

NAVIGATING FLOODING IN CHARLESTON



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The Post & Courier

Our vulnerability is real.

Charleston is no stranger to catastrophe. With remarkable resilience, it has bounced back from war, fire, earthquake, and yes, even flood. But a surge of water spun up by a direct hit from a monster hurricane at high tide could prove to be a natural disaster for Charleston's peninsula, eclipsing all others. One day that terrible wall of water is coming. Not tomorrow, maybe not in this decade, maybe not for 50 years. No one knows. But whenever it hits, the surge impact could cripple Charleston for a generation, perhaps longer. As things stand, we are defenseless.

The U.S. Army Corps of Engineers, however, is proposing a defense to the impacts of storm surge to the peninsula. On the premise that Charleston's peninsula is uniquely embedded in America's history and emblematic of its community's identity, the Corps proposes building a wall

encircling the peninsula in hopes of holding back the worst the Atlantic might deliver. To some, the Corps proposal is a welcome solution to a threat from the ocean that with climate change is only worsening. Importantly, the Dutch Dialogues Charleston report described the critical need for peninsula protection as part of an integrated, citywide water system.

While to some, the proposed wall seems an unattractive intrusion into Charleston's way of life, most agree that the peninsula needs effective perimeter protection from a potentially disastrous storm surge, as well as tidal inundation and sea level rise.

Both the Army Corps and the City of Charleston believe that public engagement in this process is critical. The current version of the Army Corps proposal is online at <https://www.sac.usace.army.mil/charlestonpeninsulastudy>.

The following are answers to some frequent questions that have arisen about the Army Corps proposal.



THIS IS A PUBLICATION OF THE COMMUNICATIONS WORKING GROUP OF THE CHARLESTON 3 X 3 ARMY CORPS CITIZENS ADVISORY COMMITTEE



WHAT IS THE THREAT TO THE CHARLESTON PENINSULA?

Flooding is our city's greatest hazard. Why? Because storms and storm surge, tidal ("sunny day") inundation, torrential rains, sinking land (subsidence) – along with sea level rise – are worsening. As in other low-lying coastal cities, the potential for significant storm surge subjects Charleston to the risks of catastrophic loss of life and economic damage. Flooding already threatens our homes and businesses, historic sites, roadways, and the health and safety of all who live, work, and visit here. In particular, surge inundation of the peninsula could critically damage at least half its essential infrastructure and historic assets, altering the cost and availability of property insurance and depressing property values.

WHAT IS THE 3 X 3 PROJECT?

The 3 X 3 Army Corps project refers to a three-year, \$3 million study that receives three levels of federal review. The Army Corps of Engineers in Charleston has spent nearly four years and \$3.7 million

to study and propose an eight-mile-long barrier around most of the peninsula to lessen the worst impacts of storm surge. Some areas along the peninsula's edge are proposed to remain outside the wall, mostly for engineering reasons. The Army Corps is expected to address impacts to communities like Rosemont by elevating homes and providing other flood proofing measures. Potentially, the height of the wall would be roughly three feet higher than the High Battery where it is aligned in the marsh and could range from 1 to 9 feet when on land. While this project is focused on limiting destruction from storm surge, it may also help with some high tidal flooding. Importantly, the barrier's path and design are still somewhat fluid and adjustments will be made in coming phases.

Based largely on public input, the Army Corps made some positive changes to its proposed plan, released on September 10. The changes reflect in part the more than 700 comments from Charleston's citizens and organizations.

Additionally, alternative proposals by professional urban and landscape architects have been submitted for conceptual consideration, although

they have not yet been tested for effectiveness against surge.

WHO IS INVOLVED IN THE PROJECT EVALUATION?

In addition to the city's Resilience and Civic Design Departments, the 3 X 3 Army Corps Advisory Committee, composed of a dozen members of the residential, business, and nonprofit communities, plus two council members, is reviewing all aspects of the proposal. The Advisory Committee, created by the city council last spring, will make recommendations to the council about the project in coming weeks. The committee's meetings are open to the public, currently conducted via Zoom, and recordings of its meetings are available on the city's YouTube channel.

If the council votes to move ahead with the project, it will have to certify to the Army Corps that it can and will raise the necessary funds. At that point, the Army Corps will proceed to a more exacting phase of engineering and design, known as PED, or pre-construction engineering and design. Members of the public have until October 25, 2021, to

comment directly to the Army Corps and to city council. As with the initial Army Corps report, both the Corps and the city council need to hear what Charleston's citizens think about this project.



CITY OF CHARLESTON 3 X 3 ADVISORY COMMITTEE

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WHAT IS PERIMETER PROTECTION?

The proposed Army Corps barrier aims to protect vulnerable parts of the peninsula from the wall of water associated with storm surge from Charleston Harbor and the Ashley and Cooper Rivers. This project has been designed strictly for peninsula protection. The Corps says that the surge structure would increase the water level by one or two inches in non-peninsular neighborhoods during a storm tide.

IS THE CITY OF CHARLESTON TAKING A COMPREHENSIVE APPROACH TO FLOODING?

Not yet. The committee views peninsula protection as one element, a critical one, in a multi-faceted, multi-year approach to citywide flooding. Committee members have unanimously endorsed the development and execution of a comprehensive Water Management Plan, encompassing and prioritizing various flood mitigation projects under way and others not yet funded that address all flooding sources, including rain bombs and

increasingly high tides. Such a plan would integrate the complex flood mitigation infrastructure for the entire city and lay out its costs, now estimated to total \$3 billion.

HOW LONG WILL IT TAKE THE ARMY CORPS TO CONSTRUCT THE BARRIER AS PROPOSED, AND HOW MUCH WILL IT COST?

If the city council decides to move forward with this project, design, engineering, and construction are likely to take at least a decade if not more, depending largely on available funding. In today's dollars, the Army Corps estimates the cost at about \$1.1 billion. Cost reductions in the revised plan helped the Corps improve its "Benefits-to-Cost" (BCR) ratio dramatically, now estimated to save \$10 of asset value for every \$1 invested, or a BCR of 10.2, up from its previously reported 2.2. The Army Corps believes that the revised benefit-cost ratio would cast Charleston's plan in a particularly favorable light as Congress considers projects in competing coastal cities for approval and appropriation. The City's 35-percent cost share is roughly \$385 million. The construction would proceed in phases and the city would make its payments in installments over the multi-year life of the project.

ARE THERE OTHER COSTS INVOLVED WITH THIS PROJECT?

Yes. Changes or additions to the design that fall outside Army Corps guidelines and add to the project's overall costs would be considered "betterments," which the city must cover in their entirety. Questions remain about how some adjustments might be viewed – whether as federal modifications or city add-ons. Any significant change in the exact location of the wall, for example, would likely have to be paid in full by the city. The city will also be responsible for the maintenance and operation of the structure, such as gates and project pump stations. These expenses are estimated to

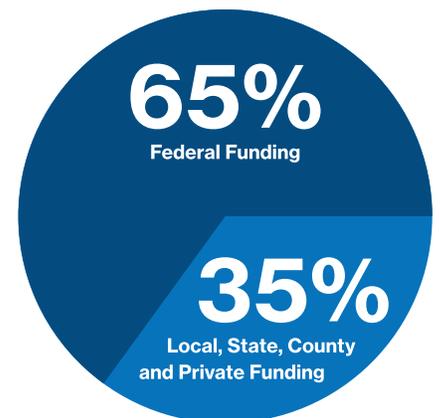
average \$3 million annually, over the life of the project – less in the beginning, more as the structure ages – and are not yet budgeted by the city. Real estate acquisitions and easements required along the path of the wall, valued at about \$150 million, are included in the current cost projection and would count toward the city's contribution.

HOW WILL CHARLESTON PAY FOR ALL THIS?

The city has begun work on a financial strategy for this project, an issue the Advisory Committee has identified as a pressing concern. Funds will have to be raised from many sources, public and private. Monies will be sought from state and county governments, as well as from residents and businesses. Protecting both homes and businesses will likely require a variety of tax or fee increases. The city has begun to engage with county, state, and congressional representatives to engender their support, and more meetings are planned. Money has been reserved in the city budget to move into the first year of PED, if the city commits to this project. To date, however, efforts by the city to engage its



PROPOSED FUNDING SOURCES



citizens in meaningful education about this project, and other water management issues, have not laid an effective groundwork for community understanding and support. The 3 X 3 Advisory Committee is working with the city to remedy this problem.

HOW WILL THE PROJECT AFFECT THE AESTHETICS OF THE PENINSULA?

The Draft Environmental Impact Statement, which is part of the Corps' proposed plan, addresses the wall's impact on Charleston's natural environment, its neighborhoods, and its historic and cultural landmarks, including access to the waterfront and its historic vistas. In response to public concerns, and a Visual Impacts Analysis, the Corps added \$53 million to the project cost for aesthetic considerations. In addition, in response to concerns about ecological impacts to the peninsula, the plan includes some "living shorelines," that would be composed of oyster beds. If the city

GLOSSARY OF TERMS

USACE

Army Corps of Engineers

PED

Pre-construction, Engineering and Design phase (The next step if city council approves the project).

12-Foot NAVD

Benchmark elevation of the perimeter barrier from ground level.

BCR

Benefit-Cost Ratio: How the Corps values city assets and risks.

TSP

Tentatively Selected Plan (What the city is considering).

PPS

Perimeter Protection System

decides to proceed to the PED, the Army Corps will provide illustrations of the barrier's possible appearance. However, as of now, the Army Corps has not prepared or offered any conceptual or schematic design for the project. The city's Civic Design Division is working with the Army Corps toward an acceptable appearance of the structure and the 3 X 3 Citizens Advisory Committee will continue to be engaged.

WHAT ELSE SHOULD WE BE THINKING ABOUT?

While the Army Corps project is an important opportunity to consider for storm surge protection, Charleston will need much stormwater, drainage, tidal, groundwater, and other flood mitigation infrastructure over the next 10 to 15 years. A comprehensive water management plan will provide a guide for this, but additional monies will be needed, over and above the city's 35-percent share of the Army Corps project.

Army Corps Project Timeline

OCTOBER 2021	NOVEMBER 2021	DECEMBER 2021	2022
10/20 3 X 3 Committee Meeting	11/3 3 X 3 Committee Meeting	12/1 3 X 3 Committee Meeting	3/22 Final Charleston Report submitted to USACE headquarters for review
10/25 Public Comment Period Ends	11/9 Final Committee Recommendations to city council	12/15 3 X 3 Committee Meeting	Spring/22 State/Agency Review of Final Report
10/26 3 X 3 Committee Update to city council	11/17 3 X 3 Committee Meeting	Year End 2021 City council vote to move to PED and acknowledgement of financial commitment/capability	August/22 Final Report to be considered for signature by USACE Chief of Engineers
			2023/2024 If Congress approves, potential start of PED with first USACE funding

Your Voice Matters

Send comments to the Army Corps by email to: Chs-Peninsula-Study@usace.army.mil
The public comment period ends on October 25. Also, consider emailing or calling your mayor and council member to let them know your thoughts.

For more information, go to the 3 X 3 Advisory Committee website: www.charlestonwaterplan.com