FY 2023-2028 CIP City Council Briefing

City of Virginia Beach
Public Works

FLOOD PROTECTION

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April 12, 2022

Flood Protection Program Overview

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   - Funding Summary
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II. Master Projects

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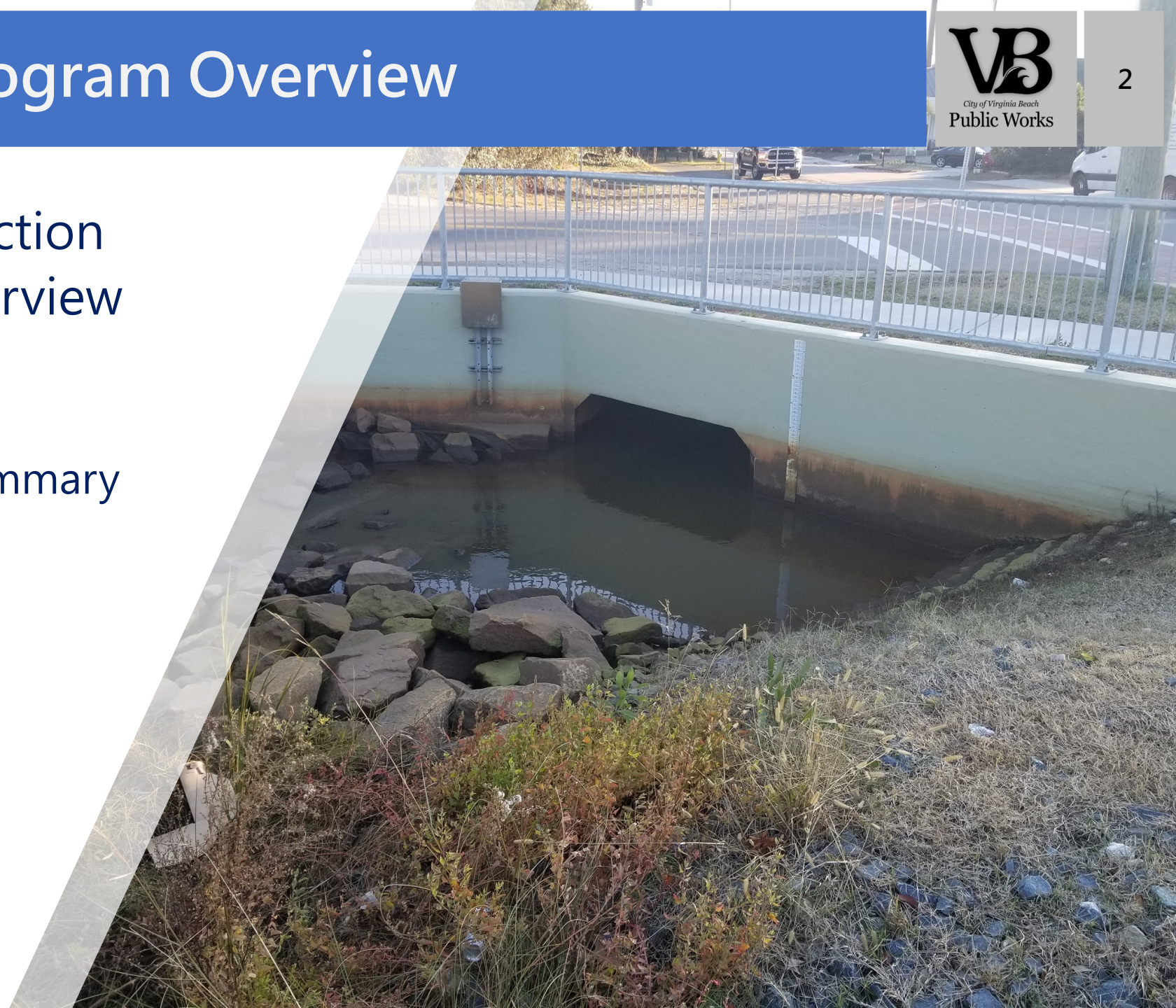
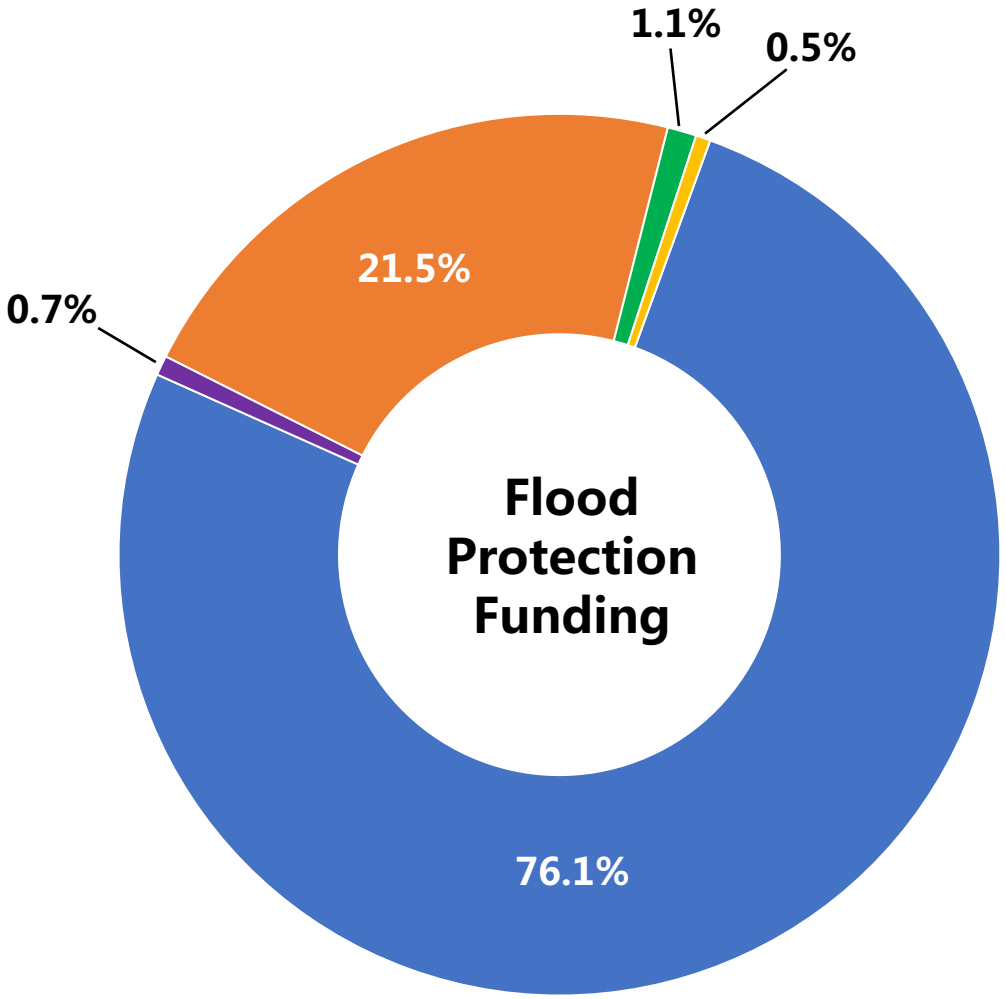


Proposed FY2023-2028 Flood Protection CIP

I. Overview

Funding Summary



- Flood Protection Bond Referendum - $576.5 M (76.1%)
- Flood Protection Pay-As-You-Go - $5.5M (0.7%)
- ATD Local Funding - $163 M (21.5%)
- Federal Funding - $8.1 M (1.1%)
- State Funding - $4.1 M (0.5%)

Total Flood Protection Funding: $757.1 M

41 Total Projects

Flood Protection CIP Summary

City of Virginia Beach Public Works

- **New CIP Section, previously included in the Stormwater CIP**
  - ❖ 41 Total Projects and Programs
    - → 7 umbrella "Master Projects" containing 30 of the 41 total projects (all appropriated to date):

	Master Project Name	# of Projects	Appropriations to Date
1	Central Resort Master Project	3	$ 99,400,000
2	Eastern Shore Drive Phase I Master Project	8	$ 34,039,490
3	Green Infrastructure Master Project	1	$ 40,000,000
4	Lake Bradford/Chubb Lake Master Project	3	$ 119,520,500
5	Linkhorn Bay Drainage Basin Master Project	2	$ 6,650,000
6	Princess Anne Plaza, The Lakes, & Windsor Woods Master Project	10	$ 266,949,000
7	Southern Rivers Master Project	3	$ 88,490,000
	Total	**30**	**$ 655,048,990**

    - → Also includes 11 separate stand-alone projects and programs: $102,053,886 Total Funding

Proposed FY2023-2028 Flood Protection CIP

II. Master Projects

Central Resort Master Project

Total Cost: $99.4 M

City of Virginia Beach Public Works

- All funding is appropriated to date
- Includes 3 Projects:

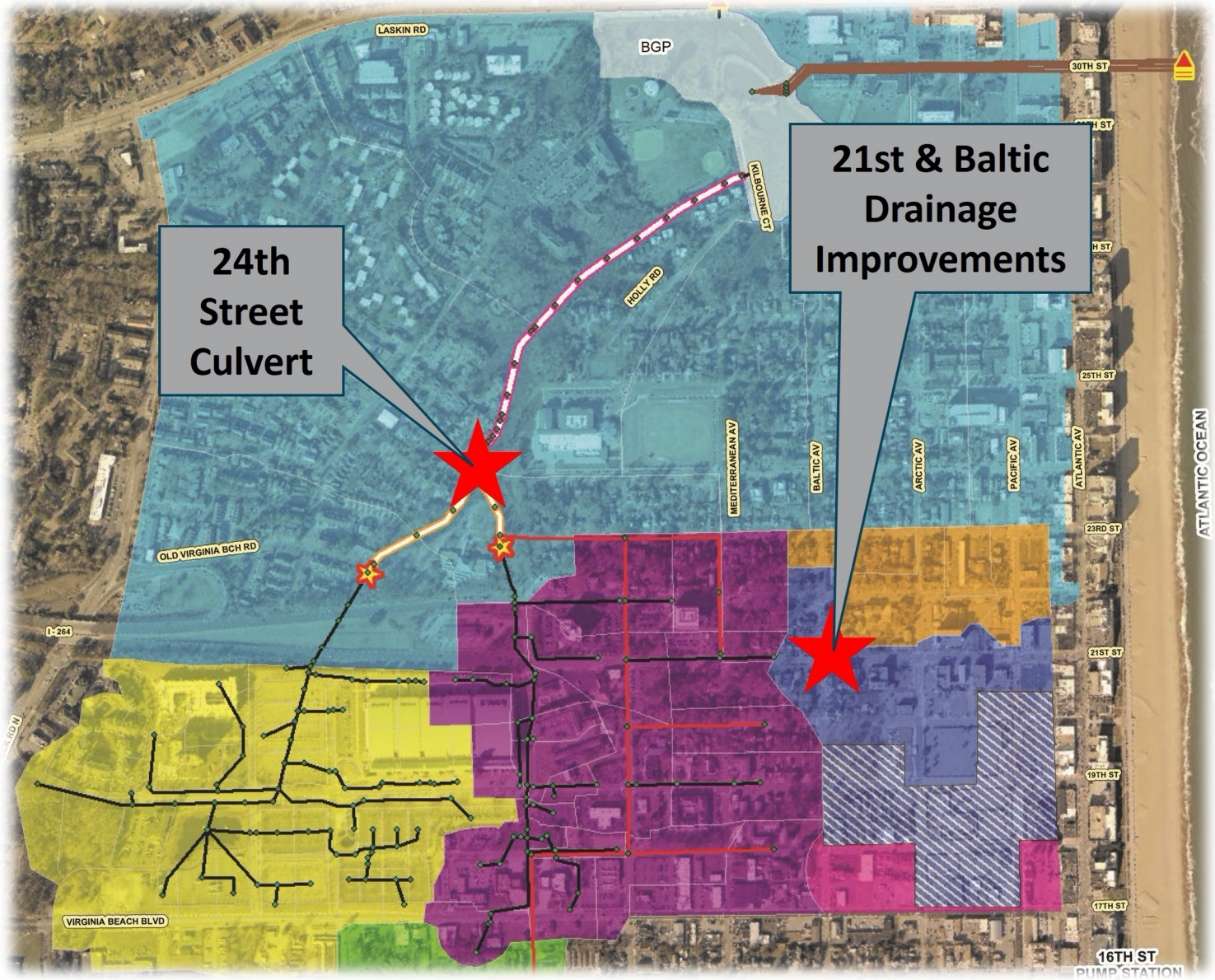
	Project	Council District(s)	Project #	Appropriations to Date
1	Central Resort District Drainage Improvements	5 & 6	100062	$ 92,800,000
2	21st & Baltic Drainage Improvements	6	100275	$ 1,400,000
3	24th Street Culvert	6	100061	$ 5,200,000
			Total	**$ 99,400,000**

Central Resort Master Project

Total Cost: $99.4 M

City of Virginia Beach Public Works

- **Central Resort District Drainage Improvements**
  - New stormwater pipes
  - Tide gates
  - Pump station
  - Ocean outfall
- **24th Street Culvert**
  - Replace small pipe with a box culvert
- **21st & Baltic Drainage Improvements**
  - Redirect Stormwater North with a small pump station



Eastern Shore Drive Phase I Master Project

Total Cost: $34 M

City of Virginia Beach Public Works

- All funding is appropriated to date
- Includes 8 Projects:

	Project	Council District(s)	Project #	Appropriations to Date
1	Lynnhaven Drive Pump Station	8	100150	$ 9,500,000
2	Cape Henry Canal Phase II	8	100153	$ 8,539,490
3	Lynnhaven Colony Park Pump Station	8	100167	$ 1,700,000
4	Elevate Lynnhaven Drive	8	100538	$ 3,600,000
5	Cape Henry Drive Street Drainage Improvements, 1G	8	100598	$ 940,000
6	North Shore Drive Street Drainage Improvements, 1F	8	100597	$ 1,560,000
7	Poinciana Pump Station	8	100599	$ 8,200,000
8	Vista Circle Pump Station	8	100539	$ -
			Total	**$ 34,039,490**

Eastern Shore Drive Phase I Master Project

Total Cost: $34 M

City of Virginia Beach Public Works

- Vista Circle Pump Station, 1A
- Cape Henry Canal Phase II, 1C.2
- Elevate Lynnhaven Drive, 1E
- Cape Henry Drive Street Drainage Improvements, 1G
- Lynnhaven Colony Park Pump Station, 1B
- Lynnhaven Drive Pump Station, 1D
- North Shore Drive Street Drainage Improvements, 1F
- Poinciana Pump Station, PPS

Green Infrastructure Master Project

Total Cost: $40 M

City of Virginia Beach Public Works

- All funding is appropriated to date
- Includes 1 Program and 2 Sub-Projects:

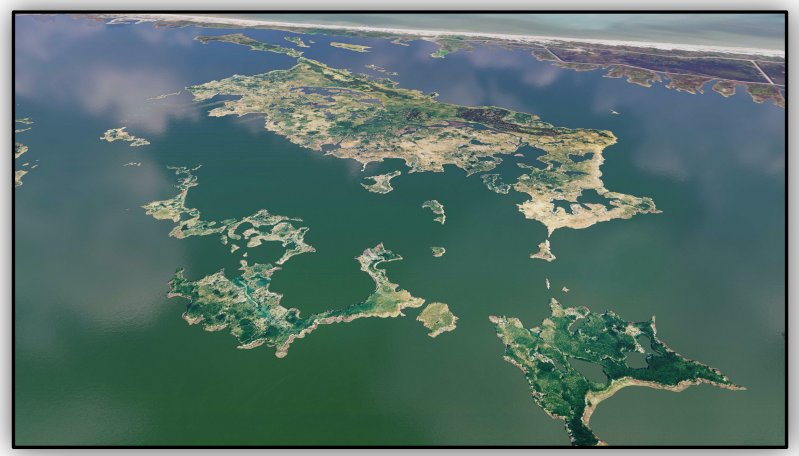
	Project	Council District(s)	Project #	Appropriations to Date
1	Stormwater Green Infrastructure	Citywide	100551	$ 11,524,220
	Marsh Restoration in Back Bay	2	100551.001	$ 20,000,000
	Elizabeth River Wetland and Floodplain Restoration	1	100551.002	$ 8,475,780
			Total	**$ 40,000,000**

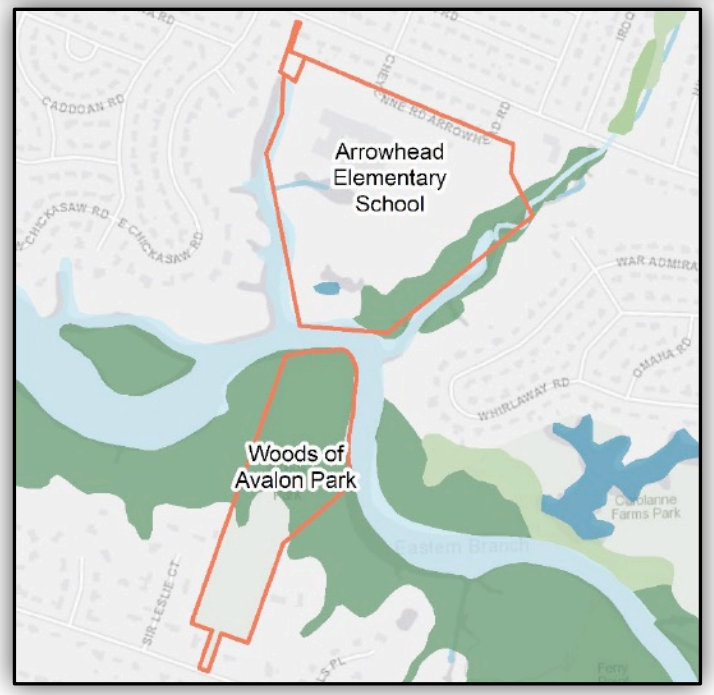
Green Infrastructure Master Project

Total Cost: $40 M

City of Virginia Beach Public Works

- **Marsh Restoration in Back Bay National Wildlife Refuge**
  - Construct marsh terraces within Bonney Cove
- **Elizabeth River Wetland and Floodplain Restoration**
  - Wetland restoration along the shorelines of Woods of Avalon Park and Ferry Point Park
  - Living shorelines along the water's edge of the Arrowhead Elementary School and Carolanne Farm Neighborhood Park





Lake Bradford/Chubb Lake Master Project

Total Cost: $119.5 M

City of Virginia Beach Public Works

- All funding is appropriated to date
- Includes 3 Projects:

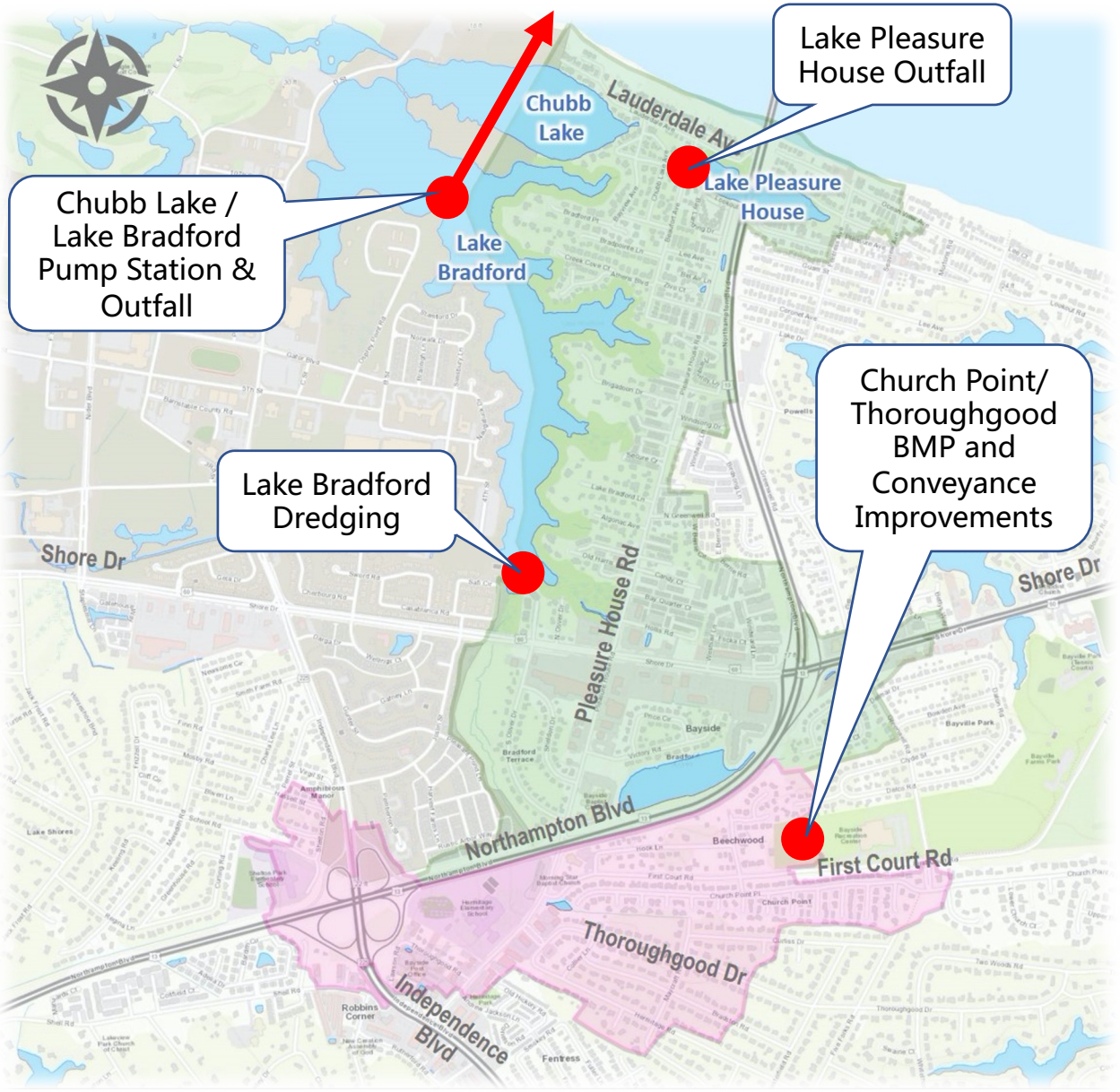
	Project	Council District(s)	Project #	Appropriations to Date
1	Lake Bradford / Chubb Lake	9	100229	$ 5,420,500
2	Chubb Lake / Lake Bradford Pump Station & Outfall	9	100595	$ 78,200,000
3	Church Point / Thoroughgood BMP and Conveyance Improvements	9	100596	$ 35,900,000
			Total	**$ 119,520,500**

Lake Bradford/Chubb Lake Master Project

Total Cost: $119.5 M

City of Virginia Beach Public Works

- **Lake Bradford / Chubb Lake**
  - **Lake Pleasure House Outfall**
    - New storm drainpipes from Lake Pleasure House to the existing stormwater pump station
  - **Lake Bradford Dredging**
    - Dredge ditches to restore to their original drainage capacity
- **Chubb Lake / Lake Bradford Pump Station & Outfall**
  - Stormwater pump station
  - Force main outfall to the Chesapeake Bay
- **Church Point / Thoroughgood BMP and Conveyance Improvements**
  - Additional stormwater storage
  - Pleasure House Road crossing improvement
  - Additional storm drain inlets and pipes



Linkhorn Bay Drainage Basin Master Project

Total Cost: $6.7 M

City of Virginia Beach Public Works

- All funding is appropriated to date
- Includes 2 Projects:

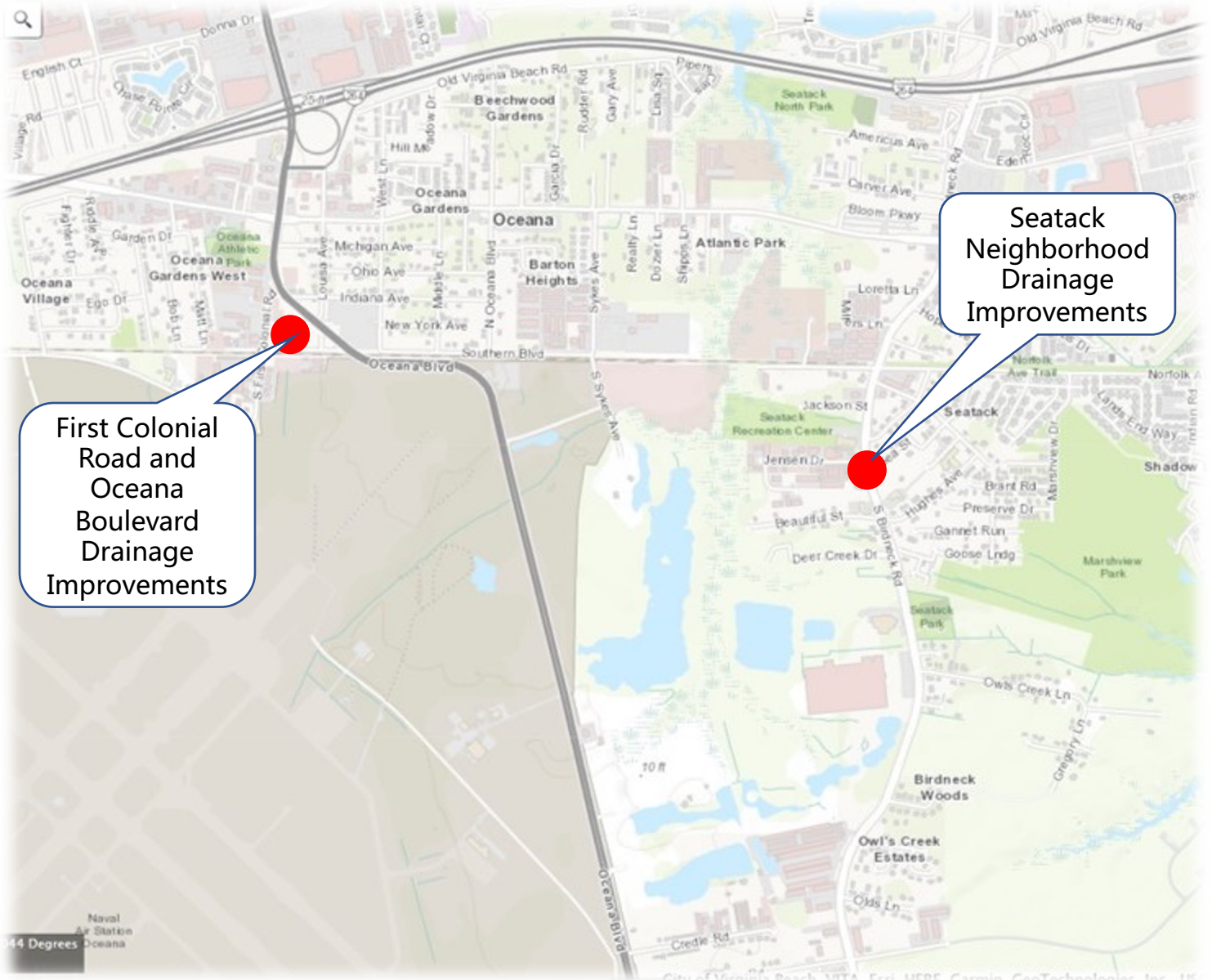
	Project	Council District(s)	Project #	Appropriations to Date
1	First Colonial Road and Oceana Boulevard Drainage Improvements	5 & 6	100601	$ 2,325,000
2	Seatack Neighborhood Drainage Improvements	6	100600	$ 4,325,000
			Total	**$ 6,650,000**

Linkhorn Bay Drainage Basin Master Project

Total Cost: $6.7 M

City of Virginia Beach Public Works

- **First Colonial Road and Oceana Boulevard Drainage Improvements**
  - Stormwater management facility on City-owned property
  - New storm drainpipes
- **Seatack Neighborhood Drainage Improvements**
  - South Birdneck Road, between Jackson Street and Sea Street
  - Replace small storm drainpipes with larger pipes



Princess Anne Plaza, The Lakes, & Windsor Woods Master Project

Total Cost: $267 M

City of Virginia Beach Public Works

- All funding is appropriated to date
- Includes 10 Projects:

	Project	Council District(s)	Project #	Appropriations to Date
1	Bow Creek Stormwater Park	3	100516	$ 83,600,000
2	Princess Anne Plaza North London Bridge Creek Tide Gate, Pump Station & Barriers	3	100517	$ 68,900,000
3	The Lakes-Flood Barriers	10	100604	$ 3,600,000
4	The Lakes-Holland Rd. Gate	10	100418	$ 8,507,000
5	The Lakes-South London Bridge Creek Channels and Gate	10	100521	$ 2,700,000
6	Windsor Woods Drainage	3	100486	$ 25,672,000
7	Windsor Woods Flood Barriers	3	100605	$ 14,000,000
8	Windsor Woods Pump Station	3	100487	$ 40,250,000
9	Windsor Woods Tide Gate	3	100488	$ 14,520,000
10	Windsor Woods - Thalia Creek/Lake Trashmore Imp.	3	100553	$ 5,200,000
			Total	**$ 266,949,000**

Princess Anne Plaza, The Lakes, & Windsor Woods Master Project

Total Cost: $267 M

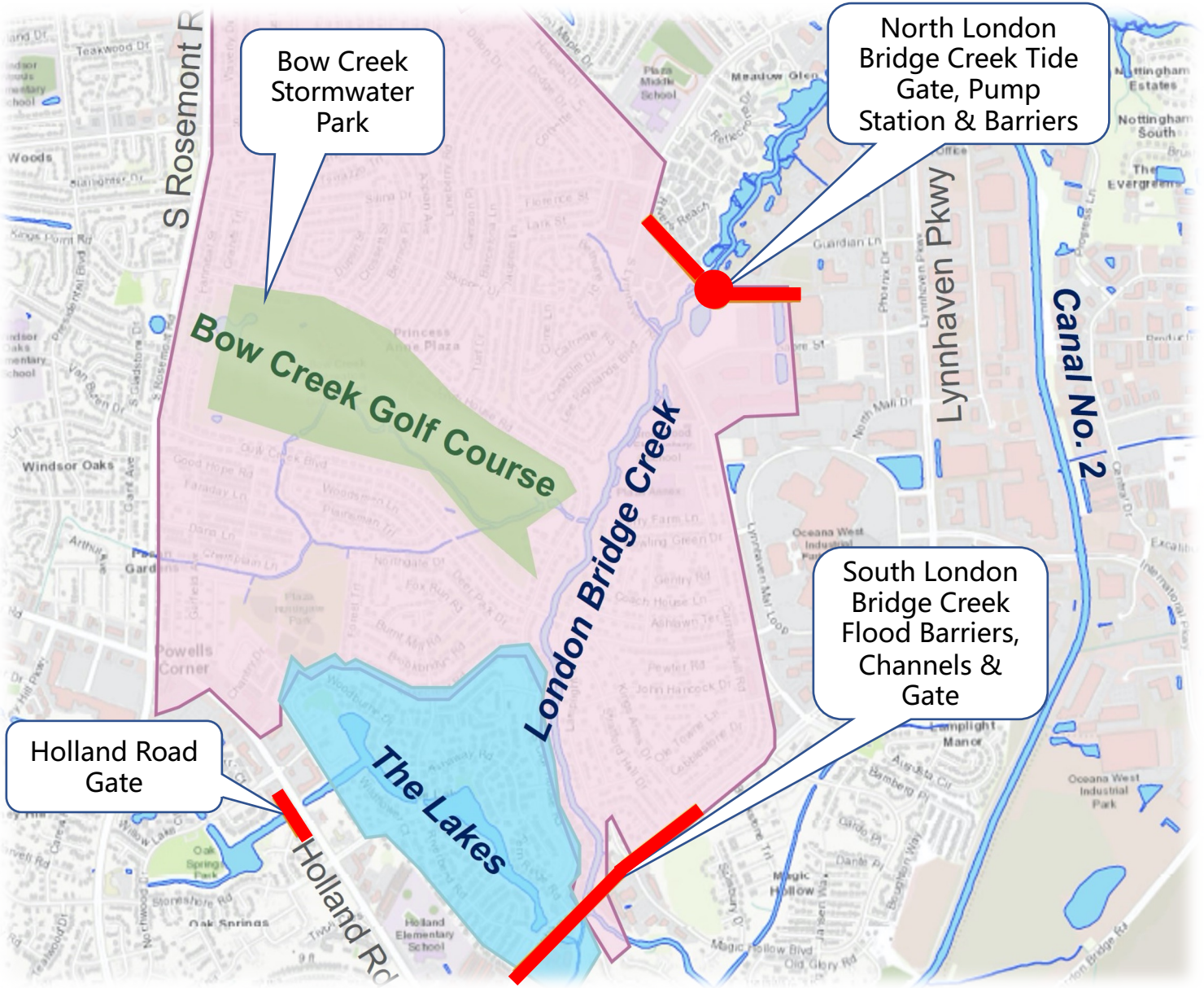
City of Virginia Beach Public Works

Princess Anne Plaza

- Bow Creek Stormwater Park
  - Combine stormwater storage with park facility
  - Will be constructed in 2 Phases
- North London Bridge Creek Tide Gate, Pump Station & Barriers
  - Large Pump Station with control building
  - Tide Gate across London Bridge Creek
  - Flood Barriers and Retaining Walls

The Lakes

- Holland Road Gate
  - Flood control gate on the west side of Holland Road at The Lakes canal crossing
  - Storm drainpipe improvements in the Chimney Hill subdivision
- Flood Barriers
  - East and West Sides of London Bridge Creek
  - Earthen Berms
- South London Bridge Creek Channels and Gate
  - Channels and a tide gate along the Lakes and Green Run canals and along London Bridge Creek south of Lynnhaven Parkway crossing



Princess Anne Plaza, The Lakes, & Windsor Woods Master Project

Total Cost: $267 M

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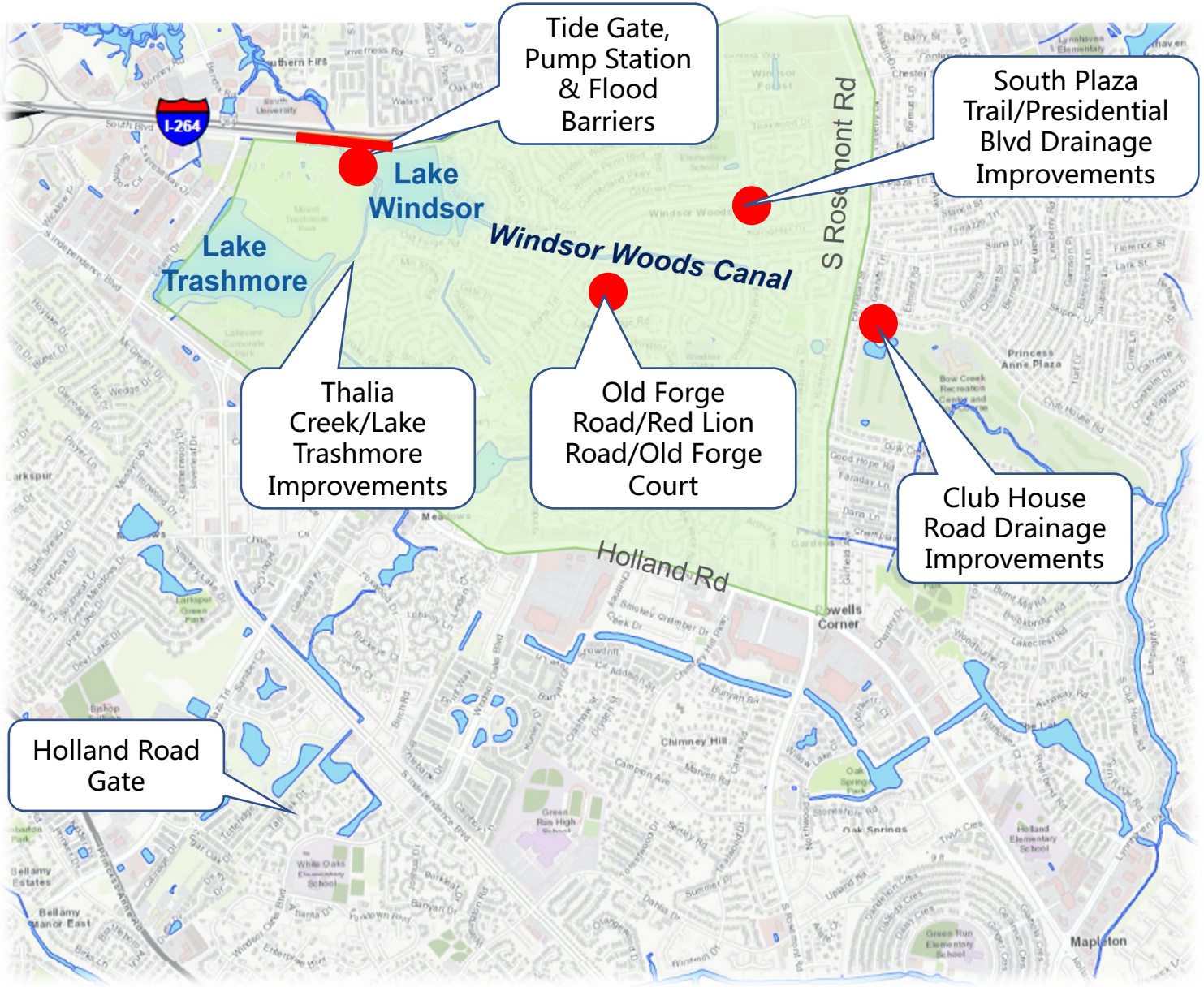
Windsor Woods

- Windsor Woods Drainage
  - Club House Road Drainage Improvements
  - South Plaza Trail/Presidential Blvd Drainage Improvements
  - Old Forge Road/Red Lion Road/Old Forge Court
- Tide Gate
  - Four Gates – Total Width 60 feet
  - Includes Interim Pumping Facilities
- Pump Station
  - Large Pump Station – 750 cfs
  - Six 54-inch Discharge Pipes
  - Control Building
- Flood Barriers
  - Earthen berms and concrete walls
- Thalia Creek/Lake Trashmore Improvements
  - Culverts between Lake Trashmore and Thalia Creek
  - Channel improvements along Thalia Creek between Lake Trashmore and Lake Windsor



Southern Rivers Master Project

Total Cost: $88.5 M

City of Virginia Beach Public Works

- All funding is appropriated to date
- Includes 3 Projects:

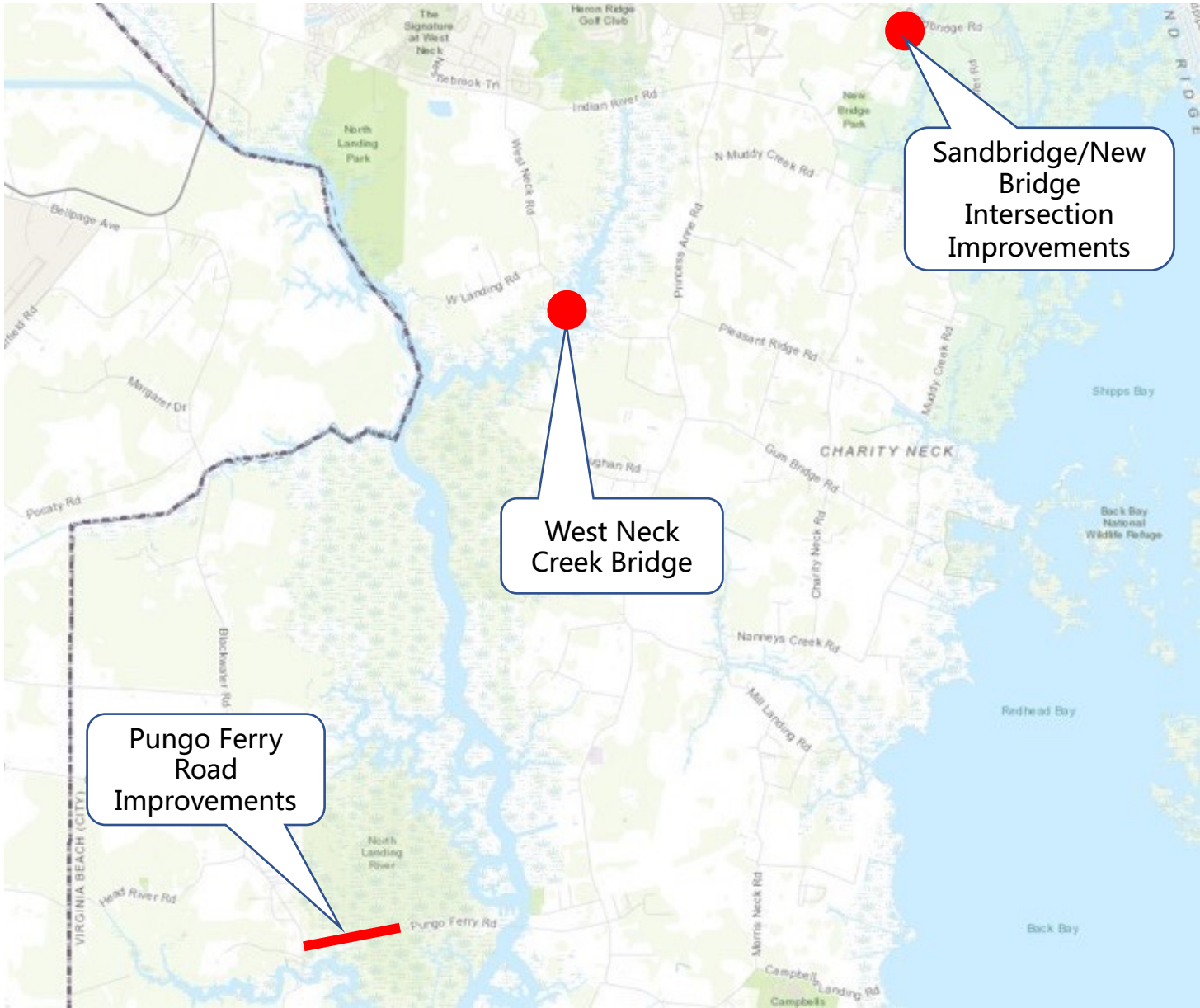
	Project	Council District(s)	Project #	Appropriations to Date
1	Pungo Ferry Road Improvements	2	100548	$ 11,500,000
2	Sandbridge/New Bridge Intersection Improvements	2	100603	$ 7,990,000
3	West Neck Creek Bridge	2	100602	$ 69,000,000
			Total	**$ 88,490,000**

Southern Rivers Master Project

Total Cost: $88.5 M

City of Virginia Beach Public Works

- **Pungo Ferry Road Improvements**
  - Raise Pungo Ferry Road between Blackwater Road to the west side of the Pungo Ferry Road Bridge
- **Sandbridge/New Bridge Intersection Improvements**
  - Raise intersection of Sandbridge Road and New Bridge Road
  - Add a Large Box Culvert under New Bridge Road for water to pass to Ashville Bridge Creek
- **West Neck Creek Bridge**
  - New bridge
  - Series of in-water miter gates spaced with the bridge piers
  - Earthen levees to tie into West Neck Road
  - West Neck Road raised at the new bridge
  - Gate house and pump station



Proposed FY2023-2028 Flood Protection CIP

III. Stand-Alone Projects

Stand-Alone Projects

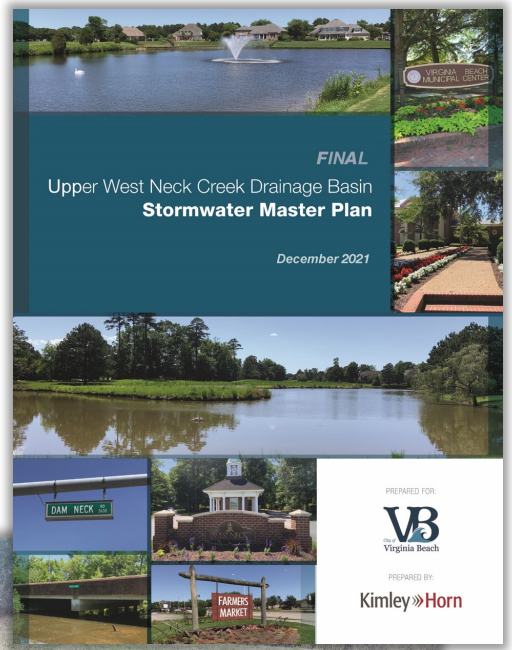
	Project	Project #	Council District(s)	Appropriations to Date	FY23	FY24 – FY28	Total	BTC
1	Ashville Park Drainage Improvements Phase I	100022	2	12,000,000	0	0	12,000,000	0
2	College Park and Level Green Drainage Improvements	100126	7	3,121,000	0	0	3,121,000	0
3	Neighborhood SW Infrastructure Improvements II	100273	Citywide	6,759,827	0	0	6,759,827	1,800,000
4	North Lake Holly Watershed	100280	5	25,351,135	0	0	25,351,135	0
5	Parcel Level Flood Mitigation Program	100504	Citywide	2,500,000	0	0	2,500,000	2,500,000
6	Sea Level Rise/Recurrent Flooding Analysis	100365	Citywide	5,239,571	0	0	5,239,571	0
7	South Lake Holly Watershed	100388	5	16,009,587	0	0	16,009,587	0
8	Stormwater Cost Participation	100582	Citywide	2,000,000	0	0	2,000,000	0
9	Stormwater Project Administration	100578	Citywide	2,505,000	495,000	5,000,000	8,000,000	0
10	SWM Master Planning, Analysis, and Inventory	100406	Citywide	19,572,766	0	0	19,572,766	860,000
11	USACE Regional Coastal Storm Risk Management Study	100512	Citywide	1,500,000	0	0	1,500,000	0

Proposed FY2023-2028 Flood Protection CIP

IV. Accomplishments

Flood Protection Accomplishments

- **50th Street Drainage Improvements**
  - Project #100273
  - Total Project Cost $437,890
  - Completed September 2021
- **Eastern Shore Drive Drainage, Cape Henry Canal Improvements Phase I**
  - Project #100154
  - Total Construction Cost $4,588,919
  - Completed October 2021
- **Upper West Neck Creek Drainage Basin Master Plan**
  - Project #100406
  - Total Project Cost $737,786
  - Completed December 2021
- **Aragona Drainage Improvements**
  - Project #100018
  - Total Project Cost $4,800,000
  - Completed January 2022



Proposed FY2023-2028 Flood Protection CIP

V. Challenges

Flood Protection Program Challenges

- Escalating Costs (Inflation)
- Supply Chain Disruption and Materials Sourcing Issues
- Previous Absence of State/Federal assistance
  - 3x3x3 Study Recently Approved: Allows for expanded pursuit of State and Federal funding assistance

Discussion

City of Virginia Beach
Public Works