

An Update: Our Vulnerability Has Heightened

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THE CITY OF 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 powerful hurricane at high tide could spell natural disaster for Charleston's Peninsula eclipsing all others. While we don't know when this might happen, scientists increasingly warn that the threat is worsening. The effects of climate change are mounting. Our vulnerability is intensifying. The National Oceanic and Atmospheric Administration (NOAA) in its 2022 report predicted sea level rise here will increase by 10 to 14 inches by 2050 – in only three decades a rise that previously took 100 years.

A hurricane's surge in these conditions could cripple Charleston for a decade or longer. As things stand, we are defenseless.

Anticipating this, the U.S. Army Corps of Engineers has proposed a storm surge defense. Because Charleston's peninsula is uniquely embedded in America's history and emblematic of its community's identity, the Corps is committed to preserving it with a protective structure that could mitigate the worst the Atlantic might deliver. The widely accepted Dutch Dialogues Charleston report described the critical need for peninsula perimeter protection as part of integrated, citywide water management. Accordingly, a Comprehensive, Integrated Water Management Plan is now under way for Charleston. It will assess, plan for, and prioritize water management needs across the entire city for all types of flooding.

The Army Corps proposal is expected to be ready for Congressional consideration later this year. If approved by Congress, the city and the Army Corps will first negotiate a design agreement to govern the Pre-construction, Engineering and Design (PED) phase of



Photo credit: *The Post & Courier*

the project. City Council will then be asked to approve funding for that part of the process.

To some here, the Corps proposal is being viewed as a realistic solution to a growing threat. But to others, a wall seems an unattractive intrusion into Charleston's way of life, compromising the beauty and tradition of this historic place. Most agree, though, that the peninsula needs effective perimeter protection in addition to mitigation of tidal inundation, rain bombs, and sea level rise.

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

Following are answers to some frequent questions about the Army Corps proposal and the city's plans to deal with flooding.

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) – and sea level rise – all are worsening. As in other low-lying coastal cities, storm surge in Charleston could result in catastrophic loss of life and ruinous economic damage. Tidal flooding already threatens our homes and businesses, historic sites, roadways, the Medical District, and the health and safety of all who live, work, and visit here. But surge inundation could critically damage at least half the essential infrastructure and historic assets on the peninsula, and profoundly alter the cost and availability of property insurance, depressing property values.

SPECIFICALLY, WHAT IS THE ARMY CORPS PROJECT?

The Army Corps of Engineers conducted a nearly four-year, \$3.7 million feasibility study to determine if it could construct peninsular protection. The study resulted in the proposal of an eight-mile wall encircling the peninsula to be designed in four phases. It would be roughly three feet higher than the High Battery, where it is aligned in the marsh, and could range from one to nine feet on land. A few areas, including the historic African-American community of Rosemont, would be outside the wall, mostly for engineering reasons, but the Corps would provide protection there by elevating homes and other flood-proofing measures. Additionally, the city will conduct a special Rosemont Resilience Study parallel to the Army Corps process.

Based largely on public input, the Army Corps made several positive changes to its original proposal

released on September 10, 2021. The changes reflect more than 700 responses from Charleston citizens and organizations. The feasibility plan is now en route through a process within the Corps. If approved, it will be considered for funding by Congress, probably by the end of this year. City Council recently endorsed a letter from the mayor to the Corps outlining key, as yet unresolved, concerns about the project, including alignment changes, the city's commitment to enhanced aesthetics and sensitivity to historic vistas, as well as its support for nature-based solutions where possible. The letter was included in the nonfederal (city) comments section of the feasibility study. Notably, the federal government is exploring a shift in thinking that stresses more natural features for funded projects, including Corps proposals. Alternatives from professional urban and landscape architects in Charleston have also been developed for conceptual consideration, though they have not been tested for effectiveness against surge.

While this project is aimed solely at destruction from storm surge, it may ultimately include a broader approach to compound flooding. The alignment (path) of the wall and its design are still fluid. If the project receives Corps, Congressional, and city approval, it will enter the Pre-construction, Engineering and Design phase (PED), a multiple-year process, that will determine where and how the wall will be built, --- what it will look like, and how it will integrate with other water projects.

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, has been reviewing all aspects of the proposal.

The Advisory Committee, created by Charleston City Council in #March 2021, has made several formal recommendations to council. They include:

- **That Charleston proceed to PED, once a design agreement has been negotiated with the Army Corps. The agreement should include a variety of Natural and Nature-based Features. Also, that a city staffing evaluation be conducted to ensure the successful execution of the Army Corps project, if approved**
- **That the proposed alignment of the perimeter protection be changed to include protections of various businesses, residences, and other properties along the east side of the peninsula**
- **That Council approve and fund a Comprehensive, Integrated Water Plan for the entire city (Approved)**
- **That Council create a Resilience Study and Plan for the Historic African-American community of Rosemont (Approved)**
- **That Council approve the continuation of the Advisory Committee and its engagement with the Army Corps and all relevant city departments**

The committee's meetings are open to the public and its meetings can be viewed on the city YouTube channel.

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, and some high tidal impact, from Charleston Harbor and the Ashley and Cooper Rivers. This project has been designed strictly for peninsula protection. The Corps says the surge structure would increase the water level by only one or two inches in non-peninsular neighborhoods during a storm tide.

DOES CHARLESTON HAVE A COMPREHENSIVE APPROACH TO FLOODING?

Peninsula protection is one critical element in a multi-faceted, multi-year approach to citywide flooding. Committee members unanimously endorsed the development and execution of a Comprehensive, Integrated Water Management Plan, which has been approved by City Council. It will assess and prioritize flood mitigation, adaptation, land and use actions, and investments that address all flooding sources, including rain bombs and increasingly high tides. The plan will integrate the complex flood mitigation infrastructure for the entire city and prioritize its investments.

HOW LONG WILL THE WALL CONSTRUCTION TAKE AND HOW MUCH WILL IT COST?

If approved, and following a design process of three to four years, completing the peninsula structure is likely to take at least a decade, depending largely on available funding. In 2021 dollars, the Army Corps estimates the cost at about \$1.1 billion. Cost reductions in the

CITY OF CHARLESTON 3 X 3 ADVISORY COMMITTEE

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revised plan helped improve its "Benefits-to-Cost" (BCR) ratio dramatically, now estimated to save \$10 of asset value for every \$1 invested, or a BCR of 10.8, up from its previously reported 2.2. 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 totals roughly \$385 million. However, the net cost to the city will likely be closer to \$250 million after subtracting the value of land-use credits the city will receive for enabling the structure to be built on city property. Construction would proceed in phases and the city would make its payments in annual installments over the multi-year life of the project.

ARE THERE OTHER COSTS INVOLVED WITH THIS PROJECT?

Possibly. Changes or additions to the design that fall outside Army Corps guidelines that raise the project's costs would be considered "betterments," which the city must cover entirely. Questions remain about how some adjustments might

be viewed – whether as federal modifications or city add-ons. An alignment change could either reduce or increase the cost. If it increases the cost, but provides an additional flood-risk reduction benefit, it may be covered in the 65-35 cost share. If the change does not increase the flood-risk benefit, but is chosen for aesthetic or convenience considerations, the marginal cost increase above the first projected cost of the change would be the city's responsibility. The city will also be responsible for maintaining and operating 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?

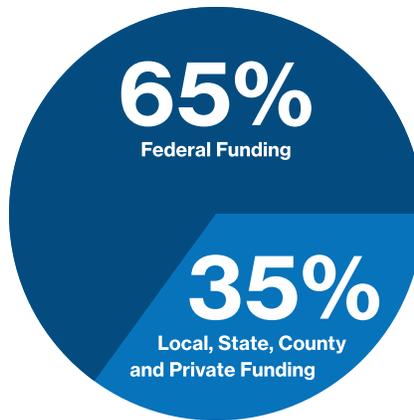
The city is developing a financial strategy for this project, an issue the

Advisory Committee has identified as a pressing concern. Funding will be sought from state and county governments, and from residents and businesses. Protecting homes and businesses could require tax or fee increases. The city is talking with county, state, and congressional representatives to engender their support, and more talks are planned. Funds have been reserved in the city budget to pay for the first year of PED, if the city commits to this project. In that regard, the city is working to engage its citizens in meaningful education about this and other water management issues in order to lay an effective groundwork for community understanding and support. The 3 X 3 Committee is collaborating on this with the city.

HOW WILL THE PROJECT AFFECT THE AESTHETICS OF THE PENINSULA?

The Draft Environmental Impact Statement, 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. The Army Corps, together with key state and local stakeholders, have developed a Memorandum of Understanding governing aesthetic mitigation goals. It is included in the feasibility

PROPOSED FUNDING SOURCES



study. In addition, in response to concerns about ecological impacts to the peninsula, the plan includes some “living shorelines,” composed of oyster beds. If the city decides to proceed to PED, the city and the Army Corps will develop conceptual, and eventually engineered, renderings of the wall. To date, the Army Corps has not prepared or offered any conceptual or schematic design for the project, beyond what is shown in the feasibility study. The city’s Civic Design Division is working with the Army Corps toward an acceptable appearance of the structure and the 3x3 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. The water management plan will provide a guide for this, but additional monies will be needed beyond the city’s 35-percent share of the Army Corps project.



COMING UP:

Spring/22

State/Federal Agency Review of Final Report

May/22

Final Report to be considered for signature by USACE Chief of Engineers

2023/2024

If Congress approves, potential start of PED with initial funding from the Army Corps of Engineers and the City of Charleston



Your Voice Matters

Send comments by email or call the mayor and/or your council member to let them know your thoughts:
Chs-Peninsula-Study@usace.army.mil

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

Meetings of the 3x3 Army Corps Committee are posted with their agendas on the city’s website and recordings of all meetings can be seen on the city’s YouTube channel. Members of the 3x3 committee are available to discuss the project. General questions on flooding issues can be directed to the city’s Stormwater Department.