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January 30, 2020

Jeff Walker, Executive Administrator
Texas Water Development Board
P.O. Box 13231, 1700 N. Congress Avenue
Austin, TX 78711-3231

Dear Sir:

These comments are submitted on behalf of the Pew Charitable Trusts' Flood-prepared communities project which aims to reduce the impact of flood-related disasters on communities and taxpayers by improving federal and state laws and programs. We greatly appreciate this opportunity to share our perspective and recommendations regarding the proposed regulations for state flood planning (44 TexReg 7827, issued December 20, 2019).

Overall, we strongly support the new regulations and the framework they create for regional flood planning across the State of Texas. We believe the proposed regulations are fully consistent with the requirements of the State's new law, offer a reasonable degree of process flexibility for local communities, and will, over time, reduce the vulnerability of people and property to devastating storms and floods.

We applaud the Board for assuring that the regional flood plans, which will be aggregated into a single statewide flood plan, not only focus on current flood risks, but also consider and prepare for future flood risks. As the Board's own experience in water supply planning underscores, effective approaches to assuring the availability of water for a range of uses requires reasonable projections of future population and business sector growth. Flood planning as well must be undertaken with an eye toward future population and conditions. A forward-looking approach will be particularly important, given that multiple areas of the State are among the nation's fastest growing communities.

We support the language in Section 361.33 which requires an analysis of flood risk exposure in a 30-year time frame based on anticipated development patterns, and we agree that such an analysis should be considered the minimum to be undertaken by each Regional Flood Planning Group (RFPG). We are hopeful, however, that the Board will provide additional guidance and technical assistance to regional planning groups to allow them to create and compare multiple scenarios, not only for different and potentially longer timelines, but also for differing combinations or suites of assumptions

regarding flood risk conditions and floodplain management approaches. This would allow the RFPGs and the Board itself to select the most useful and cost-effective means of flood protection.

We also thank the Board for including language which emphasizes the long-standing tenet of Texas law regarding diversion of floodwaters to another property (Texas Water Code 11.086) and the specific direction from the legislature for the Board to assure that no neighboring area is negatively affected by a regional flood plan. The sensible and clear statement that each RFPG must consider upstream and downstream impacts (Section 362.3,(10)) as well as provide notice to (Section 361.21(h)(3)(c)) and work collaboratively with representatives of neighboring areas (Section 361.11 (f)(8) and (j)) should help to assure that the actions or inactions of one planning entity will not exacerbate the flood risk elsewhere. We also support the inclusion of those specific sections (361.60, 361.61, and 361.62) that make it clear that the negative effects consideration is mandatory rather than simply aspirational.

Another key aspect of the regulations which we strongly support is the specific direction to consider nature-based flood solutions, including the requirement within the Guidance Principles (Section 362.3) for RFPGs to consider natural systems and beneficial functions of floodplains (Item 24) and to encourage mitigation approaches that work with natural patterns and conditions of floodplains (Item 27). These principles are important not only because they have the potential to maximize co-benefits such as improvements in water quality, fish and wildlife enhancement, recreational opportunities, and ecosystem function (Item 36), but also because they can help to control the long-term costs involved with keeping flood mitigation projects functioning.

For example, a 2018 study found that nature-based adaptation options compared favorably with many more traditional flood mitigation options and could significantly reduce flood damages in coastal environments, with average benefit-to-cost ratios over 3.5.¹ Another important study also demonstrated the value of coastal wetlands, which reduced the estimated flood damages in twelve states affected by Hurricane Sandy.² Overall, the avoided losses totaled roughly \$625 million. While savings that might be achieved will vary across different mitigation approaches and geographies, these and other studies, including study results referenced in our earlier comments to the Water Board³, underscore the significant monetary value associated with conservation and/or restoration of natural features to lessen storm and wave energy or hold and store floodwaters.

Related to this point, we also recommend that the Board amend the current proposal to more specifically and fully integrate the consideration of nature-based approaches into the procedural framework of the regulations.

- ✓ For example, Section 361.22 covers General Considerations for Development of Regional Flood Plans and specifies more than 20 items that the Board expects the RFPGs to consider. None of these, however, directly mentions existing natural features that

¹ Reguero, Borja G., et al, "Comparing the cost effectiveness of nature-based and coastal adaptation: A case study from the Gulf Coast of the United States," PLoS ONE 13(4): e0192132, 2018, <https://doi.org/10.1371/journal.pone.0192132>.

² Narayan, Siddarth, et al, "The Value of Coastal Wetlands for Flood Damage Reduction in the Northeastern USA," *Scientific Reports* 7, 9463, 2017, <https://www.nature.com/articles/s41598-017-09269-z>

³ <https://www.pewtrusts.org/-/media/assets/2019/10/texas-water-board-pew-comments.pdf>

currently help to mitigate against flood damage or which might be restored to provide better flood protections.

- ✓ Section 361.31, which covers the Description of the Existing Major Flood Infrastructure in the Region, does reference natural hydrologic and hydraulic features but lists those as distinct from existing “functional flood infrastructure.” We recommend amending this section to add “natural features, such as wetlands, vegetated dunes, and functioning floodplains,” as an additional item under (2), helping to emphasize the beneficial use of nature as flood mitigation infrastructure.
- ✓ Again, under Section 361.33 regarding Regional Flood Hazard Exposure Analysis, there is no specific mention of nature-based flood mitigation features. Information on functioning floodplains and the potential for natural features to mitigate risks or, conversely, to be lost over time, is not directly addressed in the listing but should be.
- ✓ Likewise, under Section 361.38, Identification and Assessment of Potential Flood Management Evaluations and Potentially Feasible Flood Management Strategies and Projects, we recommend that the Board insert specific mention of nature-based alternatives. One option for doing so might be to insert an additional item under subsection (g)(5) requiring a description of nature-based mitigation options assessed by the RFPG.
- ✓ Finally on this point, we ask the Board to consider adding a definition of nature-based flood mitigation, again to underscore the importance of what may be seen as less traditional protection options. For example, Section 361.10 could include a definition of nature-based mitigation methods using language similar to the following, which borrows heavily from the Federal Highway Administration’s definition in a recently released implementation guide⁴:

Mitigation approaches involving the use of natural features, materials, and processes to reduce the detrimental impacts of flooding, including flood heights, duration, or velocities, wave damage, and erosion. Examples of Nature-Based Flood Mitigation may include the conservation or restoration of beaches, dunes, wetlands, or floodplain features used as alternatives to or in conjunction with other flood mitigation projects.

Other areas we see as particularly helpful include:

- ✓ The flexibility to make possible realignments in flood planning region (FPR) boundaries or to create sub-watershed groups (Section 361.11, (a) and (b)). While Pew strongly endorses the approach of “following the water” and assessing risk and mitigation options

⁴ “Nature-Based Solutions for Coastal Highway Resilience: An Implementation Guide, August 2019, https://www.fhwa.dot.gov/environment/sustainability/resilience/ongoing_and_current_research/green_infrastructure/implementation_guide/

across an entire basin, we agree that the large size of some Texas river basins may present challenges. Flexibility is warranted.

- ✓ Authorizing the RFPs to expand representation beyond the specific interests noted in the statute (Section 361.11, (e)(12) and (h)). For example, it may be useful in certain instances to assure that plan strategies and projects appropriately account for tourism or historic preservation, focus on the special needs of seniors or disabled individuals, or consider the requirements of major medical, education, or other non-profit institutions. In those cases, additional representation may be merited.
- ✓ Creating opportunities for coordination and consultation across the RFPs to assure an adequately aligned “coastal” flooding plan (Section 361.11, (f)).
- ✓ Specific direction to consider the range of types of flood risk, including and underscoring the importance of residual risk. While flood planning and new investments in flood mitigation and floodplain management can offer significant reductions in flood risk, experts in the field know well that flood risk cannot be fully eliminated. The public, on the other hand, may have little understanding regarding residual risk. As the experiences associated with the Addicks and Barker reservoirs during Hurricane Harvey clearly illustrated, the issue of residual risk merits special attention to ensure that Texas families and businesses are fully aware of and prepared for such risks.
- ✓ The requirement to include, along with the description of any existing major flood infrastructure, information on the condition and adequacy of the structure (Section 361.31 (3)). This section requires information on the reasons why any “non-functional infrastructure” has been deemed deficient. We would encourage the Board to require similar information on any flood infrastructure that is deemed deficient, even if it has not been rendered totally non-functional. This additional information can aid the selection of appropriate strategies and build support for diligent operation and maintenance of flood mitigation infrastructure.

Related to this point, we recommend that the Board make it clear that the descriptions of major flood projects under development (Section 361.31) and the descriptions of plan-recommended Flood Management Projects (FMPs) (Section 361.38) incorporate:

(1) an explanation of any short- or long-term operations and maintenance necessary for the continued functioning of the project, and

(2) a description of any informational or regulatory framework that is planned as a component of the project’s operation.

For example, if the construction of a levee requires setbacks or vegetation restrictions, the project description should cover the form that such restrictions would take and specify which entity would assume responsibility for informing the public and/or enforcing

selected restrictions. Likewise, if the construction of a new dry dam is envisioned and an area above that dam must remain undeveloped to prevent future flood damages, the plan should specify how such restrictions will be maintained over time.

- ✓ Within the requirements for deliverables (Section 361.13) the emphasis on geographic information system (GIS) databases (Items (a)(3) and (e)(3), for example). While moving away from simple static maps may present challenges for some regions, the end result should be a floodplain management approach that can be adjusted and improved over time as conditions change. By creating and continuing to build out GIS databases, the Water Board and the regional decision-makers will enhance their capacity to understand and manage flood risk over time. They will also be able to better analyze the effectiveness of selected policies and projects over time, building the capacity to inform the public of paybacks achieved and losses avoided from past investments.
- ✓ In the deliverables section, the requirement for a listing of strategies and projects that were identified but deemed infeasible. On this point, we recommend a minor adjustment to assure that the reasoning behind those decisions is also discussed.

In Section 361.38, we recommend additional clarity and detail on items related to quantitative analyses and benefit-cost ratios. In addition to reporting on the estimated capital cost of projects (Item (g)(7)), we believe the regulations should require estimates of the annual costs associated with any necessary ongoing operations and future maintenance of selected Flood Mitigation Projects (FMP). We understand that the implications of lack of maintenance are mentioned in Item 11, but we believe that consideration of the actual O&M numbers over the expected design life of an FMP should be included. This fuller view of total costs over time will allow for a more reasoned comparison of alternative projects and strategies and help drive funding to projects that will endure.

In Item 8, which speaks directly to benefit-cost ratios, we recommend deleting the language that references “current, observed conditions.” Elsewhere, the Board has been careful to call for consideration of future risks and evaluation of projected growth and development over a 30-year period, so we are puzzled as to why this item reverts to current conditions only. Since Item 8 clearly anticipates additional guidance from the Board’s Executive Administrator, we believe you could defer decisions on how benefit-cost evaluations should deal with current versus future conditions. We understand that the Board may find it useful to set priorities and consider the gravity of current risk in making its initial funding decisions, but we are hopeful that it will also work with the RFPs to create a statewide plan that maintains that longer view.

Finally, we offer support for the thoughtful and thorough set of Guidance Principles set forth in Section 362.3 and propose an option for consolidating and organizing the 39 items. While we don’t see any principles that we would fundamentally disagree with, we offer some possible alternative wording out of concern that the sheer length of the list could appear to some to be onerous or overwhelming. We recommend that you consider either using a summary version such as the one we offer below or grouping the items into categories, such as public participation, analyses, goal and objectives, etc. As you will see from the proposed wording, we eliminated some particular items only because they appeared to be fully covered elsewhere. We also eliminated a few items ((4), (5),

(9),(31)) that we saw less as principles and more as procedural direction adequately covered in other portions of the regulations.

Proposed alternative principles language:

The overarching goal of Texas flood planning is to provide for the orderly preparation for and response to flooding to protect against loss of life and property and to reduce injuries and other flood-related human suffering.

To accomplish this goal, each regional plan must identify both current and future flood hazard exposure and risks, including residual risks, and consider any special needs for protection of vulnerable populations.

To achieve appropriate statewide flood protections, each regional plan shall consider the potential upstream and downstream effects of alternative strategies and projects and ensure that neighboring areas will not be negatively affected by the plan. In making approval and funding decisions regarding the plan, the Texas Water Board will ensure that no neighboring areas are negatively affected by a regional flood plan or project.

Regional Flood Plans shall be based on established and equitable terms of participation and decision-making that is open to, understandable by, and accountable to the public with full dissemination of planning results except for those matters made confidential by law. Solutions posed in plans shall be derived by identifying common needs, issues, and challenges; achieving efficiencies, fostering cooperative planning with local, state, and federal partners; and resolving conflicts in a fair, equitable, and efficient manner.

To provide for achievable reductions in flood risk at reasonable costs, regional plans shall:

be based on the best available science, data, models, and flood mapping;

contribute to water supply development, where possible, and in doing so, follow all regional and state planning guidance principles (31 TAC Sec. 358.3);

not cause long-term impairment of water quality as designated in the state water quality management plan;

be in accordance with adopted environmental flow standards and with all existing water rights laws, including but not limited to, Texas statutes and rules, federal statutes and rules, interstate compacts, and international treaties;

minimize adverse environmental impacts, and consider flood management strategies and projects that can improve or support water quality, fish and wildlife, ecosystem function, and recreation or achieve other co-benefits;

be consistent with participation in and benefits of the National Flood Insurance Program;

involve the evaluation and comparison of alternative floodplain management strategies and flood mitigation projects, including but not limited to projects that rely on or incorporate natural flood protection features;

include recommended strategies and projects described in sufficient detail to inform state agencies making financial or regulatory decisions to determine if a proposed action is consistent with an approved plan;

may include legislative or regulatory recommendations that are considered necessary and desirable to achieve the goals of this section; and

shall be updated no less frequently than once every five years.

Regional flood plans and the statewide plan derived from approved regional plans shall serve as a guide to state, regional and local flood risk management policy and be supported by state agencies working cooperatively to make the best and most efficient use of state and federal resources, including but not limited to the Texas Water Development Board, the Texas General Land Office, the Texas Commission on Environmental Quality, the Texas Parks and Wildlife Department, and the Texas Department of Agriculture.

Again, overall, we find the Water Board's proposed regulations to be sound and thorough, and we appreciate this opportunity to offer our comments.

Sincerely,

A handwritten signature in black ink, appearing to read "Velma M. Smith". The signature is fluid and cursive, with a large, stylized initial "V" and "S".

Velma M. Smith
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