National Park Service

Environmental Assessment
and
Section 106 Assessment of Effect

October 2002

Rehabilitation of Historic Seawall
Fort McHenry National Monument
and Historic Shrine

Baltimore, Maryland

U.S. DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

ENVIRONMENTAL ASSESSMENT AND SECTION 106 ASSESSMENT OF EFFECT REPAIR OF HISTORIC SEAWALL

FORT MCHENRY NATIONAL MONUMENT AND HISTORIC SHRINE
BALTIMORE, MARYLAND

Summary

The National Park Service proposes to repair the existing historic seawall at Fort McHenry National Monument and Historic Shrine. Portions of the seawall have been deteriorating since major work was last completed in 1988. The deterioration is the result of wave wash during storm events, high tides, and large swells caused by harbor vessels. The seawall retains its historic configuration and appearance and is one of the park's significant resources. The seawall also provides protection to many of the other park resources.

This Environmental Assessment analyzes the impacts of three alternatives (a No-Action Alternative and two action alternatives) on the human and natural environment in accordance with the National Environmental Policy Act of 1969. Under the Preferred Alternative, the proposed work includes repointing and resetting capstones; filling voids behind the wall; installation of riprap along segments 9 and 10; and the replacement of a section of the chainlink boundary fence, removal of vegetation and installation of a small retaining wall along segments 11 and 12. In the past, riprap has been used on other wall segments and has been an effective means to minimize the effects of wave wash. The Preferred Alternative would either have no or negligible impacts on air quality; archeological resources; cultural landscapes; ethnographic resources; visual resources; soundscape management; topography, geology, and soils; threatened and endangered species; wildlife; socio-economics and land use; coastal zone management; environmental justice; transportation (navigation); community facilities and services; infrastructure; and park operation. Minor, long-term, adverse impacts to floodplains, wetlands, land cover and vegetation may result from the Preferred Alternative. Minor, short-term, adverse impacts may result to the visitor experience and use if trail closures or detours are necessary during construction. Implementation of the Preferred Alternative would be expected to have minor to moderate, long-term, beneficial impacts on historic resources, visitor use and experience and safety from filling the voids and repairing of loose stones along the seawall.

Note to Reviewers and Respondents

If you wish to comment on the Environmental Assessment, you may mail comments to the name and address below by November 25, 2002. Our practice is to make comments, including names and home addresses of respondents, available for public review during regular business hours. Individual respondents may request that we withhold their home address from the record, which we will honor to the extent allowable by law. If you wish us to withhold your name and/or address, you must state this prominently at the beginning of your comment. We will make all submissions from organizations or businesses and from individuals identifying themselves as representatives or officials or organizations or businesses available for public inspection in their entirety.

Please address all comments to:
Laura Joss, Park Superintendent
Fort McHenry National Monument and Historic Shrine
2400 East Fort Avenue
Baltimore, Maryland, 21230

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TABLE OF CONTENTS

FIGURES

TABLES

PURPOSE OF AND NEED FOR ACTION

The proposed action entails the repair and treatment of the historic seawall at Fort McHenry National Monument and Historic Shrine in Baltimore, Maryland (see Figure 1 - Site Location Map). The seawall is 3,780 feet long and located at the end of Whetstone Point on the Patapsco River in the Baltimore Harbor. Several hundred feet of seawall are at high risk of failure. The action is needed because the location of the seawall (see Figure 2 - Site Plan) and lack of protection make the seawall susceptible to wave wash during storm events and high tides, and large swells caused by sea vessels using the nearby navigational channels. These actions result in the continual deterioration of the seawall.

The seawall is being undermined below mean low tide where many of the stones have been displaced. A number of voids have developed in the wall, some of which present safety concerns for park patrons walking along the seawall.

The seawall was built in segments between 1816 and 1895 and is one of the park's significant historic resources. Periodic minor repairs have been done over the last 12 years to repair storm damage; however, more comprehensive repairs are needed. The seawall also provides protection to other resources such as potential archeological resources located in the fill behind the wall. The proposed actions include masonry repair of the wall and additional long-term protective measures such as the installation of riprap.

Figure 1 – Site Location Map

This Environmental Assessment analyzes and compares the preferred alternative to the other alternatives and their impacts on the environment. This Environmental Assessment has been prepared in accordance with the National Environmental Policy Act of 1969 and regulations of the Council on Environmental Quality (40 CFR 1508.0), and the National Park Service's Director's Order – 12 (Conservation Planning, Environmental Impact Analysis, and Decision-making). In accordance with section 800.8 of the Advisory Council on Historic Preservation's regulations (36 CFR 800), the process and documentation required for preparation of this Environmental Assessment will also be used to comply with Section 106 of the National Historic Preservation Act.

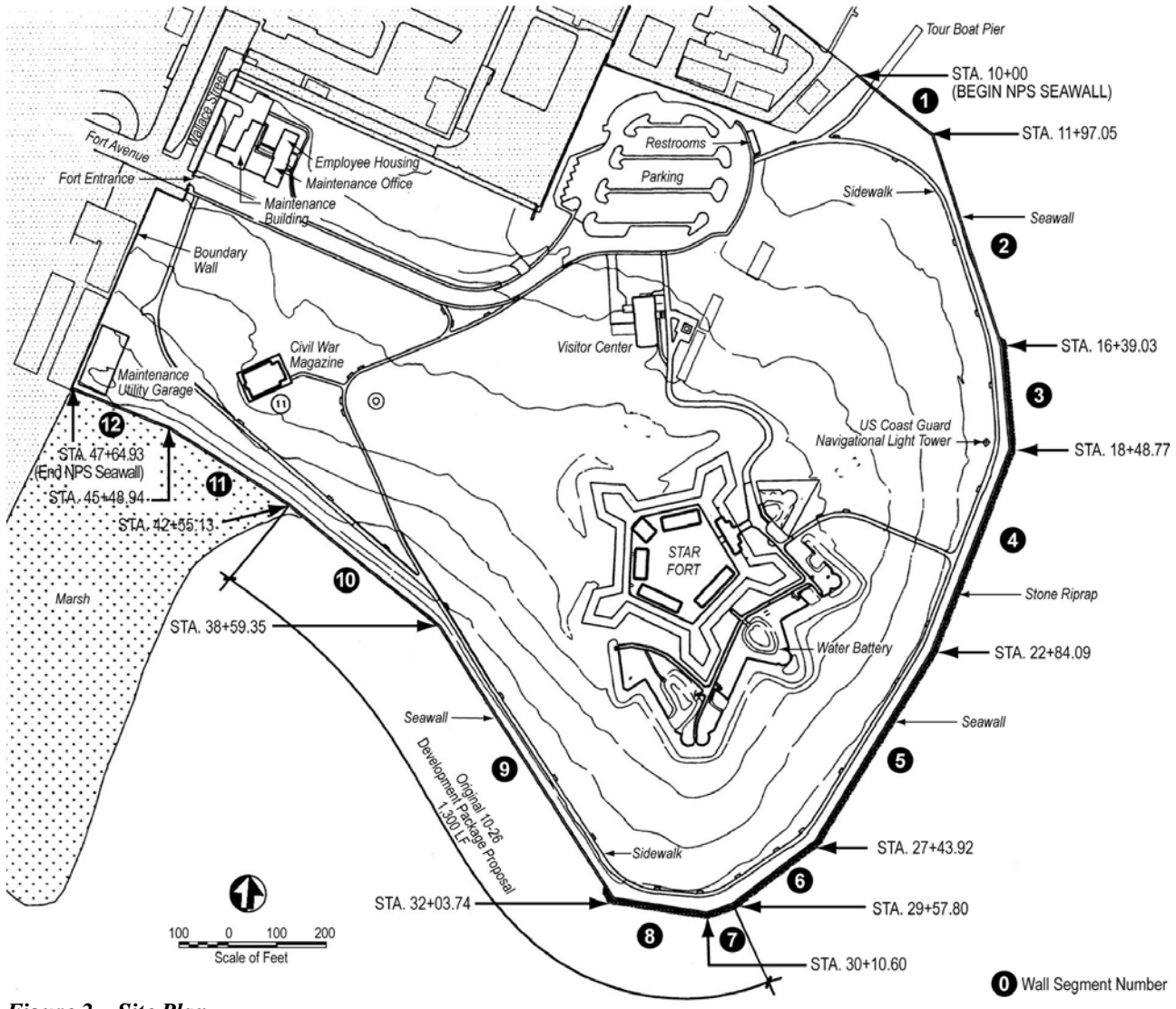

Figure 2 – Site Plan

PURPOSE AND SIGNIFICANCE OF THE PARK

Fort McHenry's significance in American history and its scenic landscape make the park a popular recreational area. The park attracts nearly 700,000 visitors annually. The site contained defensive works as early as 1776 that were used to protect the Port of Baltimore from enemy invasion. Fort McHenry, initially constructed between 1794 and 1802, served as a strategic defensive installation during the War of 1812. On September 13-14, 1814, the fort was attacked by British warships for 25 hours, but was able to withstand the bombardment and the British withdrew. Francis Scott Key, who was being detained on a truce vessel several miles away, watched the battle. The fort's survival inspired his words for the "Star-Spangled Banner." The poem later became the National Anthem of the United States in 1931.

Following the War of 1812, the site continued to fulfill a vital defensive and supportive function for the military. The fort and/or surrounding grounds served as a prison and defense post during

the Civil War, as a recruiting base during the Mexican War and Spanish American War, as a large military hospital during World War I, and as a Coast Guard training center during World War II.

The architecture of the fort is of equal importance to that of its military and social history. The design of American coastal defenses developed in three distinct phases between 1800 and 1850. Fort McHenry, a pentagon fort of five bastions with exterior walls, dates to circa 1800, and creates and represents the earliest or "First System" of American fortification. The fort is also referred to as the Star Fort because of the five bastions giving the fort a star shape. Changes and additions to the fort represent aspects of the later fortification systems.

In 1925, Fort McHenry National Park was created to recognize the site's historical significance. The property passed from the War Department to the National Park Service in 1933. In 1939, the site was designated a National Monument and Historic Shrine, the only park in the country to be so titled. Fort McHenry is individually listed in the National Register of Historic Places as a nationally significant site. The seawall is listed as a contributing resource with respect to site significance and is on the List of Classified Structures (LCS # 07758).

The park also provides recreational and educational opportunities as well as open space. The park occupies over 43 acres of open park land on Whetstone Point.

PROJECT BACKGROUND AND PLANNING

Background

The seawall at Fort McHenry has had a long history of construction and repairs. An abbreviated chronology of the seawall's construction and major repairs is provided below. One important item to note is that since the installation of riprap behind segments 3 through 8, the frequency and severity of repairs needed in these areas has been significantly reduced.

1817	First section of seawall (1,460 feet) was completed in December 1817.
1836	Seawall extended to the wharf, approximately 800 feet on the northeast part of the point.
1837-39	Seawall extended again to protect new boundary line on the north side and on south side extended around the point.
1842	Storm damage repaired.
1876	Storm damage repaired.
1877-81	Area on the north by the wharf to be filled in and new seawall built around it.
1886	Storm damage was repaired in 1889.
1889-90	Damage from the 1886 storm and subsequent May 1889 storm was repaired.
1893-94	Major storm damage repaired.
1894-95	Seawall was extended on south side to the brick boundary.
1895-96	New seawall extension around filled area on north side (this work completed the seawall for the first time).
1896-97	Seawall on east side repaired.
1904	Earth behind seawall caving in along southwest face due to wave washing through bottom of wall.
1907	Seawall repaired.

1934	Storm damage repaired.
1937-38	Seawall repaired from storm and riprap added.
1975	Seawall repaired, riprap installed (designed by Army Corps of Engineers).
1979	Seawall sustained major storm damage from Tropical Storm David with about 75 feet of the wall washed out and numerous capstones displaced.
1984	Initial storm damage repaired.
1988	Seawall repaired (a description of the repairs can be found in the Design Analysis, 2001).

The chronology of repairs demonstrates the repair of the seawall is an ongoing effort and a sustainable solution is needed to minimize future rehabilitation. The installation of riprap and masonry repairs would help to provide better long-term protection to the seawall.

Planning

Past Planning Activities - Planning for the proposed action began in early 2001. Internal project scope development was completed in May 2001. The National Park Service conducted an onsite condition assessment on May 8 and 9, 2001. Design alternatives were developed by the park staff on August 6, 2001. A Choosing by Advantages/Value Analysis workshop took place on August 28 and 29, 2001.

Design Analysis – These planning activities led to the development of the *Design Analysis: Rehabilitate Historic Seawall* report, dated October 9, 2001. In the design analysis, the National Park Service staff reviewed the history of repairs to the seawalls, evaluated existing conditions, and prepared alternatives, including conceptual design consideration and costs. Three alternatives were considered in detail in the design analysis. Through a Choosing by Advantages methodology, the National Park Service staff provided recommendations for rehabilitating the seawall. This information and the recommendations were used to assist in the development of this Environmental Assessment.

Environmental Screening Form -The National Park Service staff completed the Environmental Screening Form on July 31, 2002, and it was later revised in August 2002. This form identified potential issues and impact topics that require additional investigation to address the requirements of the National Environmental Policy Act and Director's Order #12. Generally, impact topics identified on this form are carried though in more detail in the Environmental Assessment. The completed Environmental Screening Form is provided as Appendix A.

Coordination with Maryland Historical Trust - The National Park Service has initiated consultation with the Maryland Historical Trust (State Historic Preservation Office). Representatives from the Maryland Historical Trust have been actively involved in team meetings and throughout the project planning process. In May 2002, underwater archeologists from the Maryland Historical Trust conducted an underwater archeological investigation for the area adjacent to segments 9 and 10. More information on the survey is provided in the Archeology Section of the "Affected Environment" Chapter.

Site Visit and Team Meeting - A site visit and project team meeting were conducted on July 31, 2002 to initiate the Environmental Assessment study. The project team met to discuss project

history, alternatives considered and impact topics to be further analyzed in the Environmental Assessment. A site visit was also conducted that day.

RELATIONSHIP TO OTHER PROJECTS AND PLANS

As part of the analysis and consideration of potential direct, indirect and cumulative impacts, the project team identified other potential on-site and off-site projects in or in close vicinity to the project area. The following projects were identified by the project team:

- The Maryland Port Authority in coordination with the National Aquarium in Baltimore has plans at the wetland mitigation area near the park by segments 11 and 12. Plans include repairs to unclog the drainage pipes and reestablish the flow regime in the tidal wetland.

- A new pier on the Naval Reserve property (to the north of the park) has been proposed by a non-profit organization.

- C. Steinweg/Erasmus Properties is planning to increase the size of their Wallace Street pier which is located on the northeast side of the peninsula.

- The Baltimore District Army Corps of Engineers in association with the Maryland Port Authority completed an environmental impact statement for the dredging and dredge material management for the Baltimore Harbor. The proposed action includes maintenance dredging of the two navigation channels near Fort McHenry.

- The park has started planning for an education/administration building, and four different alternatives are being considered. A new Development Concept Plan has been proposed for the project. The rehabilitation of the seawall would be completed prior to any final decision or construction associated with this project.

- The National Park Service holds a number of events during the course of the year. Three projects have the potential to be disrupted by the repair of the seawall because the events use the seawall area. The most significant annual event is called the *Living Human Flag*. Approximately 4,000 visitors (students) come by bus during this event which will be held on May 21, 2003. The buses park along the seawall. This event would be around the time of construction; therefore, coordination between the park and contractor to avoid impacts to visitors would be essential. The other significant events are *Civil War Weekend*, which is held in late April and *Defenders' Day - The Star-Spangled Banner Weekend,* which is held in the middle of September. The festivities include visiting ships, and military encampments/demonstrations.

The park's most recent amendment to Fort McHenry's 1968 master plan was completed in 1988. The amendment was reviewed to determine if the proposed action is consistent with future park plans and goals. The proposed action is consistent with the objectives outlined in the Master Plan.

ISSUES AND IMPACT TOPICS

As mentioned previously, an Environmental Screening Form was completed by the National Park Service staff that identified potential issues and impact topics that required additional investigation to address the requirements of the National Environmental Policy Act and Director's Order #12. The issues and impact topics for the proposed action are explained below.

ISSUES

During the initial planning, the National Park Service identified a number of potential issues that need to be addressed as part the preliminary design and environmental analysis. These issues included:

- Potential archeological resources both on land and in the water need further study and identification. Also, the design team should explore what construction methods could be employed to avoid or minimize potential impacts to these resources.
- The design of the seawall repairs needs to be sustainable and consistent with the National Park Service Sustainability Initiative. Preventive measures need to be explored to protect the seawall and minimize future repairs.
- The study should consider the potential effects of the installation of riprap to the adjacent man-made tidal marsh.
- The environmental analysis needs to consider potential impacts that may result from construction techniques for temporary dewatering.
- The seawall rehabilitation and construction need to comply with the Executive Order 11988 Floodplain Management and Executive Order 11990 Wetland Protection. Director's Orders 77-1 and 77-2 and associated procedures need to be adhered to.

Specific impact topics were developed for discussion focus to allow comparison of the environmental consequences of each alternative. These impact topics were identified based on federal laws, regulations, and Executive Orders; National Park Service Management Policies; and National Park Service knowledge of limited or easily impacted resources. A brief rationale for the selection of each impact topic is given below, as well as the rationale for dismissing specific topics from further consideration.

IMPACT TOPICS INCLUDED IN THIS DOCUMENT

Specialists in the National Park Service including the park manager, engineers, resource specialists, park archeologist, and other professional staff identified potential issues that may result from the action. An impact topic is a resource of concern that could be affected either positively or adversely by the alternatives. As a means of evaluation, impact topics included in this document were analyzed in more detail to compare the environmental consequences of the No-Action Alternative and the other alternatives. Specific impact topics evaluated in more detail in this document include:

- Archeology
- Historic Structures
- Cultural Landscapes
- Floodplains
- Wetlands

- Coastal Zone Management
- Land Cover and Vegetation
- Safety
- Visitor Use and Experience

IMPACT TOPICS DISMISSED FROM FURTHER ANALYSIS

The non-controversial topics listed below would either not be affected or would be affected negligibly by the alternatives evaluated in this document. Therefore, these topics have been briefly discussed in this section of the Environmental Assessment and then dismissed from further consideration or evaluation. Negligible effects are effects that are localized and immeasurable at the lowest level of detection. A list of these topics is provided on the Environmental Screening Form in Appendix A.

AIR QUALITY

Air quality became a national concern in the mid-1960s, leading to the passage of the Air Quality Act in 1967. The Act (now referred to as the Clean Air Act) and subsequent amendments have established procedures for improving conditions, including a set of National Ambient Air Quality Standards (NAAQS).

The U.S. Environmental Protection Agency is directed to set levels for pollutants in order to protect the public health. The NAAQS have been adopted for six pollutants: carbon monoxide, nitrogen dioxide, ozone, particulate matter, sulfur dioxide and lead. A system of monitoring stations has been established across the country to measure progress in meeting these goals. If an area is found to exceed the allowable concentrations, local officials are required to develop a plan for achieving air quality that meet the standards.

The Baltimore metropolitan region is designated as severe ground level ozone "nonattainment areas" by the U.S. Environment Protection Agency (U.S. EPA). This means that, during the summer, this region fails to meet the federal health based standard for ground level ozone pollution. The Baltimore metropolitan region includes the counties of Anne Arundel, Baltimore, Carroll, Harford, Howard and Baltimore City (MDE Website, 2002).

The proposed action would have no or negligible, short-term adverse impacts on air quality during construction activities from the operation of the barge, pumps, and other motorized equipment. No long-term, adverse impact to air quality would occur from the repair of the seawall. Therefore, air quality was dismissed from further consideration.

SOUNDSCAPE MANAGEMENT

In accordance with the National Park Service *Management Policies* (2001) and Director's Order #47*, Sound Preservation and Noise Management,* an important objective of the National Park Service's Mission is the preservation of natural soundscapes associated with National Park Service units. Natural soundscapes exist in the absence of human caused sound. The natural ambient soundscape is the aggregate of all the natural sounds that occur in park units, together with the physical capacity for transmitting natural sounds. Natural sounds occur within and beyond the range of sounds that humans can perceive and can be transmitted through air, water,

or solid materials. The frequencies, magnitudes, and duration of human caused sound considered acceptable varies among National Park Service units. Acceptance levels for each park unit are generally greater in developed areas and less in undeveloped areas.

Noise from vessels from the nearby navigation channel and activities associated with harbor industries exist within the project area. Construction activities such as pumps used for dewatering, placement of riprap, and replacement of the fence would have negligible, short-term, adverse noise impacts, and the contractor would be required to comply with local noise ordinances. The proposed action would have no long-term change to existing noise levels or result in any long-term impact to soundscape management. Therefore, this impact topic was dismissed from further consideration.

INDIAN TRUST RESOURCES

Secretarial Order 3175 requires that any anticipated impacts to Indian Trust Resources from a proposed action by Department of Interior agencies be explicitly addressed in environmental documents. The Federal Indian Trust responsibility is a legally enforceable fiduciary obligation on the part of the United States to protect tribal lands, assets, resources, and treaty rights, and it represents a duty to carry out the mandates of federal law with respect to American Indian and Alaskan native tribes.

Indian Trust Resources do not exist at Fort McHenry National Monument and Historic Shrine. The lands are not held in trust by the Secretary of Interior for the benefit of Indians. Therefore, this impact topic was dismissed from further consideration.

ETHNOGRAPHIC RESOURCES

The National Park Service defines ethnographic resources as any "site, structure, object, landscape or natural resource feature assigned traditional legendary, religious, subsistence or other significance in the cultural system of a group traditional associated with it" (Director's Order #28 Cultural Resources Management Guidelines, P. 181). No ethnographic resources exist in the project area nor would they be affected by the repair of the seawall. Therefore, this impact topic was dismissed from further consideration.

AESTHETICS AND VISUAL RESOURCES

The repair of the historic seawall would not affect the appearance of the existing structure nor would the repairs affect vistas to or from the Star Fort or other significant site features. The repairs would have a context sensitive design consistent with the historic significance of the seawall and in keeping with the cultural landscape. The material chosen for the repair would be reflective of and consistent with the existing resources. Stone riprap will be installed along segments 9 and 10 just below the mean high water line. The intention is to protect the seawall while changing the appearance as little as possible and collecting the least amount of trash. Segment 3 currently has riprap at this level and appears to not collect debris and trash.

The resetting of capstones and filling of voids would have a negligible, long-term, beneficial impact to the appearance of the wall. The removal of vegetation and replacement of the existing fence along segments 11 and 12 would also have a negligible, long-term, beneficial impact. The

clearing would allow for increased views of the marsh and allow more educational and interpretive opportunities from the seawall. For the reasons described above, the impact topic, aesthetics and visual resources, was dismissed from further consideration.

TOPOGRAPHY, GEOLOGY, AND SOILS

The repair of the historic seawall would have no or negligible effects on topography, geology, and soils. The installation of the retaining wall along segment 11 and 12 and the excavation required for one of the alternatives would result in negligible, short-term impacts to soils. The repairs to the seawall would have a negligible, long-term, beneficial impact by preventing erosion on the fill side of the seawall.

The installation of the riprap would have a negligible, short-term adverse impact during construction to the shoreline area outward during dewatering and installation. However, the riprap would have a negligible, long-term, beneficial impact to protect soils from eroding behind the seawall and wave wash at the base of the wall. The rip rap would result in an increase in elevation of approximately two to four feet at the shoreline in an area of 0.24 acres. The change in elevation would not be significant. Therefore, this impact topic was dismissed from further consideration.

WILDLIFE

The masonry repairs would not change existing or future conditions of the historic seawall; therefore, no long-term impacts to wildlife are expected from the masonry repairs. Temporary disruptions to wildlife such as waterfowl may occur during construction. Preventive measures such as the installation of riprap in the water or filter fabric or gravel behind the wall on the landward side would result in negligible, short-term, adverse impacts to wildlife that may be using the wall. A fox den was noted during a field visit adjacent to segment 12 near the manmade wetland. The repairs would have no long-term impacts because the area would be restored to preexisting conditions. The installation of riprap would have no or negligible effects on biotic populations along the base of the seawall. The installation of riprap would add habitat value along the shoreline for certain species, although minor.

The removal of the trees along the fence line along segments 11 and 12 would remove potential habitat and food sources for birds. This area is adjacent to the park's maintenance area where equipment storage causes periodic disruptions to the area. The proposed removal of vegetation along the fence line would not change mammal or bird populations at the site or nearby marsh. Replanting in a more suitable location with native vegetation, however, is recommended to replace the habitat value of the trees. The proposed action would have negligible, short-term and long-term, adverse impacts. Therefore, wildlife was dismissed from further consideration in this document.

THREATENED AND ENDANGERED SPECIES

The U.S. Fish and Wildlife Service and the Maryland Department of Natural Resources were contacted to determine whether any known critical habitats or listed rare, threatened, or endangered species have been documented on the project area. In a letter dated September 9, 2002, the U.S. Fish and Wildlife Service indicated except for occasional transient individuals, no

federally proposed or listed endangered or threatened species are know to exist with the project impact area (See Appendix B Agency Consultation Letters). No further consultation pursuant to Section 7 is required.

The Maryland Department of Natural Resources indicated that their agency does not have any records of Federal or State rare, threatened or endangered plants or animals within the project site. Maryland Department of Natural Resources did state that the open waters adjacent to or part of the project area are known historic waterfowl concentration areas and requested if construction of water dependent facilities are planned that the Wildlife and Heritage Service be consulted with for technical assistance regarding waterfowl (See Appendix B Agency Consultation Letters).

SOCIO-ECONOMIC AND LAND USE

The proposed action would have no effects on existing or long-term site use or conditions; as such, there would be no impact on socio-economics or land use. Therefore, this impact topic was dismissed from further consideration.

ENVIRONMENTAL JUSTICE

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations directs Federal agencies to identify and address as appropriate, disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority or low-income populations.

The park is surrounded by the Patapsco River on three sides in the middle of the Baltimore Harbor. The surrounding area is mostly industrial use. No minority or low income populations were identified within the project study area. Also, the proposed action would have no effects to existing or long-term use or site conditions; and the proposed action would not result in a significant adverse effect on any populations. Therefore, Environmental Justice was dismissed from further consideration.

TRANSPORTATION (NAVIGATION)

The Patapsco River is listed as a Navigable Water, and therefore it is subject to review under Section 10 of the Rivers and Harbor Act of 1899 (33 U.S.C. 403). Section 10 states "That the creation of any obstruction not affirmatively authorized by Congress, to the navigable capacity of any of the waters of the United States is hereby prohibited; and it shall not be lawful to build or commence the building of any wharf, pier, dolphin, boom, weir, breakwater, bulkhead, jetty, or other structures in any port, roadstead, haven, harbor, canal, navigable river, or other water of the United States, outside established harbor lines, or where no harbor lines have been established, except on plans recommended by the Chief of Engineers and authorized by the Secretary of War; and it shall not be lawful to excavate or fill, or in any manner to alter or modify the course, location, condition, or capacity of, any port, roadstead, haven, harbor, canal, lake, harbor of refuge, or inclosure within the limits of any breakwater, or of the channel of any navigable water of the United States, unless the work has been recommended by the Chief of Engineers and authorized by the Secretary of War prior to beginning the same (USACE, 2002)."

The project site is located at the tip of Whetstone Point in the middle of the Baltimore Harbor. Navigation channels for the Port of Baltimore are located on both the east and south sides of the park. The channels are maintained and operated by the Maryland Port Authority. Based on the review of the National Oceanic and Atmospheric Administration Nautical Chart, which is provided in Figure 3, the Ferry Bar Channel exists directly south of Fort McHenry, and the East Channel is directly east of Fort McHenry. The installation of the riprap is proposed in two to four feet of water along segments 9 and 10 on the south side of the park. The seawall is more than 1,500 feet away from the Ferry Bar Channel. The riprap would be installed approximately 10 feet outward along the 1,300 feet of seawall and would be consistent with riprap existing along segments 3 through 8. Also, riprap currently exists along the perimeter of the wetland creation area just west of the site.

The installation of riprap along segments 9 and 10 would have no effect on navigation because the installation of riprap is well outside of the harbor's navigation channels and normal boating patterns. A navigational marker/light exists at Fort McHenry and the proposed action would have no effect to the use of the light as a navigation marker.

Authorization by the Corps of Engineers under Section 10 of the Rivers and Harbor Act would be obtained prior to construction. The Maryland Port Authority and Coast Guard will be consulted with as part of the review process for this Environmental Assessment.

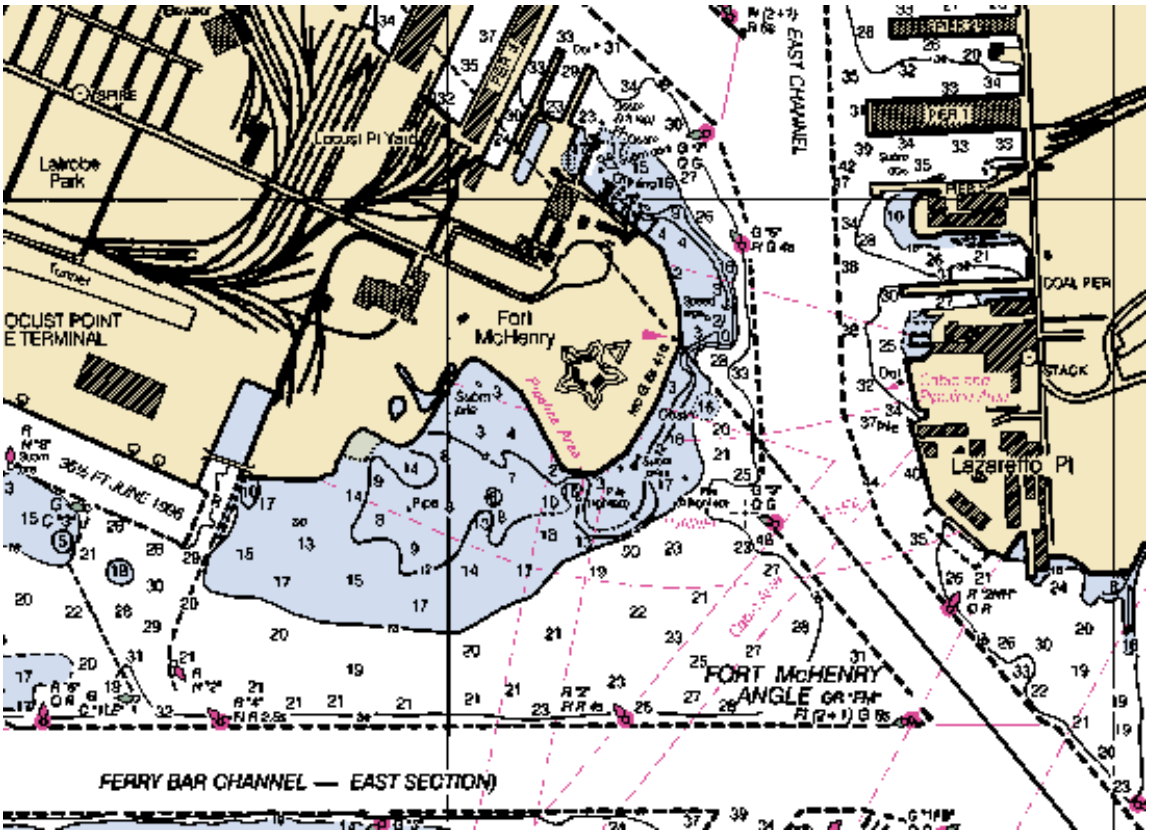

Figure 3. National Oceanic and Atmospheric Administration Nautical Chart

The riprap would make accessing the wall from the water in segments 9 and 10 more difficult. A dock for the water taxi and boat access to the park is located at the north end of the park. The National Park Service does not currently allow boats to dock along the historic seawall other than at the dock. The riprap would discourage boaters from docking along the seawall and reduce potential impacts from recreational boaters hitting the historic seawall. The proposed action would have no adverse impacts to navigation in the Baltimore Harbor; therefore, navigation was dismissed from further consideration.

COMMUNITY FACILITIES AND SERVICES

The proposed action would have no effects on existing or future site use or conditions. The repair of the seawall would have no effect on community facilities and existing levels of services for emergency response, fire and rescue, police, and schools. Therefore, this impact topic was dismissed from further consideration.

INFRASTRUCTURE

The park has inventoried 39 drainage pipes along the seawall. The pipe locations are depicted in Figure 4 and information pertaining to each pipe is provided in Table 1. The contractor would be made aware of the pipe location and the design would take into account how to avoid or minimize potential effects to these drainage structures. The installation of riprap along segments 9 and 10 would take into account the location of each pipe.

Figure 4 - Drainage Pipes Locations along Seawall at Fort McHenry

TABLE 1:
EXISTING DRAINAGE PIPES ALONG SEAWALL

SEQ_NO	DIAMETER	MATERIAL	INVERT	SEQ_NO	DIAMETER	MATERIAL	INVERT
1	12”	CP	0.20	21	18”	CI	4.04
2	24”	RCP	2.02	22	0	-	0.00
3	8”	CP	0.00	23	8”	CI	5.42
4	8”	CI	1.93	24	6”	VCP	4.57
5	6”	CI	3.00	25	10”	CPVC	0.00
6	6”	CI	2.02	26	18”	CPVC	0.00
7	4”	CI	2.73	27	12”	VCP	6.23
8	6”	CI	3.49	28	0	-	0.00
9	14”	CMP	3.30	29	0	-	0.00
10	8”	CI	5.29	30	8”	CI	2.71
11	6”	CI	0.00	31	0	-	0.00
12	6”	CI	0.00	32	0	-	0.00
13	10”	VCP	3.67	33	4”	CI	3.22
14	10”	VCP	4.57	34	12”	CI	0.92
15	6”	CI	4.54	35	0”	-	0.00
16	6”	CI	0.00	36	8”	VCP	2.89
17	8”	VCP	3.76	37	8”	CI	3.38
18	8”	VCP	4.28	38	12”	VCP	2.84
19	0	-	0.00	39	12”	CI?	0.00
20	10”	CI	4.71				

Notes
CMP = Corrugated Metal Pipe
Cl = Cast Iron Pipe
VCP = Vitrified Clay Pipe
CPVC= Chlorinated Polyvinyl Chloride Pipe

Based on the nature of the proposed repairs and location of the seawall, the proposed action would have no effect on the other existing infrastructure at the park. No utilities are known to exist in the project area. Services such as water and sewer, telephone and communications, electrical supply and natural gas, and waste management would not be affected by the repair of the seawall or associated construction activities. The state's 'Miss Utility" program would be contacted for any excavations prior to starting work to confirm that no utilities are within the project area. Therefore, this impact topic was dismissed from further consideration in this document.

PARKS AND RECREATION

The closest park is Locust Recreation Center and associated park about a half a mile west of Fort McHenry on the south side of Fort Avenue. Another park, Riverside Park exists approximately one mile west of Fort McHenry. Neither park would be affected by the proposed repair of seawall and associated construction activities. The proposed action would have no effects on existing or future site use or conditions. The repair of the seawall would have no effects on nearby parks or recreation activities. Therefore, parks and recreation was dismissed from further consideration.

PARK OPERATIONS

Fort McHenry was designated a National Park in 1925 and a National Monument and Historic Shrine in 1939. The fort and surrounding 43 acres of parkland are administered by the National Park Service. The park is open all year around except Christmas and New Years. In the winter, the park grounds are open from 8:00 a.m. to 5:00 p.m. with the visitor center closing at 4:45 p.m. During the summer, the park grounds are open from 8:00 a.m. to 8:00 p.m.

In Fiscal Year 2001, the park counted 662,769 total recreation visits. The park's annual operating budget is $1,652,000. The rehabilitation of the seawall would have no or negligible short-term or long-term adverse impacts on park operations. The park would remain open and operate as it does presently. Temporary trail closures may be needed during construction and are discussed in more detail as part of the visitor use and experience. The park would coordinate with the contractor but the effort would be minimal and no different from the staff's day to day duties.

ALTERNATIVES

In January 2001, the National Park Service began developing the program for the rehabilitation of the historic seawall at Fort McHenry National Monument and Historic Shrine. Over the course of the last year, the project team has narrowed down the list of possible alternatives. The design analysis was conducted to help with this determination. The following factors were identified by the project team as objectives to guide in the evaluation of the alternatives:

1. Prevent Loss of Park Resources: Historic structures, cultural landscape, archeology, and nearby wetlands.

2. Maintain and Improve Conditions of Park Resources: Repair seawall, replace inadequate fencing, and remove shrubs/vegetation.

3. Provide Educational and Interpretive Opportunities: Increase views of the wetland for education opportunities and improve the access to wetland marsh area.

4. Effort Required to Protect User Health, Safety, and Welfare: Repairs should improve the stability of the seawall making it safe for visitors walking on or near the seawall and attempt to reduce accumulation of trash and debris in the riprap.

5. Sustainability: The design and material should minimize the need for future repairs and preventive measures such as riprap or filter cloth should be employed.

As part of the design analysis and project planning, a range of alternatives were considered. Those alternatives that were not realistically feasible or do not adequately meet the project purpose and need were dismissed. The No-Action Alternative and two other build alternatives were retained for further evaluation by the park staff and inclusion into this Environmental Assessment.

ALTERNATIVE A – NO-ACTION

The No-Action Alternative describes the action of continuing the current management operation and conditions. No action does not imply or direct discontinuing the current action or removing existing uses, development, or facilities. The No-Action Alternative provides a basis for comparing the management direction and environmental consequences of the other alternatives. Under the No-Action Alternative, the seawall would not be repaired and preventive measures such as rip rap or drainage improvements would not be installed to protect the seawall. In addition, the fence would remain mounted to segments 11and 12. Minor repairs of the seawall would continue as part of ongoing maintenance operations.

ALTERNATIVE B – SEAWALL REPAIRS (WITH TRENCHING AND TREATMENTS BEHIND WALL SEGMENTS 9 AND 10)

Under both build alternatives, the National Park Service proposes to repair the deteriorated conditions of the seawall. Both build alternatives would involve masonry treatments and protective measures as well as improvements along segments 11 and 12 near the marsh and maintenance area. The primary difference between the two build alternatives is the method of protection. Under Alternative B, gravel and geotextile material would be installed to minimize the amount of soil washed through the wall. The installation would require trenching behind the wall along segments 9 and 10.

Masonry Treatments. These treatments include basic masonry repairs such as resetting loose facestones or replacing missing or deteriorating facestones and capstones, repointing capstone joints, and filling voids. Approximately 20 capstones are in poor condition. Loose capstones would be removed and reset. Deteriorated capstones would be replaced. The capstones would be anchored to the wall with steel rods set in epoxy grout.

Loose face stones would be cleaned and fitted/grouted back into place. Stones that have fallen into the water would be salvaged and similarly reset. In areas that have sustained masonry loss or erosion for which salvage stone cannot be obtained, new stone faces would be placed to match the existing appearance. These would then be anchored with the epoxy-grouted steel reinforcing rods. Wall voids would be filled with stone rubble set in mortar, or by other means of grout placed in cloth bags. Missing or deteriorated mortar joints would be repointed.

Dewatering may be necessary in some instances to repair facestones below the mean low tide. Scattered stone from the river bottom that may have come from the wall would be collected for reuse. A limited amount of stone salvage would be performed.

The proposed repairs would address deteriorated areas along the entire 3,765 feet of seawall; however, the bulk of the effort would be at segments 9 and 10 because they do not have any preventive structures to minimize the impacts from wave wash. In 1975, riprap was added in front of segments 4 through 8 but not segments 9 and 10. Segments 11 and 12 are protected from wave action by the existing marsh and segments 1 and 2 are not located in an area subject to the same type of waves and swells. Wall segments 9 and 10 are in the greatest need for repair and protection because of their location and lack of preventive structures.

Relocate Fence, Remove Vegetation, and Install Retaining Wall along Segments 11 and 12. To prevent exfoliation of the seawall capstones, the chainlink boundary fence would be removed and a new fence installed a few feet inside the seawall. The boundary fence is currently mounted into the capstones of the wall. The vegetation growing on and adjacent to the wall would be removed. The roots from the volunteer trees are encroaching onto the wall and further degradation may result from root infiltration into the wall. Replacement plantings are being considered to replace the habitat. Also, small tiered, concrete-block, retaining walls would be constructed to prevent soils for slipping and covering the wall. The walls would also serve to demarcate a vehicle access road into the maintenance area and a potential pedestrian pathway leading to the marsh outside the park's boundary. The new fence location would be adjacent to

or mounted to this retaining wall. Figure 5 shows the proposed improvements and vegetation removal along segments 11 and 12.

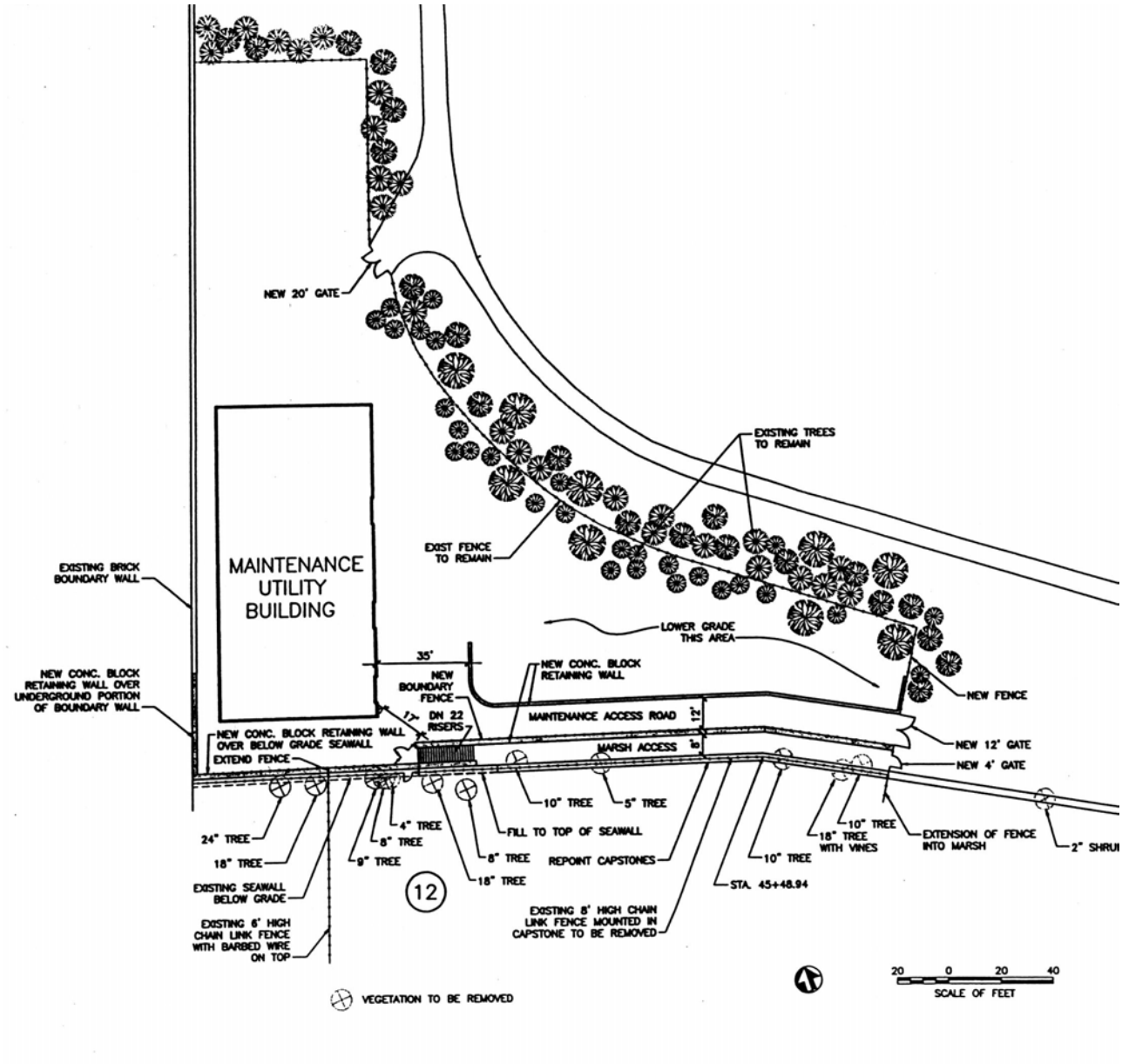

Figure 5. Segments 11 and 12 Site Improvements

Trenching with Installation of Gravel and Geotextile/Filter Cloth Material

The primary difference between Alternatives B and C is the preventive measures proposed. Under Alternative B, the National Park Service would use a technique to improve drainage and preserve the backfill behind the wall. The technique involves excavation behind the wall with the installation of gravel in a geotextile wrapping. No riprap would be placed at the base of the segments 9 and 10 under Alternative B. Figure 6 presents a conceptual design of Alternative B. In 1988, granular backfill material was used to replace soil on the landward side of the seawall in segments 1-4. This construction method acts to reduce the hydraulic actions and prevent soil loss through the stone joints.

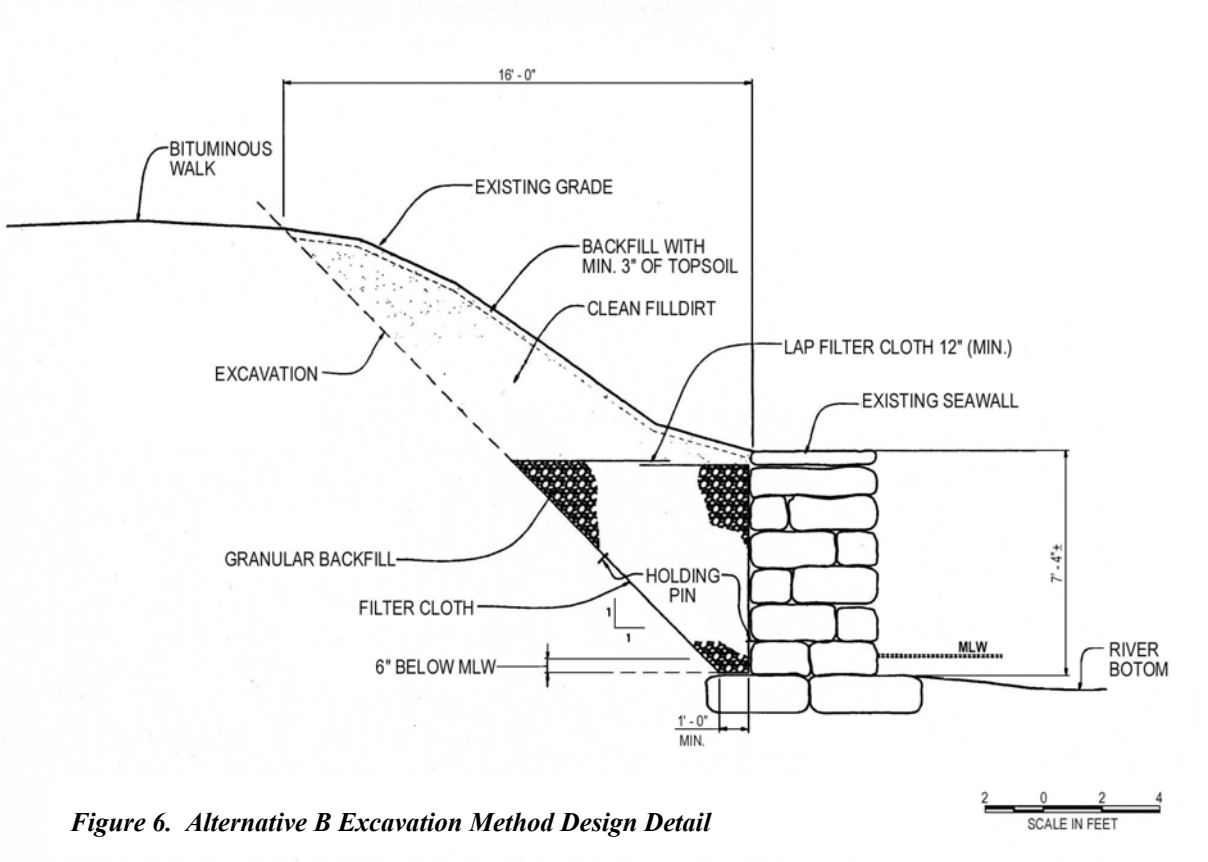

Figure 6. Alternative B Excavation Method Design Detail

ALTERNATIVE C – SEAWALL REPAIRS (WITH INSTALLATION OF RIPRAP AT BASE OF WALL SEGMENTS 9 AND 10) – PERFERRED ALTERNATIVE

Alternative C is the Preferred Alternative. Under Alternative C, the masonry repairs described in Alternative B would be the same. In addition, the National Park Service would relocate the fence, remove vegetation and install small retaining walls along segments 11 and 12 as described in Alternative B. The difference between Alternatives B and C is the protective measures being proposed for segments 9 and 10. Under Alternative C, the National Park Service would install angular stone riprap along the base of segments 9 and 10. The riprap would dissipate wave force being applied against the seawall and increase the longevity of the seawall. Figure 7 shows the relationship of the placement of riprap with the historic seawall. The new riprap would be installed so that the top of the riprap is just above the Mean High Water (MHW) line. No trenching or excavating behind the wall would occur under this alternative.

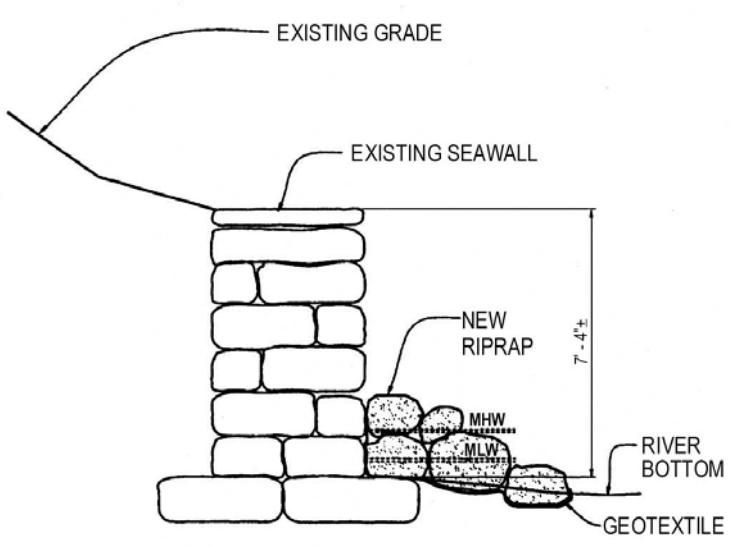

Figure 7. Alternative C Riprap Design Detail

Since 1975, riprap has been an effective protective measure to minimize the effects of wave wash and swells along the other seawall segments. The installation of the riprap along segments 9 and 10 would not be as high as other parts of the seawall so the riprap will not provide 100 percent protection. The lower design elevation would be intended to reduce the amount of debris and trash trapped in the riprap as well as reduce the visual effects of the riprap on the historic structure.

MITIGATION MEASURES/CONDITIONS OF THE PREFERRED ALTERNATIVE

Mitigation measures or conditions are presented as part of the Preferred Alternative. These actions have been developed to lessen the adverse effects of the Preferred Alternative. The following mitigation measures or conditions are recommended for the implementation of the preferred alternative:

- Design and Construction in a Floodplain - Flood mitigation is offered through the design process by incorporating methods for protecting life and minimizing storm damage through appropriate procedures. One example is the installation of the riprap to protect

wall segments 9 and 10 from wave wash and swells. Appropriate construction best management practices would be specified to minimize short-term impacts from dewatering activities. These mitigation measures would be in accordance with the National Park Service floodplain guidance (*Director's Order #77-2 Floodplain Management*) and with Executive Order 11988.

- Avoidance of Wetlands - Best management practices would be followed by the contractor and general conditions adhered to as part of the Section 404 permit to avoid and minimize short-term impacts during construction.

- Construction Zones – Construction zones would be identified and fenced with construction tape, snow fencing, or similar materials prior to construction activity. The fencing would define the construction zone and activity to the minimum area required for construction. All protection measures would be clearly stated in the construction specifications and workers would be instructed to avoid activities beyond the zone as defined by the fencing.

- Soil Disturbance and Erosion Best Management Practices - Temporary impacts associated with the repair of the seawall would occur, such as minor soil and vegetation disturbance. In an effort to minimize soil loss, silt fence and other erosion control practices would be used. Hay bales, however, are not permissible in that they often contain seeds of undesirable vegetation and harmful alien plant species. Therefore, on a case by case basis other practices would be used, such as erosion control dams, rice straw determined to be weed free by the National Park Service, cereal grain straw that has been fumigated to kill weed seeds, and wood excelsior bales. Standard erosion and control measures such as silt fence and sand bags would be used to minimize soil erosion. The contractor would be responsible for routine inspections as instructed in the design specifications.

- Revegetation Plantings - Revegetation plantings would use native plant species from genetic stocks originating in or near the park. Revegetation efforts would be to reconstruct the natural spacing, abundance, and diversity of the existing native plants species. All disturbed areas would be restored as soon as reasonably possible to preconstruction conditions.

- Periodic Monitoring during Construction - The National Park Service would continue the Section 106 process with the Maryland Historical Trust. Based on past studies and recent archeological investigations, further subsurface investigations are not likely to reveal significant artifacts in the area of potential effect. Therefore, no further archeological field investigation is recommended for the implementation of the Preferred Alternative. Periodic selective monitoring of excavations and seawall repairs would occur by the qualified archeologist from the Maryland Historical Trust or National Park Service during construction. Monitoring would occur in areas where previous study or disturbance is not as well documented.

- Recommend Use of Previously Disturbed Areas - Construction would take advantage of previously disturbed areas whenever possible to reduce the risk of disturbing potential archeological resources at the park.

- Discovery of Archeological Resources - Should the construction unearth previously undiscovered archeological resources, work would cease in the area of discovery and the park would consult with the Maryland Historical Trust and Advisory Council on Historic Preservation, as necessary according to 36 CFR 800.13, Post Review Discoveries. In the highly unlikely event that human remains are discovered during construction, provisions outlined in the Native American Graves Protection and Repatriation Act of 1990 would be followed.

  The contractors would be informed of the penalties for illegally collecting artifacts or intentionally damaging archeological sites or historic properties. Contractors would be instructed on the procedures to follow in case of discovery. Construction activities would be minimized in areas near any site containing known archeological resources.

- Trail Access and Temporary Closures – The flow of any bicycle or pedestrian traffic on the paved seawall trail would be maintained to the greatest extent possible during construction. There may be some periods when the nature of the construction would require the closure of the trail. Reasonable efforts would be made to reduce the potential impacts to park visitors and the contractor would alert the park staff in advance of any necessary closures. Visitors would be informed of any closures and signs would be posted at the construction area.

- Contractor Coordination - The contractor would coordinate with the park staff to reduce disruptions of normal park activities. Equipment would not be stored along the roadway overnight without prior approval of the park staff. The contractor and on-site workers would be informed about the special sensitivity of the park's value, regulations, and appropriate housekeeping.

SUSTAINABILITY

The National Park Service has adopted the concept of sustainable design as a guiding principle of facility planning and development. The objectives of sustainability are to design park facilities to minimize adverse effects on natural and cultural values, to reflect their environmental setting, and to maintain and encourage biodiversity; to construct and retrofit facilities using energy-efficient materials and building techniques; to operate and maintain facilities to promote their sustainability; and to illustrate and promote conservation principles and practices through the sustainable design and ecologically sensitive use. Essentially, sustainability is living within the environment with the least impact on the environment. The preferred alternative subscribes to and supports the practice of sustainable planning, design, and use of the seawall through implementing protective measures that will reduce future maintenance effort and costs.

CONSTRUCTION COST AND SCHEDULE

The cost of the project is estimated to be $1,480,000, and construction is projected for spring/summer of 2003.

ALTERNATIVES CONSIDERED BUT DISMISSED

The majority of the treatment recommendations address basic masonry repair of the seawall. For the most part, only two alternatives exist: (1) invest into the appropriate rehab to repair the wall or (2) allow the conditions to continue to deteriorate. No other reasonably feasible alternatives were identified. The options lie with the preventive measures to protect the seawall from further degradation. In the design analysis, the National Park Service considered just installing riprap along segment 9 instead of along segments 9 and 10. This option was dismissed in that the option was not as sustainable and did not provide protection for the seawall exposed to wave wash and swells.

The other option considered, but not retained, was to not implement the improvements along segments 11 and 12. The park staff considered not relocating the fence, removing vegetation, or installing small retaining walls or variations thereof. The options are small in scope when compared to the primary rehabilitation efforts; however, not addressing the potential impacts associated with vegetation could result in impacts from the roots infiltrating the seawall. Also, the fence being mounted into the seawall would continue to take away from the wall's historic character. As a result, the National Park Service deemed this option a necessary part of the rehabilitation. Based on the small scope of the improvements and anticipated negligible impacts, not implementing the improvement to segments 11 and 12 was dismissed from further consideration. No other reasonably feasible alternatives or options were identified during the design analysis or planning for this project that meet the projects purpose and need.

IMPACT COMPARISION MATRIX

This table of impacts is for comparison purposes of the project alternatives, including no action. The matrix presents a concise summary of each alternative's potential effects by impact topic.

TABLE 2: COMPARATIVE SUMMARY OF THE NO-ACTION AND PREFERRED ALTERNATIVE

Alternative A – No-Action Alternative	**Alternative B – Seawall Rehabilitation with Trenching and Treatment Behind the Seawall**	**Alternative C – Seawall Rehabilitation with Riprap Installation**
Under the No-Action Alternative, the historic seawall would not be repaired, corrective measures to prevent drainage problems would not be taken and riprap would not be added to protect the wall against wave wash and swells.	Alternative B proposes that the seawall be repaired. The seawall rehabilitation would include basic masonry repairs, repointing and resetting capstones and filling voids behind the wall. Under Alternative B, preventive measures would be included that involve trenching behind the seawall and installing gravel or filter fabric. These measures would reduce the amount of soil lost through the wall. Also, the fence would be replaced and vegetation adjacent to the wall removed to protect the seawall.	Under Alternative C, the National Park Service would repair the historic seawall. The seawall rehabilitation would include basic masonry repairs, repointing and resetting capstones, and filling voids behind the wall. Alternative C includes the installation of riprap along segments 9 and 10 to minimize the effects of wave wash and swells caused by larger vessels. Also, the fence would be replaced and vegetation adjacent to the wall would be removed to protect the seawall.

TABLE 3: COMPARATIVE SUMMARY OF POTENTIAL ENVIRONMENTAL IMPACTS

Impact Topic	**Alternative A No-Action Alternative**	**Alternative B**	**Alternative C (Preferred Alternative)**
Historic Structures	The No-Action Alternative would have a direct, moderate, long-term, adverse impact to the historic seawall from the wave wash and swells.	The repairs to the seawall would have a direct, minor, long-term, beneficial impact on historic structures as a result of added protection measures and repairs.	The repairs to the seawall would have a direct, minor, long-term, beneficial impact on historic structures as a result of added protection measures and repairs.
Archeological Resources	The No-Action Alternative would have negligible, long-term adverse impact from soil loss and voids in the historic seawall from the wave wash and swells and the lack of protective measures.	The excavation behind the wall would have the potential for direct, minor, long-term, adverse impact to significant archeological resources.	The underwater archeological survey in the vicinity of segments 9 and 10 did not identify any significant resources; therefore, the installation of riprap would have a direct, negligible, long-term adverse impact on archeology.

Impact Topic	Alternative A No-Action Alternative	Alternative B	Alternative C (Preferred Alternative)
Cultural Landscapes	The No-Action Alternative would have no impacts to cultural landscapes.	The repairs to the seawall would have a direct, minor, long-term, beneficial impact on cultural landscapes through the repair and protections of the seawall.	The repairs to the seawall would have a direct, minor, long-term, beneficial impact on cultural landscapes through the repair and protection of the seawall.
Floodplains	The No-Action Alternative would have no impacts to floodplain values.	Alternative B would have no impacts to floodplain values. No fill or change to the existing floodplain would occur for this alternative.	The preferred alternative would have direct, negligible, long-term adverse impact as a result of a 0.23 acres area being filled with riprap. The installation of riprap would not impact floodplain values nor would it present any additional hazards to the park.
Wetlands	The No-Action Alternative would have no effects to wetlands in the area therefore no impacts to wetlands would occur.	Alternative B would have minor, short-term impacts during construction from dewatering activities. No long-term adverse impacts to wetlands would occur.	The Preferred Alternative would have negligible, long-term adverse impacts to wetlands. The wetland is estuarine, subtidal, and does not have hydrophytic vegetation. The area of disturbance is 0.23-acre.
Coastal Zone Management	The No-Action Alternative would be consistent with the State's Coastal Zone Management program.	Under Alternative B, the action would be consistent with the State's Coastal Zone Management program.	Under the Preferred Alternative, the action would be consistent with the State's Coastal Zone Management; although the installation of riprap would have indirect, negligible, long-term, adverse impact on floodplains and wetlands.
Land Cover and Vegetation	The No-Action Alternative would have no impacts to land cover or vegetation in that the existing landscape would not change.	Under Alternatives B and C, minor, long-term adverse impacts would occur to vegetation and ground cover along segments 11 and 12 as a result of relocating the fence and installation of the small retaining walls.	

Safety	Not repairing the seawall would have a direct, minor, long-term adverse impact to safety. Wall segments 9 and 10 would continue to deteriorate because of the lack of protective structures and cause a safety risk to visitors or park staff who walk along the seawall.	Under Alternatives B and C, the seawall repairs would have a minor, long-term, beneficial impact on safety for visitors walking along the seawall. Voids in the seawall and loose stones would be fixed reducing the risk to visitors walking on or along the seawall.
Visitor Use and Experience	The No-Action Alternative would have negligible, long-term, adverse impacts to visitor use and experience. The seawall, which contributes to the park's scenic landscape, would continue to deteriorate and affect the visitors experience.	Under Alternatives B and C, minor, short-term, adverse impacts would occur during construction as a result of potential trail closures. Minor, long-term, beneficial impacts would occur from the restoration and preservation of the walls historic character.
Park Operations	The No-Action Alternative would have negligible, long-term, adverse impacts to park operations as a result of not addressing the need to repair the seawall.	The No-Action Alternative would have negligible, short-term, adverse impacts to park operations during construction as a result of potential trail closures.

ENVIRONMENTALLY PREFERRED ALTERNATIVE

In accordance with Directors Order - 12, the National Park Service is required to identify the "environmentally preferred alternative" in all environmental documents, including environmental assessments. The environmentally preferred alternative is determined by applying the criteria suggested in the National Environmental Policy Act of 1969, which is guided by the Council on Environmental Quality. The Council on Environmental Quality provides direction that "[t]he environmentally preferable alternative is the alternative that will promote the national environmental policy as expressed in Section 101 of the National Environmental Policy Act, which considers:

- Fulfilling the responsibilities of each generation as trustee of the environment for succeeding generations;
- Assuring for all generations safe, healthful, productive, and esthetically and culturally pleasing surroundings;
- Attaining the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences;

- Preserving important historic, cultural, and natural aspects of our national heritage and maintaining, wherever possible, an environment that supports diversity and variety of individual choice;

- Achieving a balance between population and resource use that will permit high standards of living and a wide sharing of life's amenities; and

- Enhancing the quality of renewable resources and approaching the maximum attainable recycling of depletable resources (National Environmental Policy Act, section 101)."

Generally, these criteria mean the environmentally preferable alternative is the alternative that causes the least damage to the biological and physical environment and that best protects, preserves, and enhances historic, cultural, and natural resources (Federal Register, 1981).

The No-Action Alternative fails to address the preservation of the park resources. The historic seawall is a contributing feature to Fort McHenry's listing in the National Register of Historic Places. Also, under the No-Action Alternative, a safe and healthful and esthetically pleasing environment would not be assured for future generations.

Under Alternative B, the seawall would be preserved; however, other significant archeological resources could be adversely impacted. Trenching behind the wall and the installation of filter cloth and stones would impact existing archeological resources. The documented terrestrial resources likely to be present in or adjacent to the trench area include layers of fill, largely intact, deposited behind the wall upon the completion of past construction events and remnants of historical ground surface strata adjacent to the wall. These impacts would be irreversible.

Alternative C is the Environmentally Preferred Alternative because it offers long-term protection to segments 9 and 10 while minimizing the potential impacts to the biological and physical environment. Specifically, Alternative C minimizes the most significant potential impact, which is to archeological resources at the park. Alternative C does result in short-term and long-term adverse impacts to wetland, and floodplains; however, these impacts are minor.

AFFECTED ENVIRONMENT

A summary of the resources identified as impact topics associated with this project follows.

CULTURAL RESOURCES

Cultural resources for the purposes of this environmental assessment are further characterized as historic structures, archeological resources, and cultural landscape.

"Historic properties," as defined by the implementing regulations of the National Historic Preservation Act (36 CFR 800), are defined as any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places. This term includes artifacts, records, and the remains that are related to and located within such properties, as well as traditional and culturally significant Native American sites and historic landscapes. The term "eligible for inclusion in the National Register" includes both properties formally determined eligible and all other properties that meet National Register listing criteria.

The significance of historic properties is generally judged against a property's ability to meet the four criteria for inclusion on the National Register of Historic Places (36 CFR 60):

- Association with events that have made a significant contribution to the broad patterns of our history; or
- Association with the lives of persons significant in our past; or
- That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- That has yielded, or may be likely to yield, information important in prehistory or history.

Properties may be eligible for the National Register for contributions at the national, state, or local level. Ordinarily, properties achieving significance within the last 50 years are not considered eligible unless they are integral parts of historic districts or unless they are of exceptional importance; the most common types of properties less than 50 years old listed on the National Register are works of modern architecture or scientific facilities. Additionally, in order for a structure or building to be listed in the National Register, it must possess historic integrity of those features necessary to convey its significance, i.e., location, design, setting, workmanship, materials, feeling, and association (see National Register Bulletin #15, *How to Apply the National Register Criteria for Evaluation)*.

HISTORIC STRUCTURES

Fort McHenry National Monument and Historic Shrine is listed on the National Register of Historic Places. The historic seawall (List of Classified Structures # 07758) is identified as an historic structure contributing to Fort McHenry's architectural and historical significance. The

heavy masonry retaining wall is constructed of cut granite and sandstone set flush with the earthen sod embankment. The seawall is approximately 3,780 linear feet (nearly three-fourths of a mile long) and makes up the perimeter of the north, east and south sides of the fort's grounds adjacent to the water's edge. The wall exhibits a varied appearance with some sections more roughly constructed with split–faced or undressed stone. The wall is capped with both cut granite and rough split-faced granite.

Initial construction of the wall began in 1816 with a second phase of construction occurring between 1836 and 1839. Work on additional sections continued until 1895-96. Primarily as a result of storm damage, on-going episodes of repairs and rebuilding have marked the structural development of the wall. Amongst the earliest repairs carried out by the National Park Service, the entire dry laid wall was pointed above the water line in 1938. In addition to masonry repairs carried out in 1975, the Army Corps of Engineers place stone riprap in front of portions of the seawall's eastern face.

Significant damage to the wall occurred in 1979 from Tropical Storm David, with about 75 feet of the wall washed out and numerous capstones displaced. Initial repairs were completed by 1984, but more substantial work was undertaken in 1988 that included dismantling and resetting portions of the wall. The work was carried out in accordance with the recommendation in a Historic Structures Report (Brown and Long, 1986).

The section of the boundary fence along seawall segments 11 and 12 slated for removal is non-historic. The boundary fence along the north side of the park is historic; however, the boundary fence is not within the project area or area of potential effect. Also, the seawall trail (List of Classified Structures Number 81230) is identified as a contributing structure to the fort's National Register significance. The trail originally was constructed in 1917-19 as a paved recreational path for patients and staff of the World War I hospital. Although the trail may not be directly impacted, it may fall within the area of potential effects.

ARCHEOLOGICAL RESOURCES

The archeological environment affected consists of features and soils strata having cultural aspects in areas where any of the alternatives require excavation or other construction related ground disturbing activities, or where a substantial reduction in the accessibility of significant archeological resources may result from project implementation. Such areas are, for the most part, situated in the immediate vicinity of wall segments 9 and 10, on which the rehabilitation efforts are focused. Small locations somewhat further into the river could be affected by anchoring of the work barges during the course of construction.

The documented terrestrial resources likely to be present in or adjacent to the affected project area consist most notably of:

- Layers of fill, largely intact, deposited behind the wall upon the completion of past construction events;
- Remnants of historical ground surface strata adjacent to the wall;
- Remnants of the juncture between an early (pre-1830) segment of the seawall (segment 9) and the original (1817) boundary wall of the fort;

- Deposits of sediment at the foot of the wall's face on the river side, partially overlapping the footing of the wall; and possibly containing artifacts of interest such as 19th and early 20th century sewer pipes and other drainage features that extend up to and through the fabric of the wall; and
- Miscellaneous intrusive 20th century feature and deposits.

Precautionary investigations are planned to determine more precisely the condition and potential significance of resources in or adjacent to the affected environment. At present, significant resources if found are unlikely to be typical of the vicinity, pervasive or complex. Archeological testing performed in 1986 (Orrence, et al., 1988:35-43) revealed a significant masonry feature and associated artifact deposit at the southeast end of segment 9, but found no other significant resources elsewhere along segment 9.

The segment 10 area was not among the areas investigated in 1985-86. The characteristics of the archeological resources in the vicinity of segment 10 are, to some extent, documented in historical plans and by previous archeological monitoring. These sources indicate that fill deposits dating to 1895-96 extend to depths of at least two to three feet below grade, and as much as ten feet landward from the back of the wall. In this area, the surface area is likely to have been recontoured during the course of restoration of the site's landscape between the mid-1920s and the mid-1930s.

A number of historic reports and archeological investigations have been conducted on the grounds at the Fort McHenry National Monument and Historic Shrine. The most readily available documentation concerning the seawall consists of the historical and archeological data sections of an historic structures report concerning the seawall (Brown and Long, 1986; Orrence, et al., 1988) and the Park's Archeological Overview (Cheek, et. al., 2000). The full references for the aforementioned documentation can be found in the references section of this Environmental Assessment.

In additional to the terrestrial archeology, investigations were performed by the Maryland Historical Trust to determine the presence of underwater archeological resources. The Maryland Maritime Archeology Program of the Maryland Historical Trust Department of Archeology undertook a magnetometer survey of the State bottomlands adjacent to segments 9 and 10. The purpose of the survey was to determine if there are any magnetic signals within the area of potential effect that might indicate the presence of bomb shells (Langley, 2002). Data was collected on May 29, 2002 which indicated the presence of two areas that displayed strong signals.

The locations of the two magnetic signatures encountered are depicted on Figure 8. Neither of the two signatures was located within the area of potential effect. However, the contractor should be made aware of the locations as to avoid anchoring or other activities in these areas. Target 1 is 100 feet off the juncture of wall segments 7 and 8. Target 2 is located more than 350 feet off wall segment 9 (Langley, 2002). The targets indicate the present of small, solid metal objects at these locations which have the potential to be shells perhaps dating back to 1814 from the British bombardment. It is possible that Target #2 is a portion of the I-95 tunnel, but if so, the tunnel most likely would have appeared on other lanes surveyed. Target #1 is of most interest

due to its intensity and proximity to the fort and seawall. The target could be one of the iron 10-inch or 13-inch shells from the war of 1812 or merely construction debris. Most likely, the target is a drainpipe known to be in the area. Regardless, neither target is within the area of potential effect.

Area of Potential Effect- The Area of Potential Effect corresponds with the length of the seawall and in particular those sections requiring substantial repair along the southwest boundary of the park. This area also includes submerged lands adjacent to the seawall where riprap would be installed and the upland disturbed area by segments 11 and 12 adjacent to the maintenance facility.

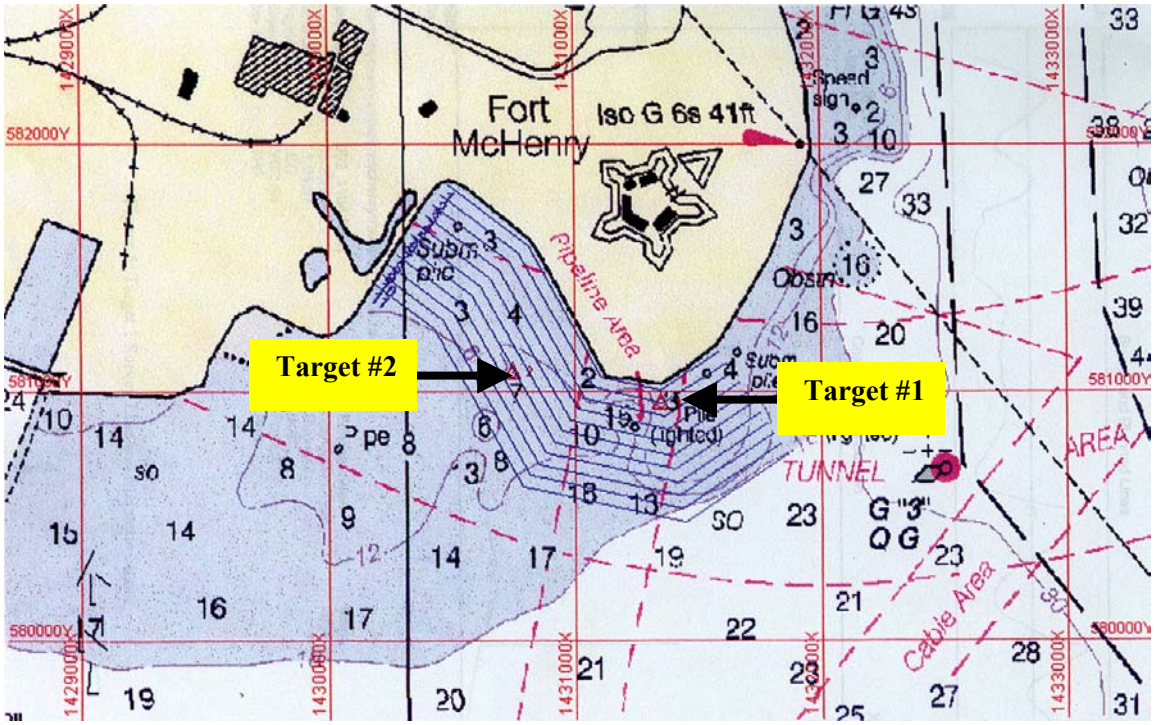

Figure 8- Location of Two Magnetic Signatures from Magnetometer Survey

CULTURAL LANDSCAPES

As described by the National Park Service *Cultural Resource Management Guideline* (DO-28, p.87), a cultural landscape is:

"…a reflection of human adaptation and use of natural resources and is often expressed in the way land is organized and divided, patterns of settlement, land use, systems of circulation, and the types of structures that are built. The character of cultural landscape is defined both by physical materials, such as roads, buildings, walls, and vegetation, and by use reflecting cultural values and traditions."

A cultural landscape inventory does not exist for Fort McHenry; however, the seawall is a significant visual element in the landscape. In the Archeological Overview, the authors mention

that additional investigation is needed to fully assess the complex interrelationships among the various structures, as well as landscape features at Fort McHenry (Cheek et al, 2000, pg 79). For more information on the existing structures and features on the grounds of Fort McHenry, please refer to the documents described in the Cultural Resources Section and cited in the bibliography of this Environmental Assessment.

FLOODPLAINS

Fort McHenry is at the confluence of Northwest Branch and Middle Branch of the Patapsco River. Based on the review of the Federal Emergency Management Agency Flood Insurance Rate Maps for Baltimore City (panels 240010 0510B and 240010 0530B), the seawall is located in a regulated 100-year floodplain. The surrounding parkland, however, is not located in the floodplain. The floodplain is designated as Zone AE on the flood insurance rate maps. Zone AE means that the area is within a 100-year floodplain where base flood elevations are determined.

The Patapsco River is tidal and affected by the ebb and flow of the tides. Based on three months of tide information from August to October 2002, the highest predicted tide for this time frame at the Fort McHenry area is 2.1 feet above mean sea level so the seawall is not normally subject to significant changes in water elevations as a result of tides.

WETLANDS

Based on the review of National Wetland Inventory mapping and site visit, the area of the Patapsco River is classified as an estuarine subtidal system with open water. The estuarine system describes deepwater tidal habitats and adjacent tidal wetlands with low energy and variable salinity, influenced and often semi-enclosed by land (USFWS, 2002). The estuarine system is defined in terms of halinity and tidal influence. The term "estuary" means that part of a river or stream or other body of water having unimpaired connection with the open sea, where the sea water is measurably diluted with fresh water derived from land drainage (NOAA, 2002).

Estuarine subtidal systems provide biotic functions such as fisheries and waterfowl habitat and hydrologic functions such as detrital export and filtration for water quality. Estuaries are known for their high primary production that serves as the base for food webs. The proposed project area to receive the riprap does not contain any submerged or emergent aquatic vegetation.

Seawall segments 11 and 12 are bordered at the southwest property line by tidal wetlands. The site is approximately ten acres and is owned by the State of Maryland and managed by the Maryland Transportation Authority. The site was created in 1982 to fulfill mitigation requirements for the construction of the Interstate 95 Fort McHenry Tunnel. Other than park and National Aquarium in Baltimore campaigns to remove trash and debris that have floated into the marsh area, the site is not routinely maintained or monitored by the park. The tidal wetland is outside the project area and proposed limits of disturbance.

COASTAL ZONE MANAGEMENT

Each Federal agency activity within or outside the coastal zone that affects any land, water use or natural resource of the coastal zone shall be carried out in a manner that is consistent to the maximum extent practicable with the enforceable policies of approved State management

programs (NOAA, 2002). The term "coastal zone" means the coastal waters (including the lands therein and thereunder) and the adjacent shorelands (including the waters therein and thereunder), strongly influenced by each other and in proximity to the shorelines of the several coastal states, and includes islands, transitional and intertidal areas, salt marshes, wetlands, and beaches (NOAA, 2002). The proposed action is within the tidally influenced area of the Patapsco River. This area is designated within the Maryland Coastal Zone and subject to Federal Consistency Review pursuant to the Coastal Zone Management Act and the state's program. The National Park Service submitted a letter to the Maryland Department of Environment requesting Federal Consistency verification. At the time of this preliminary draft report, the response from the state's coastal zone program had not been received.

LAND COVER AND VEGETATION

The land cover adjacent to the seawall segments 9 and 10 is managed turf. The park conducted a detailed tree survey in 1994. Based on the review of the mapping for this survey and site inspections, the trees are not within the proposed project area. Also with one exception, the trees appear far enough away from the seawall that the root systems would not be affected by the proposed construction activities. Wall segments 11 and 12 do contain some young trees. The vegetation existing along seawall segments 11 and 12 is in Table 4. In addition to the trees and shrubs listed, sweet autumn clematis *(Clematis*), grapevine (*Vitis sp.)* and English Ivy (*Hedera helix*) are present and growing along or on the fence. Adjacent to the fence line, the ground cover is mostly grasses such as fescue and blue grass.

TABLE 4
VEGETATION ALONG SEGMENTS 11 AND 12

Common Name Trees/Shrubs	Species Name	Size Diameter at Ground Level	Quantity
Tree-of-heaven	*Ailanthus altissima*	18"	1
Box Elder	*Acer negundo*	10"	1
Mulberry	*Morus sp.*	1,3,4(2),8,9, 10, 16(2), 18"	10
Black Cherry	*Prunus serotina*	3, 6, 8"	3
Catalpa	*Catalpa sp.*	1"	1

SAFETY

The current conditions of the seawall present safety concerns. The seawall is deteriorating and stones are loose or have fallen into the water. In addition, some areas have voids behind the seawall. The park has signs which direct visitors to stay off the seawall and on the paved paths. However, visitors still frequently walk along the seawall.

VISITOR USE AND EXPERIENCE

Fort McHenry National Monument and Historic Shrine attracts nearly 700,000 visitors annually. The park offers tours and interpretive programs about the fort's history and architecture and the creation of the "*Star-Spangled Banner*." The visitor center has a theater that provides a brief orientation film on the fort's history followed by a scenic vista of the fort's large American flag. A museum is located in the Star Fort and exhibits include historical and military memorabilia, an electric battle map, restored barracks, and restored flag pole. In addition, new exhibits have been developed in the Commander's Quarters, Guard House, Powder Magazine, and the Enlisted Men's Quarters. The park has a series of trail around the fort and along the water. Figure 9 shows the trail locations.

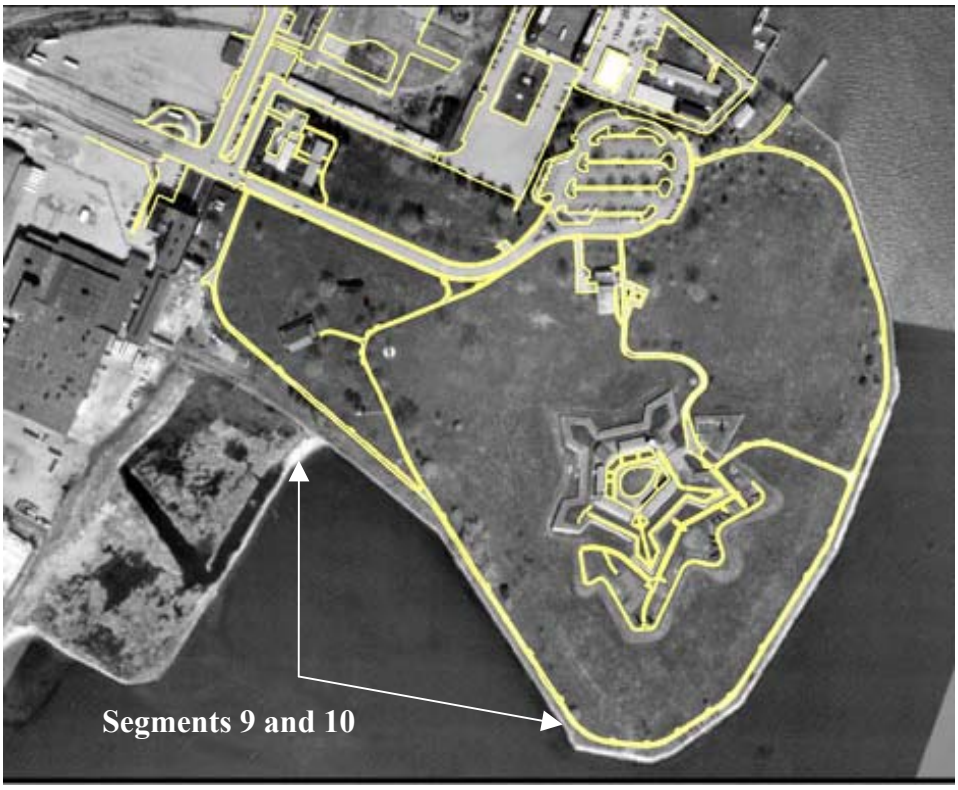

Figure 9: Trails and Sidewalks at Fort McHenry

The park holds a number of special events such as the *Living Human Flag, Civil War Weekend* and *Defenders' Day - The Star-Spangled Banner Weekend.* During these events like the *Living Human Flag*, buses transport in visitors and park along the seawall. Visitors frequently use the seawall trail which parallels the seawall along the majority of the waterfront. From the trail, visitors frequently walk up to the seawall to look at the water and surrounding features in the Port of Baltimore. The seawall trail is also used by bicyclists.

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ENVIRONMENTAL CONSEQUENCES

INTRODUCTION

This section describes the environmental consequences associated with each alternative to the proposed action. It is organized by impact topics, which refine the issues and concerns into distinct topics for discussion analysis. These topics allow a standardized comparison between the alternatives based on their impact to the environment. The National Environmental Policy Act of 1969 requires consideration of context, intensity, and duration of direct, indirect, and cumulative impacts plus measures to mitigate the impacts. National Park Service policy also requires that "impairment" of park resources be evaluated in all environmental documents.

METHODOLOGY FOR ASSESSING IMPACTS AND IMPAIRMENT TO PARK RESOURCES AND VALUES

Potential impacts are described in terms of type (are the effects beneficial or adverse?), context (are the effects site-specific, local, or even regional?), duration (are the effects short-term, lasting less than one year, or long-term, lasting more than one year?), and intensity (are the effects negligible, minor, moderate, or major?). Because definitions of intensity (negligible, minor, moderate, major) vary by impact topic, intensity definitions are provided separately for each impact topic analyzed in this environmental assessment.

In addition, the National Park Service's *Management Policies, 2001* (2000) require analysis of potential effects to determine whether or not actions would impair park resources. The fundamental purpose of the National Park System, established by the Organic Act and reaffirmed by the General Authorities Act, as amended, begins with a mandate to conserve park resources and values. National Park Service managers must always seek ways to avoid, or to minimize to the greatest degree practicable, adversely impacting park resources and values. However, the laws do give the National Park Service the management discretion to allow impacts to park resources and values when necessary and as appropriate to fulfill the purposes of a park, as long as the impact does not constitute impairment of the affected resources and values. Although Congress has given the National Park Service the management discretion to allow certain impacts, that discretion is limited by the statutory requirement that the National Park Service must leave park resources and values unimpaired, unless a particular law directly and specifically provides otherwise. The prohibited impairment is the integrity of park resources or values. An impact to any park resource or value may constitute an impairment, but an impact would be more likely to constitute an impairment to the extent that it has a major or severe adverse effect upon a resource or value whose conservation is:

- Necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- Key to the natural or cultural integrity of the park; or
- Identified as a goal in the park's general management plan or other relevant National Park Service planning documents.

Impairment may result from National Park Service activities in managing the park, visitor activities, or activities undertaken by concessioners, contractors, and others operating in the park. A determination on impairment is made for each impact topic in this section.

CUMULATIVE EFFECTS

The Council on Environmental Quality regulations, which implement the National Environmental Policy Act, requires assessment of cumulative impacts in the decision-making process for federal projects. Cumulative impacts are defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions" (40 CFR 1508.7). Cumulative impacts are considered for all alternatives and are presented at the end of each impact topic discussion analysis.

Cumulative effects were determined by combining the impacts of the proposed action with other past, present and reasonably foreseeable future actions. Therefore, it was necessary to identify other ongoing or foreseeable future projects at Fort McHenry and, if necessary, the surrounding region. A list of foreseeable projects identified as part of this evaluation is provided on page 5 of this Environmental Assessment and, when applicable, discussed under each impact topic.

MITIGATION MEASURES

Mitigation measures are described at the end of each impact topic when appropriate. Mitigation measures are designed to offset or minimize the effects of the proposed action. If no or negligible impacts are anticipated, mitigation measure may not be included for the alternative.

IMPACTS TO CULTURAL RESOURCES AND SECTION 106 OF THE NATIONAL HISTORIC PRESERVATION ACT

Section 101(b) (4) of the National Environmental Policy Act of 1969 (P.L. 91-190), as amended, requires the federal government to coordinate and plan its actions to, among other goals, "preserve important historic, cultural and natural aspects of our national heritage...." The Council of Environmental Quality implementing regulations require that federal impacts to historic and cultural resources be included as part of the National Environmental Policy Act process.

In this environmental assessment, impacts to cultural resources are described in terms of type, context, duration, and intensity, as described above, which is consistent with the regulations of the Council of Environmental Quality that implement the National Environmental Policy Act. These impact analyses are intended, however, to comply with the requirements of both the National Environmental Policy Act and Section 106 of the National Historic Preservation Act. In accordance with the Advisory Council on Historic Preservation's regulations implementing Section 106 of the National Historic Preservation Act (36 CFR Part 800, Protection of Historic Properties), impacts to archeological and cultural resources were identified and evaluated by (1) determining the area of potential effects; (2) identifying cultural resources present in the area of potential effects that were either listed in or eligible to be listed in the National Register of Historic Places; (3) applying the criteria of adverse effect to affected cultural resources either

listed in or eligible to be listed in the National Register; and (4) considering ways to avoid, minimize or mitigate adverse effects.

Under the Advisory Council's regulations a determination of either adverse effect or no adverse effect must also be made for affected, National Register eligible cultural resources. An adverse effect occurs whenever an impact alters, directly or indirectly, any characteristic of a cultural resource that qualify it for inclusion in the National Register, e.g. diminishing the integrity of the resource's location, design, setting, materials, workmanship, feeling, or association. Adverse effects also include reasonably foreseeable effects caused by the preferred alternative that would occur later in time, be farther removed in distance or be cumulative (36 CFR Part 800.5, Assessment of Adverse Effects). A determination of no adverse effect means there is an effect, but the effect would not diminish in any way the characteristics of the cultural resource that qualify it for inclusion in the National Register.

Examples of adverse effects "include, but are not limited to: (i) Physical destruction of or damage to all or part of the property; (ii) Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation, and provision of handicapped access, that is not consistent with the Secretary's standards for the treatment of historic properties (36 CFR part 68) and applicable guidelines; (iii) Removal of the property from its historic location; (iv) Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance; (v) Introduction of visual, atmospheric or audible elements that diminish the integrity of the property's significant historic features; (vi) Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization; and (vii) Transfer, lease, or sale of property out of Federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance." (36 CFR 800.5)

For the purposes of this analysis, the potential effects to cultural resources are divided into historic structures/sites, archeological resources, and cultural landscapes.

IMPACTS ON HISTORIC STRUCTURES

DEFINITION OF INTENSITY LEVELS

In order for a structure or site to be listed in the National Register of Historic Places, it must meet one or more of the following criteria of significance: A) associated with events that have made a significant contribution to the broad patterns of our history; B) associated with the lives of persons significant in our past; C) embody the distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or possess high artistic value, or represent a significant and distinguishable entity whose components may lack individual distinction; D) have yielded, or may be likely to yield, information important in prehistory or history. In addition, the structure or site must possess integrity of location, design, setting, materials, workmanship, feeling, association (*National Register Bulletin, How to Apply the National Register Criteria for Evaluation*). For purposes of analyzing potential impacts to historic structures, the thresholds of change for the intensity of an impact are defined as follows:

Negligible: Impact(s) is at the lowest levels of detection - barely perceptible and not measurable. For purposes of Section 106, the determination of effect would be *no effect*.

Minor: Adverse impact - impact would not affect the character defining features of a National Register of Historic Places eligible or listed structure or building. For purposes of Section 106, the determination of effect would be *no adverse effect*.

Beneficial impact - stabilization/ preservation of character defining features in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties*. For purposes of Section 106, the determination of effect would be *no adverse effect*.

Moderate: Adverse impact - impact would alter a character defining feature(s) of the structure or building but would not diminish the integrity of the resource to the extent that its National Register eligibility is jeopardized. For purposes of Section 106, the determination of effect would be *no adverse effect*.

Beneficial impact – rehabilitation of a structure or building in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties*. For purposes of Section 106, the determination of effect would be *no adverse effect*.

Major: Adverse impact - impact would alter a character defining feature(s) of the structure or building, diminishing the integrity of the resource to the extent that it is no longer eligible to be listed in the National Register. For purposes of Section 106, the determination of effect would be *adverse effect*.

Beneficial impact – restoration of a structure or building in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties*. For purposes of Section 106, the determination of effect would be *no adverse effect*.

ALTERNATIVE A – NO-ACTION ALTERNATIVE

Under the No-Action Alternative, the historic seawall at Fort McHenry National Monument and Historic Shrine would not be substantially repaired, no work would be performed to correct drainage problems behind the wall, and riprap would not be placed for protection along the base of wall segments 9 and 10. The National Park Service would perform spot repairs to the face of the wall from time to time as necessary. As stated previously, the historic seawall is listed as a contributing structure (LCS#:07758) to the park's listing in the National Register of Historic Places. The historic seawall would continue to deteriorate and segments 9 and 10 would remain susceptible to wave wash and swells. Implementation of the No-Action Alternative would have a moderate, long-term, adverse impact to historic resources. The impact does not diminish the integrity of the resources to the extent that the site's National Register eligibility is jeopardized and no short-term impacts would occur from construction activities.

Cumulative Impacts. A variety of past, present, and reasonably foreseeable actions have and would continue to affect historic structures/sites at Fort McHenry. Past events such as storm damage and subsequent repairs and the installation of riprap along segments 3 through 8 have adversely impacted the historic character of the seawall. The repair to the drainage structures at the adjacent man-made wetland is one foreseeable action in close proximity to the proposed action. The repairs are not expected to diminish the historic character or integrity of the seawall. Another project for consideration is the construction and use of a new education/administration building at the park. The park is in the initial planning stages and four alternatives are being considered. Depending on the on-site location, this building has a potential to visually and physically affect historic resources. Not repairing the seawall would result in a minor, cumulative, adverse impact when added to other past, present, and reasonably, foreseeable future projects.

Conclusion. The seawall would continue to deteriorate which would result in a moderate, long-term, adverse impact to historic resources because the seawall is listed as a contributing feature to the site's listing in the National Register of Historic Places. No action would result in a minor, cumulative adverse effect. There would be no impairment of the park's resources or values.

ALTERNATIVE B

Seawall Repairs. Under Alternative B, the repair of the seawall would have a measurable or perceptible impact. The impact is confined to a small area of the seawall along segments 9 and 10 where the majority of the repairs would occur. The masonry treatments and other repairs would be carried out in accordance with the Secretary of Interior's *Standards for the Treatment of Historic Properties* to ensure the repairs are compatible with the historic setting and harmonize with other significant historic structures and landscape features. As a result of the context-sensitive approach, the repair to the seawall face and capstones would result in a minor, long-term, beneficial impact. During construction, a negligible, short-term, adverse impact would occur to the visual element of the historic seawall from the presence of construction equipment such as pumps, trucks and barges.

Protection Measures. The trenching behind the wall and installation of the filter cloth and stone rubble mortar would have minor, long-term, beneficial impacts on historic structures or sites by protecting the seawall from future degradation and minimizing the need for future rehabilitation. The intent of the protection measure is to secure the wall and stabilize the soils to prevent future wash outs along the seawall. The measures would offer long-term protection of the seawall and would have no long-term visual impact on the seawall because the area of disturbance would be restored to the original grade, stabilized, and seeded to resemble preconstruction conditions.

Fence Relocation, Vegetation Removal and Retaining Walls. The relocation of the non-historic boundary fence without remounting the fence posts to the seawall would help restore the historic integrity of the seawall. The relocation would assist in correcting stone exfoliation on the seawall. As a result, this action would have a minor, long-term, beneficial impact because the seawall would be restored to more closely resemble its historic appearance.

In addition, the removal of the vegetation would help prevent roots from penetrating the seawall, thereby protecting the seawall from future damage. Without removing the vegetation, the roots

could cause the wall to fail by adding more stress to the landward side of the wall. The removal of the vegetation would have a minor beneficial impact to the preservation of the seawall.

Lastly, the retaining wall would assist in keeping soils from eroding and allowing better access to the area. The retaining wall would be constructed in such a manner as not to draw attention away from the seawall or to give a false impression to users that the retaining wall is part of the historic landscape. A long-term, adverse impact would occur because the retaining walls would add a visual element to the views of the seawall. The impact would be negligible because the existing infrastructure (fence, maintenance facility, equipment storage), would remain and these features diminish the visual element of the historic seawall in this area of the park.

Cumulative Impacts. A variety of past, present, and reasonably foreseeable actions have and would continue to affect historic structures at Fort McHenry. Past events such as storm damage and subsequent repairs and the installation of riprap along segments 3 through 8 have adversely impacted the historic character of seawall. Initial construction of the wall began in 1816, with a second phase of construction occurring between 1836 and 1839. Work on additional sections continued until 1895-96. Primarily as a result of storm damage, ongoing episodes of repair and rebuilding have marked the seawall's structural development. Among the early repairs carried out by the NPS, the entire dry-laid wall was pointed above the water line in 1938. In addition to masonry repairs carried out in 1975, the Army Corps of Engineers placed stone riprap in front of portions of the seawall's eastern face. As a result of the history of repairs, the wall historic character is a myriad of repairs from different periods.

The repair to the drainage structures at the adjacent man-made wetland is one foreseeable action in close proximity to the seawall repairs. Another project for consideration is the construction and use of a new education/administration building. The park is in the initial planning stages and four alternatives are being considered. Depending on the on-site location, this building has a potential to visually and physically affect historic resources. Implementation of Alternative B would have no or negligible cumulative impact on historic resources when added to other present and foreseeable projects because the repairs are not expected to diminish the historic character or integrity of the seawall or other historic structures existing at Fort McHenry.

Section 106 Summary. In accordance with Section 106 of the National Historic Preservation Act, implementation of Alternative B would result in a determination of *no adverse effect* on historic properties.

Conclusion. Overall, the sum of the actions proposed under Alternative B would result in a minor, long-term, beneficial impact because of the protective measures and seawall rehabilitation. Implementation of Alternative B would have no or negligible cumulative impact on historic resources. There would be no impairment of the park's resources or values.

Mitigation Measures. The repair of the seawall would be constructed with a context-sensitive design in keeping with the landscape and historic setting of Fort McHenry National Monument and Historic Shrine. Vistas to and from the Star Fort and other site features would be considered. Materials would be reflective of or consistent with the surrounding park resources and other wall segments. Site improvements would be carried out in accordance with the

Secretary of Interior's *Standards for Treatment of Historic Properties* to ensure compatibility with the historic setting and other historic structures.

ALTERNATIVE C – PREFERRED ALTERNATIVE

Seawall Repairs. Impacts under the Preferred Alternative would be the same as described in Alternative B.

Protection Measures. The installation of riprap along seawall segments 9 and 10 would have a minor, long-term, beneficial impact on historic structures or sites by protecting the wall from future degradation and minimizing the need for future repairs. The protection measure would disperse wave energy as it approaches the seawall to minimize the affects of scouring and undermining of sediments along the seawall.

The protective measure would have a negligible, adverse, visual impact on the seawall. The riprap would be consistent with other seawall segments. The riprap would be installed just below the mean high tide to minimize trash and debris being trapped between the riprap and the seawall. In addition, this elevation would make the riprap visually less intrusive to the appearance of the wall. This riprap elevation would be similar to the existing riprap along seawall segment 3.

Fence Relocation, Vegetation Removal and Retaining Walls. The impact under the Preferred Alternative would be the same as described in Alternative B.

Cumulative Impacts. The impact would be the same as described in Alternative B.

Section 106 Summary. In accordance with Section 106 of the National Historic Preservation Act, implementation of the Preferred Alternative would result in a determination of *no adverse effect* on historic properties.

Conclusion. Overall, the sum of the actions proposed under the Preferred Alternative would result in a minor, long-term, beneficial impact as a result of the protection measures and seawall rehabilitation. The installation of the riprap as a protection measure just below the mean high tide would result in a negligible, long-term, adverse impact to the historic character of the seawall, but would be consistent with past measures to protect the seawall. Implementation of the Preferred Alternative would have no or negligible cumulative impact on historic resources.

Because there would be no major, adverse impacts to resources or values whose conservation are (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Fort McHenry National Monument and Historic Shrine, (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning document, there would be no impairment of the park's resources or values.

Mitigation Measures. The mitigation measures under the Preferred Alternative would be the same as described in Alternative B.

IMPACTS ON ARCHEOLOGICAL RESOURCES

DEFINITIONS OF INTENSITY LEVELS

In order for an archeological resource to be eligible for the National Register of Historic Places it must meet one or more of the following criteria of significance: A) associated with events that have made a significant contribution to the broad patterns of our history; B) associated with the lives of persons significant in our past; C) embody the distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or possess high artistic value, or represent a significant and distinguishable entity whose components may lack individual distinction; D) have yielded, or may be likely to yield, information important in prehistory or history. In addition, the archeological resource must possess integrity of location, design, setting, materials, workmanship, feeling, association (*National Register Bulletin, Guidelines for Evaluating and Registering Archeological Properties*). For purposes of analyzing impacts to archeological resources either listed in or eligible to be listed in the National Register, the thresholds of change for intensity of an impact are defined below:

Negligible: Impact is at the lowest levels of detection - barely measurable with no perceptible consequences, either adverse or beneficial, to archeological resources. For purposes of Section 106, the determination of effect would be *no adverse effect*.

Minor: Adverse impact - disturbance of a site(s) results in little, if any, loss of significance or integrity and the National Register eligibility of the site(s) is unaffected. For purposes of Section 106, the determination of effect would be *no adverse effect*.

Beneficial impact – maintenance and preservation of a site(s). For purposes of Section 106, the determination of effect would be *no adverse effect*.

Moderate: Adverse impact - disturbance of a site(s) does not diminish the significance or integrity of the site(s) to the extent that its National Register eligibility is jeopardized. For purposes of Section 106, the determination of effect would be *adverse effect*.

Beneficial impact – stabilization of a site(s). For purposes of Section 106, the determination of effect would be *no adverse effect*.

Major: Adverse impact – disturbance of a site(s) diminishes the significance and integrity of the site(s) to the extent that it is no longer eligible to be listed in the National Register. For purposes of Section 106, the determination of effect would be *adverse effect*.

Beneficial impact – active intervention to preserve a site(s). For purposes of Section 106, the determination of effect would be *no adverse effect*.

ALTERNATIVE A – NO-ACTION ALTERNATIVE

Under the No-Action Alternative, the historic seawall at Fort McHenry National Monument and Historic Shrine would not be repaired, no work would be performed to correct drainage problems behind the wall, and protective measures would not be installed such as filter cloth or riprap. The face of the wall would be repaired from time to time as necessary.

No short-term, construction-related impacts on archeological resources would occur; however, there would be an increased risk of localized failure of sections of the wall. The potential of archeological resources existing behind the wall is documented in the historic structure reports. Wall failure during a major storm event could result in an irreversible, long-term, adverse impact to the artifacts and archeological context of these resources. The impact would be unlikely and negligible presuming that planning for emergency remediation to correct wall failures would occur during severe situations.

Cumulative Impacts. Past events such as storm damage and the installation of riprap have occurred, which may have impacted archeological resources existing adjacent to the seawall. One foreseeable future project is the construction and use of a new education/administration building at the park. The National Park Service has started planning for the project and four different alternatives are being considered. The construction of the new building on the grounds of Fort McHenry has the potential to impact archeological resources. The National Park Service would consider these impacts under a separate environmental analysis and consider ways to avoid, minimize, and mitigate impacts to archeological resources. The negligible, adverse impacts under the No-Action alternative when combined with past, present or reasonably, foreseeable future projects would have a negligible, long-term, adverse, cumulative effect on archeological resources at Fort McHenry.

Conclusion. Negligible, long-term, adverse impacts are likely to occur to archeological resources from not repairing the seawall or implementing protection measures. This assumes that the park would repair the seawall from time to time and take emergency remediation actions during wall failure after major storm events. Negligible, long-term, adverse, cumulative effects on archeological resources would occur at Fort McHenry. There would be no impairment of the park's resources or values.

ALTERNATIVE B

Seawall Repairs. Under Alternative B, the masonry repair of the seawall would have no impact to archeological resources. The repairs would not involve excavations.

Protection Measures. The trenching behind the wall and installation of the filter cloth and stone rubble mortar would have minor, long-term, adverse impact to archeological resources from the excavation during construction. The intent of the protection measures is to secure the wall; thus stabilizing the soils to prevent future wash outs along the seawall. The measures would offer long-term protection of the seawall; however, trenching could result in long-term, adverse impacts to archeological resources.

Clearance for use of the area along segment 9 was recommended by the National Park Service in the 1988 Historic Structure Report Archeological Data Section. If artifacts or features of significance were discovered during construction, mitigation measures would be followed.

Archeological investigation adjacent to Segment 10 has not been conducted. If this alternative was selected, additional investigation would be needed.

Fence Relocation, Vegetation Removal and Retaining Walls. The construction of the retaining walls would involve minor grading and earth disturbance. Based on the severity of past disturbance at the site, the likelihood of significant archeological resources in the area would be low. Therefore, the earth disturbance activities in this area would have no or negligible impacts to archeological resources. If artifacts or features are discovered during construction, mitigation measures would be implemented.

Cumulative Impacts. Past events such as storm damage and the installation of riprap have occurred, which may have impacted archeological resources existing adjacent to the seawall. One foreseeable future project is the construction and use of a new education/administration building at the park. The park has just started planning and four different alternatives are being considered. A new Development Concept Plan has been proposed for the project. The construction of the new building on the grounds of Fort McHenry has the potential to impact archeological resources. The National Park Service would consider these impacts under a separate environmental analysis and consider ways to avoid, minimize, and mitigate impacts to archeological resources. The adverse impacts under the Alternative B when combined with future, present, or past projects could have a long-term, adverse cumulative effect on archeological resources at Fort McHenry. Additional subsurface investigation would be needed to determine the impact intensity.

Section 106 Summary. Based on professional judgment by the park's cultural resources staff, the likelihood of significant archeological resources to exist adjacent to the seawall is minor. If this alternative were selected, additional investigation would be needed along segment 10 to determine if the proposed action would have *no adverse effect* according to Section 106.

Conclusion. The proposed actions described as part of Alternative B would have minor, long-term, adverse impact. Additional archeological investigation may needed along segment 10 to ascertain the impact intensity if this alternative was selected; however, the likelihood of finding significant archeological resources would be very low.

Mitigation Measures. The National Park Service would continue the Section 106 process with the Maryland Historical Trust and archeological investigations would precede construction. Construction would take advantage of previously disturbed areas whenever possible to reduce the risk of disturbing potential archeological resources at the park. Should the construction unearth previously undiscovered archeological resources, work would cease in the area of discovery and the park would consult with the Maryland Historical Trust and Advisory Council on Historic Preservation, as necessary according to 36 CFR 800.13, Post Review Discoveries. In the highly unlikely event that human remains are discovered during construction, provisions outlined in the Native American Graves Protection and Repatriation Act of 1990 would be followed.

ALTERNATIVE C – PREFERRED ALTERNATIVE

Seawall Repairs. The impacts under Alternative C would be the same as described in Alternative B.

Protective Measures. The installation of riprap along segments 9 and 10 would have negligible, long-term, adverse impacts to underwater archeological resources. Based on a magnetometer survey conducted by the Maryland Historical Trust, two targets gave strong magnetic signals, but they are not within the project area. Avoidance of the two targets identified is recommended by the Maryland Historical Trust (Langley, 2002).

Fence Relocation, Vegetation Removal and Retaining Walls. The impacts under Alternative C would be the same as described in Alternative B.

Cumulative Impacts. No or negligible adverse cumulative impacts would occur when this alternative is combined with other past, present and reasonably foreseeable future projects because the adverse impact would be negligible.

Section 106 Summary. In accordance with Section 106 of the National Historic Preservation Act, implementation of the preferred alternative would result in a determination of *no adverse effect* on historic properties.

Conclusion. The installation of riprap would have negligible, long-term, adverse impact to underwater archeological resources by filling the area adjacent to the seawall. Negligible long-term, adverse cumulative impacts would occur.

Because there would be no major, adverse impacts to resources or values whose conservation are (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Fort McHenry National Monument and Historic Shrine, (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning document, there would be no impairment of the park's resources or values.

Mitigation Measures. The National Park Service would continue the Section 106 process with the Maryland Historical Trust. Based on past studies and recent archeological investigations, the park's archeologist concurs that further subsurface investigations are not likely to reveal significant artifacts in the area of potential effect (Pousson, 2002). Therefore, no further archeological field investigation is recommended for the implementation of the Preferred Alternative. Periodic selective monitoring of excavations and seawall repairs would occur by the qualified archeologist from the Maryland Historical Trust or National Park Service during construction. Monitoring would occur in areas where previous study or disturbance is not as well documented.

Construction would take advantage of previously disturbed areas whenever possible to reduce the risk of disturbing potential archeological resources at the park. Should the construction unearth previously undiscovered archeological resources, work would cease in the area of discovery and the park would consult with the Maryland Historical Trust and Advisory Council on Historic Preservation, as necessary according to 36 CFR 800.13, Post Review Discoveries. In the highly unlikely event that human remains are discovered during construction, provisions

outlined in the Native American Graves Protection and Repatriation Act of 1990 would be followed.

IMPACTS ON CULTURAL LANDSCAPES

DEFINITIONS OF INTENSITY LEVELS

In order for a cultural landscape to be listed in the National Register, it must meet one or more of the following criteria of significance: A) associated with events that have made a significant contribution to the broad patterns of our history; B) associated with the lives of persons significant in our past; C) embody the distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or possess high artistic value, or represent a significant and distinguishable entity whose components may lack individual distinction; D) have yielded, or may be likely to yield, information important in prehistory or history (*National Register Bulletin, How to Apply the National Register Criteria for Evaluation*). The landscape must also have integrity of those patterns and features - spatial organization and land forms; topography; vegetation; circulation networks; water features; and structures/buildings, site furnishings or objects - necessary to convey its significance (*Secretary of the Interior's Standards for the Treatment of Historic Properties With Guidelines for the Treatment of Cultural Landscapes*). For purposes of analyzing potential impacts to cultural landscapes, the thresholds of change for the intensity of an impact are defined as follows:

Negligible: Impact(s) is at the lowest levels of detection - barely perceptible and not measurable. For purposes of Section 106, the determination of effect would be *no adverse effect*.

Minor: Adverse impact - impact(s) would not affect the character defining patterns and features of a National Register of Historic Places eligible or listed cultural landscape. For purposes of Section 106, the determination of effect would be *no adverse effect*.

Beneficial impact – preservation of character defining patterns and features in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties With Guidelines for the Treatment of Cultural Landscapes.* For purposes of Section 106, the determination of effect would be *no adverse effect*.

Moderate: Adverse impact - impact(s) would alter a character defining pattern(s) or feature(s) of the cultural landscape but would not diminish the integrity of the landscape to the extent that its National Register eligibility is jeopardized. For purposes of Section 106, the determination of effect would be *no adverse effect*.

Beneficial impact – rehabilitation of a landscape or its patterns and features in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes*. For purposes of Section 106, the determination of effect would be *no adverse effect*.

Major: Adverse impact - impact(s) would alter a character defining pattern(s) or feature(s) of the cultural landscape, diminishing the integrity of the landscape to the extent that it is no longer eligible to be listed in the National Register. For purposes of Section 106, the determination of effect would be *adverse effect*.

Beneficial impact – restoration of a landscape or its patterns and features in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes*. For purposes of Section 106, the determination of effect would be *no adverse effect*.

ALTERNATIVE A – NO-ACTION ALTERNATIVE

Under the No-Action Alternative, the historic seawall at Fort McHenry National Monument and Historic Shrine would not be substantially repaired, no work would be performed to correct drainage problems behind the wall, and protective measures would not be employed such as filter cloth or riprap. The minor repairs to the face of the wall would occur from time to time as necessary.

Negligible, short-term, adverse impacts on cultural landscape would occur during construction activities. Long-term, there would be an increased risk of localized failure of sections of the wall. Wall failure during a major storm event could result in an irreversible, long-term, adverse impact to the cultural landscape. Similar to the archeological resources, this impact would be unlikely and negligible presuming that planning for emergency remediation to correct wall failures would occur during severe situations.

Cumulative Impacts. Past events such as storm damage, installation of riprap, and the construction of the maintenance facility adjacent to segments 11 and 12 have impacted the cultural landscape in the areas near the seawall. Other on-site statues, interpretive displays, entrance wall, landscaping, and the construction of the manmade wetland adjacent to the wall have significantly changed the landscape over time. One foreseeable future project that could impact the cultural landscape is an education/administration building. The park has just started planning for an education/administration building and four different alternatives are being considered. The construction and use of the new building on the grounds of Fort McHenry has the potential to impact the cultural landscape. The National Park Service would consider these impacts under a separate environmental analysis and consider ways to avoid, minimize, and mitigate impacts to the cultural landscape. The negligible, adverse cumulative impacts under the No-Action Alternative when combined with future, present, or past projects would have a negligible, long-term, adverse cumulative impact on the cultural landscape at Fort McHenry.

Conclusion. Negligible, long-term, adverse impacts are likely to the cultural landscape from not repairing the seawall or implementing protection measures. This assumes that the National Park Service would repair the seawall from time to time and take emergency remediation actions during wall failure after major storm events. There would be no impairment of the park's resources or values.

ALTERNATIVE B

Seawall Repairs. Under Alternative B, the masonry repair of the seawall would preserve the seawall historic integrity and appearance. The repairs would be performed in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties With Guidelines for the Treatment of Cultural Landscapes*. The seawall repairs would have a minor, long-term, beneficial impact to the cultural landscape. The rehabilitation of the seawall would help protect the cultural landscape because the seawall is a contributing feature of Fort McHenry's landscape.

Protection Measures. The trenching behind the wall and installation of the filter cloth and stone would have no visual impact to the cultural landscape in that the site would be restored to preexisting conditions. The protection measures would have a minor, long-term, beneficial impact because of the added protection to the seawall which is an integral part of the cultural landscape.

Fence Relocation, Vegetation Removal and Retaining Walls. The retaining wall could have a negligible or minor, long-term, adverse impact to the cultural landscape. The retaining wall would be constructed in a manner consistent with the *Secretary of the Interior's Standards for the Treatment of Historic Properties With Guidelines for the Treatment of Cultural Landscapes.* The retaining wall would be constructed in a highly disturbed area inside the fence line of the maintenance area. The relocation of the fence off of the wall would have negligible, long-term, beneficial impact.

Cumulative Impacts. Past events such as storm damage, installation of riprap, construction of the man-made tidal wetland the maintenance facility adjacent to segments 11 and 12 have impacted the cultural landscape in the areas near the seawall. Other on-site statues, interpretive displays, entrance wall, and landscaping have significantly changed the landscape over time. One foreseeable future project that could impact the cultural landscape is an education/administration building. The park has just started planning for an education/administration building and four different alternatives are being considered. The construction and use of the new building on the grounds of Fort McHenry has the potential to impact the cultural landscape. The National Park Service would consider these impacts under a separate environmental analysis and consider ways to avoid, minimize and mitigate impacts to the landscape through a context-sensitive design. The negligible adverse impacts under Alternative B when combined with future, present or past projects would have a negligible, long-term, adverse cumulative impact on the cultural landscape at Fort McHenry.

Section 106 Summary. In accordance with Section 106 of the National Historic Preservation Act, implementation of the preferred alternative would result in a determination of *no adverse affect* on historic properties.

Conclusion. The sum of the actions under Alternative B would have no or negligible long-term adverse impacts on the cultural landscape because the protection measures to the seawall offset the adverse impacts. The retaining wall would add a non-contributing visual element into the landscape, although the area is already highly disturbed. Adverse cumulative impacts would occur that would be negligible and long-term. There would be no impairment of the park's resources or values.

Mitigation Measures. The design and construction of the retaining wall would consider the cultural landscape to the extent possible without a Cultural Landscape Inventory. The design should minimize potential impacts to the integrity of patterns and features, spatial organization and land forms; topography; vegetation; circulation networks; water features; and structures/buildings, site furnishings or objects necessary to convey Fort McHenry's historic significance. The design and construction of the small retaining wall would adhere to the *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes*.

ALTERNATIVE C – PREFERRED ALTERNATIVE

Seawall Repairs. The masonry repair of the seawall would preserve the seawall historic integrity and appearance. The repairs would be performed in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties*. The seawall repairs would have a minor, long-term, beneficial impact to the cultural landscape through the rehabilitation of the seawall, which would help protect the cultural landscape at Fort McHenry.

Protection Measures. The installation of riprap just above the high water line would have a negligible, long-term, adverse impact to the cultural landscape in that the riprap would add a non-contributing visual element to the cultural landscape not consistent with the site's history. The protection measure would however, preserve the seawall which is an integral part of the landscape at Fort McHenry; thus, the riprap would have a minor, long-term, beneficial impact because of the protection.

Fence Relocation, Vegetation Removal and Retaining Wall. The impact would be the same as described in Alternative B.

Cumulative Impacts. The cumulative impact under the Preferred Alternative would be the same as described in Alternative B.

Section 106 Summary. In accordance with Section 106 of the National Historic Preservation Act, implementation of the preferred alternative would result in a determination of *no adverse affect* on historic properties. The action would not change the integrity of those patterns and features - spatial organization and land forms; topography; vegetation; circulation networks; water features; and structures/buildings, site furnishings or objects - necessary to convey Fort McHenry's significance.

Conclusion. Under the Preferred Alternative, the actions would have no or negligible adverse impacts on the cultural landscapes because the protection measures to the seawall offset the adverse impacts attributed to adding visual elements (riprap and retaining wall) into the landscape. Adverse cumulative impacts would occur that would be negligible and long-term.

Because there would be no major, adverse impacts to resources or values whose conservation are (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Fort McHenry National Monument and Historic Shrine, (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning document, there would be no impairment of the park's resources or values.

Mitigation Measures. The design and construction of the retaining wall would consider the cultural landscape to the extent possible without a Cultural Landscape Inventory. The design should minimize potential impacts to the integrity of patterns and features, spatial organization and land forms; topography; vegetation; circulation networks; water features; and structures/buildings, site furnishings or objects necessary to convey Fort McHenry's historic significance. The design and construction of the small retaining wall would adhere to the *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes*.

IMPACTS ON FLOODPLAINS

DEFINITION OF INTENSITY LEVELS

Analyses of the potential intensity of floodplain impacts were derived from the available information on Fort McHenry National Monument and Historic Shrine and the professional judgment of the park staff. The thresholds of change for the intensity of impacts on floodplains are defined as follows:

- *negligible*, when the impact is localized and not measurable or at the lowest level of detection;
- *minor,* when the impact is localized and slight but detectable;
- *moderate,* when the impact is readily apparent and appreciable; or
- *major,* when the impact is severely adverse and highly noticeable.

ALTERNATIVE A – NO-ACTION ALTERNATIVE

Under the No-Action Alternative, the seawall would not be repaired or protective measure implemented; thus, no activities would be conducted in a regulated floodplain. No impacts to floodplains would occur.

Cumulative Impacts. No cumulative impacts would occur because no activities are proposed in or would affect a regulated floodplain.

Conclusion. No impact on floodplains would occur. There would be no impairment of the park's resources or values.

ALTERNATIVE B

Seawall Repairs. The repair of the seawall would be within the 100-year regulated floodplain. Based on the review of the alternatives, there are no reasonable options to repair the seawall outside the 100-year floodplain because of the seawall's location and historic significance. Masonry repairs below the mean low water line will require dewatering. Dewatering techniques may include use of coffer dams, geotextile tubes, or similar methods. The intention of the seawall repairs is preservation and rehabilitation. The repair would not involve new configurations or changes to the existing seawall size or shape. Rather, the repair would involve

rehabilitating the seawall to a more stable condition. Therefore, the adverse impact to the floodplain as a result of the seawall repairs and construction activities would be negligible and short-term.

Protection Measures. The trenching behind the seawall would not be within the regulated 100-year floodplain. Appropriate construction best management practices for sediment and erosion control would be utilized by the contractor to prevent or minimize soil from entering the floodplain. No impact to the 100-year floodplain would occur from the protection measures proposed under Alternative B.

Fence Relocation, Vegetation Removal and Retaining Walls. The construction of the retaining walls would involve minor grading and earth disturbance. Appropriate construction best management practices for sediment and erosion control would be used by the contractor to prevent or minimize soil from entering the floodplain. No impact to the 100-year floodplain would occur from the fence relocation, vegetation removal, or retaining wall proposed under Alternative B because they are all outside the floodplain and do not affect the functions or integrity of the adjacent floodplain.

Cumulative Impacts. Past events that have impacted the floodplain include the installation of riprap along segments 3 through 9. Other foreseeable projects within the floodplain include the repairs of the drainage structures at the tidal wetland adjacent to segments 11 and 12 and the channel maintenance dredging. This seawall rehabilitation and associated improvements would have no cumulative impact to floodplains because the impacts associated with the implementation of Alternative B are temporary and negligible.

Conclusion. Under Alternative B, the construction activities associated with the masonry repairs below the mean low water level would result in a negligible, short-term, adverse impact because of dewatering necessary to perform the masonry repairs. There are no other reasonable alternative to work outside the floodplain to repair the seawall because of the seawall's location and historic significance.

Mitigation Measures. Appropriate sediment and erosion control measures would be followed by the contractor for trenching and other land disturbance activities. Flood mitigation is offered through the design process by incorporating methods for protecting life and minimizing storm damage through appropriate procedures. Appropriate construction best management practices would be specified to minimize short-term impacts from dewatering activities. These mitigation measures would be in accordance with the National Park Service floodplain guidance (*Director's Order #77-2 Floodplain Management*) and with Executive Order 11988.

ALTERNATIVE C – PREFERRED ALTERNATIVE

Seawall Repairs. The impact under the Preferred Alternative would be the same as described in Alternative B.

Protection Measures. The installation of riprap along seawall segments 9 and 10 would have negligible, long term, adverse impact to the flood storage capacity of the floodplain. The intent of the protection measure would be to disperse wave energy as it approaches the seawall to minimize the affects of scouring and undermining of the seawall. The riprap would be added to

a 0.23 acre area in the 100-year floodplain. The top of the riprap would be installed just below the mean high water level similar to the existing riprap along seawall segment 3. The riprap would be consistent with other seawall segments and would not impair the integrity or function of the floodplain.

Fence Relocation, Vegetation Removal and Retaining Walls. The impact under the Preferred Alternative would be the same as described in Alternative B.

Cumulative Impacts. Other past, present, and foreseeable projects within the floodplain include installing riprap along segments 3 through 8, repairs of the drainage structures at the tidal wetland creation site adjacent to segments 11 and 12 and the channel maintenance dredging. This project would have a negligible cumulative adverse impact to floodplains because of the installation of riprap in the floodplain.

Conclusion. The construction activities associated with the masonry repairs below the mean low water level would result in a negligible, short-term, adverse impact because of dewatering necessary to perform the masonry repairs. There is no other reasonable alternative to work outside the floodplain to repair the seawall because of the seawall's location and historic significance. The installation of the riprap as a protection measure just below the mean high tide line would result in a negligible, long-term, adverse impact because the placement of the riprap is within the regulated 100-year floodplain. The impact would be negligible because of the area proposed to receive riprap is insignificant in relationship to the size of the watershed and floodplain. In addition, the riprap provides protection to the seawall which helps reduce soil erosion into the Patapsco River. The impact however, would not affect the integrity or functions of the floodplain; therefore, the action would comply with Executive Order 11988 *Floodplain Protection* and Director's Order 77-2 *Floodplain Management*. A Statement of Findings in accordance with Executive Order 11988 *Floodplain Management* and Director's Order 77-2 *Floodplain Management* is in Appendix C.

Because there would be no major, adverse impacts to resources or values whose conservation are (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Fort McHenry National Monument and Historic Shrine, (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning document, there would be no impairment of the park's resources or values.

Mitigation Measures. Appropriate sediment and erosion control measures would be followed by the contractor for land disturbance activities. Flood mitigation is offered through the design process by incorporating methods for protecting life and minimizing storm damage through appropriate procedures. Appropriate construction best management practices would be specified to minimize short-term impacts from dewatering activities. These mitigation measures would be in accordance with the National Park Service floodplain guidance (*Director's Order #77-2 Floodplain Management*) and with Executive Order 11988.

IMPACTS ON WETLANDS

DEFINITION OF INTENSITY LEVELS

Analyses of the potential intensity of wetland impacts were derived from the available information on the Fort McHenry National Monument and Historic Shrine, and the professional judgment of the park staff. The thresholds of change for the intensity of impacts on wetlands are defined as follows:

- *negligible*, when the impact is localized and not measurable or at the lowest level of detection;
- *minor,* when the impact is localized and slight but detectable;
- *moderate,* when the impact is readily apparent and appreciable; or
- *major,* when the impact is severely adverse and highly noticeable.

ALTERNATIVE A – NO-ACTION ALTERNATIVE

Under the No-Action Alternative, the seawall would not be repaired or protective measure implemented; thus, no activities would be conducted in wetlands. No impacts to wetlands would occur.

Cumulative Impacts. No cumulative impacts would occur because no activities in or impacts to wetland are proposed under the No-Action Alternative.

Conclusion. No impact on wetlands would occur. There would be no impairment of the park's resources or values.

ALTERNATIVE B

Under Alternative B, the proposed action would not directly affect any wetlands. The action is within an upland area. The man-made tidal marsh would not be impacted by the site improvements along segments 11 and 12. Best management practices would be used by the contractor to avoid and minimize sediment erosion. Temporary dewatering for masonry repairs below the low water level would have a negligible, short-term, adverse impact to the estuarine open water system. The removal of vegetation along the stream buffer is discussed in the Land Cover and Vegetation Section.

Cumulative Impacts. One project identified that could impact wetlands is the corrective measures proposed at the man-made wetland to unclog drainage pipes and reestablish the flow regime. No impacts to wetlands are anticipated under Alternative B; therefore no cumulative impacts would occur to wetlands.

Conclusion. Implementation of Alternative B would have no long-term impact on wetlands because the land disturbance activities are located in an upland area. Temporary dewatering for

masonry repairs below the low water level would have a negligible, short-term, adverse impact to wetlands. There would be no impairment of the park's resources or values.

Mitigation Measures. Best management practices for erosion and sediment control would be followed by the contractor and general conditions adhered to as part of the Section 404 permit to avoid and minimize short-term impacts from land disturbance during construction.

ALTERNATIVE C – PREFERRED ALTERNATIVE

The installation of riprap would have a minor, long-term, adverse impact to a nonvegetated, estuarine intertidal open water habitat. The installation of riprap to the 0.23 acre area would not substantially change the wetland classification or wetland functions. The area is part of the Patapsco River. The wetland habitat classification would remain estuarine, intertidal, open water but the substrate modifier would be converted to rocky or rubble. Typically, structures such as riprap provide better fisheries habitat than unconsolidated bottom; however, the change in habitat could result in a minor, adverse impact to existing aquatic organisms. Hydrophytic (wetland) vegetation does not exist in the area adjacent to the seawall proposed to receive the riprap.

Negligible, short-term, adverse impacts would occur during dewatering. The duration of dewatering would not be sufficiently long to impact any populations of biotic communities that may exist in the area. In addition, the dewatering areas would be small and localized and the hydrology quickly restored back to preexisting conditions. The park has submitted a Tidal Wetland Permit application to the Maryland Department of Environment and Corps of Engineers for the proposed action pursuant to Section 404 of the Clean Water Act.

Cumulative Impacts. One past event that directly impacted wetlands along the seawall was the installation of riprap along segments 3 through 8. This project in combination with past riprap installation along the other segments would result in a minor, long-term, adverse cumulative impact. Also, the creation of the wetland and future repair of the pipes in the man-made wetland is another project affecting wetlands. If the flow regime is reestablished correctly, the corrective measures would benefit wetlands. Overall, adverse cumulative impacts would occur to wetlands when added to past projects but the impact would be localized and minor.

Conclusion. The installation of riprap would have a minor, long-term, adverse impact to wetlands because the riprap is filling a 0.23 acre area and result in a slight change to the aquatic environment. The wetland classification and functions would not significantly change. Minor adverse cumulative impacts would occur to wetlands when added to past events to repair and protect the seawall.

Because there would be no major, adverse impacts to resources or values whose conservation are (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Fort McHenry National Monument and Historic Shrine, (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning document, there would be no impairment of the park's resources or values.

Mitigation Measures. Best management practices for erosion and sediment control would be followed by the contractor and general conditions adhered to as part of the Section 404 permit to avoid and minimize short-term impacts from land disturbance during construction.

IMPACTS ON COASTAL ZONE MANAGEMENT

DEFINITION OF INTENSITY LEVELS

Analyses of the potential intensity of coastal zone resources were derived from the available information on the Fort McHenry National Monument and Historic Shrine, and the professional judgment of the park staff. The thresholds of change for the intensity of impacts on coastal zone management are defined as follows:

- *negligible*, when the impact is localized and not measurable or at the lowest level of detection;
- *minor,* when the impact is localized and slight but detectable;
- *moderate,* when the impact is readily apparent and appreciable; or
- *major,* when the impact is severely adverse and highly noticeable.

ALTERNATIVE A – NO-ACTION ALTERNATIVE

Under the No-Action Alternative, no impacts to the coastal zone resources would occur because there would be no change to the existing physical environment or conflict with any objectives or policies with the state's coastal zone program.

Cumulative Impacts. No cumulative impacts would occur under the No-Action Alternative because no activities are proposed that would change the physical environment of the coastal zone or conflict with any objectives or policies with the state's coastal zone program.

Conclusion. No impacts to the coastal zone resources would occur because there would be no change to the physical environment. There would be no impairment of the park's resources or values.

ALTERNATIVE B AND ALTERNATIVE C

Under Alternative B and C, the proposed actions are within Maryland's Coastal Zone. The Maryland Coastal Zone Program addresses a variety of coastal issues including provision of public access, nonpoint source pollution reduction, coastal hazards mitigation, habitat and living resources protection, and growth management (MDE, 2002). The repair of the seawall and implementation of protection measures would have a negligible, long-term, adverse impact on Maryland's coastal zone resources. The repair of the seawall is consistent with the program's goal to provide living resources protection and coastal hazards mitigation. Other program initiatives such as access, non-point source control, and growth management would not be impacted. One minor impact which is not consistent with the Coastal Zone Program would be the installation of riprap along segments 9 and 10. This action would change the existing aquatic

habitat. The change in wetland habitat as described in the wetland section is negligible and unavoidable without greater impacts to other significant park resources. Overall, the proposed action would be consistent with the provisions of the Maryland Coastal Zone Management Program.

Cumulative Impacts. No past, present, or reasonably foreseeable future projects within the project vicinity were identified that would impact Maryland's Coastal Zone Program. No cumulative impacts would occur to the coastal zone resources.

Conclusion. Overall, both Alternatives B and C would be consistent with the provisions of the Maryland Coastal Zone Program and would result in negligible, long-term, adverse impacts to coastal zone resources. A minor impact to wetlands and floodplains resulting from the installation of riprap described in previous sections is unavoidable to meet the project purpose and need without causing adverse impacts to archeological resources. Also, the installation of riprap provides for greater longevity of the seawall when compared to landward protective measures. There would be no impairment of the park's resources or values.

Because there would be no major, adverse impacts to resources or values whose conservation are (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Fort McHenry National Monument and Historic Shrine, (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning document, there would be no impairment of the park's resources or values.

IMPACTS ON LAND COVER AND VEGETATION

DEFINITION OF INTENSITY LEVELS

Analyses of the potential intensity of land cover and vegetation were derived from the available information on the Fort McHenry National Monument and Historic Shrine, and the professional judgment of the park staff. The thresholds of change for the intensity of impacts on land cover and vegetation are defined as follows:

- *negligible*, when the impact is localized and not measurable or at the lowest level of detection;
- *minor,* when the impact is localized and slight but detectable;
- *moderate,* when the impact is readily apparent and appreciable; or
- *major,* when the impact is severely adverse and highly noticeable.

ALTERNATIVE A – NO-ACTION ALTERNATIVE

Under the No-Action Alternative, the historic seawall at Fort McHenry National Monument and Historic Shrine would not be repaired. No impacts would occur to land cover and vegetation because the existing physical environment would not change. The vegetation along the fence line adjacent to segments 11 and 12 would remain and no earth disturbance would occur.

Cumulative Impacts. No cumulative impacts would occur as implementation of the No-Action Alternative would have no effect on land cover or vegetation.

Conclusion. No impact would occur to land cover or vegetation. There would be no impairment of the park's resources or values.

ALTERNATIVE B AND ALTERNATIVE C

Seawall Repair and Protective Measures. The seawall repairs and installation of the protective measures would have no long-term, adverse impact on vegetation and land cover. There is no vegetation in the area proposed for the riprap installation. The trenching method would impact a maintained grassy area along the landward side of the seawall. No other vegetation would be impacted. Any short-term disturbance from construction activities on the maintained grassy areas would be reseeded and restored to resemble preconstruction conditions.

Fence Relocation, Vegetation Removal and Retaining Wall. Under Alternatives B and C, the relocation of the fence, removal of the vegetation and construction of a small retaining wall along segment 11 and 12 would have an adverse impact on vegetation and land cover. The impact would be minor and long-term because the National Park Service proposes to remove vegetation along the existing fence line. A list of vegetation is provided in the Affected Environment section of this Environmental Assessment.

The purpose of removing the vegetation along the seawall is to protect the wall against root infiltration which could damage the seawall and increase access to segments 11 and 12 and adjacent marsh. Also, the removal of the vegetation is necessary to relocate the fence. The vegetation along the fence constitutes a stream buffer.

The existing vegetation provides a vegetated buffer between the park's maintenance facility and the manmade tidal wetland and the Patapsco River. The area is a "critical area" under the Chesapeake Bay Critical Area Law because it is within 1000 feet of tidal waters. Consultation with the Maryland Department of the Environment has been initiated to determine the applicability and requirements of these actions to the Chesapeake Bay Critical Area Law. The existing vegetation in this area provides some habitat value to birds, although minor. Replanting is being considered by the National Park Service to replace the habitat value. Overall, the proposed action would not significantly affect any populations of trees, birds, or mammals.

Cumulative Impacts. A variety of past, present, and reasonably foreseeable actions have and would continue to affect land cover and vegetation at Fort McHenry. One future project that could impact vegetation and land cover is a proposed education/administration building at the park. The park staff is in the preliminary planning stages of development of the building and four alternatives are being considered. A new Development Concept Plan has been proposed for the project. The construction of the new building on the grounds of Fort McHenry has the potential to impact the vegetation and land cover. The National Park Service would consider these impacts under a separate environmental analysis and consider ways to avoid, minimize and mitigate impacts to the landscape through a context sensitive design. The removal of the small trees and vegetation along segments 11 and 12 would have negligible, adverse, cumulative impacts to vegetation and land cover existing at Fort McHenry.

Conclusion. The implementation of either Alternative B or C would have a minor, long-term, adverse impact because of the removal of the trees and other vegetation along the segments 11 and 12. The removal of the vegetation would protect the seawall against root penetrating through the seawall. Also the removal of the vegetation is necessary to relocate the fence.

Because there would be no major, adverse impacts to resources or values whose conservation are (1) necessary to fulfill specific purposes identified in the establishing of legislation or proclamation of the Fort McHenry National Monument and Historic Shrine, (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning document, there would be no impairment of the park's resources or values.

Mitigation Measures. Revegetation plantings would use native plant species from genetic stocks originating in or near the park. Revegetation efforts would be to reconstruct the natural spacing, abundance, and diversity of the existing native plants species. All disturbed areas would be restored as soon as reasonably possible to preconstruction conditions.

IMPACTS ON SAFETY

DEFINITION OF INTENSITY LEVELS

Analyses of the potential intensity of safety impacts were derived from the available information on Fort McHenry National Monument and Historic Shrine, and the professional judgment of the park staff. The thresholds of change for the intensity of impacts on safety are defined as follows:

- *negligible*, when the impact is localized and not measurable or at the lowest level of detection;
- *minor,* when the impact is localized and slight but detectable;
- *moderate,* when the impact is readily apparent and appreciable; or
- *major,* when the impact is severely adverse and highly noticeable.

ALTERNATIVE A – NO-ACTION ALTERNATIVE

Under the No-Action Alternative, the historic seawall at Fort McHenry National Monument and Historic Shrine would not be repaired to stabilize loose stones and fill voids behind the walls. The National Park Service would repair the face of the wall from time to time as necessary. Added risk of visitors tripping or falling along the seawall would persist although the risk is very small. The park discourages pedestrians along the seawall and has posted signs directing visitors to stay off the seawall. A minor, long-term, adverse impact on visitor safety would occur under the No-Action Alternative.

Cumulative Impacts. Annual events such as the *Living Human Flag*, *Civil War Weekend*, and *Defenders' Day* attract a large number of visitors to the park. During these events, buses park along the seawall and visitors (students) naturally go up to the water's edge to view the harbor area. During these events that attract large numbers of visitors where the park's grounds are

used, implementation of the No-Action Alternative would have a negligible, short-term, adverse cumulative impact on visitor safety because of the added risk associated with the unstable areas of the seawall. Over time, conditions would worsen if no action is taken to repair the wall.

Conclusion. The No-Action Alternative would have a minor, long-term, adverse impact because unstable stones and voids along portions of the wall increase the risk for pedestrian's tripping or falling. However, the park discourages visitors from walking along the wall and has posted signs directing visitors to stay off the wall. There would be no impairment of the park's resources or values as a result of implementing the No-Action Alternative.

ALTERNATIVE B AND ALTERNATIVE C

Under Alternative B and C, the National Park Service proposes to repair the seawall. The repairs include masonry treatments to fix loose stones and corrective measures to fill small voids on the shore side of the seawall. These repairs would make the wall safer for visitors. The park would continue to direct visitors to stay off the seawall for safety reasons as well as to protect the historic character of the seawall. The repairs would have a minor, long-term, beneficial impact on visitor safety because the stones on the seawall would be more stable, and the small voids along the seawall would be filled.

Cumulative Impacts. Annual park events such as the *Living Human Flag, Civil War Weekend* and *Defenders' Day* attract additional visitors to the park. These events require the use of the park grounds including areas along the seawall. In the case of the "*Living Human Flag*" event, buses park on the grounds along the seawall and students naturally want to visit the seawall area to view the water and harbor. These events in combination with the construction of the seawall repairs could have an adverse cumulative impact to visitor safety that would be short-term and negligible.

Conclusion. Under Alternative B or C, the repair of the seawall would have a minor, long-term, beneficial impact on safety at Fort McHenry as a result of corrective measures taken to stabilize stones on the seawall and filling of voids along the seawall. These events in combination with the seawall repairs could have an adverse cumulative impact to visitor safety that would be short-term and negligible.

Because there would be no major, adverse impacts to resources or values whose conservation are (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Fort McHenry National Monument and Historic Shrine, (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning document, there would be no impairment of the park's resources or values.

Mitigation Measures. Construction zones would be identified and fenced with construction tape, snow fencing, or similar materials prior to construction activity. The fencing would confine the construction zone and activity to the minimum area required for construction. All protection measures would be clearly stated in the construction specifications, and workers would be instructed to avoid activities beyond the zone as defined by the fencing.

The flow of any bicycle or pedestrian traffic on the paved seawall trail would be maintained to the greatest extent possible during construction. There may be some periods when the nature of the construction would require the closure of the trail. Reasonable efforts would be made to reduce the potential impacts to park visitors and the contractor would alert the park staff in advance of any necessary closures. Visitors would be informed of any closures, and signs would be posted at the construction area.

The contractor would coordinate with the park staff to reduce disruptions of normal park activities. Equipment would not be stored along the roadway overnight without prior approval of the park staff. The contractor and on-site workers would be informed about the special sensitivity of the park's value, regulations, and appropriate housekeeping.

IMPACTS ON VISITOR EXPERIENCE AND USE

DEFINITION OF INTENSITY LEVELS

Analyses of the potential intensity of impacts on visitor experience and use were derived from the available information on the Fort McHenry National Monument and Historic Shrine, and the professional judgment of the park staff. The thresholds of change for the intensity of impacts on visitor experience and use are defined as follows:

- *negligible*, when the impact is localized and not measurable or at the lowest level of detection;
- *minor,* when the impact is localized and slight but detectable;
- *moderate,* when the impact is readily apparent and appreciable; or
- *major,* when the impact is severely adverse and highly noticeable.

ALTERNATIVE A – NO-ACTION ALTERNATIVE

Under the No-Action Alternative, the historic seawall at Fort McHenry National Monument and Historic Shrine would not be repaired. The deterioration of the seawall would continue at present. A more comprehensive repair program would not occur, which in turn, would slightly diminish the visitor experience. Implementation of the No-Action Alternative would have a negligible, long-term adverse impact to the visitor experience because the seawall is a contributing feature of the park's history and significance. The protection of this resource would be necessary to maintain the visitor experience for future generations.

Cumulative Impacts. No past, present and reasonably foreseeable actions were identified that would have an adverse impact on visitor use and experience or result in a cumulative impact with regards to visitor use and experience at Fort McHenry.

Conclusion. Not repairing the seawall and other associated improvements would have a negligible, long-term, adverse impact to the visitor experience as a result of continued deterioration of one of the park's significant historic resources. There would be no impairment of the park's resources or values.

ALTERNATIVE B AND ALTERNATIVE C

The repair of the seawall, installation of protective measures along segments 9 and 10 and site improvements along segments 11 and 12 would have a minor, long-term, beneficial impact on the visitor experience. The long-term impact would be beneficial because Alternatives B and C propose to rehabilitate the historic seawall, which is one of the significant historic resources and contributes to the park setting.

In the short-term, the visitor experience could be adversely impacted by construction activities that may require trail closures or detours. The impacts would be minor. All construction activities would be coordinated with the park staff to minimize the affects on visitors. The park staff would post signs in advance at the visitor center and along the trail notifying visitors of trail detours or closures.

Cumulative Impacts. Annual park events such as the *Living Human Flag, Civil War Weekend,* and *Defenders' Day* attract additional visitors to the park. In the case of the *Living Human Flag* event, buses park on the grounds along the seawall and students naturally want to visit the seawall area to view the water and harbor. These events in combination with the construction of the seawall repairs could have an adverse, cumulative impact to the visitor use and experience if not properly coordinated because the construction zone could impact the area available for buses and visitors.

Conclusion. The repair of the seawall would have a minor, long-term, beneficial impact to the visitor use and experience. In the short-term, construction activities could have a minor, adverse impact because of potential of trail closures or detours. A minor, adverse cumulative impact on the visitor experience could result during the "*Living Human Flag*" event.

Because there would be no major, adverse impacts to resources or values whose conservation are (1) necessary to fulfill specific purposes identified in the establishing of legislation or proclamation of the Fort McHenry National Monument and Historic Shrine, (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning document, there would be no impairment of the park's resources or values.

Mitigation Measures. The mitigation measures for Visitor Experience and Use would be the same as for Alternatives B and C in the previous section on safety.

CONSULTATION AND COORDINATION

Scoping is the effort to involve agencies and the general public in determining the scope of issues to be addressed in the environmental document. Among other tasks scoping determines important issues and eliminates issues not important; allocates assignments among the interdisciplinary team members and/or other participating agencies; identifies related projects and associated documents; identifies other permits, surveys, consultations etc. required by other agencies; and creates a schedule which allows adequate time to prepare and distribute the environmental document for public review and comment before a final decision is made. Scoping includes any interested agency, or any agency with jurisdiction by law or expertise (including the Advisory Council on Historic Preservation, the State Historic Preservation Officer, and Indian Tribes) to obtain early input.

In September 2002, the National Park Service met with representatives of the Maryland Historical Trust to discuss on-going park actions related to compliance with the National Historic Preservation Act. At the meeting, the seawall rehabilitation project was presented and discussed. At the time of the meeting, the Maryland Historical Trust did not have any further recommendation related to compliance for the project.

The National Park Service in accordance with Section 7 of the Endangered Species Act consulted with the Maryland Department of Natural Resources and U.S. Fish and Wildlife Service to identify if any known protected species or habitat were known to exist in the project area. Both agencies did not have any records for threatened or endangered species for the project site.

Pursuant to the Coastal Zone Management Act, the National Park Service submitted a Federal Consistency determination to the Maryland Department of the Environment. The National Park Service found the proposed action consistent with the state's coastal zone program objectives and the proposed action would not significantly alter any coastal zone resources. At the time of this Environmental Assessment, comments from the Maryland Department of the Environment had not been received.

A Joint Permit Application for Construction in a Floodplain, Waterway, Tidal or Nontidal Wetland in Maryland was submitted by the National Park Service to the Maryland Department of Environment in August 2002. The National Park Service received confirmation from the Regulation Services Coordination Office of the Maryland Department of the Environment that the application was received on August 16, 2002 and distributed to the Tidal Wetlands Division and U.S. Army Corps of Engineers for review. At the time of this Environmental Assessment, authorization or other response from the joint permit application had not been received.

COMPLIANCE WITH FEDERAL AND STATE REGULATIONS

The following laws and associated regulations provided direction for the design or project alternatives, the analysis of impacts and the formulation of mitigation/avoidance measures:

National Environmental Policy Act of 1969 (Title 42 U.S. Code Sections 4321 to 4370 [42 USC 4321-470]). The purposes of National Environmental Policy Act include encouraging "harmony between [humans] and their environment and promote efforts which will prevent or eliminate damage to the environment…and stimulate the health and welfare of [humanity]." The purposes of National Environmental Policy Act are accomplished by evaluating the effects of federal actions. The results of these evaluations are presented to the public, federal agencies, and public officials in document format (e.g., environmental assessments and environmental impact statements) for consideration prior to taking official action or making official decisions. Implementing regulations for the National Environmental Policy Act are contained in Part 1500 to 1515 of Title 40 of the U.S. Code of Federal Regulations (40 CFR 1500-1515).

Endangered Species Act of 1973, as amended (16 USC 1531-1544). The purposes of the Endangered Species Act include providing "a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved." According to the Endangered Species Act, "all Federal departments and agencies shall seek to conserve endangered species and threatened species: and "[e]ach Federal agency shall…insure that any action authorized, funded, or carried out by such agency…is not likely to jeopardize the continues existence of any endangered species or threatened species." The U.S. Fish and Wildlife Service (non-marine species and the National Marine Fisheries Service (marine species, including anadromous fish and marine mammals) administer the Endangered Species Act. The effects of any agency action that may affect endangered, threatened, or proposed species must be evaluated in consultation with either the U.S. Fish and Wildlife Service or National Marine Fisheries Service, as appropriate. Implementing regulations which describe procedures for interagency cooperation to determine the effects of actions on endangered, threatened, or proposed species are contained in 50 CFR 402.

National Historic Preservation Act of 1966, as amended (16 USC 470 *et sequentia)*. Congressional policy set forth in the National Historic Preservation Act includes preserving "the historical and cultural foundations of the Nation" and preserving irreplaceable examples important to our national heritage to maintain "cultural, educational, aesthetic, inspirational, economic, and energy benefits." The National Historic Preservation Act also established the National Register of Historic Places composed of "districts, sites, buildings, structures, and objects significant in American history, architecture, archeology, engineering, and culture." Section 106 of the National Historic Preservation Act requires that federal agencies take into account the effects of their actions on properties eligible for or included in the National Register of Historic Places and coordinate such actions with State Historic Preservation Office. National Historic Preservation Act also requires federal agencies, in consultation with the State Historic Preservation Office, to locate, inventory, and nominate all properties that appear to qualify for the National Register of Historic Places, including National Historic Landmarks. Further it requires federal agencies to document those properties in the case of an adverse effect and propose alternatives to those actions, in accordance with the National Environmental Policy Act.

Coastal Zone Management Act of 1972 (16 USC 1451-1464). The Coast Zone Management Act presents a congressional declaration to 'preserve, protect, develop, and where possible, to restore or enhance, the resources of the Nation's coastal zone for this and succeeding generations." The Act also encourages "states to exercise effectively their responsibilities in the coastal zone through the development and implementation of management programs to achieve wise use of the land and water resources of the coastal zone." All actions proposed by federal, state, and local agencies must be consistent with the Coastal Zone Management Plan, as determined by the implementing state.

Clean Water Act of 1972, as amended (33 USC 1251-1387). The purpose of the Clean Water Act is to "restore and maintain the chemical, physical and biological integrity of the Nation's waters." The U.S. Army Corps of Engineers has been charged with evaluating federal actions that result in the potential degradation of the waters of the United States and issuing permits for actions consistent with the Clean Water Act. In the State of Maryland, the Corps of Engineers has a joint permit process with the Maryland Department of the Environment.

Section 10 of the Rivers and Harbor Act of 1899 (33 USC 403). Section 10 of the Rivers and Harbor Act regulates activities in navigable waters of the United States. The Corps of Engineers is the regulatory agency responsible for Section 10 reviews. Section 10 states "That the creation of any obstruction not affirmatively authorized by Congress, to the navigable capacity of any of the waters of the United States is hereby prohibited; and it shall not be lawful to build or commence the building of any wharf, pier, dolphin, boom, weir, breakwater, bulkhead, jetty, or other structures in any port, roadstead, haven, harbor, canal, navigable river, or other water of the United States, outside established harbor lines, or where no harbor lines have been established, except on plans recommended by the Chief of Engineers and authorized by the Secretary of War; and it shall not be lawful to excavate or fill, or in any manner to alter or modify the course, location, condition, or capacity of, any port, roadstead, haven, harbor, canal, lake, harbor of refuge, or inclosure within the limits of any breakwater, or of the channel of any navigable water of the United States, unless the work has been recommended by the Chief of Engineers and authorized by the Secretary of War prior to beginning the same (USACE, 2002)."

Chesapeake Bay Critical Area Law (COMAR 14.15). In 1986, the State of Maryland approved the final regulation and guideline for the establishment of the Critical Area Commission, (Subtitle 8-1801-1816) and criteria for the Chesapeake Bay Critical Area Law (COMAR 14.15). The purpose of the law is to regulate activities within 1,000 feet of tidal waters of the Chesapeake Bay with the intent of improving the water quality and habitat in the Bay (MDE, 2002).

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APPENDIX A

Environmental Screening Form

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DO-12 APPENDIX 1

ENVIRONMENTAL SCREENING FORM
(REVISED 28 JANUARY 2002)

This form must be attached to all documents sent to the regional director's office for signature. Sections A and B should be filled out by the project initiator (may be coupled with other park project initiation forms). Sections C, D, E, and G are to be completed by the interdisciplinary team members. While you may modify this form to fit your needs, you must ensure that the form includes information detailed below and must have your modifications reviewed and approved by the regional environmental coordinator.

A. PROJECT INFORMATION

Park Name **Fort McHenry National Monument and Historic Shrine**

Pkg. Number: **FOMC-029289-001** / **PMIS # 14415**

Project Type (*Check*): ☐ Cyclic ☐ Cultural Cyclic ☐ Repair/Rehab ☐ ONPS
☐ NRPP ☐ CRPP ☐ FLHP
XXLine Item ☐ Fee Demo ☐ Concession Reimbursable
☐ Other (specify) _____

Project Location **Fort McHenry National Monument and Historic Shrine**

Project Originator/Coordinator **Laura E. Joss**

Project Title **Rehabilitate Historic Seawall**

Contract # _____

Contractor Name _____

Administrative Record Location **Fort McHenry National Monument and Historic Shrine**

Administrative Record Contact **Laura E. Joss**

B. PROJECT DESCRIPTION/LOCATION *[To begin the statutory compliance file, attach to this form, maps, site visit notes, agency consultation, data, reports, categorical exclusion form (if relevant), or other relevant materials.]*

Preliminary drawings attached? Yes **XX** No **DSC Design Analysis Study**

Background info attached? ☐ Yes **XX** No **DSC Design Analysis Study**

Date form initiated **July 2002**

Anticipated compliance completion date **December 30, 2002** (?)

Projected advertisement/Day labor start ____ Not Known Yet: **XX**

Construction start ___ Not yet known **Spring 2003 ??**

C. RESOURCE EFFECTS TO CONSIDER *(Tailor the following to meet individual park/unit project needs.)*

Are any measurable[1] impacts possible on the following physical, natural or cultural resources?	Yes	No	Data Needed to Determine
1. Geological resources – soils, bedrock, streambeds, etc.		X	
2. From geohazards		X	
3. Air quality		X	
4. Soundscapes		X	

Are any measurable[1] impacts possible on the following physical, natural or cultural resources?	Yes	No	Data Needed to Determine
5. Water quality or quantity		X	
6. Streamflow characteristics		X	
7. Marine or estuarine resources	X		
8. Floodplains or wetlands	X		**Possible but unlikely –minimal impact from wave action to adjacent tidal wetlands.
9. Land use, including occupancy, income, values, ownership, type of use		X	
10. Rare or unusual vegetation – old growth timber, riparian, alpine		X	
11. Species of special concern (plant or animal; state or federal listed or proposed for listing) or their habitat		X	
12. Unique ecosystems, biosphere reserves, World Heritage Sites		X	
13. Unique or important wildlife or wildlife habitat		X	
14. Unique or important fish or fish habitat		X	
15. Introduce or promote non-native species (plant or animal)		X	
16. Recreation resources, including supply, demand, visitation, activities, etc.		X	
17. Visitor experience, aesthetic resources	X		The project will have a positive effect on visitor experience for those who walk along the seawall trail.
18. Cultural resources including cultural landscapes, ethnographic resources	X		The project will have a positive effect on the park's cultural landscape by improving the seawall appearance. This work will improve the condition of this historic structure.
19. Socioeconomics, including employment, occupation, income changes, tax base, infrastructure		X	
20. Minority and low income populations, ethnography, size, migration patterns, etc.		X	
21. Energy resources		X	
22. Other agency or tribal land use plans or policies		X	
23. Resource, including energy, conservation potential		X	
24. Urban quality, gateway communities, etc.		X	
25. Long-term management of resources or land/resource productivity	X		This work will improve the park's ability to provide long-term management the cultural and natural resources.
26. Other important environment resources (e.g. geothermal, paleontological resources)?		X	

[1] Measurable impacts are those that the interdisciplinary team determines to be greater than negligible by the analysis process described in DO-12 §2.9 and §4.5(G)(4) to (G)(5).

D. MANDATORY CRITERIA

Mandatory Criteria: If implemented, would the proposal:	Yes	No	Data Needed to Determine
A. Have material adverse effects on public health or safety?		X	
B. Have adverse effects on such unique characteristics as historic or cultural resources; park, recreation, or refuge lands; wilderness areas; wild or scenic rivers; national natural landmarks; sole or principal drinking water aquifers; prime farmlands; wetlands; floodplains; or ecologically significant or critical areas, including those listed on the National Register of Natural Landmarks?		X	
C. Have highly controversial environmental effects?		X	
D. Have highly uncertain and potentially significant environmental effects or involve unique or unknown environmental risks?		X	
E. Establish a precedent for future action or represent a decision in principle about future actions with potentially significant environmental effects?		X	
F. Be directly related to other actions with individually insignificant, but cumulatively significant, environmental effects?		X	
G. Have adverse effects on properties listed or eligible for listing on the National Register of Historic Places?		X	
H. Have adverse effects on species listed or proposed to be listed on the List of Endangered or Threatened Species or have adverse effects on designated Critical Habitat for these species?		X	
I. Require compliance with Executive Order 11988 (Floodplain Management), Executive Order 11990 (Protection of Wetlands), or the Fish and Wildlife Coordination Act?	X		*Installation of rip-rap will be in a floodplain wetland
J. Threaten to violate a federal, state, local, or tribal law or requirement imposed for the protection of the environment?		X	
K. Involve unresolved conflicts concerning alternative uses of available resources (NEPA sec. 102(2)(E)?		X	
L. Have a disproportionate, significant adverse effect on low-income or minority populations (EO 12898)?		X	
M. Restrict access to and ceremonial use of Indian sacred sites by Indian religious practitioners or adversely affect the physical integrity of such sacred sites (EO 130007)?		X	
N. Contribute to the introduction, continued existence, or spread of federally listed noxious weeds (Federal Noxious Weed Control Act)?		X	
O. Contribute to the introduction, continued existence, or spread of non-native invasive species or actions that may promote the introduction, growth or expansion of the range of non-native invasive species (EO 13112)?		X	
P. Require a permit from a federal, state, or local agency to proceed, unless the agency from which the permit is required agrees that a CE is appropriate?	X		Yes, 404 permit required from the Corps of Engineers.
Q. Have the potential for significant impact as indicated by a federal, state, or local agency or Indian tribe?		X	
R. Have the potential to be controversial because of disagreement over possible environmental effects?		X	
S. Have the potential to violate the NPS Organic Act by impairing park resources or values?		X	

E. OTHER INFORMATION *(Please answer the following questions/provide requested information.)*

Are personnel preparing this form familiar with the site? [X] Yes [ ] No

Did personnel conduct a site visit? [X] Yes [ ] No *(If yes, attach meeting notes or additional pages noting when site visit took place, who attended, etc.)*

Is the project in an approved plan such as a General Management Plan or an Implementation Plan with an accompanying environmental document? [X] Yes [ ] No

If so, plan name: **Historic Structures Report for the Seawall (Phase I work completed in 1988).**

Is the project still consistent with the approved plan? [X] Yes [ ] No *(If no, prepare plan/EA or EIS.)*

Is the environmental document accurate and up-to-date? [ ] Yes [X] No *(If no, prepare plan/EA or EIS.)* FONSI[X] ROD [ ] *(Check)* Date approved _____Environmental information will be updated during production of EA **Expect FONSI to be completed by December 2002.**

Are there any interested or affected agencies or parties? [X] Yes [ ] No

Did you make a diligent effort to contact them? [X] Yes [ ]No

Has consultation with all affected agencies or tribes been completed? Yes No **X**
(If so, attach additional pages detailing the consultation, including the name, the dates, and a summary of comments from other agencies or tribal contacts.)

Are there any connected, cumulative, or similar actions as part of the proposed action? **X** Yes No
The State of Maryland is the owner of the submerged lands in the river in front of the historic Seawall. They have been participating with the park in consultation since the fall 2001. In June 2002, the State Underwater Archeologist conducted an underwater survey of the area and detected no known underwater archeological resources. Further shovel testing of terrestrial archeological resources will be conducted in cooperation with the state and park archeologist. Consultation with the State of Maryland will continue during the entire EA process.

(If so, attach additional pages detailing the other actions.)

F. INSTRUCTIONS FOR DETERMINING APPROPRIATE NEPA PATHWAY

Complete the following tasks: conduct a site visit or ensure that staff is familiar with the site's specifics; consult with affected agencies, and/or tribes; and interested public and complete this environmental screening form.

If your action is not described in DO-12 § 3.4 or if you checked yes or identified "data needed to determine" impacts in any block in Section D (Mandatory Criteria), you must prepare an environmental assessment or environmental impact statement.

If you checked no in all blocks in Section C (resource effects to consider) and checked no in all blocks in Section D (Mandatory Criteria) and if the action is described in DO-12 § 3.4, you may proceed to the categorical exclusion form. (Appendix 2 of DO-12 Handbook)

G. INTERDISIPLINARY TEAM SIGNATORY *(All interdisciplinary team members must sign.)*

By signing this form, you affirm the following: you have either completed a site visit or are familiar with the specifics of the site; you have consulted with affected agencies and tribes; and you, to the best of your knowledge, have answered the questions posed in the checklist correctly.

Interdisciplinary Team Leader Name	Field of Expertise	Date Signed
ANNA VON LUNZ	SECTION 106 COORDINGATOR (FOMC)	
Technical Specialists Names	**Field of Expertise**	**Date Signed**
Dr. Susan Langley	State Of Maryland Underwater Archeologist	8/28/02
Anna von Lunz	History/Historic Preservation (FOMC)	8/15/02
John Pousson	Archeologist (FOMC)	8/15/02
Laura E. Joss	Superintendent	8/14/02
Paul Bitzel	Horticulturist	8/20/02

H. SUPERVISORY SIGNATORY

Based on the environmental impact information contained in the statutory compliance file and in this environmental screening form, environmental documentation for the subject project is complete.

Recommended:

Compliance Specialist	Telephone Number	Date
Anna R. von Lunz	**410-962-4290 ext 239**	**7/31/2002**

Approved:

Superintendent	Telephone Number	Date
Laura E. Joss	**410-962-4290 ext 223**	**8/14/2002**

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APPENDIX B

Agency Letters

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
Chesapeake Bay Field Office
177 Admiral Cochrane Drive
Annapolis, MD 21401

September 9, 2002

Mr. John Wiser
Greenhorne & O'Mara, Inc.
9001 Edmonston Road
Greenbelt, Maryland 20770

RE: Seawall Rehabilitation, Fort McHenry National Monument and Historic Shrine, City of Baltimore, MD

Dear Mr. Wiser:

This responds to your letter, received August 13, 2002, requesting information on the presence of species which are federally listed or proposed for listing as endangered or threatened within the vicinity of the above reference project area. We have reviewed the information you enclosed and are providing comments in accordance with Section 7 of the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*).

Except for occasional transient individuals, no federally proposed or listed endangered or threatened species are known to exist within the project impact area. Therefore, no Biological Assessment or further Section 7 Consultation with the U.S. Fish and Wildlife Service is required. Should project plans change, or if additional information on the distribution of listed or proposed species becomes available, this determination may be reconsidered.

This response relates only to federally protected threatened or endangered species under our jurisdiction. For information on the presence of other rare species, you should contact Lori Byrne of the Maryland Wildlife and Heritage Division at (410) 260-8573.

An additional concern of the Service is wetlands protection. Federal and state partners of the Chesapeake Bay Program have adopted an interim goal of no overall net loss of the Basin's remaining wetlands, and the long term goal of increasing the quality and quantity of the Basin's wetlands resource base. Because of this policy and the functions and values wetlands perform, the Service recommends avoiding wetland impacts. All wetlands within the project area should be identified, and if construction in wetlands is proposed, the U.S. Army Corps of Engineers, Baltimore District, should be contacted for permit requirements. They can be reached at (410) 962-3670.

We appreciate the opportunity to provide information relative to fish and wildlife issues, and thank you for your interests in these resources. If you have any questions or need further assistance, please contact Charisa Morris at 410-573-4550.

Sincerely,

Mary Ratnaswamy

Mary J. Ratnaswamy, Ph.D.
Program Supervisor, Threatened and Endangered Species

Parris N. Glendening
Governor

Kathleen Kennedy Townsend
Lt. Governor

Maryland Department of Natural Resources

Tawes State Office Building
580 Taylor Avenue
Annapolis, Maryland 21401

J. Charles Fo
Secretary

Karen M. Whi
Deputy Secretar

September 24, 2002

Mr. John Wiser
Greenhorne & O'Mara, Inc.
9001 Edmonston Road
Greenbelt, MD 20770

RE: Environmental Review for Seawall Rehabilitation at Fort McHenry National Monument and Historic Shrine in Baltimore, Maryland.

Dear Mr. Wiser:

The Wildlife and Heritage Service has no records for Federal or State rare, threatened or endangered plants or animals within this project site. This statement should not be interpreted as meaning that no rare, threatened or endangered species are present. Such species could be present but have not been documented because an adequate survey has not been conducted or because survey results have not been reported to us.

However, the open waters that are adjacent to or part of the site are known historic waterfowl concentration areas. If there is to be any construction of water-dependent facilities please contact Mr. Larry Hindman of the Wildlife and Heritage Service at (410) 827-8612, for technical assistance regarding waterfowl.

Sincerely,

Lori A. Byrne

Lori A. Byrne,
Environmental Review Specialist,
Wildlife and Heritage Service

ER# 2002.1557.bc
Cc: L. Hindman, DNR
R. Esslinger, CAC

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APPENDIX C

Statement of Findings

For Floodplains and Wetlands

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STATEMENT OF FINDING
FOR
EXECUTIVE ORDER 11988 "FLOODPLAIN MANAGEMENT"
AND
EXECUTIVE ORDER 11990 "WETLAND PROTECTION"

Rehabilitate Historic Seawall
Fort McHenry National Monument and Historic Shrine
Baltimore, Maryland

September 2002

RECOMMENDED:

Superintendent, Fort McHenry National Monument and Historic Shrine	Date

CONCURRED:

Chief, Water Resources Division	Date

CONCURRED:

Regional Compliance Officer	Date

CONCURRED:

Regional Safety Officer	Date

APPROVED:

Director, Northeast Region	Date

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Introduction

The National Park Service proposes to repair the existing historic seawall at Fort McHenry National Monument and Historic Shrine. Portions of the seawall have been deteriorating since major work was last completed in 1988. The deterioration is the result of wave wash during storm events and large swells caused by harbor vessels. The seawall was originally built in segments from 1816 to 1895 and is one of the park's significant historic resources. The seawall also provides protection to many of the other park resources, such as archeological artifacts.

The historic seawall is located within the 100-year floodplain. As part of the proposed action, the National Park Service proposes to install riprap along approximately 1000 linear feet of seawall (segments 9 and 10). In the past, riprap has been added to other segments and has been effective in protecting the seawall against wave wash and swells. The riprap would be placed within an estuarine, subtidal waterway. Segments 11 and Section 12 of the seawall also abut a man-made wetland; however, the wall repair in this area would not impact the man-made wetland. The installation of riprap would result in negligible, adverse short-term impacts during construction. As a result, the National Park Service has prepared this Statement of Findings (SOF) in accordance with *Director's Order (DO) – 77-2 Floodplain Management* and *DO 77-1 Wetland Protection* to address to potential impacts of this project on the floodplain and wetlands. The SOF has been prepared to comply with Executive Orders 11988 and 11990.

Project Description

The seawall has been deteriorating since the last major repair work in 1988. The proposed action is a more comprehensive repair program. The National Park Service plans to procure a design-build contractor to repair the seawall and install riprap. A site map is provided as Figure 1 and depicts the wall segments and other site features of the park and surrounding areas. The project construction involves:

- resetting face stones,
- repointing capstones and wall,
- filling void areas with stone and mortar,
- installing riprap along segments 9 and 10, and
- removing fence and existing vegetation along the wall on Segments 11 and 12 and replacing the boundary fence with a new fence about two feet inside of the wall.

The work would be performed from both the water side of the seawall using barges and the landward side using trucks. The methods are dependent on water depths for barge access, cost and constructability. Along some segments, dewatering using coffer dams or similar methods would be needed to repair the seawall below the mean low tide level. For areas not accessible by water, vehicle access for a pickup truck to the seawall would be provided. For more specifics on design and construction, please refer to *the Design Analysis: Rehabilitate Historic Seawall*, dated October 9, 2001, prepared by the National Park Service, Denver Service Center.

The repair of the seawall is a Class I Action based on the *Procedural Manual #77-2: Floodplain Management*. The seawall is a man-made feature within the regulatory 100-year base floodplain and the proposed repair (specifically the installation of riprap) could result in an impact to the natural floodplain values. In addition, the installation of the riprap would occur in a wetland

habitat (estuarine subtidal open water) as defined by the U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) and Cowardin Classification system. According to the Cowardin Classification system, the area of Patapsco Creek where the riprap installation is proposed contains one or more wetland attributes. As a result, this SOF was also prepared pursuant to the *Procedural Manual #77-1: Wetland Protection* and includes a description of the wetland, its values, potential impacts, alternatives considered, and compensatory mitigation and/or conditions.

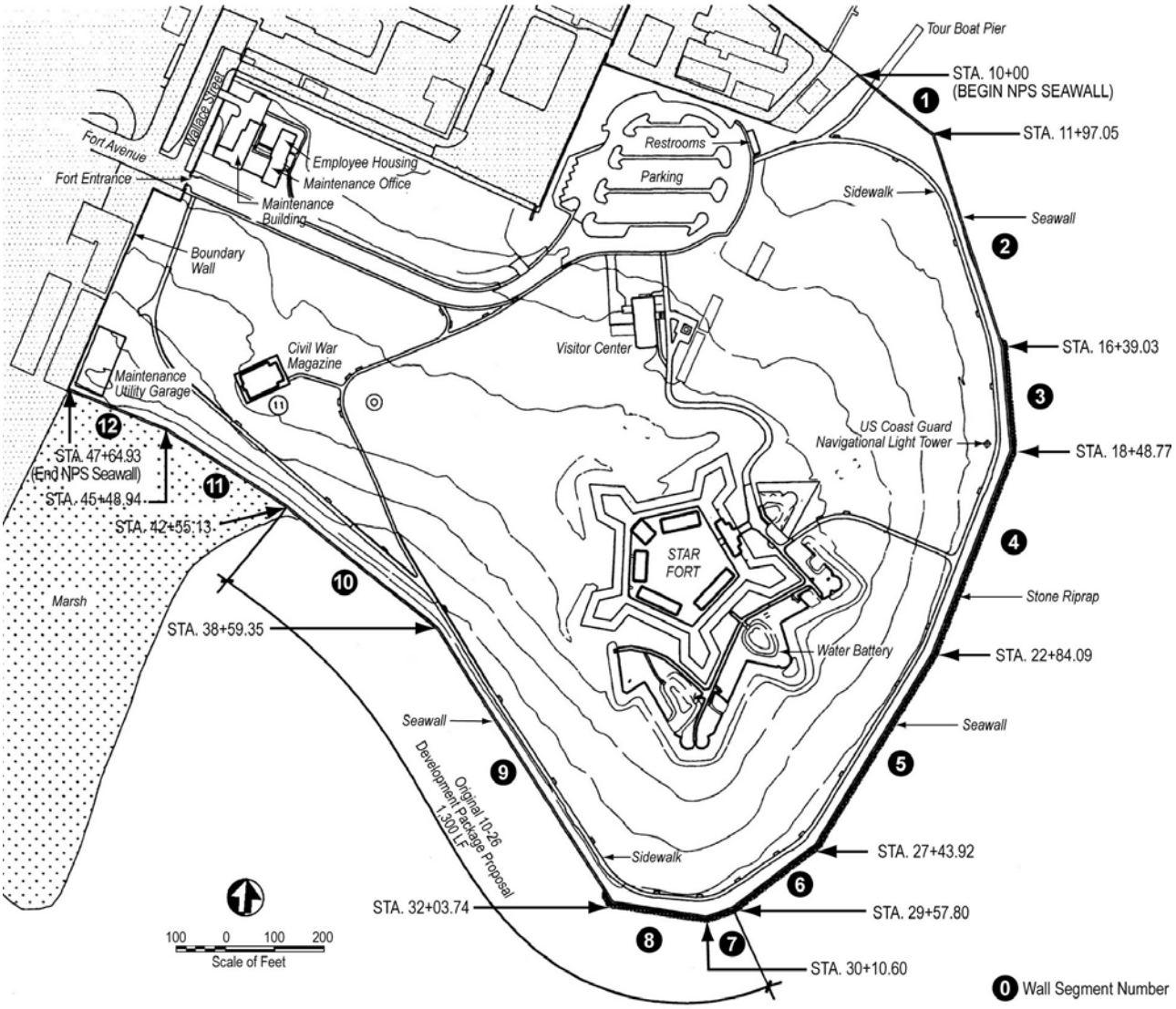

Figure 1. Wall Segments at Fort McHenry

Site Description

Fort McHenry National Monument and Historic Shrine occupies over 43 acres of land in the City of Baltimore, Maryland. The seawall protects the perimeter of the Star Fort[1] and other significant resources. The seawall is 3,765 feet long, wrapping around the tip of the peninsula known as Whetstone Point. The seawall is set flush with the earthen sod embankment on the fort side. On the other side, the seawall borders the Patapsco River. On the southwest side of the park property, the seawall abuts a man-made tidal wetland. For more information on the site description, please refer to the Affected Environment Section of the *Environmental Assessment for the Seawall Rehabilitation*, dated September 17, 2002 prepared by the National Park Service. Figure 2 depicts the project location.

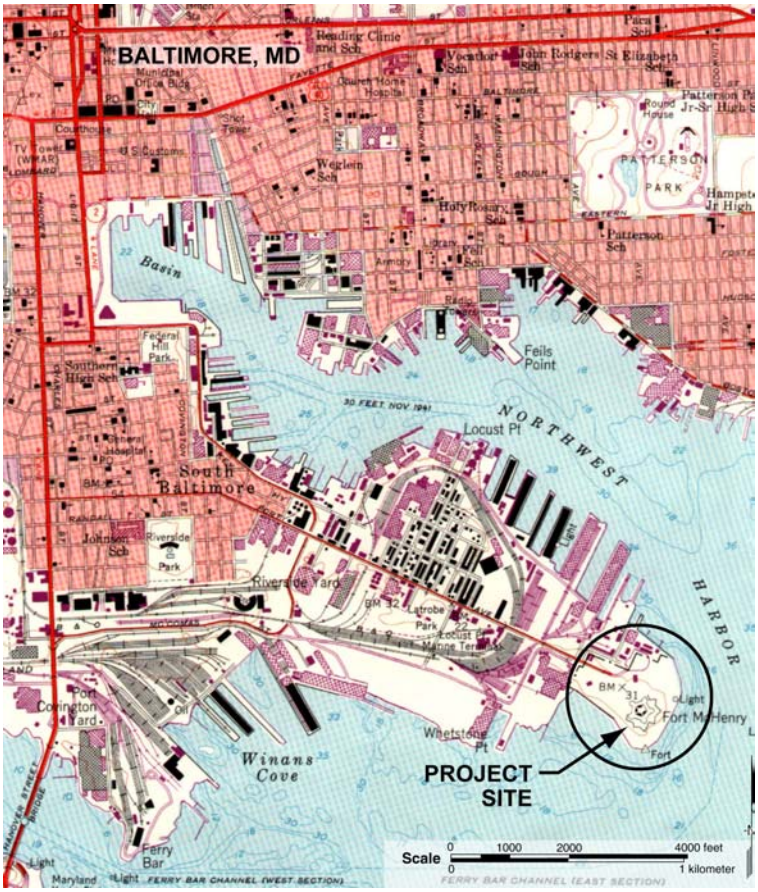

Figure 2. Site Location Map

General Floodplain and Wetland Characteristics

Floodplain Description

Fort McHenry is at the confluence of the Northwest Branch and Middle Branch of the Patapsco River. Based on the review of the Federal Emergency Management Agency Flood Insurance Rate Maps (FIRMs) for Baltimore City (panels 240010 0510B and 240010 0530B), the seawall is located in a regulated 100-year floodplain. The surrounding parkland, however, is not located in the floodplain. Tidal floodplains consist of areas subject to coastal or tidal flooding by high tides, hurricanes, tropical storms, and steady on-shore winds. Tidal floodplains are also designated as "A" zones on the FIRM. The floodplain is designated as Zone AE on the FIRMs. Zone AE means that the area is within a 100-year floodplain where base flood elevations are determined.

[1] The fort at the Fort McHenry National Monument and Historic Shrine is commonly referred to as the "Star Fort" due to the fort's star like configuration.

The Patapsco River is tidal and affected by the ebb and flow of the tides. Based on 3 months of tide information from August to October 2002, the highest predicted tide for this time frame at the Fort McHenry area is 2.1 feet above mean sea level. Therefore, the seawall is not normally subject to significant changes in water elevations as a result of tides.

Wetland Habitat Classification

For the purposes of implementing Executive Order 11990, any area that is classified as a wetland habitat according to the U.S. Fish and Wildlife Service's "*Classification of Wetlands and Deepwater Habitats of the United States"* is subject to Director's Order #77-1 and the implementation procedures outlined in the "*Procedural Manual #77-1: Wetland Protection."* Based on the review of NWI mapping, the area of the Patapsco River is classified as an estuarine subtidal system with open water. The estuarine system describes deepwater tidal habitats and adjacent tidal wetlands with low energy and variable salinity, influenced and often semi-enclosed by land[2]. The estuarine system is defined in terms of halinity and tidal influence.

Wetlands Function and Value

Estuarine subtidal systems provide biotic functions such as fisheries and waterfowl habitat and hydrologic functions such as detrital export and filtration for water quality. Estuaries are known for their high primary production that serves as the base for food webs. The proposed area to receive the riprap does not contain any submerged or emergent aquatic vegetation. Overall, the wetland value is moderate with few functions. The proposed activity will have no direct or indirect adverse impact on wetlands. In general, the added riprap structure would provide better habitat for fisheries and invertebrates.

Justification of Use of Floodplain and Wetland

Part of the Mission of the National Park Service at Fort McHenry is to preserve the Star Fort, associated structures, material culture, archeology and landscapes to provide for their use in a way that leaves them protected for future generations. The seawall helps protect the perimeter of the Fort McHenry grounds, including significant archeological and historic resources. The seawall is also historically significant because the structure was constructed in segments in the 1800s. Traditionally, seawalls by their very nature and purpose are located along the edge of the water body and in the regulated floodplain. The repair and protection of the seawall is justified to protect the park's resources. In addition, there are safety benefits to park visitors. The seawall repairs (e.g., filling in of the voids and stabilizing stones) would make the seawall safer for pedestrians.

Alternatives

Three alternatives were evaluated as part of the Environmental Assessment. The No -Action Alternative was the only alternative identified that does not involve an action in the regulatory floodplain or wetland habitat. The No-Action Alternative as discussed in the Environmental

[2] The description of the wetland is based on the Cowardin Classification System as found on the USFWS website.

Assessment does not fulfill the project purpose and need. No other alternatives outside the floodplain or wetland habitat were deemed feasible. A seawall is typically located in or at the edge of a floodplain to protect uplands from the effects of the water eroding the shoreline or banks; subsequently, the protection of this resource must also be in the floodplain.

Alternatives to the installation of the riprap along segments 9 and 10 were considered. The National Park Service considered installing riprap only along segment 9. This alternative was dismissed in that it would not provide for long-term protection to segment 10 and the design would not be as sustainable. The purpose of the installation of riprap is to protect the wall against wave wash and swells to minimize the need for future restoration efforts. So the installation of the riprap is consistent with the park's mission for protection of the park's resources. Figure 3 shows the design relationship of the riprap, seawall, and river bottom.

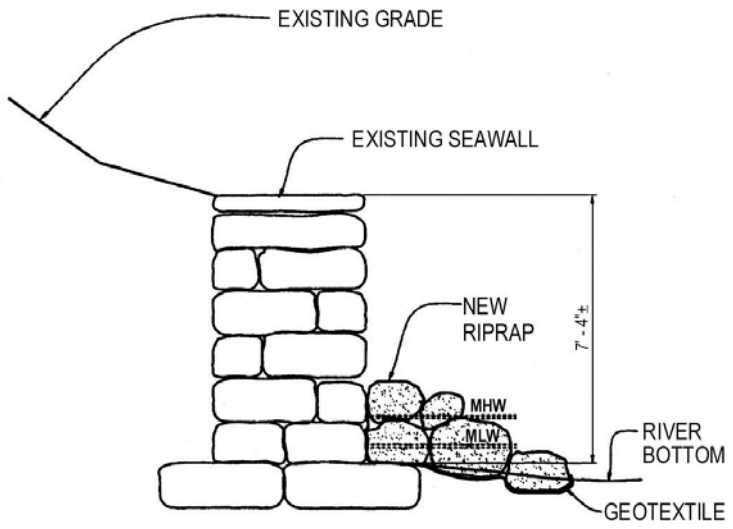

Figure 3. Riprap Design Detail

Excavation methods were also considered on the sodded embankment side of the wall. These methods would not be effective in protecting the wall against the wave wash and swells. In the Environmental Assessment, the staff predicted that the excavation methods would potentially have minor to moderate long-term adverse effects on archeological resources and the impact would be irreversible. In contrast, the installation of the riprap would have negligible, long-term impact to underwater archeology, but would be reversible because the riprap would lie on the river bottom and would not involve excavation.

Site Specific Flood Risk

Conditions associated with flooding in the proposed project area are not considered hazardous. The Star Fort and associated facilities are located in uplands. There is a seawall trail that visitors frequently use but again this trail is out of the 100-year floodplain. Based on the review of mapping and site visit, only the seawall is in the 100-year floodplain. The risk to visitors at the park associated with flooding is very low. The risk to the park resources associated with flooding is increased without the implementation of the seawall repairs and riprap.

The increase in depth of flow during the 100-year flood event is relatively low and tidally influenced. Velocities are small due to the low gradient and the tidal influence. Flooding in this area generally occurs as a result of prolonged rainfall events associated with high tides or major

intense tropical storm events, both of which can be predicted well in advance to allow visitors time to leave the seawall area and evacuate the park.

Wetland Impacts

The project is consistent with the National Park Service policy for no-net-loss of wetlands. Although temporary impacts would occur during construction, the total area of the wetland would remain the same. During construction, the contractor would temporarily dewater areas where the wall is below the mean low tide level and this would be accomplished through the use of coffer dams, geotextile tubes, or similar construction methods. This would result in a minor short-term, adverse impact. In addition, the installation of riprap would impact an area 1000 feet by 10 feet (0.23 acres) along base of the seawall. The riprap would be designed to be just below the mean high water line. The area would remain estuarine subtidal open water with a modifier of rubble or rock. No significant change in wetland function would occur.

Mitigation

Flood mitigation is offered through the design process by incorporating methods for protecting life and minimizing storm damage through appropriate procedures. One example is the installation of the riprap to protect wall segments 9 and 10 from wave wash and swells. Appropriate construction best management practices would be specified to minimize short-term impacts from dewatering activities. These mitigation measures would be in accordance with the National Park Service floodplain guidance and with Executive Order 11988.

The proposed project would have no direct or indirect long-term adverse impacts to wetlands. Best management practices and conditions would be followed by the contractor as part of the Section 404 permit conditions to avoid and minimize short-term impacts during construction. No significant change in wetland function would result.

Compliance

The Patapsco River is designated a Navigable Water and Waters of the United States; thus, the project is subject to review and approval by the U.S. Army Corps of Engineers under Section 10 of the Rivers and Harbor Act and Section 404 of the Clean Water Act (CWA). In addition, the project would require a water quality certification under Section 401 of the CWA which is administered by the State of Maryland. The project falls within the state coastal zone and is subject to the Federal Consistency Review by the Maryland Department of the Environment under the Coastal Zone Management Act.

Because the project involves fill in tidal waters, a joint permit application would need to be prepared by the National Park Service and submitted to Maryland Department of Environment, which acts as the clearinghouse in the process. The Maryland Department of Environment would distribute the application to the Corps of Engineers for review under Section 10 and Section 404.

The seawall is historic and the surrounding areas have a high potential for significant archeology to exist; therefore, consultation with the Maryland Historical Trust is required to obtain clearance

under Section 106 of the National Historic Preservation Act. The park has consulted with and included personnel from the Maryland Historical Trust since the beginning stages of the project. The state's underwater archeologist and staff have performed the underwater archeology investigations in areas adjacent to segments 9 and 10. Additional archeological terrestrial surveys are proposed for sodded embankment areas behind the seawall, but would not affect the development of the environmental assessment. Section 106 clearance would be received prior to construction.

Conclusions

The repair of the seawall at Fort McHenry National Monument and Historic Shrine is necessary to protect the historic wall and other park resources. In addition, the repairs would provide safety benefits to park visitors. The National Park Service has concluded that there are no other practical alternatives that still fulfill the project's purpose and need.

By the very nature of a seawall, repairs outside the floodplain to the wall below the mean low tide are not feasible. The project would involve the installation of riprap at the base of the seawall along segments 9 and 10. The riprap would provide protection against wave wash and swells from harbor vessels and minimize the need for future maintenance and repairs. The repair of the seawall and installation of riprap would have no significant effect on natural or beneficial floodplain values. The project would not increase the risk associated with flooding.

The installation of the riprap would be within an Estuarine Subtidal Open Water System based on the National Wetlands Inventory. Placement of fill in this area would require authorization from the Corps of Engineers under Section 404 of the CWA and Section 10 of the Rivers and Harbor Act. The area does not contain any hydrophytic vegetation, thus compensatory mitigation would not be required. The area would still be classified as estuarine subtidal with no wetland function loss and would therefore be consistent with the National Park Service's no-net-loss wetland policy. The National Park Service has determined the proposed actions to be consistent with Executive Orders 11988 and 11990.

A man-made wetland exists adjacent to the seawall segments 11 and 12. The man-made wetland would not be impacted from the proposed construction activities and the contractor would be directed to avoid this area.