

## **Comments of the Friends of Dyke Marsh on the U.S. Army Corps of Engineers' Proposed Belle View Floodwall and Levee, Draft Integrated Feasibility Report and Environmental Assessment (May 2022)**

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On behalf of the Friends of Dyke Marsh, we submit these comments to object to the study of the proposed floodwall, levee and pump stations in the Belle Haven-New Alexandria-River Towers area, the U.S. Army Corps of Engineers' (ACE) "tentatively selected plan" posted at [https://www.nab.usace.army.mil/DC\\_Coastal\\_Study/](https://www.nab.usace.army.mil/DC_Coastal_Study/). The study does not fully consider all alternative coastal flooding management approaches or explain the ACE's rationale and the reasons for eliminating certain approaches. Without this information, the study is flawed and the public is unable to evaluate their comparative merits.

Among other deficiencies, this study –

- ignores the total river ecosystem of the middle Potomac River;
- fails to allow for an "impairment assessment" by the National Park Service;
- minimizes the historic designation and character of the George Washington Memorial Parkway;
- ignores further restoration of Dyke Marsh;
- understates wetlands flood control potential;
- fails to adequately address environmental impacts; and
- inadequately evaluates possible threatened and endangered species.

### **The ACE Proposed Floodwall, Levee and Pump Stations in the Belle Haven Area**

The draft study proposes a Belle Haven floodwall in Appendix G described as a "levee/floodwall system" of "6,725 total linear feet consisting of 1,900 linear feet of I-Wall, 3,715 linear feet of T-Wall, 400 linear feet of earthen levee, and include five aluminum stop-log closures and two culvert crossings. Pump stations will be located in uplands at the location of the two culvert crossings."

The project's location is described as follows on page 168: "At Belle Haven, a floodwall would be constructed just north of Belle Haven Road from Barrister Place to 10<sup>th</sup> Street with a closure structure at 10<sup>th</sup> Street and the GWMP. Closure structures would also be constructed along Belle Haven Road and Belle View Blvd. A floodwall would tie into the closure structure at 10<sup>th</sup> Street and run south along the west side of the GWMP, curving around Boulevard View to 10<sup>th</sup> Street. The floodwall would then run west to East Wakefield Drive tying into both sides of a closure structure on Potomac Avenue. The floodwall would continue west to West Wakefield Drive and tie into a small portion of earthen levee ending at Westgrove Dog Park."

Page 140 indicates that it "may permanently obstruct the view of the natural areas located south of Belle Haven and the GWMP [for] the residents of the Belle Haven community."

### **Study Ignores the Total River Ecosystem**

The draft report does not include the District of Columbia and Maryland shorelines, potential flooding there or approaches to address it. Those shorelines are as much a part of the middle Potomac River watershed ecosystem as the Virginia shoreline. Prince George's County is directly across from Belle Haven/Belle View/Dyke Marsh. Page i of the draft report states that Washington, D.C., and Prince George's County "declined to participate" since they "determined that their needs did not align with the proposed study."

It is critical to understand what "their needs" are and how those needs differ from Virginia's since the same river flows next to all three jurisdictions and affects all three jurisdictions. Storms, floods and other river events affect both sides of the river. Additionally, it is critical to understand those jurisdictions' adopted or considered coastal flooding management approaches, in evaluating management approaches for the Virginia side of the river.

When a river rises, the entire river rises, not just half the river. The entire river has tides, not half the river. Building structures on only one side of a tidal river ignores the entire river and its potential behavior. This is a piecemeal approach that ignores the full coastal flooding potential and opportunities for various approaches, including nonstructural, coastal flooding management approaches on the Washington, D.C., and Maryland shorelines. Ignoring the entire river also fails to identify opportunities for wetland restoration, creation and migration as alternatives.

The May 23, 2001, Senate resolution cited on page 1 as the study authority specifically includes "conducting a study, in cooperation with the States of Maryland and West Virginia, the Commonwealths of Pennsylvania and Virginia, and the District of Columbia, their political subdivisions and agencies and instrumentalities thereof . . ."

**Recommendation:** Include all jurisdictions in the middle Potomac River watershed in the analysis and recommendations and the coastal flooding management measures that all affected jurisdictions have considered or implemented.

### **The Study Lacks an Assessment of Impairment of National Park Resources and Values Required by Law**

The 1916 Organic Act that created the National Park Service, enacted at 39 Statutes at Large 535, ch. 408, §1 (Aug. 25, 1916) and now codified at 54 U.S.C. § 100101(a), declares that the National Park System's purpose is to conserve Federal parklands scenery, natural and historic objects, and wildlife and provide for its enjoyment in such manner and by such means "as will leave them unimpaired for the enjoyment of future generations."

Assuming a coastal flooding alternative would impact the George Washington Memorial Parkway, the National Park Service must first have the opportunity to make its own assessment and determine whether the recommended approach would constitute an unacceptable "impairment" to park resources and values

Consistent with Congress's no-impairment mandate, the National Park Service's Management Policies (2006) explain that "[t]he impairment of park resources and values may not be allowed by the Service unless directly and specifically provided for by legislation or by the proclamation establishing the park"; and "[b]efore approving a proposed action that could lead to an impairment of park resources and values, an NPS decision-maker must consider the impacts of the proposed action and determine, in writing, that the activity will not lead to an impairment of park resources and values." The phrase "park resources and values" subject to the no-impairment standard include "the park's scenery, natural and historic objects, and wildlife, and the processes

and conditions that sustain them, including, to the extent present in the park: the ecological, biological, and physical processes that created the park and continue to act upon it; scenic features; natural visibility, both in daytime and at night; natural landscapes; natural soundscapes and smells; water and air resources; soils; geological resources; paleontological resources; archeological resources; cultural landscapes; ethnographic resources; historic and prehistoric sites, structures, and objects; museum collections; and native plants and animals...” National Park Service’s Management Policies (2006) §§ 1.4.4 - 1.4.7.

The study on page 180 lists “environmental laws . . . required for the project alternatives under consideration.” It omits at least three relevant laws: the 1916 National Park Service Organic Act, the law directing construction of the GW Memorial Parkway and P.L. 86-41 which added the Dyke Marsh Wildlife Preserve to the national park system.

The draft report and the Corps comments at the June 14, 2022, public meeting acknowledge that the National Park Service has concerns about a proposed floodwall.

Page 101 of the draft report noted that “[d]uring agency coordination meetings, NPS has voiced that they are very concerned with any impact to the parkway, which includes anything that detracts from the character or viewshed of the road and its historic integrity. This includes changes to views of the river, disconnection from the natural landscape, alterations of other views, impact to the historical character of the road itself, impacts from induced flooding to trails or other NPS resources, and other cultural resource impacts. NPS has been negotiating with the Federal Highway Administration (FHWA) over a 7-inch raising of the wall along the parkway, and therefore there is little viability for a floodwall that would be significantly higher than what is currently under negotiation.”

**Recommendation:** Include the 1916 National Park Service Organic Act and other laws cited above as applicable environmental laws and do not choose, fund or otherwise proceed with a final approach without this official, legally-required “impairment” analysis from the National Park Service.

More fully evaluate the floodwall/levee’s negative impacts on federal park resources and values, including the Dyke Marsh Wildlife Preserve, visitors and the local community and the survivability of Dyke Marsh.

### **The Study Minimizes the Historic Designation of the George Washington Memorial Parkway**

The George Washington Memorial Parkway is listed on the Virginia Department of Historic Resources register, 029-0228 <https://www.dhr.virginia.gov/historic-registers/029-0228/> because of its “important contributions to landscape design” and because “extended verdant parks offer constantly unfolding scenic views.”

It is listed as 95000605 on the National Register of Historic Places at <https://catalog.archives.gov/id/117691603>. Both nomination forms explain that Congress’s intent was “a public project memorializing George Washington.”

The Virginia nomination document states “The landscape values for the George Washington Memorial Parkway have always been the preservation of scenic and esthetic qualities associated with the Potomac River valley . . . the palisades and the tree covered slopes, flowering understory, steep-sided creek valleys (runs) and hilltop vistas.”

A floodwall/levee system would likely be inconsistent with these values and compromise the historic, natural and aesthetic integrity of the parkway.

Starting on page 29, the study explains that certain consultations are required for “federal actions that may affect historic properties.” Table 2-8 includes the George Washington Memorial Parkway as an “archaeological and architectural/Above-ground “resources with 0.5 miles of Alternative 5c (Belle Haven and other alternatives. Presumably, all alternatives affecting the parkway’s resources and values, as defined in NPS management policies, would require a review by the federal Advisory Council on Historic Preservation.

Presumably, depending on the sponsor (the study cites Fairfax and Arlington Counties), local and state actions could also affect historic properties, such as the George Washington Memorial Parkway.

Dyke Marsh potentially has archaeological resources.

**Recommendation:** Thoroughly evaluate other alternatives and their environmental impacts and impacts on historic properties. Assuming a coastal flooding management alternative would impact the George Washington Memorial Parkway, as impacts are described in the Park Service’s management policies above, explain how a floodwall/levee system would be consistent with the parkway’s state and federal historic designations and Congress’s intent in directing the building of the parkway.

### **Some Alternatives Could Compromise the Parkway’s Historic Character**

Floodwalls, levees and similar structures as described in the study are contrary to the parkway’s character and Congress’s intent.

*The George Washington Memorial Parkway, a Unique Gateway to Mount Vernon:* In 1928, Congress authorized the construction of the Mount Vernon Memorial Parkway to honor the bicentennial of George Washington’s birth. Lt. Col. Peter Hains, who conducted the first land survey told Congress that the parkway should “have the character of a monumental structure, such as would comport with the dignity of this great nation . . . and the grandeur of character of the man to whom it is dedicated. . . It should be such a work as no American need feel ashamed of.”

The U.S. Department of Agriculture completed the first segment, the southern part, in 1932. Planners envisioned a unique roadway to preserve and enhance the Potomac River valley, keep both shorelines in public ownership and create a grand gateway to Mount Vernon Estate, the first president’s plantation.

They sought to integrate the road with the undulating terrain following natural contours and winding in gentle curves and to highlight natural areas and scenic vistas of the river. They included forested and grassy areas, minimized signs and lights and prohibited billboards. Builders used then-modern highway design approaches like overpasses, limited access, widely-spaced exits and entrances, tree-lined rights-of-way and bridges made of reinforced concrete faced with hand-laid, rough-cut stone for a natural look.

Assuming a coastal flooding management alternative would impact the George Washington Memorial Parkway, as impacts are described in the Park Service's management policies above, a floodwall/levee system would be contrary to Congress's intent and the planners' goals and design.

*Wildlife Habitat Paramount:* The 1959 law (P.L. 86-41) that added Dyke Marsh to the National Park Service system clearly states Congress's intent in preserving Dyke Marsh as a wildlife preserve: "... so that fish and wildlife development and their preservation as wetland wildlife habitat shall be paramount."

Nature does not respect artificial, manmade boundaries. Wildlife, pollinators and water, for example, move throughout the environment. A floodwall/levee system in, near or next to a wildlife preserve and wetland could have adverse impacts inconsistent with Congress's intent.

**Recommendation:** Eliminate alternatives inconsistent with the parkway's character. Assuming a coastal flooding management alternative would impact the George Washington Memorial Parkway, as impacts are described in the Park Service's management policies above, fully examine alternative approaches and their impacts.

### **The Study Ignores Further Dyke Marsh Restoration**

The study cites on page 1 as the authority for the study a May 23, 2001, U.S. Senate Committee on the Environment and Public Works resolution and acknowledges that the Senate resolution includes ecosystem restoration, but "this study will focus solely on CSRM" (coastal storm risk management). The study does not explain why the Corps ignores the resolution's language addressing "ecosystem restoration."

Wetlands act as "nature's sponges" to control floodwaters. See [The Study Understates Wetlands' Flood Control Potential](#) below.

The study on pages 102-3 acknowledges the potential for further Dyke Marsh restoration. The study states, "Further information is required to understand how much marsh restoration would mitigate storm impact and restoration was not retained as a measure." Therefore, the Corps has excluded wetland restoration as an approach.

Dyke Marsh was once far larger before dredge mining occurred between 1940 to 1972. Dyke Marsh has only been partially restored under the 2016 George Washington Memorial Parkway's Record of Determination. This Record of Determination provided that the marsh would be restored in a "phased approach up to the historic boundary of the marsh," where "[i]mplementation of the different phases will be dependent upon available funding and fill material," where "[f]uture phases will continue marsh restoration until a sustainable marsh is achieved," where "[t]he outer edges of the containment cell structures will be placed at the park boundary in the river," with "[r]estoration of 16 acres of wetlands south of the breakwater will also be included as an option," and with "[a]pproximately 180 acres of various wetland could be created overall...." 2016 Record of Determination, pages 3-4, found at <https://parkplanning.nps.gov/document.cfm?parkID=186&projectID=20293&documentID=73850>.

One reason the study apparently dismisses further Dyke Marsh restoration is because of the "state's

reluctance.” The “state’s reluctance” apparently refers to one permit considered and granted by the Virginia Marine Resources Commission. What the report calls the “state’s reluctance” is unexplained. Other permits could presumably be approved. State leadership and decision-makers change. Conditions change. Designs can change.

Virginia has committed to wetlands restoration in the interstate Chesapeake Bay agreement and in its tidal wetlands law.

**Recommendation:** Analyze the survivability of Dyke Marsh under various alternatives and analyze the potential of further Dyke Marsh and other area wetlands restoration and restoration’s impacts. Analyze alternatives’ adverse environmental impacts and propose mitigation on-site and in-kind if an alternative would have adverse impacts.

### **The Study Inadequately Analyzes Many Other Alternative Approaches**

Table 3-2 lists “management measures screened with study objectives.”

One measure is “improve resiliency of critical infrastructure,” but the study fails to include or analyze how some alternative approaches can improve natural resiliency.

Importantly, the study does not include a full evaluation of the 20 risk management measures for coastal communities subject to flooding that are in the ACE North Atlantic Coast Comprehensive Study Report (<https://www.nad.usace.army.mil/CompStudy/>). It is unclear why the Corps did not start with evaluating more alternatives. The Corps’ screening process is unclear and the study fails to adequately explain why these alternatives were eliminated.

The study fails to fully analyze for the public many alternatives to a floodwall and levee system that can address potential flooding, including the following:

- flood management measures on the District of Columbia and Prince Georges County shorelines;
- retrofitting or flood proofing non-elevated buildings;
- buyouts of at-risk properties;
- the creation of additional storm water drainage;
- upgrades of stormwater controls;
- reduction of impervious surfaces;
- building of living shorelines; and
- wetlands creation and restoration.

Consistent with the ACE North Atlantic Coast Comprehensive Study Report (<https://www.nad.usace.army.mil/CompStudy/>), the Corps of Engineers should at a minimum evaluate the following risk management measures as alternatives to a floodwall/levee system:

A. ALTERNATIVE: RETROFIT FOR NON-ELEVATED BUILDINGS.

For a non-elevated structure in the flood zone that is prone to flooding, Study Report #2 recommends building retrofit to address flooding, which “include elevation of a structure or possibly dry flood proofing of a structure. Elevation of a structure is usually limited to smaller residential and commercial buildings. Whether a structure may be elevated depends on a number of factors, including the foundation type, wall type, size of structure, condition, etc.”

There are two types of flood proofing for buildings according to the Corps of Engineers’ Local Flood Proofing Programs (February 2005) found at <https://www.usace.army.mil/Missions/Civil-Works/Project-Planning/nnc/>. Dry flood proofing involves “[m]aking the building walls and floor watertight so water does not enter, while wet flood proofing involves “[m]odifying the structure and relocating the contents so that when floodwaters enter the building there is little or no damage.”

Dry Flood Proofing deals with “[s]ealing a building to ensure that floodwaters cannot get inside.... All areas below the flood protection level are made watertight. Walls are coated with a waterproofing compound, or plastic sheeting is placed around the walls and covered. Openings, such as doors, windows, sewer lines and vents, are closed temporarily, with sandbags or removable closures, or permanently.” Local Flood Proofing Programs (February 2005) page 6.

Wet Proof Flooding addresses “[h]ydrostatic water pressure [which] increases with the depth of water. Depths over 3 feet have been shown to collapse the walls of a typical house. Basements can be subject to 6 or 7 feet of water pressure when the ground is saturated. As a result, watertight walls and floors may crack, buckle or break from shallow surface flooding. One way to deal with this is simply to let the water in and remove or protect everything that could be damaged. ... Wet flood proofing measures range from moving a few valuable items to rebuilding the flood prone area.” Local Flood Proofing Programs (February 2005) page 7.

The Corps of Engineers has stated that “flood proofing has also been shown to be less expensive than other flood protection measures.” “Flood protection studies in Fairfax County, Virginia, and King County, Washington, reviewed a variety of structural and nonstructural alternatives. Where flood proofing was found to be the most economical solution, the community favored it instead of a more expensive structural project. Fairfax County noted that flood proofing is cheaper than ‘chasing the system a mile downstream to fix the overland route.’” Local Flood Proofing Programs (February 2005) page 9.

#### B. ALTERNATIVE: DRAINAGE IMPROVEMENTS.

Study Report #15 recommends drainage improvements as an option to address flooding. “A drainage system can carry water away via conveyance systems and, during times of high water, may store water until it can be carried away in storage facilities. Conveyance systems utilize measures such as pump stations, culverts, drains, and inlets to remove water from a site quickly and send it to larger streams. Storage facilities are used to store excess water until the storm or flood event has ended.”

#### C. ALTERNATIVE: CREATION OF LIVING SHORELINES

Study Report #16 recommends the creation of living shorelines as an option to address flooding. “Open and exposed shorelines are prone to erosion due to waves. Living shorelines are essentially tidal wetlands constructed along a shoreline to reduce coastal erosion. Living shorelines maintain dynamic shoreline processes, and provide habitat for organisms such as fish, crabs and turtles. An essential component of a living shoreline is

constructing a rock structure (breakwater/sill) offshore and parallel to the shoreline to serve as protection from wave energy that would impact the wetland area and cause erosion and damage or removal of the tidal plants.”

#### D. ALTERNATIVE: CREATION OR ADDITION OF WETLANDS

Study Report #20 recommends the creation or addition of wetlands as an option to address flooding. “The dense vegetation and shallow waters within wetlands can slow the advance of storm surge somewhat and slightly reduce the surge landward of the wetland or slow its arrival time. Wetlands can also dissipate wave energy; potentially reducing the amount of destructive wave energy propagating on top of the surge, though evidence suggests that slow-moving storms and those with long periods of high winds that produce marsh flooding can reduce this benefit.”

**Recommendations:** More fully evaluate other alternatives and using a combination of alternatives; explain to the public the selection of an initial limited list of alternatives and the Corps’ screening process and explain, in terms of their effectiveness, why alternatives were eliminated.

#### **The Study Fails to Adequately Address Environmental Impacts**

The draft study offers minimal analysis of environmental impacts and in fact (page 3) says “reasonably foreseeable effects to the human environment are not expected to be significant and that “adverse environmental effects (undefined) will be offset by mitigation (undefined).” The report includes a “finding of no significant environmental impact” to justify an environmental assessment instead of a full-blown environmental impact statement.

The study states on page 174 that –

- the floodwall/levee system “may result in temporary and minor effects to natural and physical environmental resources during construction . . . Long-term effects include permanent fill impacts to the Belle Haven East Channel and obstruction of the view.”
- A potential change in inundation depth in the wetlands following construction of the floodwall/levee is not expected to affect the health, character or integrity of the wetlands.”

The study lacks an explanation or scientific justification for these conclusions.

Hardened approaches can increase erosive forces on adjacent properties. The study fails to analyze the impact of a floodwall/levee system on adjacent properties.

On page 175, the study states that “Construction of the proposed culvert crossings would result in roughly 2,250 sq ft of new permanent fill impacts to two streams.” Presumably more fill will reduce the floodplain, a natural flood control system, and therefore could create more flooding.

40 CFR 1502.14(a)(b) requires that “[t]he alternatives section should present the environmental impacts of the proposed action and the alternatives in comparative form based on the information and analysis presented in the sections on the affected environment and the environmental consequences. In this section, agencies shall: (a) Evaluate reasonable alternatives to the proposed action, and, for alternatives that the agency eliminated

from detailed study, briefly discuss the reasons for their elimination. (b) Discuss each alternative considered in detail, including the proposed action, so that reviewers may evaluate their comparative merits. . . .”

If the floodwall/levee system requires a space of 40 feet on both sides, trees and habitat on federal and private property will presumably be destroyed or degraded. The study fails to document which trees or how many trees and related vegetation would be destroyed or the impact.

The study includes no time-of-year restrictions for construction, such as fish spawning and waterfowl nesting in west Dyke Marsh.

**Recommendation:** Thoroughly evaluate all environmental impacts of all approaches, including the floodwall/levee system, no action and others.

### **The Study Understates Wetlands’ Flood Control Potential**

Wetlands play a key role in flood protection, which the study minimally recognizes on page 11. “Nowhere is this function more important than along coastal areas . . . Preserving and reconstruction coastal marshes can help reduce storm damage. Coastal wetlands serve as storm surge protectors when hurricanes or tropical storms come ashore.” (*Wetlands: Protecting Life and Property from Flooding*, U.S. Environmental Protection Agency (EPA))

Other EPA findings:

- “A one-acre wetland can typically store about three-acre feet of water, or one million gallons. An acre-foot is one acre of land, about three-quarters the size of a football field, covered one foot deep in water.” (*Wetlands: Protecting Life and Property from Flooding*)
- “Wetland restoration and preservation is an important component of a comprehensive flood protection strategy.” (*Wetlands: Protecting Life and Property from Flooding*)
- “The ability of wetlands to store floodwaters reduces the risk of costly property damage and loss of life – benefits that have economic value to us. For example, the U.S. Army Corps of Engineers found that protecting wetlands along the Charles River in Boston, Massachusetts, saved \$17 million in potential flood damage.” (*Functions and Values of Wetlands*)

The study on page 10 acknowledges that “wetlands historically lined the Potomac River, the Old Town Alexandria waterfront, Hunting Creek and Cameron Run. . . most of these wetlands are gone. . . .” The study fails to evaluate the creation and restoration of wetlands.

**Recommendation:** Evaluate the creation and restoration of wetlands, including their flood control potential.

### **The Study Inadequately Examines Wetlands Migration**

The study fails to identify areas for potential tidal wetlands migration anticipated because of sea level rise.

Many of the jurisdictions along both sides of the Potomac River have areas which could accommodate the creation or addition of wetlands and areas to which existing wetlands can migrate landward.

**Recommendation:** Identify and evaluate potential areas for wetlands to migrate inland.

### **The Study Inadequately Examines Wetlands' Value, Intertidal Activity and Habitat**

Tidal shorelines are dynamic, transitional areas between land and water. Shoreline structures can sever the connection between land and water, block natural tidal exchange and impact shallow water habitats essential to fish, birds and other wildlife. "Freshwater marshes are one of the most productive ecosystems on earth." (U.S. Environmental Protection Agency)

The Corps proposes to build concrete structures, culverts and pump houses on both the creeks that feed into Dyke Marsh, just upstream from the marsh.

On page 122, "Flap gates would be installed at the ends of the culverts at the proposed culvert crossings. Flap gates are mounted by hinges at the top of the culvert pipe and open and close in response to water pressure. Flap gates allow the free flow of water through the culvert pipe during normal water flows. During a high-water event, when the depth of water is greater on the riverside of the floodwall, the flap will close automatically to prevent back flow."

The study fails to acknowledge that these two creeks are tidal. If the flap gates are down, except during discharge events, the effect, as described in the study, will be to stop the tidal flow and intertidal exchange of these creeks. The east creek has tides of over one foot, even north of Olde Towne Road, approximately 50 yards from Belle Haven Road.

The study on page 121 concludes that "the structural measures proposed at Belle Haven would have no direct effects to wetlands," without substantiation. It is widely agreed that structures in tidal wetlands block intertidal exchange.

Amphibious wildlife, for example, use both water and land. Turtles leave the marsh and dig nests and lay eggs on properties adjacent to Dyke Marsh, for example.

**Recommendations:** Recognize and describe the value of the various habitats that would be affected and evaluate the full environmental impacts of a floodwall/levee system, including impacts on amphibious wildlife, shallow water habitats and downstream environments.

Do not alter or compromise streams that flow into and out of Dyke Marsh.

### **Cost vs. Life of Project**

The study cites as the cost of the Belle Haven floodwall/levee system \$25 million and that the federal government will pay 65 percent and non-federal entities will pay 35 percent of that cost for pre-construction engineering and design and construction. The study cites as the annualized cost “\$16,000 for Belle Haven.”

The study describes the “period of analysis” as 50-years per ER 1105-2-100 Planning Guidance Notebook, but it fails to explain the projected life of the floodwall/levee system under various sea level rise scenarios, updated rainfall projections and other events, whether the cost estimate covers future maintenance, repairs and replacement if it fails. The study does not examine its potential to fail.

The study’s purpose is “to evaluate the feasibility of federal participation in the implementation solutions,” but fails to evaluate funding sources or the feasibility of local or state participation, except for two letters from two Fairfax County officials and none from state or federal officials.

**Recommendations:** Provide a projection of the total life of the Belle Haven floodwall and levee project and other alternatives considered and the costs over time. Identify committed sources of funding.

### **The Study Omits Stronger Stormwater Control Systems**

Sudden, intense storms like derechos can generate and overwhelm stormwater systems and cause flooding.

It is not clear what rainfall projections the Corps is using (see, for example, NOAA’s Mid-Atlantic RISA team, <https://midatlantic-idf.rcc-acis.org/>, 2022 to 2070 projected intensity-duration-frequency).

Most of the immediate area west of the parkway has lost much of its natural flood control potential because Fairfax County has allowed development, fill and impervious surfaces to be built. For example, part of the Belle Haven Golf Course is on former wetlands, land created by fill. Some of the land, buildings and development are in former floodplains and wetlands. Fairfax County operates tide gates and pumping stations in the area.

The National Park Service has a *national* mission to manage a system of national parks for the greatest public good. Localities should address the *local* problems, including adverse environmental conditions, that they have created.

**Recommendation:** Use the most current rainfall projections. Evaluate local stormwater control systems’ ability to manage rainfall and stormwater runoff using the most current rainfall projections. Identify opportunities and approaches for Fairfax County to upgrade the current stormwater control system to better respond to flooding from all types of storms.

### **The Study Inadequately Evaluates Endangered and Threatened Species**

On page 13, the study identifies some federal and state-listed species “that have the potential to be present in the study area.”

The study on page 13 states, “Each species was further assessed to determine if suitable habitat conditions are present.” Some in fact have been documented as present, including the peregrine falcon and the monarch butterfly, a federal candidate species.

Table 2-1 on page 14 lists three species of bats “that have the potential to be present in the study area.”

Observers have documented the following bats in Dyke Marsh, including west Dyke Marsh near the site for a proposed levee, including the three listed on table 2-1:

- Big brown bat, *Eptesicus fuscus* (very common)
- Silver-haired bat, *Lasionycteris noctivagans* (common during spring and autumn)
- Eastern red bat, *Eptesicus fuscus* (very common)
- Hoary bat *Lasiurus cinereus* (common during spring and autumn)
- Northern long-eared bat, *Myotis septentrionalis* (occasional)
- Evening bat, *Nycticeius humeralis* (common)
- Brazilian free-tailed bat *Tadarida brasiliensis* (new migrant to Virginia, common)
- Seminole bat, *Lasiurus seminolus* (occasional)
- Little brown bat, *Myotis lucifugus* (rare)
- Tri-colored bat, *Perimyotis subflavus* (rare)

While no longer listed as federally endangered the bald eagle is protected by other laws. The study on page 129 cites bald eagle nests confirmed in 2018. This data is very out of date. The Dyke Marsh Wildlife Preserve has had active bald eagle nests every year in recent years, including three active nests in 2022.

On page 19, the study refers to a 40-year-long bird list of 296 species in Dyke Marsh compiled by the Friends of Dyke Marsh, 2021. It is not clear which bird survey this is referring to. The annual breeding bird survey is only one of several bird surveys available.

The Friends of Dyke Marsh, the Audubon Society of Northern Virginia, George Mason University, the Virginia Herpetology Society, the Virginia Native Plant Society, the National Park Service and others have survey data.

**Recommendation:** Use existing survey data that confirms actual species present, as opposed to those potentially present and conduct comprehensive surveys to determine others that are in fact present. Document how the destruction of trees and other vegetation would impact wildlife.

### **Community Opposition Continues**

When the Corps recommended a combination levee/floodwall around the area in 2014, the “project was not implemented due to community opposition to the project” (page 76). It appears that such a proposed floodwall and levee still face significant community concerns, some of which were expressed at the Corps’ June 14, 2022, public meeting.

**Recommendation:** Continue to invite public comments and hold additional public meetings.