



Welcome!

DRAFT PLAN /
ENVIRONMENTAL IMPACT
STATEMENT
PUBLIC OPEN HOUSE
MEETING AGENDA

6:30pm - 7:00pm

Open House

7:00pm - 7:30pm

Presentation

7:30pm - 8:30pm

Open House

8:30pm

Meeting Concludes

Dyke Marsh Wetland Restoration and Long-Term Management Plan

Environmental Impact Statement

Dyke Marsh Wildlife Preserve, George Washington Memorial Parkway

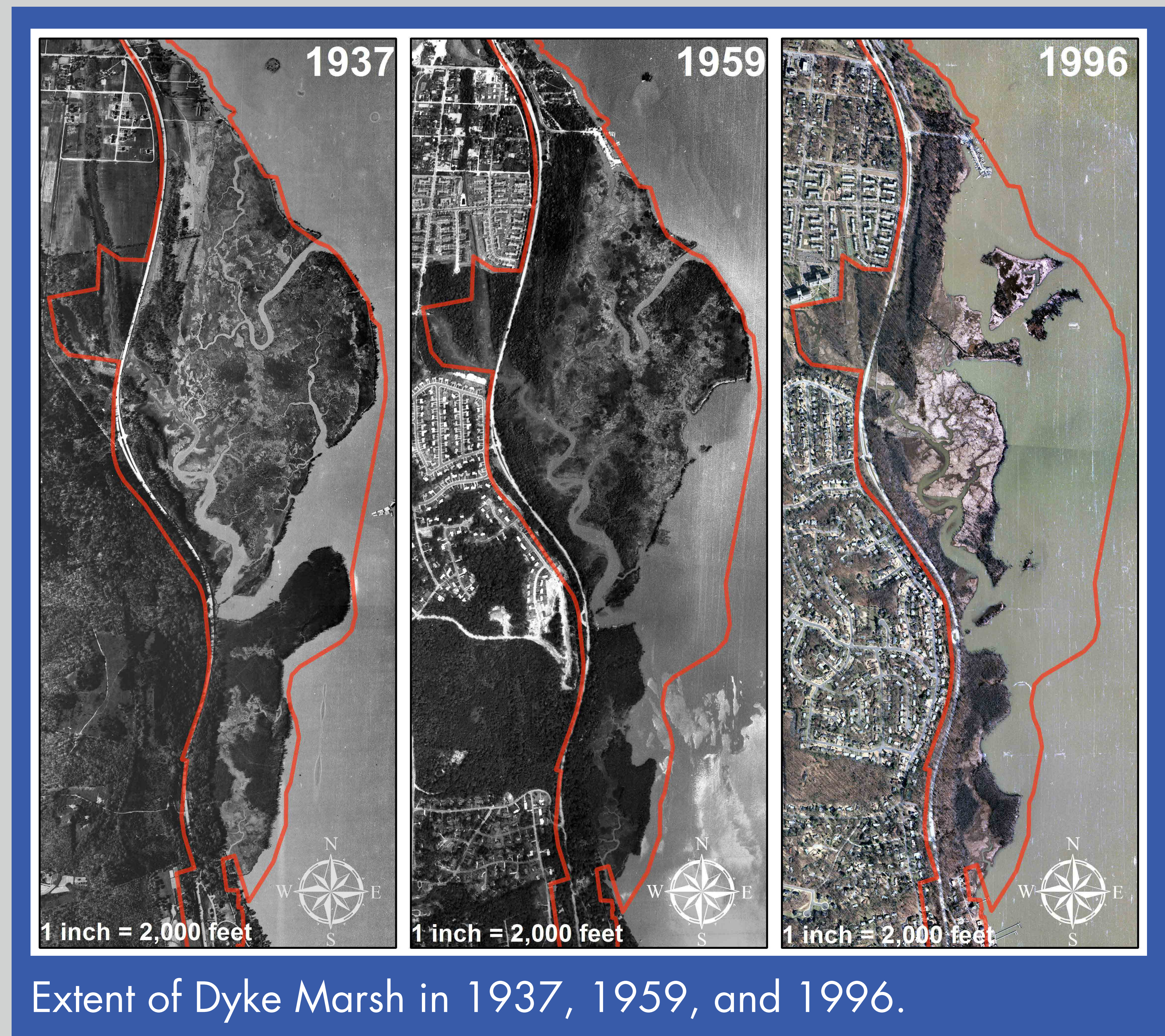


PURPOSE OF AND NEED FOR THE PLAN

The purpose of this plan is to develop and implement actions for restoration and long-term management of the tidal freshwater marsh and other associated wetland habitats that have been lost or impacted in Dyke Marsh on the Potomac River in Virginia.

Dyke Marsh wetland resources, plant and animal communities, and natural ecosystem functions have been damaged by previous human uses and are subject to continuing threats, such as alterations to the hydrology in the Potomac River and in nearby tributaries, and other effects from urbanization in the surrounding region. In addition, the NPS is required to restore Dyke Marsh, under P.L. 93-251, and WRDA 2007 Sec. 5147. Therefore, a restoration and long-term management plan is needed at this time to:

- Protect the existing wetlands from erosion, nonnative plant species, loss of habitat, and altered hydrologic regimes;
- Restore wetlands and ecosystem functions and processes lost through sand and gravel mining and shoreline erosion;
- Avoid increased costs (delayed restoration will result in increased restoration costs); and
- Improve ecosystem services that benefit the Potomac River Watershed and the Chesapeake Bay.



Extent of Dyke Marsh in 1937, 1959, and 1996.



PLAN OBJECTIVES

NATURAL RESOURCES

- Restore, protect, and maintain tidal freshwater wetlands and associated ecosystems to provide habitat for fish, wildlife, and other biota.
- Ensure management actions promote native species while minimizing the intrusion of invasive plants.
- Reduce erosion of the existing marsh and provide for erosion control measures in areas of restored marsh.
- To the extent practicable, restore and maintain hydrologic processes needed to sustain Dyke Marsh.
- Protect populations of state rare species such as swamp sparrow and river bulrush.
- Increase the resilience of Dyke Marsh and provide a natural buffer to storms and flood control in populated residential areas.

CULTURAL RESOURCES

- Protect the historic resources and cultural landscape features associated with Dyke Marsh and the George Washington Memorial Parkway.

VISITOR EXPERIENCE

- Enhance appropriate educational, interpretation, and research opportunities at Dyke Marsh and enhance accessibility for diverse audiences.

PROJECT BACKGROUND AND RESEARCH

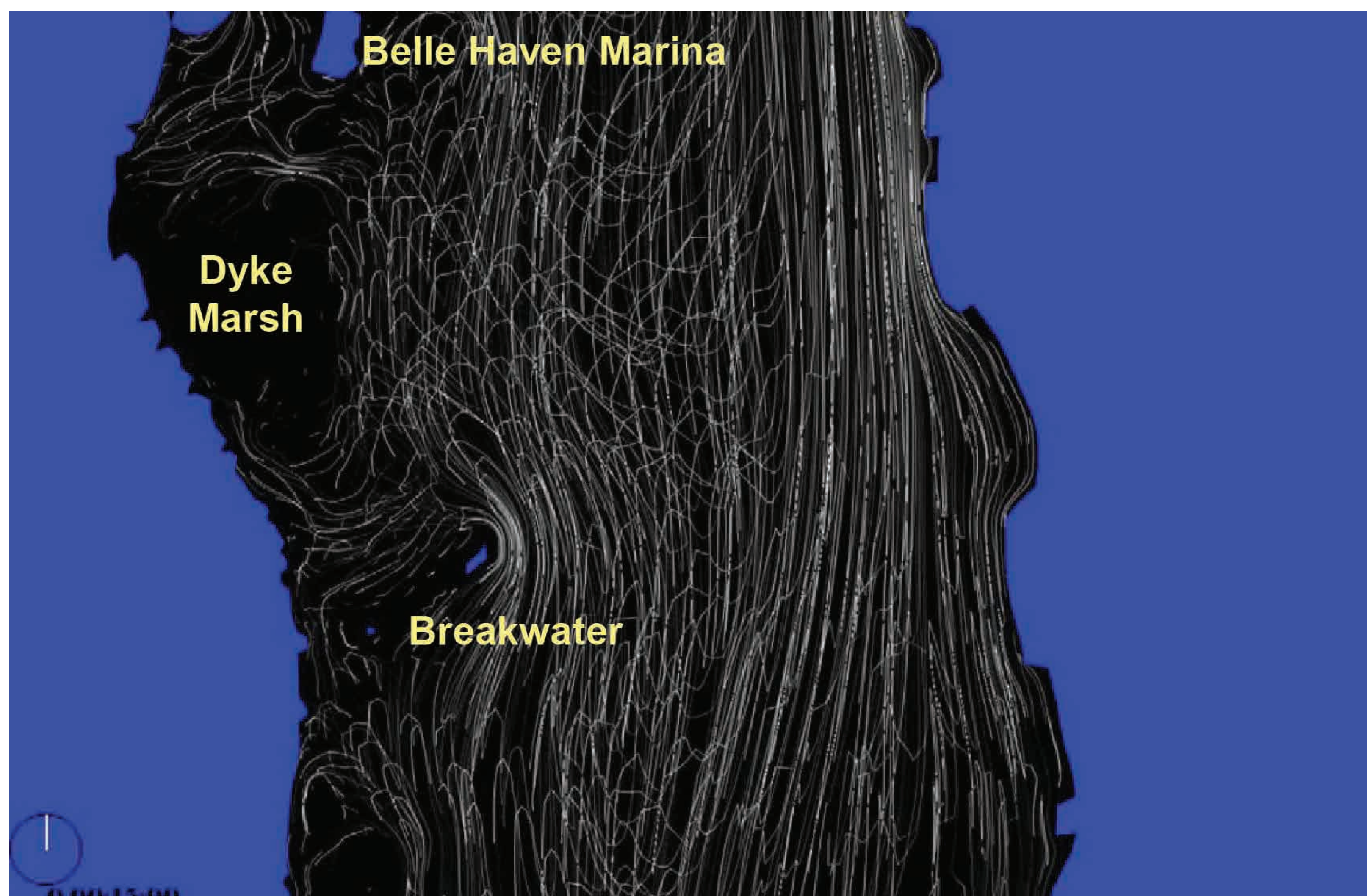
Dyke Marsh represents the last major remnant of once extensive freshwater tidal marshes along the Potomac River. A USGS Open File report published in 2011 by Litwin et al. confirmed that the marsh is eroding and is not naturally sustainable. The researchers found that the post-mining remnants are shrinking rapidly, and Hog Island Gut, the principal tidal creek in the marsh, is not stable without the protective promontory that was removed in the 1950s.

A recent article by Litwin et al. (published in *Wetlands* October 2013) reports that the primary post-mining degradation process affecting the marsh is wave-induced erosion from northbound cyclonic storms. The report states that mining removed several key geomorphic features at the marsh such as the shallow river bottom and the promontory. This significantly reset the initial natural boundary conditions for this wetland and compromised its ability to dissipate tidal energy and to accumulate sediment.

The NPS supported additional USACE studies to address data needed to complete the restoration plan. This included studies of the following:

- Bathymetry (water depth)
- Sediment transport
- One and two-dimensional hydrodynamic modeling of existing flow conditions
- Modeling to predict the effectiveness of alternatives to redirect flow and encourage sediment deposition in the marsh.

One scenario evaluated by hydrodynamic modeling was the impact of a promontory (breakwater) structure at the mouth of Hog Island gut. The results of the modeling show that this likely would result in sediment accumulation and the creation of a low-energy system along the lower part of Hog Island (see figure).



Aerial schematic to show the impact of the promontory on the Potomac River and sediment transport.



DEVELOPMENT OF ALTERNATIVES

The NPS identified four preliminary alternative concepts that were presented to the public in May 2012. Comments from this meeting were considered and alternatives were reevaluated in a “Choosing by Advantages” workshop held in September 2013. At that time, one alternative that had been considered was dismissed because it was redundant with elements of another alternative. Also, elements of two alternatives were combined to create a new alternative that had more advantages than was previously presented, **resulting in two action alternatives carried forward for detailed analysis (alternatives B and C in the DEIS).**

Several key issues were considered in developing alternatives for the restoration of the marsh:

- One main issue addressed by both action alternatives is the loss of the protective promontory at the southern end of the marsh due to dredging and the resulting effects on the integrity of Hog Island Gut. Hog Island Gut is the principal remaining wetland gut in the marsh and is experiencing erosion that affects the overall integrity of the gut. Marsh guts are important to the overall structure of a marsh because they act as lungs and filters in large wetland systems.
- A second issue is the area behind (west of) the Haul Road, which is no longer hydrologically connected to the rest of Dyke Marsh and has become overgrown with many invasive nonnative plants. Increased tidal exchange in this area would allow for restoration of bottomland swamp forest.
- A final issue addressed by the action alternatives is the presence of several deep channels along the eastern edge of the marsh that may have been a result of the past dredging operations. These channels affect flow through the marsh and exacerbate erosion rates.

Dyke Marsh Wetland Restoration and Long-Term Management Plan

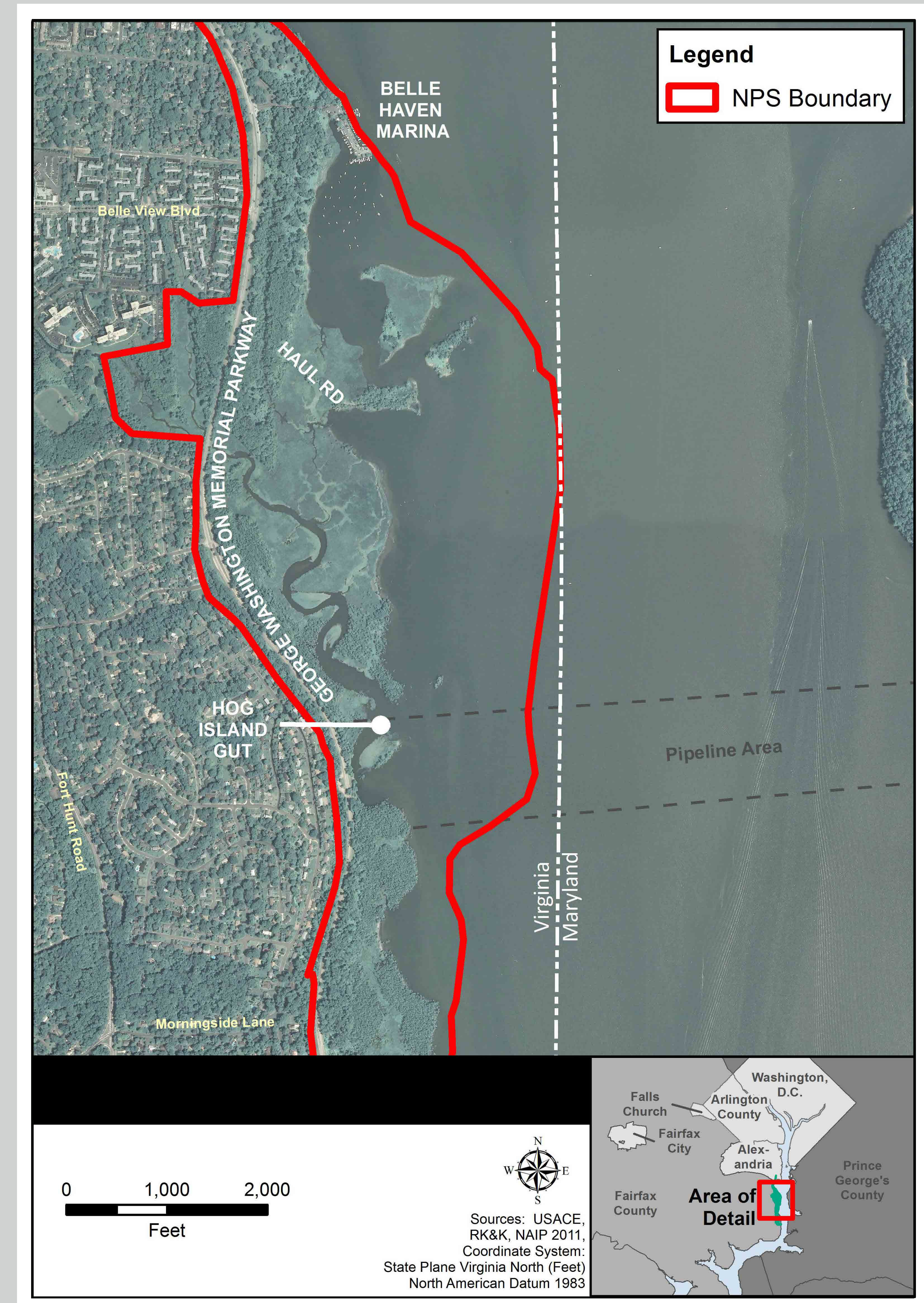
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ALTERNATIVE A - NO ACTION

Under the **No Action alternative**, no restoration would occur. Management of the marsh would continue as it is currently, including providing basic maintenance related to the Haul Road, controlling non-native invasive plant species, and enforcing existing regulations. No manipulation of the marsh would be done other than emergency, safety-related, or limited improvements or maintenance actions. Only natural processes would guide the evolution of the marsh, and it is expected that the destabilized marsh would continue to erode at an accelerated rate. This alternative serves as the baseline for comparison of impacts.



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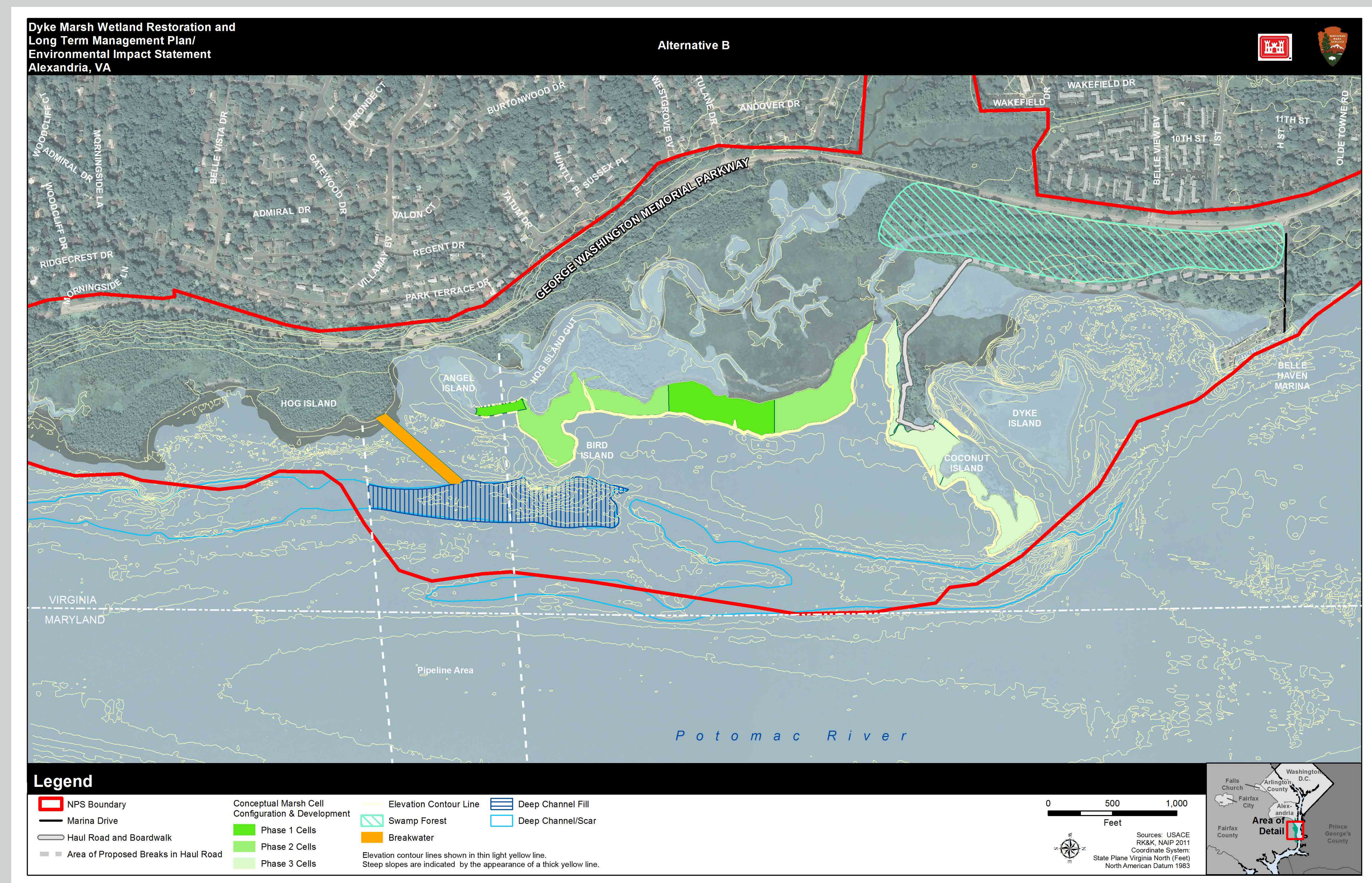


ALTERNATIVE B: HYDROLOGIC RESTORATION AND MINIMAL WETLAND RESTORATION

Alternative B would achieve a minimal level of marsh restoration and focus on the most essential actions to reestablish hydrologic conditions that would shield the marsh from erosive currents and protect the Hog Island Gut channel and channel wall. This alternative would create approximately 70 acres of various new wetland habitats.

A breakwater structure would be constructed on the south end of the marsh, in alignment with the northernmost extent of the historic promontory. Wetlands would be restored to wherever the water is less than 4 feet deep. Because the breakwater structure would be constructed in alignment with the northern extent of the historic promontory, no marsh would be created within the historic extent of the promontory. This alternative also includes fill of some deep channels near the breakwater.

Several breaks would be created along the Haul Road to reestablish hydrologic connections and tidal flows to the former swamp forest west of the Haul Road that were disconnected when the road was constructed.



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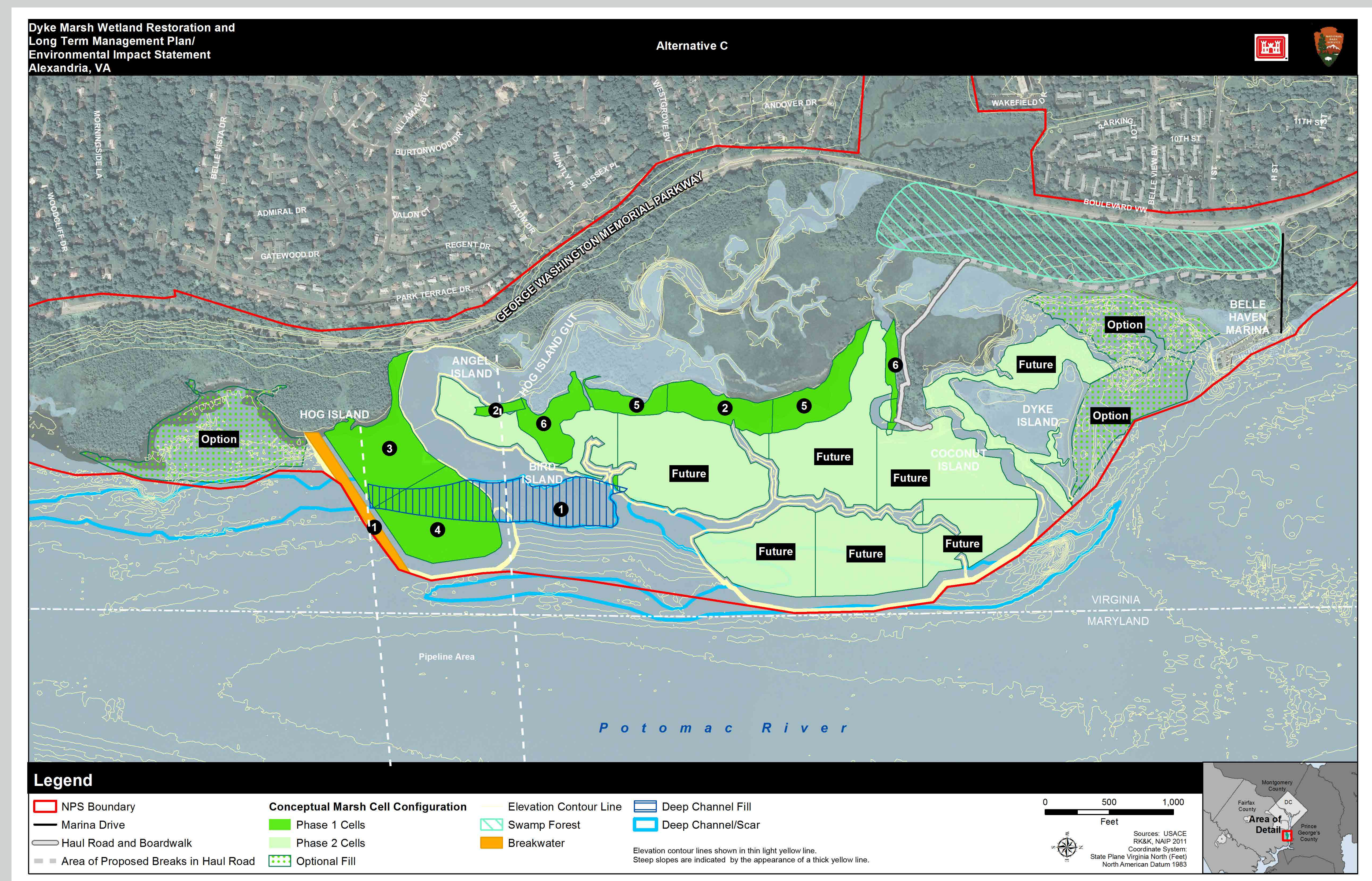
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ALTERNATIVE C: HYDROLOGIC RESTORATION AND FULLEST POSSIBLE EXTENT OF WETLAND RESTORATION (NPS PREFERRED ALTERNATIVE)

Alternative C would restore up to 245 acres of various wetland habitats in a phased approach. The initial phase would stabilize the marsh by installing a breakwater on the southern edge of the historic promontory and restore marsh in the outline of the historic promontory and along the edge of existing marsh to wherever the water is less than 4 feet deep (approximately 40 acres). Future phases would continue marsh restoration within the historic boundaries of the marsh. The alternative includes two optional restoration areas: (1) a 20-acre restoration cell in the area currently serving as mooring for the marina, which would only be implemented should the marina concession no longer be economically viable, and (2) an area south of the historic promontory.

This alternative also includes filling deep channels as described in alternative B, and placement of breaks along the Haul Road to reestablish hydrologic connections and tidal flows to former swamp forest west of the Haul Road that were disconnected when the road was constructed.





PHASING APPROACH & POSSIBLE CONTAINMENT LAYOUTS

The project is dependent upon availability of clean fill and will be phased out of necessity in a way similar to the Poplar Island restoration project in the Chesapeake Bay. Necessary hard structures, such as the promontory structure, protective dike structures, and outer containment structures would be constructed first. It is likely the outsides of individual cells would be constructed early in the project, so clean fill could be placed as it becomes available. Cells would be filled in order of priority. Example cell configurations are shown in each of the alternative figures, and represent examples of how the containment cells could be laid out and constructed over time.



Containment cells at Poplar Island, Maryland, which was restored with dredged material from the Chesapeake Bay. Restoration at Dyke Marsh would use a similar approach.

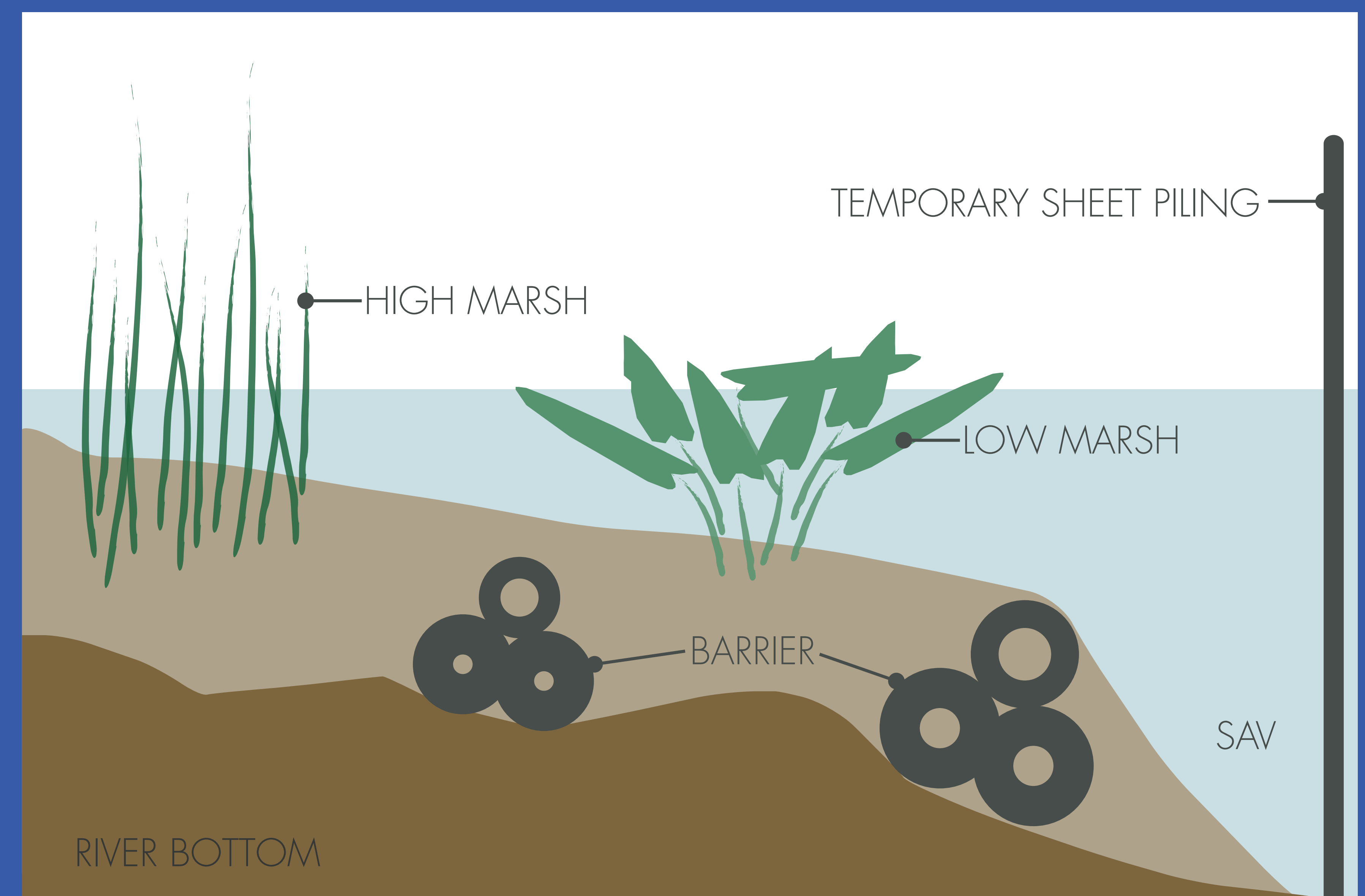
CONTAINMENT STRUCTURE OPTIONS

There are several available options for building containment cells. For example, staked-in hay bales or coir biologs would be used as cell walls for cells closer to shore, in shallower water, or for internal cell walls. Geotextile tubes are an option in select areas. Sheet piling would likely be used to protect the outer edge of containment cells in deeper water that are more exposed to flow and wave action. These would be configured to allow for intertidal exchange (see below). Table 2-3 of the DEIS addresses containment cell material options.

Whatever material is chosen, the outermost edge of the restored marsh would be designed to achieve a soft, natural edge without noticeable armor or sheet piling (see below).



Example of sheet piling configured to allow for intertidal exchange.



Conceptual drawing of outer containment cell to achieve a softer, natural edge

VEGETATION REESTABLISHMENT & GOOSE EXCLOSURES

Both of the action alternatives include some degree of marsh reestablishment. It is important to use vegetation that is appropriate to the elevation (water depth) within the containment cells. Several options can be used, depending on factors such as available seed sources, type of wetlands desired in a cell, available plant material, and cost constraints.



Example of goose exclosures (from Anacostia Park, Washington, D.C.)

Options include:

- allowing plants to establish naturally by seed or other propagules;
- seeding mudflats, or
- transplanting plugs of nursery plants.

Plant species used for the plantings would include narrowleaf cattail (*Typha angustifolia*), river bulrush (*Bolboschoenus fluviatilis*) if available, wild rice (*Zizania aquatica*), jewelweed (*Impatiens capensis*), arrow arum (*Peltandra virginica*), pickerel weed (*Pontederia cordata*), and yellow pond-lily (*Nuphar lutea*), among others.

In addition, goose exclosures would be used to prevent herbivory by geese. Exclosures consist of stakes and wire fencing placed around the edges of the restored marsh, with strings stretched between the stakes and flagged so they are visible by birds and other wildlife (see figure). The strings would be placed at intervals that prevent geese from landing between them.

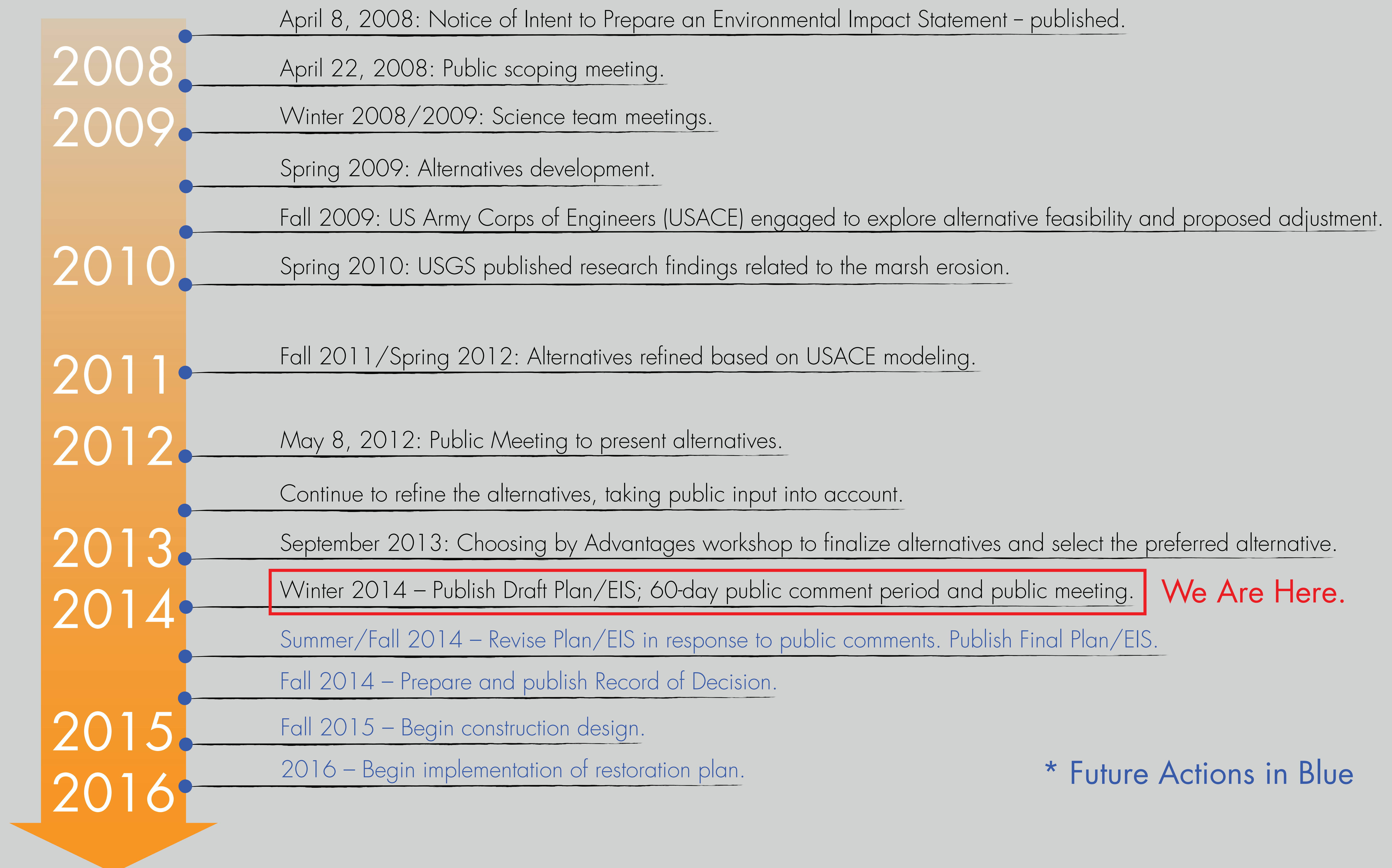
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NEPA PROCESS (TIMELINE)





Please let us know what you think!

HOW TO COMMENT

NPS is seeking your comments on the alternatives, the analysis presented, or other aspects of the Draft Plan/EIS. There are several ways to provide input:

- Fill out a comment card at this meeting
- Submit comments electronically at <http://parkplanning.nps.gov/dykemarshdeis>
- Send your comments to:

Superintendent

Attn: Dyke Marsh Wetland Restoration Plan/EIS

George Washington Memorial Parkway

700 George Washington Memorial Parkway

Turkey Run Park Headquarters

McLean, Virginia 22101

The public review and comment period will close on March 18, 2014.

Please include your full name and e-mail/address with your comments so we may be sure you are on our mailing list for future notices about this process. Before including your address, phone number, e-mail address, or other personal identifying information in your comment, however, you should be aware that your entire comment—including your personal identifying information—may be made publicly available at any time. While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.