Coordinator

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Organization	Texas Parks and Wildlife Department
Submitted by	Marty Kelly
Submitted on	9/30/2022

Type	Comment	Final Response
San Antonio Regional Flood Plan Comments	The goals of the Draft SARFP include education and outreach, improving flood warning and readiness, increasing the number of flood studies, increasing the prevention of flooding, and supporting flood infrastructure projects. **TPWD encourages the inclusion of the ecological and societal benefits of flooding in any education program and appreciates the repeated mention of nature-based solutions in the education and outreach goals of the SARFP.**	Noted, will consideration in future flood plan goals.
San Antonio Regional Flood Plan Comments	The SARFP identified 29 potentially feasible Flood Management Projects (FMPs), 165 potentially feasible Flood Management Evaluations (FMEs), and 20 potentially feasible Flood Management Strategies (FMSs). It appears that most of the recommended FMPs are infrastructure based with only one nature-based solution being put forward. TPWD appreciates that the Draft SARFP acknowledges the gap in flood risk and mitigation in relation to nature-based infrastructure in the region. TPWD understands that the goal of the RFP is to mitigate floods to reduce risk to life and property **but would like to encourage the use of nature-based solutions where possible.** The Draft SARFP states that none of the projects or strategies are anticipated to have negative downstream effects.	The Region 12 FPG encourages the use of natural design features during the design phase of the project.
San Antonio Regional Flood Plan Comments	**TPWD would like to encourage all the FMX (an FMP, FME, or FMS) proponents to consider stream crossing designs that allow for sediment transport and passage of aquatic organisms and do not impound water.** Basically, designs that are invisible to the creek. This includes bridges that span the creek where possible or culverted crossings designed with the culvert(s) in the active channel area lower than those in the floodplain benches so that the flow in the channel is not overly spread out. The central/low flow culvert(s) should be large enough to handle a 1.5-year flow without backing up water. The bottoms of these lower culverts should be set at least a foot below grade (i.e., recessed) to allow natural substrate to cover the culvert bottom and to allow for aquatic organism passage. These lower, recessed culverts should be installed in the thalweg or deepest part of the channel and be aligned with the low flow channel (Clark in et at., 2006).	Will encourage this during the design phase.
San Antonio Regional Flood Plan Comments	The Draft SARFP includes a number of channel improvement projects which may include widening, deepening, and straightening streams. Channelization and over-widening of streams slows flow, which increases deposition of sediment, decreases fish habitat, increases water temperatures, and can result in channel erosion. Streams in good condition naturally reach bank full and start spilling onto the floodplain during a 1.5 to 2 year flood event. Widening and deepening a stream channel to force it to contain the 100-year flow negatively impacts the adjacent water table and riparian area and has geomorphic effects upstream and downstream of the modification. If channelization is necessary, constructing a two-stage channel with a low-flow channel and a floodplain allows for the continued transport of sediment, habitat for aquatic wildlife, and can reduce maintenance (Rosgen 1996). **TPWD encourages the RFPG to protect existing streams, riparian areas, and floodplains.**	Encourages the consideration of these topics during the design phase.

SARFPG Draft Plan Comment Log

Project Title:	**San Antonio Regional Flood Plan**	**TWDB Reviewers:**
Project Development Engineer (PDE):	**HDR**	**RZ - Reem Zoun**
Project Manager:	**Ron Branyon**	
Deliverable Milestone:	**Draft Flood Plan**	
Comments Folder Location PW: pw://pwhdruscen01:HDR_US_Central_01/Documents/State_of_Texas_San_Antonio_River_Authority/SA_River_Flood_Planning_Group/3.0_Correspondence/3.2_WIP/From_TWDB/202221021_Draft_Comments/		

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

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6	GIS	SOW Task 2A	TWDB	6. Model Coverage GIS Feature Class, *ModelCoverage* : It appears that some fields are missing entries, including 'MODEL_DESCR'. Please complete all required fields with valid entries per TWDB email Jan 31, 2022. [31 TAC §361.33(b)(2)].	Agree, will update.
7	Plan	SOW Task 2B	TWDB	7. Future Condition Flood Hazard Vulnerability, *Text* : Please expand the description of the future conditions vulnerability analysis by considering factors such as proximity to a floodplain, proximity to other bodies of water, past flooding issues, emergency management plans, and location of critical systems like primary and back-up power. [31 TAC §361.34 & Exhibit C 2.2.B.3].	Agree, will add more explanation.
8	Plan	SOW Task 3B	TWDB	8. Goals, *Text* : Tables 3-5 through 3-9 in Chapter 3 contain 36 goals, while the Exhibit C Table 11 and *Goals* feature class appears to contain 33 goals. Please review and reconcile for consistency. [31 TAC §361.36 & Exhibit C 2.3.B].	Agree, will update.
9	Plan	SOW Task 3B	TWDB	9.Goals (Exhibit C Table 11): a. It appears that some fields are missing entries, including Residual Risk. Please complete all required fields with valid entries b. Tables 3-5 through 3-9 in Chapter 3 contain 36 goals, while the Exhibit C Table 11 and Goals feature class appears to contain 33 goals. Please review and reconcile for consistency. [31 TAC §361.36 & Exhibit C 2.3.B].	a. Filled in "Unknown" for Residual Risk field, per additional guidance. b. Agree, will update to match.
10	Plan	SOW Task 3B	TWDB	10.Goals GIS Feature Class, Goals: a. It appears that the required field 'RESIDUAL' contains only NULL values. Please ensure required fields are populated with valid entries per Exhibit D Table 21 [31 TAC §361.36]. b. Tables 3-5 through 3-9 in Chapter 3 contain 36 goals, while the Exhibit C Table 11 and Goals feature class appears to contain 33 goals. Please review and reconcile for consistency. [31 TAC §361.36].	a. Filled in "Unknown" for Residual Risk field, per additional guidance. b. Agree, will update to match.
11	Plan	SOW Task 4B	TWDB	11.Flood Management Evaluation (Exhibit C Table 12): Some FMEs list $0 for Estimated Study Cost (i.e., FME_IDs 121000015 and 121000033). Please review these FMEs for accuracy and reconcile as needed. [31 TAC §361.38(i) & Exhibit C 2.4.B].	Agree, will update.
12	Plan	SOW Task 4B	TWDB	12.Flood Management Evaluations GIS Feature Class, FME: It appears that some fields are missing entries, including 'NEW_MODEL', 'HUC8', 'FLD_TP_RIV', and 'FLD_TP_LOC'. Please complete all required fields with valid entries per Exhibit D Table 23.	Agree, will update.
13	Plan	SOW Task 4B	TWDB	13.Flood Management Evaluation (Exhibit C Map 16): Please indicate on the map whether the identified FME area is associated with a previously studied area that requires an update or if the identified study area does not have any existing or anticipated flood mapping, models, etc., and therefore requires an initial study. [31 TAC §361.38(m)].	Agree, will update.

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

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Deliverable Milestone:	Draft Flood Plan	

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19	Plan	SOW Task 5	TWDB	19.Flood Mitigation Projects Recommendations (Exhibit C Table 16): a. FMP_ID 123000021 does not appear to include a BCR in Table 13, Table 16, FMP_Details table, and the FMP feature class. Please populate the BCR field Table 13, Table 16, and FMP Details table, and populate the 'BC_RATIO' field in the FMP feature class as required. If no BCR is available, please remove this FMP from the recommended FMP list in the plan. b. Twenty-seven recommended FMPs list "Y" for Negative Impact and are blank for Negative Impact Mitigation. Please review these FMPs to ensure accuracy of these data fields.§361.39 c. It appears that some fields are missing entries, including Water Supply Benefit. Please complete all required fields with valid entries per Exhibit C Table 16. [31 TAC §361.39 & Exhibit C 2.5.B].	Agree, will update. Agree, will update. Agree, will update.
20	Plan	SOW Task 5	TWDB	20.Flood Mitigation Project Recommendations GIS Feature Class, FMP: d. It appears that some fields are missing entries, including 'HUC8', 'FLD_TP_RIV', 'FLD_TP_LOC', and 'ASSOCIATED'. Please complete all required fields with valid entries per Exhibit D Table 24. e. Twenty-seven recommended FMPs list "Yes" for 'NEG_IMPACT' and "No" for 'NEG_MITIG'. Please review these FMPs to ensure accuracy of these data fields. [31 TAC §361.39 & Exhibit D 3.11.1].	Agree, will update. Agree, will update.

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21	Plan	SOW Task 5	TWDB	21.Flood Mitigation Project Details Geodatabase, FMP_Details: The FMP Details table provided in the geodatabase appears blank. Please complete as required in §361.40	Agree, will update.
22	Plan	SOW Task 5	TWDB	22.Flood Mitigation Strategies Recommendations GIS Feature Class, FMS: It appears that some fields are missing entries, including 'ENTITY_ID', 'NEG_IMPACT', and 'ASSOCIATED'. Please complete all required fields with valid entries per Exhibit D Table 26. For 'ENTITY_ID', leave NULL or 999999 if there is no data. [31 TAC §361.39 & Exhibit D 3.10].	Agree, will update.
LEVEL 2					
23	Plan	General Commen	TWDB	23.To better align with our agency's preferred nomenclature, please consider using the name, "Cursory Floodplain Data" instead of "Fathom" or Cursory Fathom Data" throughout the regional flood plan.	Agree, will update.

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24	Plan	SOW Task 1	TWDB	24.Watersheds GIS Feature Class, Watersheds: Please populate the applicable ID fields to associate the Watersheds feature class with identified FME/FMS/FMP.	Agree, these fields have been updated.
25	Plan	SOW	TWDB	25.Existing Infrastructure, Text: Please provide a description of how Low Water Crossings were identified within the text of Chapter 1.	Agree, will update.
26	Plan	SOW Task 1	TWDB	26.Existing Infrastructure GIS Feature Class, ExFldInfraPt: There appear to be Low Water Crossings in the TNRIS dataset which do not appear to be included in the ExFldInfraPt feature class. Please consider reviewing the TNRIS dataset for potential inclusion.	LWC's were all evaluated, some were moved to be more in line with the stream CL and road CL, and some were removed that did not seem to be correct based on road overtopping, based on the March 7th TM comments. In short, ExFldInfraPt layer was modified which was used to identify LWC's that intersected the ExFldHazard layer to
27	Plan	SOW Task 1	TWDB	27.Deficient Infrastructure (Exhibit C Map 3): Please consider renaming map to Non- Functional or Deficient Infrastructure since the map includes dams and levees.	Agree, will update.
28	Plan	SOW Task 1	TWDB	28.Existing Projects, Text: a. Please refer to Table 2 in the text of Chapter 1. b. Please ensure Map 2 is referenced in a similar manner. Chapter 4 is referenced in the text of Chapter 1 (and Chapter 4 references Map 2), however, for the sake of ease and convenience, please consider providing the reference to the Map 2 in Chapter 1 (in addition to the map's reference in Chapter 4). It appears all of this can be accomplished by referencing Table 2 and Map 2 within the following sections: "1.12.4 Proposed or Ongoing Flood Mitigation Projects" and "1.12.5 Implementation of Nonstructural Flood Mitigation Projects" in Chapter 1 (as well as Chapters 4).	a. Agree, will update. b. Agree, will update.

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29	Plan	SOW Task 2A	TWDB	29. Existing Condition Flood Exposure GIS Feature Class, ExFldExPol: a. The agricultural coverage layers appear to have irregular triangle and rectangular features that may be a result of the conversion of a raster to polygon. b. The agricultural coverage layers appear to have irregular triangle and rectangular features that may be a result of the conversion of a raster to polygon. Please review and revise, as appropriate.	a. Based on the March/April comments we reprocessed the Agricultural raster into polygons that were rectangles as opposed to triangles. The August submittal had the rectangles. b. Same comment
30	Plan	SOW Task 2A	TWDB	30.Existing Condition Flood Exposure Vulnerability GIS Feature Class, ExFldExpAll: It appears that some entries with 'EXP_TYPE' listed as "Other" may better fit in the provided 'EXP_TYPE' valid entries. Please consider reviewing and revising as appropriate using the updated 'CRIT_TYPE' valid entry list: "Medical, Police, Fire, EMS, Shelter, School, Infrastructure, Water Treatment, Wastewater Treatment, Power Generation, Other".	a. "Other" was used in EXP_TYPE for Gas pipelines, Electrical Transmission lines and Railroad Segments. There did not seem to be a better category available for this field. However we categorized Gas and Transmission line as "Yes" in the CRITICAL field and used the "Infrastructure" classification in the CRIT_TYPE field. For the Railroad segments we did not consider as critical similar to the logic for the Roadway segments.
31	Plan	SOW	TWDB	31.Existing Condition Vulnerability: Please consider modifying the map color scheme to enhance critical infrastructure legibility.	Agree, changed the infrastructure to orange.
32	Plan	SOW Task 2A	TWDB	32.Model Coverage, Text: Please consider providing a table of models within Chapter 2 or appendix that includes the modeling information contained in the ModelCoverage feature class.	Agree, will update.
33	Plan	SOW Task 2B	TWDB	33.Future Condition Flood Hazard Map Gaps (Exhibit C Map 9): Please consider changing the colors used for the Unknown future flood hazard and the areas where Cursory Floodplain Data (Fathom data) was used.	Agree, updated color to red.
34	Plan	SOW Task 2B	TWDB	34.Future Condition Flood Exposure GIS Feature Class, FutFldExpPol: a. The agricultural coverage layers appear to have irregular triangle and rectangular features that may be a result of the conversion of a raster to polygon. Please review and revise. b. Bldg_IDs 6025014 and 6331393 both appear to be within the extent of the FutFldHazard layer but do not appear to be identified in the FutFldExpPol feature class. c. Bldg_ID 6080782 (A Hospital) appears to be within the extent of the extent of the FutFldHazard layer but does not appear to be identified in the FutFldExpPol feature class. d. Bldg_ID 6028788 (A power generating facility) appears to be within the extent of the extent of the FutFldHazard layer but does not appear to be identified in the FutFldExpPol feature class. e. Please review the FutFldHazard layer confirm that buildings within the extent are properly identified in the FutFldExpPol feature class. Some buildings do not appear to include the entire building footprints.	a. Based on the March/April comments we reprocessed the Agricultural raster into polygons that were rectangles as opposed to triangles. The August submittal had the rectangles. b. After rechecking the August submittal these buildings do appear to be shown in the FutFldExpPol layer as is expected. c. After rechecking the August submittal this building does appear to be shown in the FutFldExpPol layer as is expected and classified as a critical Medical facility in the FutFldExpAll layer. d. After rechecking the August submittal this building does appear to be shown in the FutFldExpPol layer as is expected and classified as a critical Power Generation facility in the FutFldExpAll layer.
35	Plan	SOW Task 2B	TWDB	35.Future Condition Flood Exposure Vulnerability GIS Feature Class, FutFldExpALL: FTEXPALLID 156611 is the site of San Antonio Fire Department Station 49, however, it does not appear to be identified as critical infrastructure. Please consider reviewing all critical infrastructure layers and modify, as appropriate, to identify them in the FutFldExpAll feature class.	This is captured in the FutFldExpAll layer as a Fire facility but the ID's don't match up. The issue could be from reviewing potentially out dated data and not the August submittal. The ID I see is FTEXPALLID 120176170

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36	Plan	OW Task 4	TWDB	36.Streams GIS Feature Class, Streams: a. Please consider linking this feature class to any relevant FMEs, FMSs, or FMPs when appropriate by populating the associated ID fields. b. Please ensure that identified streams are within the boundary of the associated FME, FMP, and FMS.	a. This was previously done. b. Previously Region-wide FMX's were identified and that is why the streams were included. For the August submittal the Region-wide FMX's were modified or removed. Based on the guidance the streams layer should only show Streams that intersect identified FMX's. We removed the streams that do not intersect and renumbered the ID's
37	Plan	OW Task 4	TWDB	37.Flood Management Evaluation, Text: In areas where there is an ongoing TWDB-funded FIF Category 1 study, please consider describing how duplication of efforts would be avoided and how FIF Category 1 study data would be incorporated into the proposed FMEs. For example, several FMEs appear to overlap spatially with current FIF Category 1 funded Karnes County Flood Protection Planning Study (FIF ID 40011).	Agree, will expand on the on the stakeholder coordination in the text.
38	Plan	OW Task 4	TWDB	38.Flood Management Evaluation (Exhibit C Table 12) In areas where there is an ongoing TWDB-funded, FIF Category 1 study, please consider describing how duplication of efforts would be avoided and how FIF Category 1 study data would be incorporated into the proposed FMEs. For example, several FMEs appear to overlap spatially with current FIF Category 1 funded Karnes County Flood Protection Planning Study (FIF ID 40011).	Agree, will include in the 'Existing or Anticipated Maps (year)' column.
39	Plan	OW Task 4	TWDB	39.Flood Management Evaluation (Exhibit C Map 16): a.Map 16 does not include region-wide FMEs. Please consider providing an additional map that would show all of the FMEs within the region. b.Please include TWDB-funded, FIF Category 1 studies in the indication of a previously studied area.	a. There are no region-wide FMEs in the San Antonio Region. b. Agree, will add.
40	Plan	OW Task 4	TWDB	40.Flood Mitigation Projects (Exhibit C Table 13): Some FMPs list "0" for Project Area. Please review and ensure that these values are accurate.	Agree, will add.
41	Plan	OW Task 4	TWDB	41.Flood Mitigation Projects GIS Feature Class, FMP_HazPost: Please consider developing a FMP_HazPost feature class showing an updated hazard area that accounts for the impact of recommended FMPs.	Agree, will add.
42	Plan	OW Task 4	TWDB	42.Flood Mitigation Project (Exhibit C Map 17): Consider providing a zoomed in "inset" map of the San Antonio area to improve the legibility of the FMP extents.	Agree, updated map.
43	Plan	OW Task 4	TWDB	43.Flood Mitigation Strategies GIS Feature Class, FMS: For county-wide watershed strategies where majority of the county falls outside of the RFPG boundary, please include justification how the strategy benefits the region and please coordinate with other RFPGs to make sure the efforts are not duplicated.	There was coordination with other Regions, see text in Chapter 10. Will add to description on strategy benefits.
44	Plan	OW Task 5	TWDB	44.Flood Management Evaluation Recommendations, Text: In areas where there is an ongoing TWDB-funded, FIF Category 1 study, please consider describing how duplication of efforts would be avoided and how FIF Category 1 study data would be incorporated into the proposed FMEs. For example, several FMEs appear to overlap spatially with current FIF Category 1 funded Karnes County Flood Protection Planning Study (FIF ID 40011).	Agree, will expand on the on the stakeholder coordination in the text.
45	Plan	OW Task 5	TWDB	45.Flood Management Evaluation Recommendations (Exhibit C Table 15): In areas where there is an ongoing TWDB-funded, FIF Category 1 study, please consider describing how duplication of efforts would be avoided and how FIF Category 1 study data would be incorporated into the proposed FMEs. For example, several FMEs appear to overlap spatially with current FIF Category 1 funded Karnes County Flood Protection Planning Study (FIF ID 40011).Flood Management Evaluations GIS Feature Class, FME: Please consider adding the 'ASSOCIATED' field to the FME feature class and populating as applicable.	Agree, will add to the ASSOCIATED field.
46	Plan	OW Task 9	TWDB	46.Please consider providing the supporting calculation and supporting data that is the basis for the statement: “Of this $1,184,840,000 it is projected that $1,005,017,000 in state and federal grant funding is needed for implementation of these projects”. (Page 9-16).	Agree, will expand on.
47	Plan	OW Task 9	TWDB	47.Flood Infrastructure Financing Analysis text: Please review section for language accuracy. Please consider revising "rant" to "grant" in the subtitle of Chapter 9.1.6.	Agree, corrected.

SARFPG Draft Plan Comment Log

Project Title:	**San Antonio Regional Flood Plan**	**TWDB Reviewers:**
Project Development Engineer (PDE):	**HDR**	**RZ - Reem Zoun**
Project Manager:	**Ron Branyon**	
Deliverable Milestone:	**Draft Flood Plan**	
Comments Folder Location PW: pw://pwhdruscen01:HDR_US_Central_01/Documents/State_of_Texas_San_Antonio_River_Authority/SA_River_Flood_Planning_Group/3.0_Correspondence/3.2_WIP/From_TWDB/202221021_Draft_Comments/		
Initial Disposition: A = Agree, will incorporate; C = Requires Clarification; D = Disagree, do not incorporate; E = Acknowledge comment, no change to deliverable required		
Final Disposition: A = Comment to be incorporated; D = Disagree; E = No change required		

Comment #	Comment Location: Document	Comment Location: Page / Section	Reviewer	Comment	Response
48	Plan	SOW Task 5	TWDB	48.Water Supply, Text: a. Table 6-6 in Section 6.6 does not appear to include the estimated, quantified annual volume of water associated with the three identified FMPs. Please review and reconcile. [31 TAC §361.41 & Exhibit C 2.6.B]. b. On p. 6-6, there is a brief discussion about coordination with RWPGs to determine impacts on WMSs. The text states that the results of coordination are presented in "the following tables", but the tables appear to not be included. Please include a summary and a table identifying any negative impacts to water supply. If no negative impacts are identified, please include a statement to that effect.	Agree, will add.