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RESILIENT
NORFOLK
COASTAL STORM RISK MANAGEMENT

Project Partnership Agreement Overview

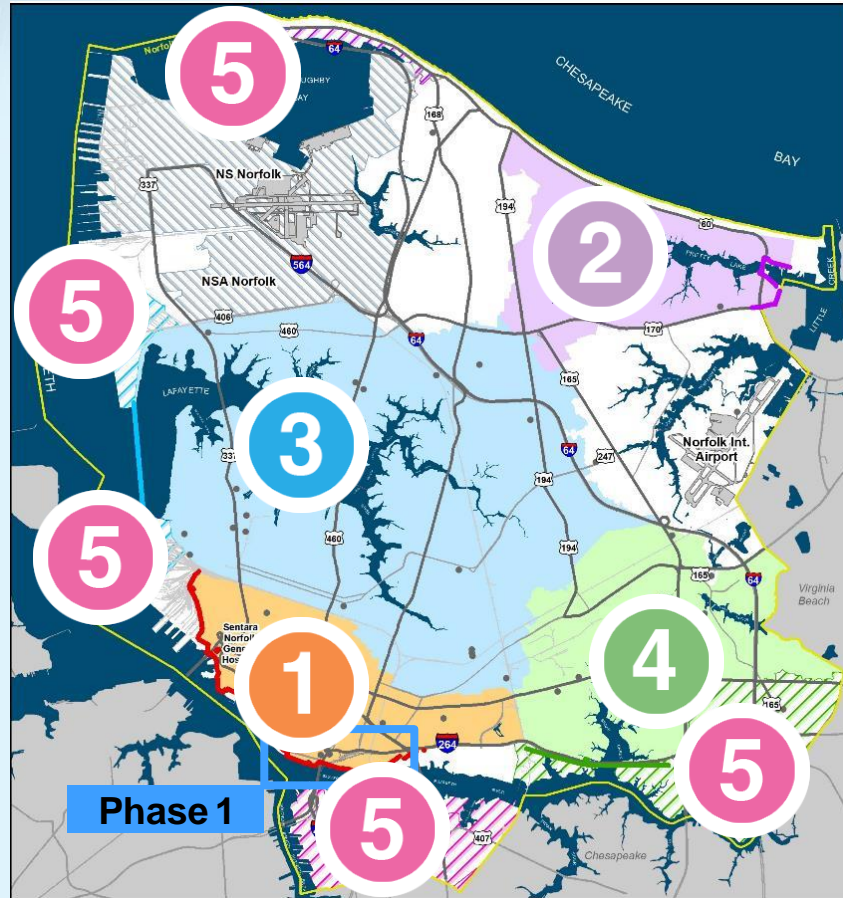
March, 2023



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Overall Norfolk CSRM Project Scope



City's priorities for Construction Sequence:

- 1 Area 1: Ghent – Downtown – Harbor Park
- 2 Area 2: Pretty Lake
- 3 Area 3: Lafayette
- 4 Area 4: Broad Creek
- 5 Non-Structural (concurrent to other work)

LEGEND

Structural Flood Risk Management Measures

- Ghent-Downtown-Harbor Park
- Pretty Lake Surge Barrier
- Lafayette Outer Surge Barrier
- Broad Creek Surge Barrier

Structural Measures Risk Management Area

Hatched Area Indicates Non-Structural Measures

- Ghent-Downtown-Harbor Park
- Pretty Lake Surge Barrier
- Lafayette Outer Surge Barrier
- Broad Creek Surge Barrier
- Campostella-Berkley Non-Structural Measures Area



Non-Structural measures throughout the city of Norfolk: Berkley, Campostella, Elizabeth Park, Ingleside, Norfolk International Terminals (NIT), Willoughby





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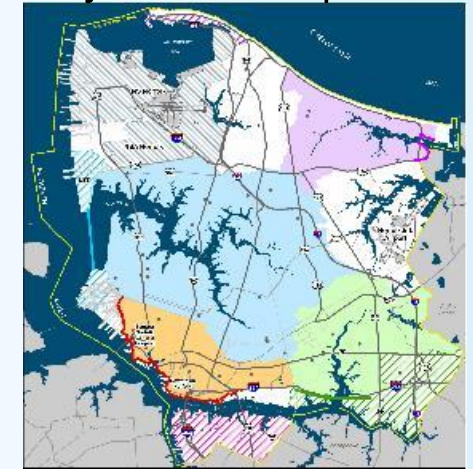
Full Plan – 10 Year Draft

PHASE	LOCATION	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
1A	Berkley Bridge to Campostella	Design Phase		Construction Phase								
1B	Town Point Park/Waterside	Construction Phase		Design Phase								
1C	Ghent to Town Point Park	Construction Phase		Design Phase								
1D	Downtown Floodwall	Construction Phase		Design Phase								
2	Pretty Lake Surge Barrier	Construction Phase		Design Phase								
3	Lafayette Outer Surge Barrier	Construction Phase		Design Phase								
4	Broad Creek Surge Barrier	Construction Phase		Design Phase								
5	Campostella/Willoughby/Elizabeth Park (Nonstructural)	Design Phase		Construction Phase								

Design Phase

Construction Phase

Project Phase Map:





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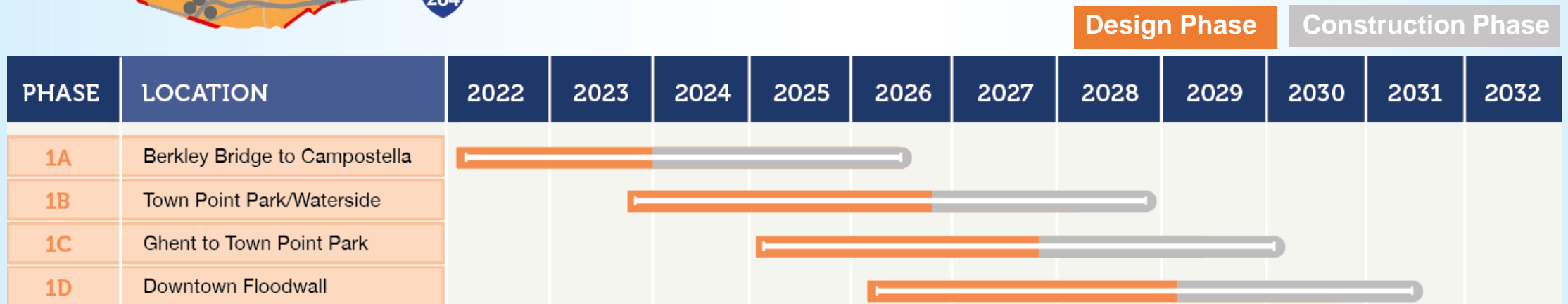
THE CITYWIDE PROJECT IS DIVIDED INTO 5 Implementation Phases



1 Downtown



A system of floodwalls with a levee, surge barriers, and natural and nature-based features, extending from Ghent through downtown connecting to the Ohio Creek Watershed project.





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Phase 1 Plan





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Norfolk CSRM Project Status

- Phase 1a - 65% Design underway;
 - Pump Station Design Phase 1
 - Non-Structural – cost re-analysis update underway; Developing Pilot Program for initial structures
 - Environmental Coordination
 - Cost Estimate Certification
 - Real Estate and Utilities for Phase 1 – parcel research underway
- **Project Partnership Agreement (PPA)** - Seeking City Council Approval 28 March
- Public Outreach – Communications Plan, website, DNC, Task Force Meetings, Civic League meetings



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Project Partnership Agreement Overview

What is a PPA and why do we need it?

- Required Written Agreement between the City of Norfolk and the Department of the Army, “the Government.”
- Moves the Project into the Construction Phase from the Preliminary Engineering and Design (PED) Phase
- Allows the Bipartisan Infrastructure Law (BIL) Funding of \$399M to be accessed for the project.
- Norfolk District Commander, COL Hallberg and the City of Norfolk Manager Sign the PPA to execute.
- City Manager is given authority to sign by City Council and Norfolk District Commander is given authority to sign by the North Atlantic Division (NAD) Commander.



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Project Partnership Agreement Cost Share

- Cost-shared Agreement between the City of Norfolk and the Department of the Army, “the Government.”
- Total Project Cost Estimate \$2.6 Billion
 - Federal = \$1.7B
 - Non-Federal = \$931M
- Cost-shared 65% Federal and 35% Non-Federal (City)
 - Lands Easements, Rights of Way = \$122M
 - Utility Relocations = \$330M
 - Cultural Resource Preservation = \$42M
- \$399.3 M BIL (IIJA) Funds - \$215M Non-Federal



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Project Partnership Agreement Article I Definitions (cont.)

“Construction Costs” include:



Initial Environmental Assessments (survey)



Design



Government Construction (incl. Supervision & Administration)



Lands Easements Rights of Way & Utility Relocation



Historic Preservation



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Project Partnership Agreement Article I Definitions (cont.)

“Construction Costs” DO NOT include:



OMRR&R



Betterments



Dispute resolution



NF sponsor costs of negotiation



Remediation/Removal of contaminated soil



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Project Partnership Agreement

Overview and Risks

- 10% design completed during feasibility
- Identify potential costs increases, i.e. Inflation, unforeseen requirements such as differing site conditions
- Utility Relocations
- Schedule delay due to complicated real estate
- Potential liability and litigation



Addressing Flooding

Is there a plan for the integration of rainfall and stormwater improvements?

- **Norfolk's Floodplain Management Plan** ties together the work of coastal storm risk management, increased precipitation, and impacts on aging stormwater system.
 - The Floodplain Management Plan will guide the City as it converts a gravity conveyance system to an interior drainage system reliant on pumps.
- City obtained a \$315K CFPF grant to produce a new **Watershed Master Plan** based on the CSRSM conditions and updated rainfall estimates.
 - Watershed Master Plan provides recommended Actions for adapting system to sea level rise across tailwater intervals.



Nonstructural Education

Have there been meetings with communities impacted by nonstructural projects (home elevations, etc.)?

- Outreach to various Tasks Force groups began in 2022 (Ocean View, East Side, Southside)
- The team has met with a number of civic leagues to address their questions and concerns with nonstructural improvements
- Outreach will continue at the group and individual level
- Nonstructural workshops will be held after PPA signing – anticipating Summer 2023
- Nonstructural consulting team coming on-board (14 staff)



Southside

There have been concerns about not having any structural measures for Southside.

- The City is committed to working with the community to find a solution for the Southside.
- Nonstructural measures will not be implemented without buy-in from the community.
- We have shared the Southside concern with USACE and working to determine options.
 - May require a new study and approval from Congress.
- Full transparency - involvement of key community leaders in discussions with USACE.



Southside

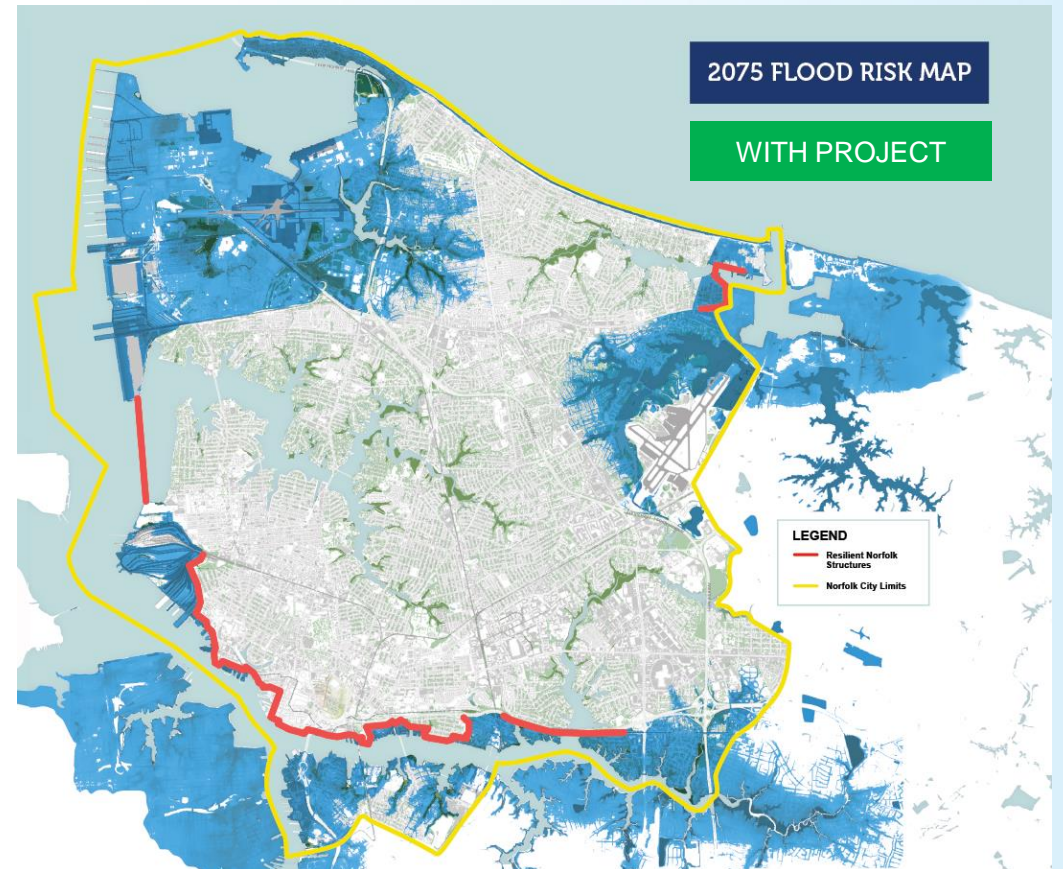
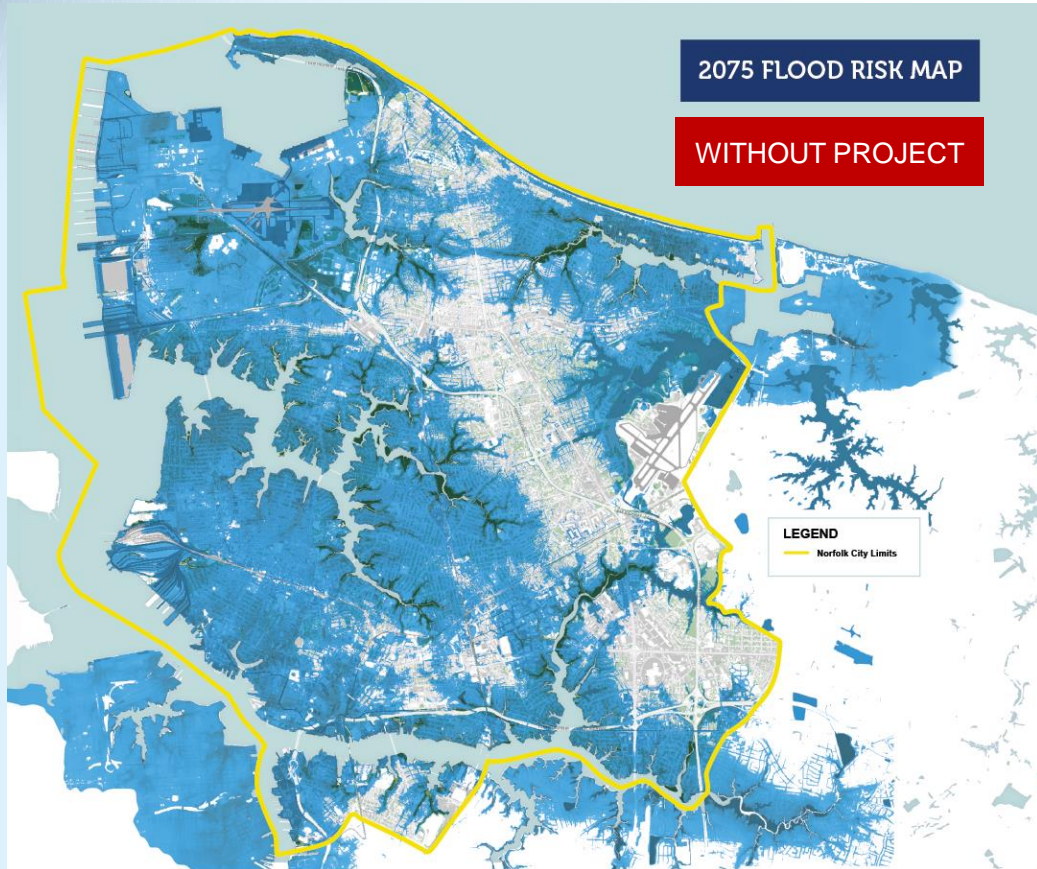
There have been concerns about not having any structural measures for Southside.

- **Campostella and Berkley Nonstructural (337 total):**
- Basement Fill: 157
- Basement Fill + Floodproofing: 1
- Basement Fill + Elevation: 32
- Floodproofing: 14
- Buyouts (converted to Elevations): 55
- Elevations: 78 + 55 (previous Buyouts)





Flood Risk Map

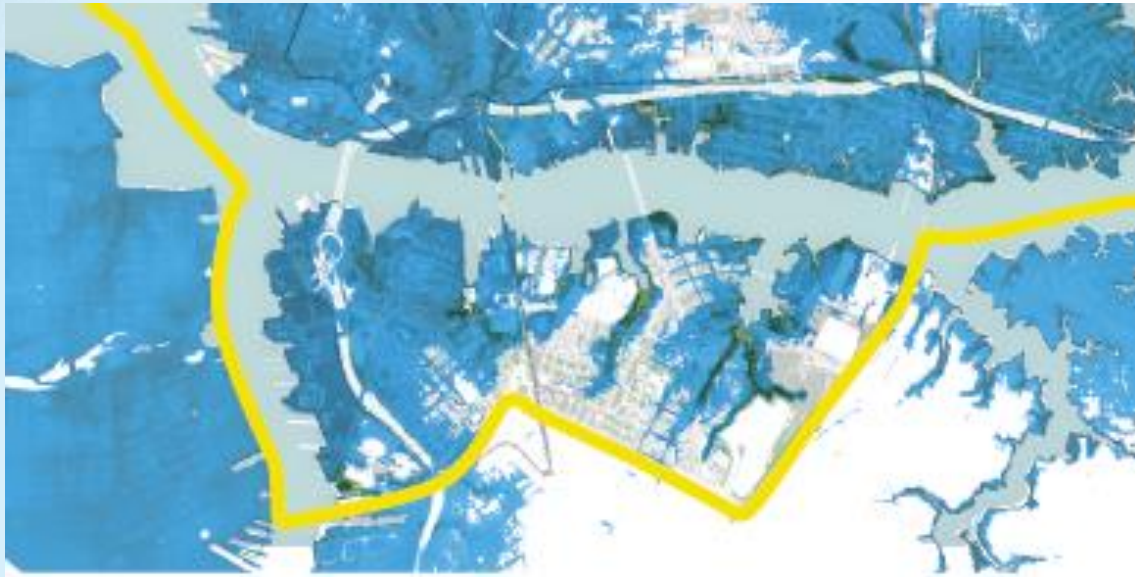




Flood Risk Map - Southside

2075 FLOOD RISK MAP

WITHOUT PROJECT



2075 FLOOD RISK MAP

WITH PROJECT





Concept of Induced Flooding

There have been concerns the project could cause increased flooding for adjacent communities (induced flooding).

- Tropical-cyclone flooding, or storm surge flooding, affects the landscape differently than other types of flooding.
- Recent reports have mentioned induced flooding studies, suggesting similarities to this project. These studies, modeled for California, were not based on tropical-cyclone coastal storm surge, and reports suggest concerns for induced flooding upon Portsmouth.
 - Walls that reduce hydraulic capacity for storm surge within coastal estuaries also reduce the availability for surge to be pulled-in from the Atlantic.
 - An induced flooding study will be performed to analyze localized wave refraction.



Water Quality

What about potential impacts to water quality as a result of the project?

- The team is committed to addressing the effects on water quality. Signing the PPA will allow additional federal funds to be used to further study.
- City obtained \$900K grant from CFPF to study these impacts through a robust coastal analysis.
 - This allows the City to develop 3D hydrodynamic models and simulations of potential changes in discharge, velocity, salinity, flushing and sediment transport.
 - This will inform accurate mitigation measures and design changes needed to abate impacts.



Funding

What other projects are being put on hold to finance this project?

- 65% of the project funded at Federal level.
- The more appropriate question would compare the real cost of *not* being prepared for a significant storm event to the cost borne by the City to build protection.
- Lessons learned from Katrina – billions in damages and 140,000 in permanent population displacement.



Other Updates

Other items that will be updated...

- plaNorfolk2050
- Vision2100
- Regional Hazard Mitigation Plan
- VDEM Evacuation Zones and Routes
- OMRR&R needs to operate and maintain a new system of levees, pumps and flood gates
- Economic Development Strategy focused on new flood industries.
- EJ Strategy based on layers of coastal, economic, financial and environmental resiliency
- Comprehensive Urban Water Plan - access to the water
- Nonstructural Pattern Book for home elevations, floodproofing and basement fills



Ongoing Efforts and Next Steps

- Complete the on-going design of Phase 1a
- Complete design of remaining phases to include Non-structural
- Identify Funding Allocation Plan over the 10-year schedule
- USACE and City finalizing Joint-Communications Plan
 - Website: www.ResilientNorfolk.com
 - Continue Public Meetings
 - Non-Structural Power BI Dashboard
- City Council vote on Project Partnership Agreement – March 28



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Thank you

