

Fox Point Hurricane Barrier

Providence, Rhode Island

Continued Operation and Maintenance

Environmental Assessment

August 2015

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North Atlantic Division
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DRAFT
Finding of No Significant Impact (FONSI)
Fox Point Hurricane Barrier, Providence, Rhode Island
Continued Operation and Maintenance

Pursuant to the Council on Environmental Quality (CEQ) regulations (40 *Code of Federal Regulations* [CFR] 1500-1508) for implementing the procedural provisions of the *National Environmental Policy Act* (NEPA) (42 U.S.C. 4321 et. seq.) and the U.S. Army Corps of Engineers (USACE) Regulation 33 CFR 230 (*Procedures for Implementing NEPA*), the U.S. Army Corps of Engineers conducted an environmental assessment (EA) of potential environmental effects associated with the continued operation and maintenance of the Fox Point Hurricane Barrier (Hurricane Barrier) located in the City of Providence, Rhode Island.

The EA evaluates the operation and maintenance of the Hurricane Barrier in regard to its designated purpose of protecting of the City of Providence from flooding due to large storms such as hurricanes. The Corps of Engineers also, when requested, operates the Hurricane Barrier to support water-based recreational activities such as WaterFire Providence®.

In 2010, USACE assumed ownership of the river barrier and all components within the barrier (bank to bank) including: west abutment, pumping station, central barrier, river gates, and east barrier-east abutment. The City of Providence operates and maintains all other portions of the project including: the west dike and extension, retaining walls (formerly east dike), vehicular gates and drainage structures, which include six sewer relief gates. The City of Providence must operate its portion of the project in conjunction with USACE to obtain protection from hurricanes and large storms.

The Hurricane Barrier is operated in accordance with its authorized purposes, including response to major storms, during maintenance activities and in support of recreation activities. The environmental impacts associated with this flood damage reduction project are not significant, and its presence ensures USACE has the ability to protect the City of Providence during major storms and support cultural activities that have substantial positive economic benefit to the State of Rhode Island.

Impacts were analyzed for water resources, fish and wildlife, vegetation and wetlands, endangered and threatened species, land use and recreation areas, socioeconomics, cultural resources, air quality and noise, and floodplains. My determination of a Finding of No Significant Impact is based on the EA and the following considerations:

Impacts on public health or safety: The operation and maintenance of the project protects downtown Providence, including commercial areas, transportation facilities, public utilities, and homes, against tidal flooding from hurricanes and other coastal storms.

Unique characteristics: There is an active river herring run through the Hurricane Barrier and up the Woonasquatucket River. No specific restrictions associated with this run are maintained for the operation, maintenance and recreational support activities at the Hurricane Barrier; all closures are temporary and any impacts to fish and aquatic species will be short-term.

Controversy: The operation and maintenance of the project, and related support for recreation activities is not controversial.

Uncertain impacts: The impacts of the proposed project are not uncertain; they are readily understood based on past operation, maintenance and recreation support activities.

Precedent for future actions: The operation, maintenance and support for recreation-based activities are part of the authorized purposes for this Flood Damage Reduction Project. Its continued use will not establish a precedent for future actions.

Cumulative significance: There are no reasonably foreseeable activities associated with this project to anticipate a cumulatively significant impact on the environment.

Historic resources: The operation and maintenance of the project will have no known adverse impact on historic properties, nor will it result in adverse impacts on properties eligible for listing on the National Register of Historic Places.

Endangered species: The project will have no impacts to Federal threatened or endangered species or state-listed species of concern, rare or endangered species.

Potential violation of state or federal law: The operation and maintenance of the project will not violate Federal or state laws.

Measures to minimize adverse environmental effects from the routine operation and maintenance actions and operation for recreational events are discussed in the EA. The EA lists routine operation and maintenance activities that are considered categorically excluded from further National Environmental Policy Act (NEPA) documentation.

Based on my review and evaluation of the environmental effects as presented in the EA, I have determined that the continued operation and maintenance of the Fox Point Hurricane Barrier in Providence, Rhode Island is not a major Federal action significantly affecting the quality of the human environment. Therefore, this project is exempt from the requirement to prepare an Environmental Impact Statement.

Date: _____

Christopher J. Barron
Colonel, Corps of Engineers
District Engineer

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4. Air Emission Record of Non-applicability

Appendix B: Compliance with Federal Environmental Statutes, Executive Orders and Executive Memorandum (Compliance Tables)

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1 Introduction

The Fox Point Hurricane Barrier (Hurricane Barrier) is a Federal flood damage reduction project located in the City of Providence, Rhode Island (figure 1). The Hurricane Barrier provides flood protection to about 280 acres of the City of Providence from hurricanes and other coastal storms. In 2014, the U.S. Congress provided authorization for the acceptance of funds from a State or a political subdivision and other non-Federal interests or private entities to operate a hurricane barrier project to support recreational activities at or in the vicinity of the project, at no cost to the Federal Government. Under that framework, the U.S. Army Corps of Engineers (USACE) also operates the Hurricane Barrier to provide support to recreation events throughout the year in addition to operation for flood risk management. The primary recreation support is the operation of the Hurricane Barrier to maintain navigation in the Woonasquatucket, Moshassuck and Providence Rivers during low tide at the request of WaterFire Providence® (WaterFire).

WaterFire is a multifaceted event that occurs in downtown Providence multiple times each year. It consists of many floating braziers located in the Woonasquatucket, Moshassuck and Providence Rivers, which are lit on specific nights. The lightings are accompanied by music, performance artists and food venues. The event can be viewed from the walking paths along the rivers, and includes adjacent streets and parks where music and varied performances can be viewed. The braziers must be tended throughout the event and small boats are used for this purpose. During low-tide many of the areas accessed by WaterFire are shoaled-in and are not navigable. In past years, the Hurricane Barrier has closed during specific WaterFire events to maintain navigation in these areas.

1.1 Scope and regulatory framework

This Environmental Assessment (EA) identifies, documents and evaluates the environmental impacts of the continued operation and maintenance of the Hurricane Barrier in accordance with its authorized project purposes. Operation and maintenance activities were evaluated for compliance with current federal laws, regulations, Executive Orders and Executive Memorandum, and to meet compliance requirements of the Corps Environmental Review Guide for Operations (ERGO). This document was prepared to comply with the Council on Environmental Quality (40 Code of Federal Regulations (CFR) 1500) and the U.S. Army Corps of Engineers (USACE) regulations (33 CFR 230 and 235) for implementing the National Environmental Policy Act of 1969 (NEPA). NEPA requires the Federal government to consider potential environmental effects of a proposed action and solicit comments from interested agencies, groups and the public. An interdisciplinary team of environmental scientists, operations managers, engineers and archaeologists has analyzed the proposed action and alternatives in light of existing conditions, and has identified relevant beneficial and adverse environmental effects associated with the action.



Figure 1 - Overview of Rivers in Providence, Rhode Island

2 Purpose, Need and Project Description

2.1 Location and brief history

The Fox Point Hurricane Barrier is located in the City of Providence, Rhode Island (figure 2). It spans the Providence River about 900 feet upstream of its confluence with the Seekonk River at Fox Point (USACE, 1966). Flood protection for the City of Providence, Rhode Island was authorized by the Flood Control Act of 1958 (Public Law 85-500, 85th Congress dated July 3, 1958). The barrier provides complete protection to about 280 acres of the City of Providence and a high degree of protection from a hurricane of design intensity with a maximum Stillwater flood level of 20.5 feet, MSL (USACE,1971).

Construction of the facility began late in 1960 and was completed early in 1966 (USACE, 1966). In August of 1966, the operation and maintenance of the Barrier was turned over to the City of Providence (USACE, 1971). The original facility consisted of the 700 ft. concrete river barrier, and approximately 2,000 ft. of concrete flood wall and earthen dike structure to the east and west of the river barrier. In 2006, the National Defense Authorization Act for Fiscal Year 2007 (PL 109-364, dated October 17, 2006) directed the Secretary of the Army, acting through the Chief of Engineers, to assume responsibility for the annual operation and maintenance of the Fox Point Hurricane Barrier.

During the Rhode Island Department of Transportation (RIDOT) Interstate 195 Improvement project, which was completed in 2009, major changes to the system were undertaken, specifically: the removal and replacement of portions of the west dike, modifications of the west dike extension, replacement of the east dike with concrete flood walls, installation of an additional vehicular gate and modifications to existing vehicular gates (USACE, 2012).

In 2010, USACE received a deed from the City of Providence for the river barrier and all components within the barrier (bank to bank) including: west abutment, pumping station, central barrier, tainter (river) gates, and east barrier-east abutment (USACE, 2010). The City of Providence operates and maintains all other portions of the project including: the west dike and extension, retaining walls (formerly east dike), vehicular gates and drainage structures, which include six sewer relief gates (USACE, 2012). The City of Providence must operate its portion of the project in conjunction with USACE to obtain protection from hurricanes and large storms.

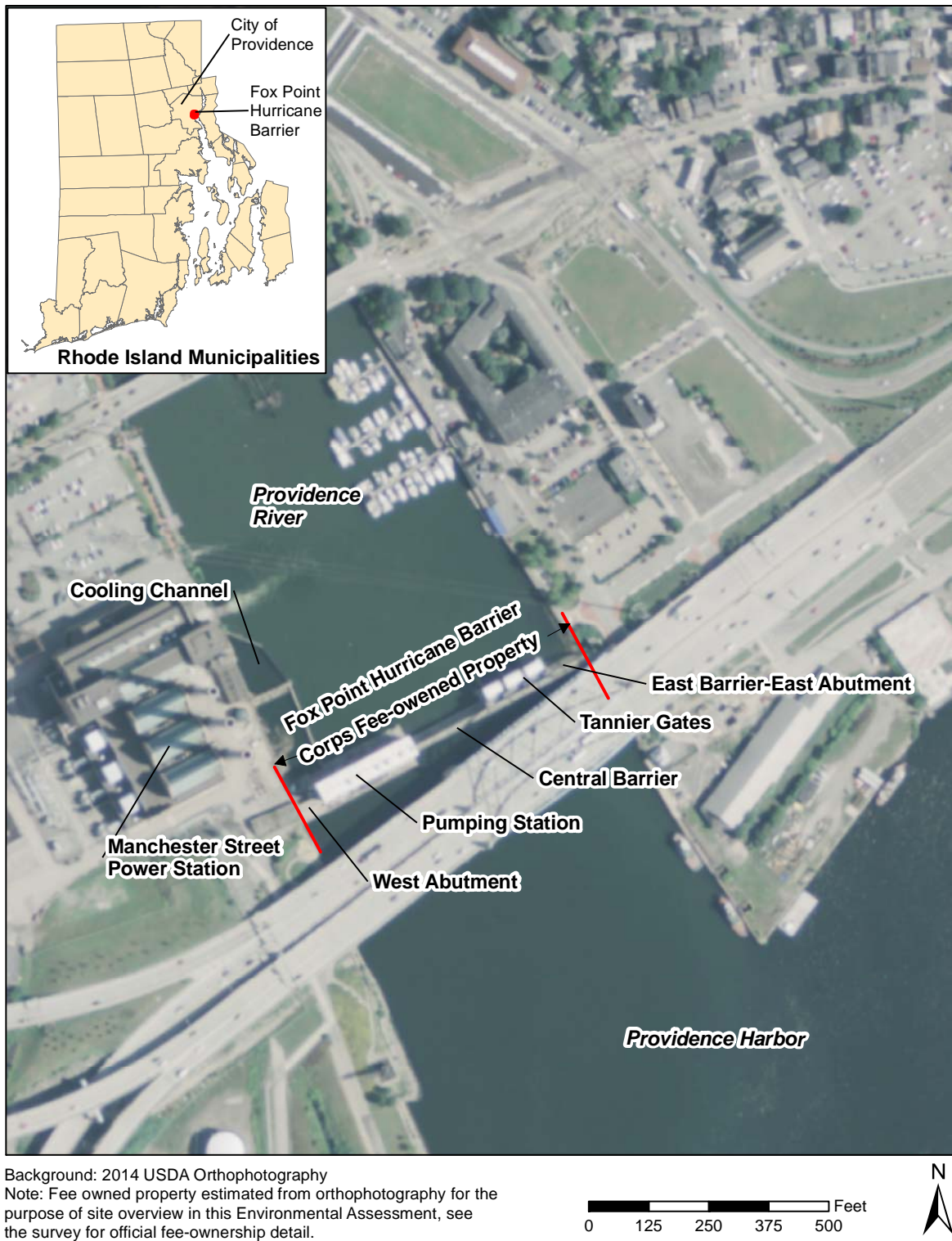


Figure 2 - Fox Point Hurricane Barrier and Vicinity

2.2 Facility information

The USACE fee-owned portion of the Hurricane Barrier system consists of an approximately 700 ft. concrete structure that crosses the Providence River. This structure includes a 50 ft. concrete cellular structure located in the west abutment, a 214 ft. pumping station, a 180 ft. center river barrier, a 148 ft. tainter gate section, and a 108 ft. concrete wall section on the east abutment (figure 2, USACE, 1966). The pumping station consists of five 4,500 horsepower vertically mounted 19-inch axial flow pumps (USACE, 2012) and two 10 by 15 ft. gates to allow for water flow into the cooling water canal (USACE, 1966). The cooling water canal is located along the Western shore of the Providence River, running from the pumping station in the Hurricane Barrier North to the Manchester Street power station, which is currently operated by Dominion Energy. The power station utilizes a once through cooling water system, taking in and discharging water to the Providence River via the cooling water canal. The cooling water canal originally serviced an additional power station to the North of the Manchester Street station, this station has since ceased operation. The river gate section includes three 40 by 40 ft. tainter gates with a sill at elevation -15.0 MSL (USACE, 1966).

3 Alternatives

NEPA requires the analysis and objective evaluation of all reasonable alternatives associated with a project including the proposed action and no action alternative, so that reviewers may evaluate their comparative merits. USACE NEPA guidance can be found in 33 CFR 230. Three alternatives for the operation and maintenance of the Hurricane Barrier were identified and are described below.

3.1 No Action Alternative

The No Action Alternative is required to be evaluated as prescribed by NEPA and the Council on Environmental Quality (CEQ). Evaluation of the No Action Alternative involves assessing the environmental effects that would result if the proposed action did not take place. It typically serves as the baseline upon which the expected environmental impacts from the Proposed Action are compared. The project was completed and turned over to the City of Providence for operation and maintenance prior to the enactment of NEPA. The No Action Alternative consists of allowing operation and maintenance activities to continue without change to flood risk management and non-flood flood risk management project operations. This alternative would maintain the status quo in regards to operation and maintenance actions at the Hurricane Barrier. The City of Providence operated Fox Point Hurricane Barrier since construction in 1966, until USACE assumed ownership in 2010. Unless the U.S. Congress de-authorizes the project it will continue to operate and require maintenance.

3.2 Continue to Operate and Maintain the Facility for Flood Damage Reduction and in Support of Recreation as Congressionally authorized – Preferred Alternative

This is the USACE Preferred Alternative. This alternative consists of continuing to operate the Hurricane Barrier for flood risk management in response to storms that could cause damage to downtown Providence's commercial center, transportation facilities, public utilities and residences. It also includes continuing support for recreation activities, including support of WaterFire. The advantage of this

alternative is that, based on the analysis provided in this EA, there are no major adverse impacts from operation and maintenance of the facility and it can continue to protect the City of Providence during major storms and support cultural activities that have substantial positive economic benefit to the state of Rhode Island. Based on the information provided in the following sections we have determined that there are no significant environmental impacts associated with continuing the existing operation and maintenance activities. In addition, a MOU is currently in place (28 August 2014) that allows for the project to provide continued support for future WaterFire events (Appendix A). Our review of the environmental effects of the activities described in that agreement indicates that there are no significant adverse effects of those activities.

3.2.1 Only Operate During Storms and Maintenance Activities

This alternative includes operation of the Hurricane Barrier in response to major storms with the potential to cause flood damage to the City of Providence and during maintenance activities. This alternative would limit the ability of USACE to support recreational activities as directed by 2014 Congressional authorization. It would prevent support to WaterFire, limiting their ability to schedule events during low tide, subsequently resulting in a loss of economic benefit from these events. Like the Preferred Alternative, an evaluation of the existing operation and maintenance actions does not show significant environmental impacts as a result of the continued operation from either flood control operations or maintenance activities.

4 Project Operation and Maintenance

4.1 General

General operational activities for the Hurricane Barrier fall into three categories: maintenance activities, flood damage reduction during hurricanes or other significant storm events, and operation in support of recreational activities that require navigability of upstream areas. Each of these activities is described below.

4.1.1 Maintenance Activities

Maintenance operations consist of inspection, testing, operation, upkeep, and repair of equipment and structures in the Hurricane Barrier (USACE, 1966). Upkeep and repair activities generally include painting, blasting, scraping, lubricating, replacing fluids and oils, cleaning strainers and removing trash from trash racks. During maintenance operations, one of the three tainter gates is always left open to maintain navigation and water flow (Lawrence Davis, Personal communication, 5 May 2015).

4.1.2 Flood Damage Reduction

Operation of the Hurricane Barrier for flood reduction when the City of Providence is threatened by a large storm or hurricane requires actions by the USACE, City of Providence Department of Public Works (DPW) and the Narragansett Bay Commission (NBC). The general criterion used by USACE is to operate the barrier to keep the river from exceeding 6.5 feet MLLW. USACE actions consist of: closure of all tainter gates and canal gates, and the pumping of water from upstream of the barrier to downstream areas. The City of Providence DPW is responsible for operating the dike/levee and vehicular gates and

NBC is responsible for operating the sewer relief gates. In general, non-hurricane storm closures last from one to three hours, while hurricane based closures typically last four to five hours.

4.1.3 Recreational Activity Support

In 2014, the U.S. Congress passed legislation to allow the Secretary of the Army to accept and expend funds from a State or a political subdivision, and other non-Federal interests or private entities, to operate the hurricane barrier project to support recreational activities at or in the vicinity of the project, at no cost to the Federal Government, if the Secretary determines that operation for such purpose is not inconsistent with the operation and maintenance of the project for the authorized purposes of the project (33 USC 701h). Under that authority, the USACE operates the Hurricane Barrier to allow small boats to operate on the upstream rivers (Moshassuck, Woonasquatucket and Providence Rivers) during WaterFire events occurring at low tides. Recreational closures associated with WaterFire are timed to extend the high tide period, allowing for small boat navigation during the event. The actual period of closure, which may be from three to 11 hours, is a function of: tide stage, flow from the Providence River and timing of the WaterFire event. Some WaterFire events do not require a Hurricane Barrier closure. WaterFire events may occur at any time of the year, but most often occur from May through October.

4.2 Master Plan and Operational Management Plan

A Master Plan (MP) and Operational Management Plan (OMP) are not required for the Hurricane Barrier because the project does not include any land. USACE requires a MP and OMP be developed for all land originally or subsequently acquired for a project (Engineering Regulation (ER) 1130-2-550, 15 Nov. 1996). The MP is a strategic land use management document that guides the comprehensive management and development of project recreational, natural and cultural resources throughout the life of the project. The OMP is prepared to guide implementation of the resource objectives and development needs identified in the MP.

5 Affected Environment and Environmental Consequences

This section describes the environmental conditions in the vicinity of the Hurricane Barrier and potential environmental consequences of the ongoing operation and maintenance activities, as well as recreation support. The environment described in this chapter is the baseline for the consequences that are presented for each resource and each alternative. The geographic region of influence of the proposed action is the downtown area of the City of Providence and the immediate waters of the Woonasquatucket, Moshassuck and Providence Rivers, and Providence Harbor. Most of the baseline information was taken from existing USACE data, existing documentation, and coordination with Federal and State resource agencies.

5.1 Direct and Indirect Impacts

An impact is a consequence that could occur from modifying the existing environment due to a proposed action or alternative. Impacts can be beneficial or adverse, can be a primary result of an action (direct) or a secondary result (indirect), and can be permanent/long-term or of temporary/short-

term. Secondary impacts are impacts that occur later in time or farther removed in distance, but are still reasonably foreseeable. Impacts can vary in degree from a slightly noticeable change to a total change in the environment. For this EA, all identified impacts are direct and short-term resulting from the closure of the Hurricane Barrier for flood damage reduction or in support of recreation. No long-term nor secondary impacts have not been identified for operation and maintenance of the Hurricane Barrier for flood damage reduction nor in support of recreation.

5.2 Water Resources

Approximately 4,500 ft. upstream (North) of the Hurricane Barrier, the Woonasquatucket and Moshassuck Rivers combine to form the Providence River, which flows through the Hurricane Barrier into Providence Harbor (figure 1, USACE, 1971). Many portions of these rivers are channelized, with little to no vegetated buffer. Historic use of these rivers for hydropower and other industrial uses have left some areas degraded. Stormwater outfalls into these rivers, from an urban landscape, are a continued source of concern. In 1997 the Woonasquatucket River was designated as an American Heritage River due to its historical and cultural significance, and the significant role the river played in the Industrial Revolution as one of the first rivers to be dammed to supply power (WRWC, 2015). The Woonasquatucket River watershed hosts an active watershed group called the Woonasquatucket River Watershed Council (WRWC). WRWC works with many local, state and federal partners on education, outreach and restoration projects centering on the Woonasquatucket River and watershed.

The Rhode Island Department of Environmental Management (RIDEM) water quality classification for the segment of the Woonasquatucket River discharging to the Providence River is B1{a} and the segment of the Moshassuck River discharging to the Providence River is B{a} (RIDEM, 2010). Class B waters are designated for fish and wildlife habitat, and primary and secondary contact recreational activities (RIDEM, 2010). The “1” designation indicates that primary contact recreational activities may be impacted due to pathogens from approved wastewater discharges and the “{a}” designation indicates that the segment is likely impacted by Combined Sewer Overflows (RIDEM, 2010). Both river segments are classified as freshwater, although it is expected these areas are tidally influenced. Neither segment supports its designated uses (RIDEM, 2015). This segment of the Woonasquatucket River is impaired due to metals (copper, lead, mercury, zinc), dioxin, low dissolved oxygen, non-native aquatic plants, polychlorinated biphenyls (PCBs), bacteria and compromised benthic community structure (RIDEM, 2015). This Moshassuck River segment is impaired due to bacteria and compromised benthic community structure (RIDEM, 2015).

The brackish Providence River begins at the confluence of the Woonasquatucket and Moshassuck Rivers and terminates about 1,000 ft. downstream of the Hurricane Barrier where it flows into Providence Harbor. RIDEM provides a water quality classification for the Providence River from its head south through Providence Harbor to a line extending from a point on shore due east of Naushon Avenue in Warwick to Beach Road in East Providence (RIDEM, 2015). This segment is classified as SB1{a}, saltwater (RIDEM, 2015). Waters with the SB1{a} designation are designated for primary and secondary contact recreation activities, and fish and wildlife habitat, and should be suitable for aquacultural uses, navigation and industrial cooling (RIDEM, 2010). The additional designation as {a} indicates that the waters are likely to be impacted by combined sewer overflow and the designated uses are likely to be

restricted (RIDEM, 2010). This segment is supporting of fish consumption, but not supporting of fish and wildlife habitat or primary and secondary contact recreation due to concerns with total nitrogen, dissolved oxygen and bacteria levels (RIDEM, 2015).

Upstream of the Hurricane Barrier, Dominion Energy maintains the Manchester Street power facility, which utilizes the Providence River for once-through cooling water. Downstream of the Hurricane Barrier, Providence Harbor is one of only two deep water ports in New England and is part of Narragansett Bay. Rhode Island Coastal Resources Management Council (CRMC) categorizes Providence Harbor as Coastal Water Use Type 6: industrial waterfront and commercial navigation channel and the Providence River as Type 5: Commercial and Recreational Harbor (RIGIS, 2011).

5.2.1 Environmental Consequences

The operation of the Hurricane Barrier does not have an adverse impact to the Woonasquatucket River, an American Heritage River.

During maintenance activities that requires gate operations, one Hurricane Barrier tainter gate typically remains open allowing for water exchange, as such no water quality issues are expected. Closures related to recreation support, hurricanes or storms necessitate the closure of all tainter gates and therefore prevent the exchange of water between the Providence River and Harbor. As such, there is the potential for elevation of water temperature and a corresponding decline in dissolved oxygen upstream of the Hurricane Barrier due to cessation of tidal exchange and the discharge of cooling water from the Manchester Street power station. This activity could temporarily degrade water quality and impact fisheries habitats. The severity of the impact is affected by length of closure, time of year, time of day, and volume and temperature of inflow from upstream. In general, non-hurricane storm closures, such as routine maintenance, last from one to three hours, while hurricane based closures typically last four to five hours (USACE correspondence 22 September 2014). Closures in support of recreational activities may extend up to 11 hours.

Overall impacts are expected to be localized and minimal, especially for short-term closures. Impacts to water quality due to recreation events is expected to be minimal, based on prior year's experience, as well as the understanding that Dominion Energy intends to operate within the parameters dictated by its RIPDES permit requirements specific to its thermal discharge limits. Coordination between USACE, Dominion Energy, RIDEM and CRMC was completed to understand concerns associated with water quality and barrier closure. As such, USACE will continue to coordinate Hurricane Barrier closures as described in the MOU with Dominion Energy (as per MOU Appendix A).

5.3 Fish Resources

The Woonasquatucket River has an active river herring run that passes out through the Providence River and subsequently the Hurricane Barrier (Phillip Edwards, Personal Comm., 5 May 2015). Restoration of the Woonasquatucket River has included two dam removals and the installation of two fishways; plans for a fish passage around an additional obstruction are underway (Phillip Edwards, Personal Comm., 5 May 2015). Spawning stock size estimates in the Woonasquatucket River at the Rising Sun Fishway have increased substantially from 7,269 in 2011 to 39,518 in 2015 (Phillip Edwards, Personal Comm., 5 May

2015). The adult migration window extends from March 1st to June 1st of each year, with the peak run typically in April (Phillip Edwards, Personal Comm., 5 May 2015). Run peak is affected by seasonal weather patterns and may shift slightly from year to year, but is generally complete by May 15th of each year (Phillip Edwards, Personal Comm., 5 May 2015). In the summer and fall the juvenile fish migrate down the river and into Narragansett Bay. Shellfishing is prohibited both upstream and downstream of the Hurricane Barrier (RIGIS, 2013).

Essential Fish Habitat (EFH) for the Providence River was evaluated (Appendix C). The following fish species have EFH designed in the Providence River: American plaice, Summer flounder, Windowpane flounder, Winter flounder, Black sea bass, Haddock, Red hake, Scup, Atlantic mackerel, Atlantic sea herring, Bluefish, Cobia, King mackerel and Spanish mackerel.

5.3.1 Environmental Consequences

Short-term impacts to fish and aquatic species could occur during operation of the Hurricane Barrier for flood risk reduction and in support of requested recreation events. During maintenance activities fish will be able to migrate in and out of at least one open gate; impacts to fisheries during maintenance actions are not considered significant. Potential impacts to fish resources are greatest during periods of total gate closure. Complete gate closures occur when USACE operates the Hurricane Barrier for storm risk management (hurricanes, coastal storms, abnormally high tides, or any event that may cause flooding in the City of Providence) and when USACE provides support for recreation activities, such as WaterFire. Flood control operations typically occur in the late summer or fall, outside of the adult upstream migration period, but operations may temporarily trap juvenile anadromous and/or local fish populations upstream of the Hurricane Barrier. Early season recreation closures may delay upstream migration of adults, but closures generally occur after peak migration (table 1). Migrating fish will be temporarily held back while the Hurricane Barrier is closed, but will resume their passage once the Hurricane Barrier is re-opened. Consultation with Rhode Island Division of Fish and Wildlife has not provided any specific requirements associated with barrier closures and fish runs.

There are no anticipated impacts to EFH from the continued maintenance of the Hurricane Barrier. The facility has been in place for almost 50 years and during routine maintenance at least one tainter gate is left open, allowing for fish passage and water exchange. Therefore, no changes in temperature or salinity regime, tidal flows or tide height, or prey species are anticipated during routine maintenance activities.

Closures related to recreation support, hurricanes or storms necessitate the closure of all tainter gates and therefore prevent the exchange of water between the Providence River and Harbor. As such, there is the potential for short-term, localized elevation of water temperature and a corresponding decline in dissolved oxygen upstream of the Hurricane Barrier due to cessation of tidal exchange and the discharge of cooling water from the Manchester Street power station, located upstream of the Hurricane Barrier. These operational conditions could temporarily degrade local water quality upstream of the Hurricane Barrier and are considered the condition that would have the greatest potential for impact to EFH species. Temporary delay of fish passage when all tainter gates are closed is also anticipated, but not

expected to cause permanent nor significant impacts to fisheries resources. This expectation is based on prior site experience.

The severity of the impact to water quality upstream of the barrier is affected by length of closure, time of year, time of day, and temperature and volume of freshwater flow from upstream of the barrier. In general, non-hurricane storm closures last from one to three hours, while hurricane based closures typically last four to five hours (USACE correspondence 22 September 2014). Closures in support of recreation events may extend up to a maximum duration of 11 hours. Impacts to water quality due to storm closures may occur if dissolved oxygen levels decrease and/or temperatures increase behind the barrier. Any impacts are expected to be localized (upstream of the barrier) and short-term (during closure only). Impacts to water quality due to recreation events are expected to be minimal, based on prior years experience, as well as the understanding that Dominion Energy intends to operate within the parameters dictated by its RIPDES permit requirements specific to its thermal discharge limits. Coordination between USACE, Dominion Energy, RIDEM and CRMC was completed in order to limit water quality impacts from barrier closure. As such, USACE will continue to coordinate Hurricane Barrier closures as described in the MOU with Dominion Energy (as per MOU contained in Appendix A of EA).

Water temperature data from the permanent climatic station on Providence Harbor, slightly downstream of the Hurricane Barrier, reports mean water temperatures range from a low of about 0°C in February to a high of between 25 and 30°C in July (NDBC, 2015). It is expected that very few temperature sensitive juvenile or adult fish species will be present in the vicinity of the Hurricane Barrier during the summer periods when water temperatures are naturally highest and the recreational closures of the Hurricane Barrier most often occur, further reducing the potential fisheries impact.

Table 1 – WaterFire Events and Estimated River Herring Run Periods

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
WaterFire Events¹					x	x	x	x	x	x		
River Herring Run²			x	peak	x							

¹WaterFire events are most often held between May through October. Historically there is at least one WaterFire event in January or December each year.

²There is no defined outward migration window for river herring at this project location (Edwards, Personal Comm., 5 May 2015).

5.4 Wildlife Resources

Urban wildlife such as pigeons, gulls, ducks and small mammals may intermittently use portions of the facility for roosting or resting.

5.4.1 Environmental Consequences

The Hurricane Barrier is a concrete and steel structure spanning the River from bank to bank. Operation and maintenance of the Hurricane Barrier is not anticipated to negatively impact wildlife resources that may occur in the project area.

5.5 Vegetation and Wetlands

There is no vegetation or wetlands present at this facility.

5.5.1 Environmental Consequences

None anticipated.

5.6 Endangered and Threatened Species

There are no Federal, State or local listed rare or threatened or endangered species at the Hurricane Barrier nor directly upstream nor downstream (RIGIS Natural Heritage Areas dataset, 2014 and Personal communication, Christopher Raithel 5/8/2015, Personal communication Kevin Madley NOAA, 6/30/2015).

5.6.1 Environmental Consequences

None anticipated. Coordination with the relevant agencies has confirmed there are no threatened and endangered species in the project area. The project site has not been designed as critical habitat for any National Marine Fisheries Service (NMFS) listed species.

5.7 Land Use and Recreation Areas

There are no fee-owned lands associated with the Hurricane Barrier, and there are no recreation areas present. There are no actions that would incur significant adverse impacts to land resources.

5.7.1 Environmental Consequences

Not applicable.

5.8 Socioeconomics

Socioeconomic factors include economic development, demographics, housing, quality of life, environmental justice and protection of children. Environmental justice is the fair treatment for people of all races, cultures, and incomes, regarding the development and implementation (or lack thereof) of environmental laws, regulations, and policies. EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations*, directs Federal agencies to address environmental and human health conditions in minority and low-income communities. A memorandum from President Clinton concerning EO 12898 stated that Federal agencies would collect and analyze information concerning a project's effects on minorities or low-income groups when required by NEPA. If such investigations find that minority or low-income groups experience a disproportionate adverse effect, then avoidance or mitigation measures are necessary. Executive Order 13045, *Protection of Children from Environmental Health and Safety Risks*, requires Federal agencies, to the extent permitted by law and mission, to identify and assess environmental health and safety risks that might disproportionately affect children. USACE takes special precautions for the safety of children, including the use of fencing and signage.

The Hurricane Barrier protects a large section of downtown Providence which contains commercial, industrial and residential areas including areas identified as Environmental Justice Area (RIDEM, Environmental Resource Map, Accessed April 17, 2015). In Rhode Island, Environmental Justice areas are defined as block groups with percentages in the top 15% of the state for low-income residents

and/or non-white populations (<http://www.dem.ri.gov/envequity/graphics/ejareas.jpg>, accessed April 17, 2015).

5.8.1 Environmental consequences

There are no short- or long-term adverse impacts to socioeconomic resources with continued operation of the Hurricane Barrier. The environmental and economic consequences associated with failure to maintain and operate the Hurricane Barrier in response to storms where flooding is predicted would be substantial. Failure to properly maintain and operate the Hurricane Barrier during large storms and hurricanes would risk damage to areas identified as Environmental Justice Area, which have been damaged by large storms and hurricanes in the past. Failure to operate the Hurricane Barrier for recreational use would negatively affect WaterFire events. These events generate substantial positive economic and social benefit to the City of Providence and the State of Rhode Island. In 2011, the 17 WaterFire events that occurred attracted more than a million visitors (USACE, 2012a). The estimated total economic output due to WaterFire events is \$114 million annually (USACE, 2012a).

Continuing to operate the Hurricane Barrier for flood damage reduction and to support recreation would not change the authorized purpose for the project. It would not adversely affect regional or local economic development, demographics, housing, quality of life, environmental justice nor protection of children. USACE will continue to operate the facility in accordance with the Congressionally-authorized purpose of the project by providing flood protection and recreational opportunities. There are no expected changes to these resources with the proposed action.

5.9 Cultural Resources (Historic and Archeological)

A National Register of Historic Places (NRHP) registration form for the Fox Point Hurricane Barrier was completed by a group of Brown University students (William Schachterle, Jacqui Hogans, and Jennifer Good) as part of a class in Urban Preservation. The exact date is unknown but appears to be from circa 2000. Their research included text about the structure, photo images, drawings, and an extensive bibliography. The information from this undated form was located on the City of Providence website; the completed form was also found on the Internet. It is not known if the form was ever formally submitted to the National Park Service for consideration as the barrier is not listed on the NRHP.

According to Ms. Good, “the Fox Point Hurricane Barrier is eligible for the National Register of Historic Places under Criteria A: relation to an event, a series of events or activities, or patterns of an area's development, as well as Criteria C: a building form, architectural style, engineering technique, or artistic value, based on a stage of physical development; or the use of a material or method of construction that shaped the historic identity of an area. The construction of the Hurricane Barrier reflects an interest in community building and development because it is an attempt to prevent community disasters (Criteria A). Additionally, the construction methods and engineering technology were innovative such that the barrier is operated in the same manner that it was when it was first built (Criteria C).”

Although the Barrier is eligible, USACE currently has no plans to formally nominate the hurricane barrier to the NRHP. Historic properties eligible for the NRHP are accorded the same protections as those that are formally listed on the NRHP.

Future construction activities at and around the Hurricane Barrier will be coordinated with the Rhode Island State Historic Preservation Officer (RI SHPO) in accordance with Section 106 and 110 of the National Historic Preservation Act (NHPA) of 1966, as amended. The NHPA requires Federal agencies to take into account impacts to historic properties as a result of federally funded undertakings and to afford the Advisory Council on Historic Preservation (ACHP) an opportunity to comment on said undertakings.

Due to the Fox Point HB's historical significance, USACE coordinated the replacement of the Barrier's pump station roof in 2013 with the RI SHPO. Although it was not clear when the existing membrane roof of the pump station was installed, it is suspected to be over 50 years old. This roof was at the end of its life, and needed to be replaced. Significant leaking has been observed during high rainfall events. Asbestos was also present in the mastic around the flashing present at penetrations, and at the roof edges. Coordination of the above repairs with the RI SHPO resulted in a "no adverse effect" determination upon historic properties, namely the Fox Point Hurricane Barrier as a whole by letter dated January 2013. No further action was required.

5.9.1 Environmental consequences

Preparation of this EA for Operation and Maintenance of the Fox Point Hurricane Barrier is required to determine the types of activities that would normally be construed as normal "operation and maintenance" of the structure and determine whether these activities would impact environmental resources as well as historic properties. Normal operation and maintenance activities are unlikely to impact upon the historic significance of the Barrier (detailed above), namely its method of construction and innovative engineering technology at the time, along with its association with a period (late 1950's-1960's) when community planning for disaster prevention was initiated. Activities that would impact upon the defining characteristics that afford the Hurricane Barrier its historic significance would require further review and coordination. These types of activities could include but are not to be limited by: major repairs and rehabilitation, the introduction of additional or new features that may detract from the aesthetic setting and historic characteristics of the Barrier (i.e. changes in construction material or technology), and demolition of part or all of the structure. These activities, which are defined in greater detail below, would be evaluated on a case-by-case basis.

Project undertakings with the potential to have an "adverse effect" upon historic properties would require further coordination with RI SHPO and, if other prudent or feasible alternatives are not identified, mitigation measures would be stipulated in a Memorandum of Agreement between USACE, RI SHPO and the ACHP. These measures would likely include historic and/or photographic documentation conforming to Historic American Engineering Record (HAER) standards or other format as determined by the consulting parties.

An "adverse effect" is defined by the ACHP as:

"An undertaking [that] may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling or association.

Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the National Register. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative (35 CFR 800.5(a)(1)).”

“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(a)(2)).”

5.10 Air quality and noise

Ambient air quality is protected by Federal and State regulations. The US Environmental Protection Agency (EPA) has developed the National Ambient Air Quality Standards (NAAQS) for certain air pollutants; state air quality standards cannot be less stringent than the NAAQS. Currently, Providence County is non-attaining for ozone, which includes the City of Providence (EPA, 2015).

5.10.1 Environmental consequences

Clean Air Act compliance, specifically with EPA’s General Conformity Rules, requires that all Federal agencies, including the Department of the Army review their actions that take place in non-attainment or maintenance areas for conformity. If the total direct and indirect emissions caused by the operation of the facility are less than *de minimus* levels established in the rule, then a Record of Non-applicability is prepared and signed by the installation’s environmental coordinator (Appendix A). EPA has allowed that certain actions are exempt from the general conformity rule because the expected air emissions are not likely to impact the State Implementation Plan. The list of exempt actions appears in 40 CFR 93.153

(c), and includes all activities expected to occur at the Hurricane Barrier. Exemptions applicable to this site include: routine maintenance and repair, and route operations of facilities, mobile assets and equipment.

During operation of the Hurricane Barrier, operation of pumps may elevate ambient noise levels. Closure or opening of the tainter gates may also cause intermittent increases in noise levels. This noise is not excessive and the surrounding urban land mainly consists of commercial, industrial and transportation land uses, which have higher levels of ambient noise (RIGIS, 2015). Air quality is not expected to be impacted by the operation and maintenance activities at the Hurricane Barrier.

5.11 Floodplains

This Flood Risk Management Project is authorized by the U.S. Congress to be located in the floodplain to protect civil works structures located within the floodplain. As per Executive Order 13690 (Jan 30, 2015), it is required that the Federal Government take action to improve the Nation's preparedness and resilience against flooding (80 FR 9347). In doing so, the government requires executive departments and agencies to avoid, to the extent possible, the long-term and short-term adverse impacts with occupancy and modification of floodplains as well as the public benefits from restoring and preserving flood plains (80 FR 9347). The Hurricane Barrier was previously authorized and there are no planned substantive changes.

5.12 Environmental Review Guide for Operations (ERGO)

Each USACE facility is subject to the Corps's Environmental Review Guide for Operations (ERGO) program. USACE initiated the ERGO program as a comprehensive self-evaluation and program management system for achieving, maintaining, and monitoring compliance with environmental laws and regulations at USACE projects and facilities. Objectives of the ERGO program are to:

- Enhance Corps environmental compliance at Federal, State and local levels.
- Improve Corps environmental management.
- Build supporting financial programs and budgets.
- Assure supervisors that their environmental programs are being implemented effectively in accordance with USACE goals and objectives.

Periodic environmental compliance assessments at USACE facilities are necessary. These evaluations are designed to assess environmental compliance and provide necessary feedback to Project Managers for organizing, directing, and controlling environmental compliance and protection activities. A comprehensive ERGO assessment considers 13 major environmental compliance categories (table 2). Within each category, project practices and procedures are reviewed for compliance with Federal, State and local laws, DOD and Corps regulations, and best management practices. USACE staff is responsible for performing an internal self-assessment annually, with the exception of those years when an external assessment is being completed. Overall, the program has resulted in elevated awareness and compliance with environmental laws and regulations among USACE staff and subsequently increased identification of project operations that could have significant impact on natural resources.

Table 2 - ERGO Compliance Categories

ERGO Compliance Categories	
1. Air emissions	8. Special Pollutants Management (Radon, Asbestos, Polychlorinated biphenyls (PCBs), Noise)
2. Cultural and Historic Resources Management	9. Fuel Storage Tank Management
3. Hazardous Materials and Waste Management	10. Wastewater Management
4. Natural Resources Management	11. Water Quality Management
5. Pesticide Management	12. Other Environmental Issues
6. Petroleum, Oil and Lubricant (POL) Management	
7. Solid Waste Management	

5.13 Cumulative Impacts

“Cumulative impact” is the impact on the environment that 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. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. Although the individual impact of a project might be minor or locally isolated, the additive or synergistic effects from all the projects could be significant.

Each flood damage reduction or recreational support event which occurs at the Hurricane Barrier is a discrete and separate event. It is expected that environmental conditions return to pre-event conditions after each event. Therefore, no cumulative impacts are expected.

6 Coordination

The Coordination Guide prepared by Providence Emergency Management Agency (PEMA) forms the basis of required communications between PEMA, City of Providence Department of Public Works, Providence Water Supply Board, Narragansett Bay Commission and USACE for storm related Hurricane Barrier closures (PEMA, 2011). This document also outlines communications between the USACE and Fox Point Marina, which is located immediately inside the Hurricane Barrier gates as well as communications with the Providence Police and Fire departments, which dock vessels behind the barrier.

Additional communications between the Manchester Street Power Station operated by Dominion are set forth in a MOU dated January 29, 2010 which focuses on the notification requirements for gate closures (Appendix A).

A Memorandum of Agreement between the Department of the Army and WaterFire Providence (28 August 2014) provides direction into the cooperative requirements between the two entities (Appendix A).

The following agencies and interested parties were consulted in preparation of this EA: RIDEM, RIDEM Department of Fish and Wildlife, NMFS, Rhode Island CRMC and Dominion Energy. Pertinent correspondence is contained in Appendix D.

7 NEPA Categorical Exclusions

Certain actions when considered individually and cumulatively do not have significant effects on the quality of the human environment and are categorically excluded from NEPA documentation. However, district commanders should be alert for extraordinary circumstances that may dictate the need to prepare an EA or an EIS. Even though an EA or EIS is not indicated for a Federal action because of a “categorical exclusion,” that fact does not exempt the action from compliance with any other Federal law. For example, compliance with the Endangered Species Act, the Fish and Wildlife Coordination Act, the National Historic Preservation Act, the Clean Water Act, etc., is always mandatory, even for actions not requiring an EA or EIS (33 CFR 230.9 (a)).

The USACE procedures for implementing NEPA established in Engineering Regulation (ER) 200-2-2 (4 March 1988) and 33 Code of Federal Regulations 230.9, lists certain activities at existing Corps projects that are categorically excluded from NEPA documentation. These include:

- Activities at completed USACE projects which carry out the authorized project purposes. Examples include: routine operation and maintenance actions, general administration, equipment purchases, custodial actions, erosion control, painting, repair, rehabilitation, replacement of existing structures and facilities such as buildings, roads, levees, groins and utilities, and installation of new buildings utilities, or roadways in developed areas.
- Minor maintenance dredging using existing disposal sites.
- Planning and technical studies which do not contain recommendations for authorization or funding for construction, but may recommend further study. This does not exclude consideration of environmental matters in the studies.
- All Operations and Maintenance grants, general plans, agreements, etc., necessary to carry out land use, development and other measures proposed in project authorization documents, project design memoranda, master plans, or reflected in the project NEPA documents.
- Real estate grants for use of excess or surplus real property.
- Real estate grants for Government-owned housing.
- Exchanges of excess real property and interests therein for property required for project purposes.
- Real estate grants for rights-of-way which involve only minor disturbances to earth, air, or water:
 - Minor access roads, streets and boat ramps.
 - Minor utility distribution and collection lines, including irrigation.
 - Removal of sand, gravel, rock and other material from existing borrow areas.
 - Oil and gas seismic and gravity meter survey for exploration purposes.

- Real estate grants of consent to use Government-owned easement areas.
- Real estate grants for archeological and historical investigations compatible with the Corps Historic Preservation Act responsibilities.
- Renewal and minor amendments of existing real estate grants evidencing authority to use Government-owned real property.
- Reporting excess real property to the General Services Administration for disposal.
- Boundary line agreements and disposal of lands or release of deed restrictions to cure encroachments.
- Disposal of excess easement interest to the underlying fee owner.
- Disposal of existing buildings and improvements for off-site removal.
- Sale of existing cottage site areas.
- Return of public domain lands to the Department of the Interior.
- Transfer and grants of lands to other Federal agencies.

Flood control activities at the Hurricane Barrier are considered routine operation and maintenance actions that carry out authorized project purposes and are therefore categorically excluded from NEPA documentation (Table 3). The identified activities are considered minor actions and, in some cases, they are conducted in accordance with existing protocols established to minimize environmental impacts. These actions are completed in accordance with all federal environmental laws, regulations, and executive orders.

Table 3 - Activities Categorically Excluded from NEPA Documentation Related to Fox Point Hurricane Barrier

Activities Categorically Excluded from NEPA Documentation related to Fox Point Hurricane Barrier
<ul style="list-style-type: none"> • Flood Control Operations • Renewals of Real Estate Leases and Licenses • Culvert Installation and Maintenance • Vegetation Control (chemical/mechanical) • Installation of Safety Railings/Fences/Guardrails • Sign Installation • Flood Debris Removal • Asbestos and Lead Paint Removal • Insect and Rodent Control • Log Boom Replacement • Utility line maintenance by Lessee • Snow removal • Grading and gravelling access roads • Automating Piezometers • Replacing Roofs • Repaving Project Roads • Curing Encroachments • Remedying Deficiencies Listed in Periodic Inspections • Sealing Upstream Concrete Wall Joints • Repairing and/or Replacing Bridges • Road Surfacing (gravel/pavement), Repairs, Ditch Maintenance • Road Gate Installation/Vehicle Access Control Measures (blocking off with boulders, etc.) • Construction of Storage Buildings

8 References

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9 Appendices

Appendix A:

1. Memorandum of Understanding between Dominion and USACE (January, 2010)
2. Final survey of fee ownership Tract No. 200
3. Memorandum of Agreement Between the Department of the Army and WaterFire Providence, Rhode Island for Operation of the Fox Point Hurricane Barrier, Rhode Island for Certain Recreational Activities dated 28 August 2014.
4. Air Emission Record of Non-applicability

Appendix B: Compliance with Federal Environmental Statutes, Executive Orders and Executive Memorandum (Compliance Tables)

Appendix C: Essential Fish Habitat

Appendix D: Pertinent correspondence

Appendix E: Public Notice, comments received and responses

Appendix A: Compliance with Federal Environmental Statutes, Executive Orders and Executive Memorandums (Compliance Tables)

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4. Air Emission Record of Non-applicability

MEMORANDUM OF UNDERSTANDING
BETWEEN
DOMINION ENERGY MANCHESTER STREET, INC.
AND
THE UNITED STATES OF AMERICA

This MEMORANDUM OF AGREEMENT entered into this 29 day of January, 2010 between the United States of America, represented by the District Commander, U. S. Army, Corps of Engineers, New England District (hereinafter referred to as the Government), and Dominion Energy Manchester Street, Inc. (hereinafter referred to as Dominion) represented by its Vice President.

WITNESSETH THAT:

WHEREAS, the Fox Point Hurricane Barrier Project was authorized by the Flood Control Act of 1958 (PL 85-500, 3 July 1958); and

WHEREAS, the City of Providence (the "City") was granted a right and easement from The Narragansett Electric Company, dated April 10, 1961, and recorded in the Land Evidence Records of the City of Providence in Book 1108, Page 60, to construct, maintain, operate the Fox Point Hurricane Barrier on, over and across lands of The Narragansett Electric Company (hereinafter "1961 easement"); and

WHEREAS, Section 2866 of the National Defense Authorization Act for Fiscal Year 2007 (PL 109-364, dated October 17, 2006) directs the Secretary of the Army, acting through the Chief of Engineers to assume responsibility for the annual operation and maintenance of the Fox Point Hurricane Barrier Project, including acquiring, in accordance with paragraph (b) of said Act, without consideration, all right, title, and interest of the City in and to the land and structures identified for the continued operation, maintenance, repair, replacement, rehabilitation and structural integrity of the Fox Point Hurricane Barrier Project; and

WHEREAS, in accordance with paragraph (b) of said Act, the City, in coordination with the Government, has identified those lands and structures required for the continued operation and maintenance, repair, replacement, rehabilitation and structural integrity of the Fox Point Hurricane Barrier Project by the United States; and

WHEREAS, the federal portions of the Fox Point Hurricane Barrier Project (hereinafter the "Project") shall only include those lands and structures so identified in a survey entitled, "PROPOSED ACCESS EASEMENT & PROPERTY SURVEY FOR FOX POINT HURRICANE BARRIER SITUATED BETWEEN GLOBE STREET & SOUTH WATER STREET, PROVIDENCE, RI" dated June 19, 2009, as amended January 27, 2010, and in a Quitclaim Deed from the City to the Government recorded in the Land Evidence Records of the City of Providence; and

WHEREAS, Dominion operates a power generating facility on the west side of the Providence River, adjacent to the Project ("Manchester Street Station"), that relies on water from the river as cooling water supply for routine facility operation, and

WHEREAS, the Project has been used in recent history by the City of Providence for purposes other than hurricane and flood damage reduction; and

WHEREAS, these purposes pose a potential risk to the continued supply of cooling water necessary for Dominion's facility to generate power.

NOW THEREFORE, in consideration of a perpetual right to access and maintain the Project in, on, over and across certain lands owned in fee by Dominion, which right is evidenced by an Easement Agreement between Dominion and the Government dated January, 2010, the Government and Dominion, their successors and assigns, agree as follows:

ARTICLE 1. HURRICANE AND FLOOD DAMAGE REDUCTION OPERATIONS

Dominion acknowledges that the Government will operate and maintain the Project for the authorized purposes of hurricane and flood damage reduction. Nothing contained in this agreement shall in any way limit the Government's ability to operate the project for its authorized purposes. As used herein, "flood damage reduction" shall mean flooding or the threat of flooding from Narragansett Bay into the Providence River resulting from severe coastal storms or other similar weather events. For all hurricane and flood damage reduction operations, maintenance, and training that requires closure of the canal and/or tainter (barrier) gates (collectively "Gate" or "Gates") or pump operation, with the exception of emergency operations, the Government agrees to engage in routine communications regarding such activities with Dominion to the extent practicable. The Government agrees to provide as much notification as is reasonable for emergency operations. On the day of a scheduled Gate closure or pump operation for hurricane and flood damage reduction operations, maintenance, and training, the Government agrees to notify the Manchester Street Station control room prior to commencing such activities.

ARTICLE 2. NON-HURRICANE AND FLOOD DAMAGE REDUCTION OPERATION

A. Because of the risk of significant impact on the operation of the Manchester Street Station resulting from closure of the Gates, the Government agrees that it shall not close the Gates for purposes other than hurricane and flood damage reduction operations, maintenance, training and emergency operations, between July 1 and September 15 each year without the prior written consent of Dominion.

B. Any such consent that is given by Dominion shall be explicitly subject to the following:

(i) The Government acknowledges that (a) adverse weather conditions or (b) the condition of the regional electric grid, including, but not limited to, the demand for and availability of power, may create a situation in which the Manchester Street Station must, in the judgment of Dominion, operate and, therefore, the Gates cannot be closed.

(ii) In such event, Dominion shall give the Government notice of such conditions and the scheduled closure of the Gates shall be cancelled. Without imposing any legal obligation, Dominion shall endeavor to give notice to the Government of such conditions promptly after Dominion's Manchester Street Station manager becomes aware of such conditions.

C. In the event of the proposed closure of the Gates for purposes other than hurricane and flood damage reduction between September 16 and the subsequent June 30, the Government shall give Dominion not less than twenty (20) days written notice of the date, time and duration of the proposed closure. Thereafter, Dominion shall have the right to cancel the closure as provided under paragraph 2B hereof; provided, however, that notice of cancellation shall be given by Dominion to the Government not less than two (2) days prior to the planned closure.

D. The Government waives any claims for damages against Dominion resulting from the exercise by Dominion of the right to cancel a gate closure hereunder.

E. The Government shall not close the Gates for any non-hurricane/flood damage reduction event unless the organization(s) that has requested said closure executes, in advance, an Acknowledgement and Release substantially in the form of Exhibit A attached hereto.

ARTICLE 3. NOTICE

Notice hereunder shall be given by delivery in hand, by certified mail, return receipt requested, by express mail, or by courier, if to the Government:

The United States of America
District Commander
U. S. Army, Corps of Engineers
New England District
696 Virginia Road
Concord, MA 01742-2751

If to Dominion:

William J. Freddo, Station Manager
Dominion Energy Manchester Street, Inc.
40 Point Street
P. O. Box 6607
Providence, RI 02940-6607

With a copy to:

Peter V. Lacouture, Esq.
Robinson & Cole LLP
One Financial Plaza
Suite 1430
Providence, RI 02903

ARTICLE 4. EXTENT OF AGREEMENT

This Memorandum represents the entire and integrated agreement between the Government and Dominion as to the matters addressed herein. This agreement may be amended or extended only by a written instrument signed by both the Government and Dominion.

ARTICLE 5. SUCCESSORS AND ASSIGNS

This agreement shall inure to the benefit of and bind the successors and assigns of the parties.

ARTICLE 6. LEGAL REMEDIES

None of the terms or provisions contained herein shall be the basis for any claim for damages against the Government.

ARTICLE 7. COUNTERPARTS

This Agreement may be executed in multiple counterparts, each of which shall constitute an original, but all of which shall constitute one document.

IN WITNESS WHEREOF, the parties hereto have executed this agreement which shall become effective on the last date signed below.

THE UNITED STATES OF AMERICA

DOMINION ENERGY MANCHESTER
STREET, INC.

By



Philip T. Feir
Colonel, Corps of Engineers
District Engineer

By



Katheryn Curtis
Its: Vice President

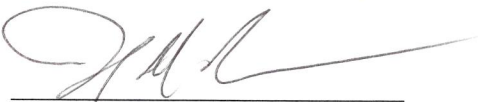
Date

29 January 2010

Date

1/28/2010

ACKNOWLEDGED BY THE CITY OF PROVIDENCE:



David N. Cicilline
Its Mayor

EXHIBIT A

EVENT SPONSOR: _____
ADDRESS: _____

EVENT(S): _____
DATE(S) OF EVENT(S): _____

ACKNOWLEDGEMENT AND RELEASE

This Acknowledgement and Release (the “**Acknowledgement and Release**”) is made as of this ____ day of _____, 20__ by Event Sponsor for the benefit of **DOMINION ENERGY MANCHESTER STREET, INC.**, a Virginia corporation with an address of 40 Point Street, P.O. Box 6607, Providence, Rhode Island 02940 (“**Dominion**”) and the **UNITED STATES OF AMERICA, represented by the District Commander, U.S. Army, Corps of Engineers, New England District**, with an address of 696 Virginia Road, Concord, Massachusetts 01742 (the “**Government**”).

1. Event Sponsor has requested that, in connection with its planned event(s) identified above, the Government close the canal and tainter (barrier) gates (collectively “Gates”) located at the Fox Point Hurricane Barrier Project, Providence, Rhode Island to alter the water level of the Providence River.

2. Event Sponsor acknowledges that an adequate supply of cooling water from the Providence River is essential to Dominion’s routine operation of the Manchester Street Station power plant. This water is supplied through the Gates.

3. Event Sponsor further acknowledges that, notwithstanding any consent that Dominion may give to allow closure of the Gates, Dominion may cancel the closure of the Gates at any time, without prior notice to the Event Sponsor, for any reason deemed necessary by Dominion, in its sole discretion, including but not limited to adverse weather conditions, demand for and availability of power, and other conditions of the electric grid.

4. Event Sponsor further acknowledges that Dominion’s actions in requiring that the Gates remain open may result in the Event being cancelled and that any approval of Event Sponsor’s request for the Gates to be closed is expressly conditioned on Dominion’s right to cancel the closure of the Gates in accordance with Paragraph 3.

5. In consideration of good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, Event Sponsor individually and for itself, its parents, subsidiaries, affiliates, agents, contractors, servants, employees, shareholders, officers, directors, partners, heirs, successors and assigns (“Releasing Parties”), hereby forever releases, indemnifies, holds harmless, remises, and discharges Dominion and the Government, and their respective predecessors, successors and assigns, parents, subsidiaries and affiliated entities and their respective managers, members, officers, directors, agents, employees and representatives, past and present, of any and all of such entities (“Released Parties”), of and from any and all

claims, demands, causes of action, suits, debts, dues, duties, sums of money, accounts, reckonings, covenants, contracts, agreements, promises, damages, judgments, extents, executions, liabilities and obligations, both contingent and fixed, known and unknown, of every kind and nature whatsoever in law or equity, or otherwise, under local, state, or federal law, against any of them, which Releasing Parties ever had, now have, or which they hereafter can, shall, or may have against Released Parties, for, upon, or by reason of, any matter, cause, or thing whatsoever relating to the opening, closing, or other operation or non-operation of the Gates or any other related actions or events.

IN WITNESS WHEREOF, Event Sponsor has executed this Acknowledgement and Release as of the date first above written.

EVENT SPONSOR:

_____ [Name of Event Sponsor]

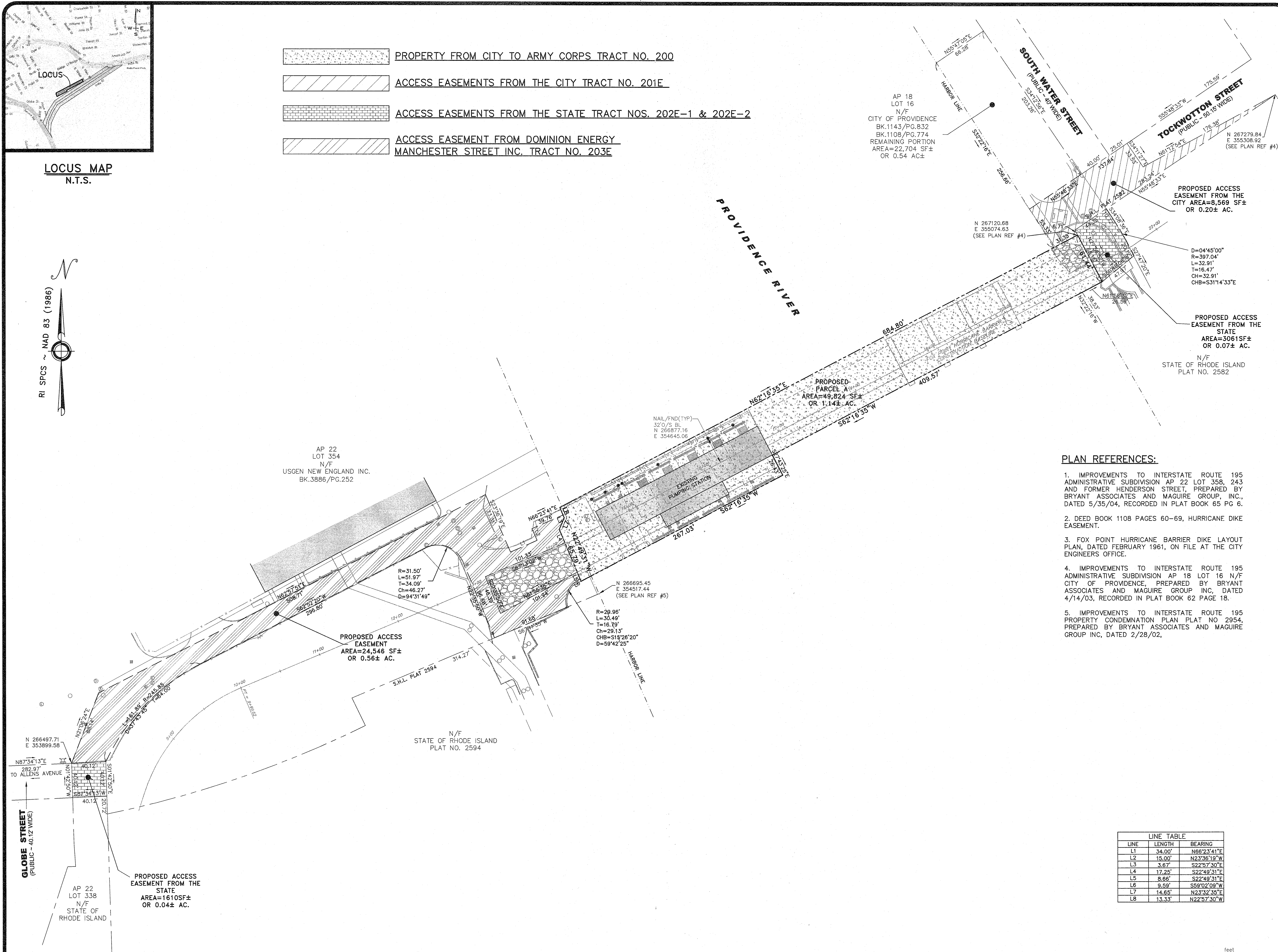
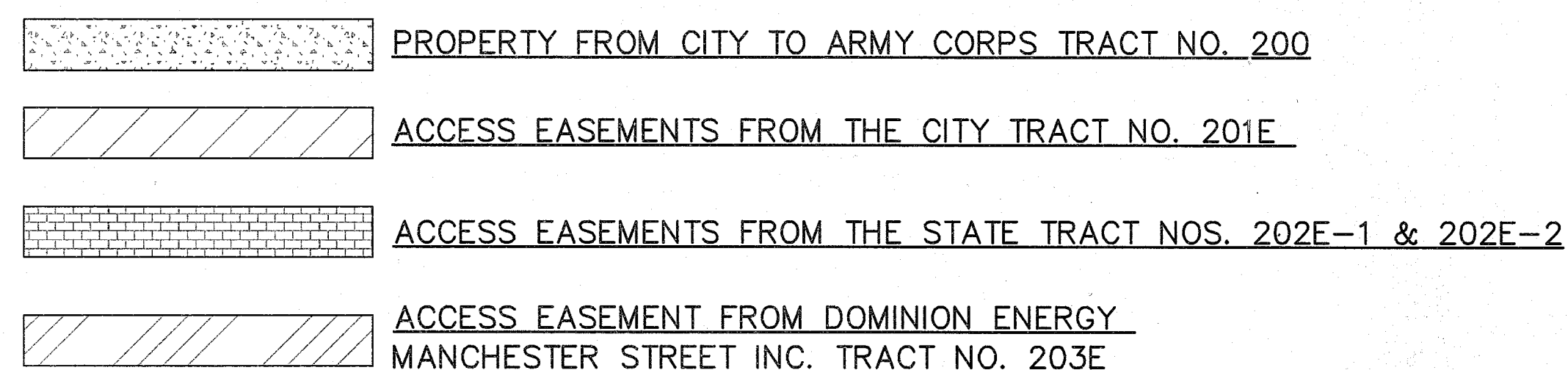
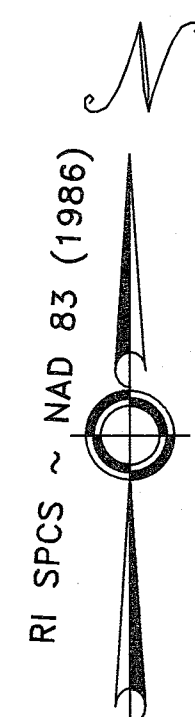
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Name:

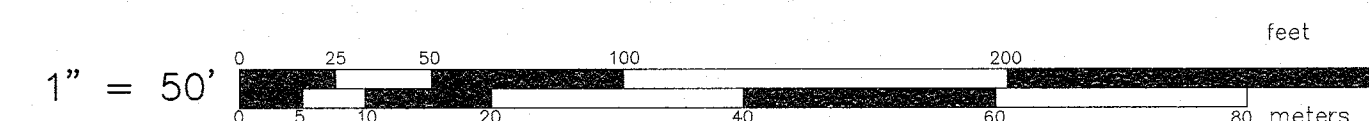
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Providence
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Feb 01, 2010 at 03:00:32P
Document Num: 00002526
John A Murphy
Recorder of Deeds

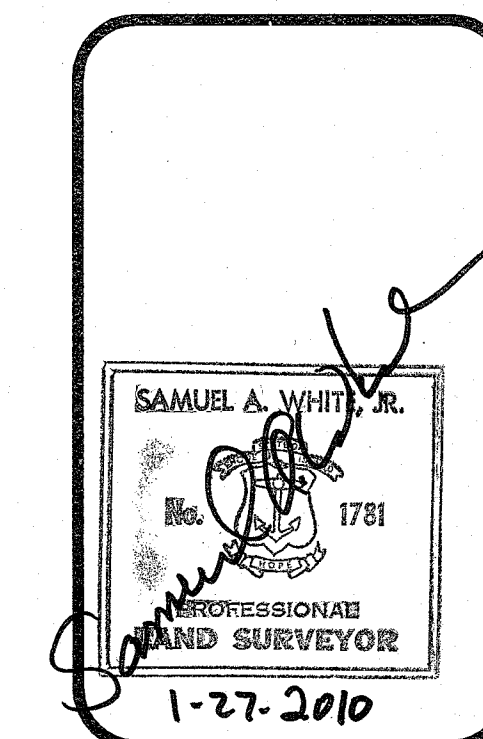


LINE	LENGTH	BEARING
L1	34.00'	N68°23'41"
L2	15.00'	S23°36'19"
L3	3.67'	S22°57'30"
L4	17.25'	S22°49'31"
L5	8.66'	S22°49'31"
L6	9.59'	S59°02'09"
L7	14.65'	N23°32'35"
L8	13.33'	N22°57'30"



PROPOSED ACCESS EASEMENTS &
PROPERTY SURVEY
FOR
FOX POINT HURRICANE BARRIER
SITUATED BETWEEN
GLOBE STREET &
SOUTH WATER STREET
PROVIDENCE, RI
PREPARED FOR
CITY OF PROVIDENCE

NO.	REVISION	BY	DATE
1.	Misc. revisions per 9-28-09 meeting with Dominion Energy Manchester Street Inc. Attorney		
2.	Misc. revisions	SAW	12-09



CAROFALO
CAROFALO & ASSOCIATES, INC.
CIVIL & STRUCTURAL ENGINEERS/SURVEYORS
AND PLANNERS/ENVIRONMENTAL SCIENTISTS

Garofalo & Associates © These drawings are the property of the engineer/surveyor and have been prepared for the owner, for this project at this site and are not to be used for any other purpose, location or owner without written consent of this owner or one of its directors.

85 CORLISS STREET
P.O. BOX 6145
PROVIDENCE, R.I. 02940
TEL. 401-273-6000

JOB NO. 6374-07	DRAWN BY S.L.C.
DWG. NO. 6374-EASEMENT.DWG	CHECKED S.A.W.
SCALE: 1"=50'	APPROVED S.A.W.
	DATE: JUNE 19, 2009

SHEET

1

OF 1 SHEETS

MEMORANDUM OF AGREEMENT
BETWEEN
THE DEPARTMENT OF THE ARMY
AND
WATERFIRE PROVIDENCE, RHODE ISLAND
FOR OPERATION OF THE
FOX POINT HURRICANE BARRIER, RHODE ISLAND
FOR CERTAIN RECREATIONAL ACTIVITIES

This MEMORANDUM OF AGREEMENT (hereinafter the "MOA") is entered into this 28 day of August, 2014, by and between the Department of the Army (hereinafter the "Government"), represented by the U.S. Army Engineer, New England District (hereinafter the "District Engineer"), and WaterFire Providence, Rhode Island (hereinafter "WaterFire Providence"), represented by the Managing Director.

WITNESSETH, THAT:

WHEREAS, operation of the Fox Point Hurricane Barrier in Providence, Rhode Island (hereinafter the "Project") by the Government is authorized pursuant to Section 2866(a) of Public Law 109-364 (120 Stat. 2499);

WHEREAS, the Government is authorized pursuant to 33 U.S.C. 701h to receive and expend funds to operate the Project to support recreational activities at or in the vicinity of the Project, at no cost to the Federal Government, if the Assistant Secretary of the Army (Civil Works) (ASA(CW)) determines that operation for such purpose is not inconsistent with the operation and maintenance of the Project for the authorized purposes of the Project;

WHEREAS, WaterFire Providence desires to provide funds to be used by the Government to operate the Project in support of recreational activities requiring specific river elevations in the City of Providence, Rhode Island (hereinafter the "Proposed Work"); and

WHEREAS, the ASA(CW) determined on July 25, 2014 that the Proposed Work is not inconsistent with operation of the Project for the authorized purposes of the Project.

NOW, THEREFORE, the Government and WaterFire Providence agree as follows:

1. WaterFire Providence shall provide to the Government funds to pay all costs associated with the Proposed Work, which is limited to approximately five (5) public events to be supported per fiscal year of the Government, during the period beginning on the date of execution of this MOA and ending September 30, 2018. While the Government shall endeavor to limit costs associated with Proposed Work under this MOA to the current estimate of \$15,000 per fiscal year of the Government, WaterFire Providence acknowledges that the actual costs for the Proposed Work may exceed this estimated amount due to the

duration of gate closures or other unforeseen circumstances and that WaterFire Providence is responsible for all costs, including any claims, related to the Proposed Work.

2. WaterFire Providence shall provide funds in accordance with the provisions of this paragraph.

a. Within ten (10) calendar days of the execution of this MOA, WaterFire Providence shall provide to the Government \$6,000, which is the current estimated cost of Proposed Work to be performed during the remainder of the 2014 fiscal year of the Government. The Government and WaterFire Providence shall develop expeditiously a Work Plan for Proposed Work proposed to be performed during the remainder of the 2014 fiscal year. The Work Plan shall identify the dates of the public events to be supported; the schedules for completion of compliance with applicable environmental laws and regulations; and the Government's estimate for each Proposed Work event, including the costs of environmental compliance.

b. No later than thirty (30) calendar days before the beginning of each full fiscal year of the Government covered by this MOA or as soon thereafter as practicable, the Government and WaterFire Providence shall develop a Work Plan for Proposed Work during the upcoming fiscal year. The Work Plan shall identify the amount of funds WaterFire Providence plans to provide; the Proposed Work events; the schedules for completion of compliance with applicable environmental laws and regulations; the Government's estimate for each Proposed Work event, including the costs of environmental compliance; and the Government's estimate of funds required for each quarter. No later than fifteen (15) calendar days before the beginning of each quarter of the fiscal year, WaterFire Providence shall provide to the Government funds for all estimated costs, including the costs of environmental compliance, of Proposed Work to be accomplished in that quarter. The Government and WaterFire Providence shall review and update, as necessary, the Work Plan.

c. If the Government determines at any time that additional funds are needed to fund Proposed Work, the Government shall notify WaterFire Providence in writing and adjust the Work Plan to use available and unobligated funds received pursuant to this MOA to satisfy the balance owed. In the event there are no funds available to satisfy the balance, the Government shall notify WaterFire Providence in writing of the need for additional funds and WaterFire Providence shall provide such additional funds within fifteen (15) calendar days of such notification.

d. The Government may use funds not obligated in the quarter received or remaining after completion of a Proposed Work event, for other Proposed Work events under this MOA in the current or a future fiscal year unless notified in writing to the contrary in advance by WaterFire Providence.

3. WaterFire Providence shall provide the funds to the Government by delivering a check payable to "FAO, USAED, New England" to the District Engineer or providing an Electronic Funds Transfer of such funds in accordance with procedures established by the Government.

4. Prior to operation of the Project for a Proposed Work event WaterFire Providence will provide to the Government an executed Acknowledgement and Release form as set forth in the Memorandum of Understanding between Dominion Energy Manchester Street and the United States dated January 29, 2010.

5. The Government shall not commence a Proposed Work event until all applicable environmental laws and regulations have been complied with, including but not limited to, the National Environmental Policy Act of 1969 (42 U.S.C. 4321-4347) and Section 401 of the Clean Water Act (33 U.S.C. 1341).

6. The Government shall provide WaterFire Providence with quarterly reports of obligations for the Proposed Work, by Proposed Work event. The first such report shall be provided within thirty (30) calendar days after the final day of the first full quarter of a fiscal year following initial receipt of funds pursuant to this MOA, and subsequent reports shall be provided within thirty (30) calendar days after the final day of each succeeding quarter until the Government concludes all Proposed Work under this MOA.

7. Upon conclusion of each Proposed Work event, the Government shall conduct an interim accounting of the costs of such work and furnish WaterFire Providence with written notice of the results of such interim accounting. Such interim accounting shall in no way limit the WaterFire Providence's responsibility to pay for all costs associated with such Proposed Work event, including contract claims or any other liability that may become known after such interim accounting. Should the results of such interim accounting show that the costs of that Proposed Work event exceed the amount of funds provided by WaterFire Providence, WaterFire Providence shall provide the required additional funds to the Government within thirty (30) calendar days of written notice of the results of the interim accounting by delivering a check payable to "FAO, USAED, New England" to the District Engineer or providing an Electronic Funds Transfer of such funds in accordance with procedures established by the Government.

8. Upon conclusion of the final Proposed Work event and resolution of any claims and appeals, the Government shall complete a final accounting of the costs of the Proposed Work under this MOA and furnish WaterFire Providence with written notice of the results of such final accounting. Should the final accounting show that the costs of the Proposed Work exceed the amount provided by WaterFire Providence, WaterFire Providence shall provide the required additional funds in accordance with paragraph 7 of this MOA within thirty (30) calendar days of written notice of the final accounting. Should the final accounting show that the costs of the Proposed Work are less than the amount provided by WaterFire Providence, the Government shall refund the excess amount to WaterFire Providence within thirty (30) calendar days of the written notice of the final accounting.

9. No credit or repayment is authorized, nor shall be provided, for any funds obligated by the Government for the Proposed Work.

10. Before any party to this MOA may bring suit in any court concerning an issue relating to this MOA, such party must first seek in good faith to resolve the issue through negotiation or other forms of nonbinding alternative dispute resolution mutually acceptable to the parties.

11. WaterFire Providence shall hold and save the Government free from all damages arising from the Proposed Work.

12. In the exercise of their respective rights and obligations under this MOA, WaterFire Providence and the Government agree to comply with all applicable Federal and State laws and regulations, including, but not limited to, Section 601 of the Civil Rights Act of 1964, Public Law 88-352 (42 U.S.C. 2000d), and Department of Defense Directive 5500.11 issued pursuant thereto, as well as Army Regulation 600-7, entitled "Nondiscrimination on the Basis of Handicap in Programs and Activities Assisted or Conducted by the Department of the Army".

13. In the exercise of their respective rights and obligations under this MOA, the Government and WaterFire Providence each act in an independent capacity, and neither is to be considered the officer, agent, or employee of the other.

14. Notices.

a. Any notice, request, demand, or other communication required or permitted to be given under this MOA shall be deemed to have been duly given if in writing and either delivered personally or mailed by first-class, registered, or certified mail, as follows:

If to WaterFire Providence:

Managing Director
WaterFire Providence
101 Regent Avenue
Providence, RI 02908

If to the Government:

District Engineer
U.S. Army Engineer District, New England
696 Virginia Road
Concord, Massachusetts 01742-2751

b. A party may change the recipient or address to which such communications are to be directed by giving written notice to the other party in the manner provided in this paragraph.

c. Any notice, request, demand, or other communication made pursuant to this paragraph shall be deemed to have been received by the addressee at the earlier of such time as it is actually received or seven (7) calendar days after it is mailed.

15. To the extent permitted by the laws governing each party, the parties agree to maintain the confidentiality of exchanged information when requested to do so by the providing party.

16. Notwithstanding any other provision of this MOA, the Government, in its sole discretion, may determine, with written notice to WaterFire Providence, that the Government will not participate in future Proposed Work events. Such notice shall not relieve WaterFire Providence of any responsibility for costs incurred by the Government pursuant to the MOA, including costs of completing accountings, or for any other liability associated with the Proposed Work.

17. This MOA may be modified or amended only by written, mutual agreement of the parties.

IN WITNESS WHEREOF, the parties have executed this MOA as of the day, month, and year first above written.

THE DEPARTMENT OF THE ARMY

WATERFIRE PROVIDENCE

BY: 

Christopher J. Barron
Colonel, US Army
District Engineer

BY: 

Peter A. Mello
Managing Director
WaterFire Providence


DATE: 28 AUG 2014

DATE: August 28, 2014

CERTIFICATE OF AUTHORITY

I, Sean Holley, do hereby certify that I am an attorney and further certify that WaterFire Providence is an independent, non-profit arts organization with full authority and legal capability to perform the terms of the Agreement between the Department of the Army and WaterFire Providence, and to pay damages in accordance with the terms of this Agreement, if necessary, in the event of the failure to perform, as required by Section 221 of Public Law 91-611 (42 U.S.C. Section 1962d-5b), and that the persons who have executed this Agreement on behalf of WaterFire Providence have acted within their statutory authority.

IN WITNESS WHEREOF, I have made and executed this certification this 28th
day of August 2014.



Sean Holley
Attorney
WaterFire Providence

CERTIFICATION REGARDING LOBBYING

The undersigned certifies, to the best of his or her knowledge and belief that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all sub-awards at all tiers (including subcontracts, sub-grants, and contracts under grants, loans, and cooperative agreements) and that all sub-recipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.



Peter A. Mello
Managing Director
WaterFire Providence

DATE: August 28, 2014

GENERAL CONFORMITY - RECORD OF NON-APPLICABILITY

Project Name: Fox Point Hurricane Barrier – Operation and Maintenance Environmental Assessment

Project/Action Identification Number: not applicable

Project/Action Point of Contact:

Lawrence Davis, Chief, Cape Cod Field Office, U.S. Army Corps of Engineers.

Phone: 978-318-8565

Begin Date: 2015

General Conformity under the Clean Air Act, Section 176 has been evaluated for the project described above according to the requirements of 40 CFR 93, Subpart B. The requirements of this rule are not applicable to this project/action because:

X The project/action is an exempt action under 40 CFR 93.153(c)(2)(iv) and (xiii) –

(c) The requirements of this subpart shall not apply to the following Federal actions:

(2) Actions which would result in no emissions increase or an increase in emissions that is clearly *de minimis*:

(iv) Routine maintenance and repair activities, including repair and maintenance of administrative sites, roads, trails and facilities.

(xiii) Routine operation of facilities, mobile assets and equipment

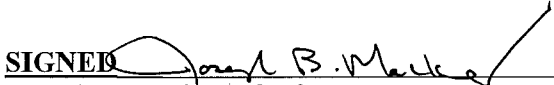
Supporting documentation and emissions estimates are

() ATTACHED

() APPEAR IN THE NEPA DOCUMENTATION

(X) OTHER

SIGNED


Joseph B. Mackay, Chief, Environmental Resources Section
New England District, U.S. Army Corps of Engineers

Appendix B: Compliance with Federal Environmental Statutes, Executive Orders and Executive Memorandums (Compliance Tables)

Federal Statutes

1. Archaeological Resources Protection Act of 1979, as amended, 16 USC 470 et seq.

Compliance: Not applicable, no alternation of the land will occur at this site.

2. Preservation of Historic and Archeological Data Act of 1974, as amended, 16 U.S.C. 469 et seq.

Compliance: Not applicable, no alternation of the land will occur.

3. American Indian Religious Freedom Act of 1978, 42 U.S.C. 1996.

Compliance: Not applicable to this site, site is a hurricane barrier and includes no land.

4. Clean Air Act, as amended, 42 U.S.C. 7401 et seq.

Compliance: Public notice of the availability of this report to the Environmental Protection Agency is required for compliance pursuant to Sections 176c and 309 of the Clean Air Act.

5. Clean Water Act of 1977 (Federal Water Pollution Control Act Amendments of 1972) 33 U.S.C. 1251 et seq.

Compliance: Not applicable for operation and maintenance activities as described in this EA. Any activity requiring a Clean Water Act, Section 404(b)(1) Evaluation and Compliance Review will require separate environmental documentation.

6. Coastal Zone Management Act of 1972, as amended, 16 U.S.C. 1451 et seq.

Compliance: Coordination with Rhode Island Coastal Resources Management Council and consistency with the approved state coastal zone management program is documented in this EA. Final consistency determination will be completed upon review of this EA.

7. Endangered Species Act of 1973, as amended, 16 U.S.C. 1531 et seq.

Compliance: Coordination with the U.S. Fish and Wildlife Service (USFWS) and NOAA NMFS has determined that formal consultation requirements pursuant to Section 7 of the Endangered Species Act are not necessary.

8. Estuarine Areas Act, 16 U.S.C. 1221 et seq.

Compliance: Not Applicable. This report is not being submitted to Congress.

9. Federal Water Project Recreation Act, as amended, 16 U.S.C. 4601-12 et seq.

Compliance: Public notice of availability to the project report to the National Park Service (NPS) and Office of Statewide Planning relative to the Federal and State comprehensive outdoor recreation plans signifies compliance with this Act.

10. Fish and Wildlife Coordination Act, as amended, 16 U.S.C. 661 et seq.

Compliance: Coordination with the USFWS and State Fish and Wildlife agencies signifies compliance with the Fish and Wildlife Coordination Act.

11. Land and Water Conservation Fund Act of 1965, as amended, 16 U.S.C. 4601-4 et seq.

Compliance: Not applicable, no land is associated with this project.

12. Marine Protection, Research, and Sanctuaries Act of 1971, as amended, 33 U.S.C. 1401 et seq.

Compliance: Not Applicable. The operation of the facility project does not involve the transportation or disposal of dredged material in ocean waters pursuant to Sections 102 and 103 of the Act, respectively.

13. National Historic Preservation Act of 1966, as amended, 16 U.S.C. 470 et seq.

Compliance: Coordination with the State Historic Preservation Office for activities beyond normal operation and maintenance as defined above signifies compliance.

14. Native American Graves Protection and Repatriation Act (NAGPRA), 25 U.S.C. 3000-3013, 18 U.S.C. 1170

Compliance: Regulations implementing NAGPRA will be followed if discovery of human remains and/or funerary items occur during implementation of this project.

15. National Environmental Policy Act of 1969, as amended, 42 U.S.C 4321 et seq.

Compliance: Preparation of an Environmental Assessment signifies partial compliance with NEPA. Full compliance shall be noted at the time the Finding of No Significant Impact or Record of Decision is issued.

16. Rivers and Harbors Act of 1899, as amended, 33 U.S.C. 401 et seq.

Compliance: No requirements for projects or programs authorized by Congress. The project is operated pursuant to the Congressionally-approved authority.

17. Watershed Protection and Flood Prevention Act as amended, 16 U.S.C 1001 et seq.

Compliance: This project was previously authorized.

18. Wild and Scenic Rivers Act, as amended, 16 U.S.C 1271 et seq.

Compliance: This project is not within or adjacent to a designated Wild and Scenic River.

19. Magnuson-Stevens Act, as amended, 16 U.S.C. 1801 et seq.

Compliance: Coordination is on-going.

Executive Orders

1. Executive Order 11593, Protection and Enhancement of the Cultural Environment, 13 May 1971

Compliance: Coordination with the State Historic Preservation Officer under Section 106 and 110 of the National Historic Preservation Act signifies compliance.

2. Executive Order 11988, Floodplain Management, 24 May 1977 amended by Executive Order 12148, 20 July 1979; subsequently amended by Executive Order 13690, January 30, 2015.

Compliance: Public notice of the availability of this report or public review fulfills the requirements of Executive Order 11988 2(a)(2).

3. Executive Order 11990, Protection of Wetlands, 24 May 1977.

Compliance: Public notice of the availability if this report for public review fulfills the requirements of Executive Order 11990, Section 2 (b).

4. Executive Order 12114, Environmental Effects Abroad of Major Federal Actions, 4 January 1979.

Compliance: Not applicable to projects located in the United States geographical boundaries.

5. Executive Order 12898, Environmental Justice, 11 February 1994.

Compliance: The project will not have a significant impact on minority or low-income population, or any other population in the United States.

6. Executive 13007, Accommodation of Sacred Sites, 24 May 1996

Compliance: Not applicable unless on Federal lands, then agencies must accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners, and avoid adversely affecting the physical integrity of such sacred sites.

7. Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks. 21 April, 1997.

Compliance: Not applicable if the project would not create a disproportionate environmental health or safety risk for children.

8. Executive Order 13061, and Amendments – Federal Support Of Community Efforts Along American Heritage Rivers.

Compliance: The Environmental Assessment considers the federal action that may affect the quality of an American Heritage River. This includes cooperation with State and local governments and communities regarding their activities that take place in or affect the area around an American Heritage River. Support of WaterFire signals compliance with this EO.

9. Executive Order 13175, Consultation and Coordination with Indian Tribal Governments, 6 November 2000.

Compliance: Consultation with Indian Tribal Governments, where applicable, and consistent with executive memoranda, DoD Indian policy, and Corps Tribal Policy Principles signifies compliance.

Executive Memorandum

1. Analysis of Impacts on Prime or Unique Agricultural Lands in Implementing NEPA, 11 August 1980.

Compliance: There are no prime agricultural lands on the project.

2. White House Memorandum, Government-to-Government Relations with Indian Tribes, 29 April 1994.

Compliance: Consultation with Federally Recognized Indian Tribes, where appropriate, signifies compliance.

Appendix C: Essential Fish Habitat

APPENDIX C

ESSENTIAL FISH HABITAT

**ESSENTIAL FISH HABITAT ASSESSMENT
FOR THE
CONTINUED OPERATION AND MAINTENANCE OF THE
FOX POINT HURRICANE BARRIER, PROVIDENCE, RHODE ISLAND**

July 2015

Prepared by

**U.S. Army Corps of Engineers
New England District
696 Virginia Road
Concord, Massachusetts 01742-2751**

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1.0 INTRODUCTION

The 1996 amendments to the Magnuson-Stevens Fishery Conservation and Management Act require that an Essential Fish Habitat (EFH) consultation be conducted for activities that may adversely affect important habitats of federally managed marine and anadromous fish species. EFH includes “those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity.” An assessment of the EFH for the Continued Operation and Maintenance of the Fox Point Hurricane Barrier (Hurricane Barrier) is included here for the Providence River, which flows through the Hurricane Barrier.

2.0 PROPOSED ACTION

2.1 Background on Proposed Action

The Hurricane Barrier is a Federal flood damage reduction project located in the City of Providence, Rhode Island. The Hurricane Barrier provides flood protection to about 280 acres of the city of Providence from hurricanes and other coastal storms. In 2012, the U.S. Congress provided authorization for the acceptance of funds from a State or a political subdivision and other non-Federal interests or private entities to operate a hurricane barrier project to support recreational activities at or in the vicinity of the project, at no cost to the Federal Government. Under that framework, the U.S. Army Corps of Engineers (USACE) also operates the Hurricane Barrier to provide support to recreation events throughout the year in addition to operation for flood risk management. The primary recreation support is the operation of the Hurricane Barrier to maintain navigation in the Woonasquatucket, Moshassuck and Providence Rivers during low tide at the request of WaterFire Providence® (WaterFire).

A brief description of the proposed action is provided below. More detailed information regarding the operation and maintenance activities occurring at the Hurricane Barrier are provided in the EA.

2.2 Description of Proposed Action

General operational activities for the Hurricane Barrier fall into three categories: maintenance activities, flood damage reduction during hurricanes or other significant storm events, and operation in support of recreational activities that require navigability of upstream areas. Each of these activities is described below.

Maintenance operations consist of inspection, testing, operation, upkeep, and repair of equipment and structures in the Hurricane Barrier. Upkeep and repair activities generally include painting, blasting, scraping, lubricating, replacing fluids and oils, cleaning strainers and removing trash from trash racks. During maintenance operations, one of the three tainter (river) gates is always left open to maintain navigation and water flow (Lawrence Davis, Personal communication, 5 May 2015).

Operation of the Hurricane Barrier for flood reduction when the City of Providence is threatened by a large storm or hurricane generally consists of: closure of all tainter gates and canal gates, and the pumping of water from upstream of the barrier to downstream areas. In general, non-hurricane storm closures last from one to three hours, while hurricane based closures typically last four to five hours.

USACE operates the Hurricane Barrier to allow small boats to operate on the upstream rivers (Moshassuck, Woonasquatucket and Providence Rivers) during WaterFire events occurring at low tides. Recreational closures associated with WaterFire are timed to extend the high tide period, allowing for small boat navigation during the event. The actual period of closure, which may be from three to 11 hours, is a function of: tide stage, flow from the Providence River and timing of the WaterFire event. Some WaterFire events do not require a Hurricane Barrier closure.



3.0 ANALYSIS OF IMPACTS

3.1 Summary of Potential Impacts

There are no anticipated impacts to EFH from the continued maintenance of the Hurricane Barrier. The facility has been in place for almost 50 years and during routine maintenance at least one tainter gate is left open, allowing for fish passage and water exchange. Therefore, no changes in temperature or salinity regime, tidal flows or tide height, or prey species are anticipated during routine maintenance activities.

Closures related to recreation support, hurricanes or storms necessitate the closure of all tainter gates and therefore prevent the exchange of water between the Providence River and Harbor. As such, there is the potential for short-term, localized elevation of water temperature and a corresponding decline in dissolved oxygen upstream of the Hurricane Barrier due to cessation of tidal exchange and the discharge of cooling water from the Manchester Street power station, located upstream of the Hurricane Barrier. These operational conditions could temporarily degrade local water quality upstream of the barrier and are considered the condition that would have the greatest potential for impact to EFH species. Temporary delay of fish passage when all tainter gates are closed is also anticipated but not expected to cause permanent impacts to the fisheries resources. This expectation is based on prior site experience.

The severity of the impact to water quality upstream of the barrier is affected by length of closure, time of year, time of day, ambient water temperature and volume of freshwater flow from upstream of the barrier. In general, non-hurricane storm closures last from one to three hours, while hurricane based closures typically last four to five hours (USACE correspondence 22 September 2014). Closures in support of recreation events may extend up to a maximum duration of 11 hours. Impacts to water quality due to storm closures may occur if dissolved oxygen levels decrease and/or temperatures increase behind the barrier. Any impacts are expected to be localized (upstream of the barrier) and short-term (during closure only). Impacts to water quality due to recreation events are expected to be minimal, based on prior years experience, as well as the understanding that Dominion Energy intends to operate within the parameters dictated by its RIPDES permit requirements specific to its thermal discharge limits. Coordination between USACE, Dominion Energy, RIDEM and CRMC was completed in order to limit water quality impacts from barrier closure. As such, USACE will continue to coordinate all Hurricane Barrier closures with Dominion Energy (as per MOU contained in Appendix A of EA).

Water temperature data from the permanent climatic station on Providence Harbor, slightly downstream of the Hurricane Barrier, reports mean water temperatures range from a low of about 0°C in February to a high of between 25 and 30°C in July (NDBC, 2015). It is expected that very few temperature sensitive juvenile or adult fish species will be present in the vicinity of the Hurricane Barrier during the summer periods when water temperatures are naturally highest and the recreational closures of the Hurricane Barrier most often occur, further reducing the potential fisheries impact.

3.2 Life History of EFH Species

3.2.1 Selection of EFH Species

The National Marine Fisheries Service Guide to Essential Fish Habitat web site was used to determine which species have designated EFH in the Providence River. The location of this site is <http://www.greateratlantic.fisheries.noaa.gov/hcd/webintro.html>. The species, and the life stages of those species, that have EFH in the study area was determined by using the quick reference 10 x 10 minute squares of latitude and longitude. The coordinates of the 10 x 10 minute squares that are representative of the geographic area where the Hurricane Barrier is located are provided in Table 1. The square description is as follows: The waters within the square within the Providence River, within Narragansett Bay, affecting all cities, towns, and features within or adjacent to it, from Nayatt Pt. and south of Nayatt,



RI., north, as well as from Warwick Pt. North. Also, these waters affect within and around Greenwich Bay, northeast of East Greenwich, RI., and north of Sally Rock Pt. on Potowomut Neck, and all other towns, cities, and features within or adjacent to those waters including Apponaug Cove, Buttonwoods Cove, Brush Neck Cove, and Warwick Cove.

Table 1. Latitude and longitude coordinates of the 10 x 10 minute square representing the geographic area of the Hurricane Barrier.

Grid	North	East	South	West
Providence River	41°50.0' N	71°20.0' W	41°40.0' N	71°30.0' W

Table 2 presents a list of the species that have designated EFH in the Providence River. EFH has been designated for 14 species in the Providence River. A short summary of the EFH for each life stage of each particular species is described in the sections below. Information on the species was taken from the NMFS “Guide to EFH Species Designations” located at <http://www.greateratlantic.fisheries.noaa.gov/hcd/list.htm>. Additional sources used to describe life history characteristics of the various species include Bigelow and Schroeder’s “*Fishes of the Gulf of Maine*” (1993) and the U.S. Fish and Wildlife Services “*Development of the Fishes of the Mid-Atlantic Bight: An atlas of egg, larval and juvenile stages*” (1978; Volumes I through VI). Table 3 and Table 4 present overall summaries of impacts to fish species with EFH in Providence River.

Table 2. Species and their respective life stages having designated Essential Fish Habitat in the Providence River.

Species	Providence River
Demersal Species	
American plaice	L J A
Summer flounder	L J A
Windowpane flounder	E L J A
Winter flounder	E L J A
Black sea bass	J A
Haddock	L
Red hake	L J A
Scup	E L J A
Pelagic Species	
Atlantic mackerel	E L J A
Atlantic sea herring	L J A
Bluefish	J A
Cobia	E L J A
King mackerel	E L J A
Spanish mackerel	E L J A

E = Eggs
L = Larvae
J = Juvenile
A = Adult



Table 3- Summary of fish species with EFH in the Providence River.

Life History Stage	Water Column Position	Species	Likelihood of Presence ¹	Habitat Requirement ²
Eggs	Demersal	Winter flounder	High	Low
	Planktonic	Windowpane flounder	Medium	Medium
		Scup	Medium	Medium
		Atlantic mackerel	Medium	Medium
		Cobia	Low	Low
		King mackerel	Low	Low
		Spanish mackerel	Low	Low
Larvae	Planktonic - Flounders	Winter flounder	High	Low
		American plaice	Low	Low
		Summer flounder	Low	Low
		Windowpane flounder	Medium	Medium
	Planktonic - groundfish	Haddock	Low	Low
		Red hake	Low	Low
		Scup	Medium	Low
	Planktonic - pelagic fish	Atlantic mackerel	Medium	Medium
		Atlantic sea herring	Medium	Medium
		Cobia	Low	Low
		King mackerel	Low	Low
		Spanish mackerel	Low	Low
Juveniles	Demersal	American plaice	Low	Low
		Summer flounder	Low	Medium
		Windowpane flounder	Medium-Low	Medium
		Winter flounder	High	Low
		Black sea bass	Low	Low
		Red hake	Low	Medium
		Scup	Medium	Low
	Pelagic	Atlantic mackerel	Medium-Low	Medium
		Atlantic sea herring	Medium	Low
		Bluefish	Medium	Low
		Cobia	Low	Low
		King mackerel	Low	Low
		Spanish mackerel	Low	Low
Adults	Demersal	American plaice	Low	Low
		Summer flounder	Low	Medium
		Windowpane flounder	Medium-Low	Medium
		Winter flounder	High	Low
		Black sea bass	Low	Low
		Red hake	Low	Medium
		Scup	Medium	Low
	Pelagic	Atlantic mackerel	Medium-Low	Medium
		Atlantic sea herring	Medium	Low
		Bluefish	Medium	Low
		Cobia	Low	Low
		King mackerel	Low	Low
		Spanish mackerel	Low	Low

¹ Likelihood of presence information is based on surveys by Bourne and Govoni (1988), Keller et al. (1999) and MRI Inc (1996-2000). Narragansett Bay trawl surveys indicate potential presence of juvenile and adult fish species. Low - not present; Medium - present but not abundant; High - present and fairly abundant

² Habitat requirement information refers to the substrate type, water depth, and salinity of the Providence River
Low - not suitable habitat; Medium - moderately suitable; High - suitable



3.2.2 Demersal Species

Demersal species are those fish living on or near the bottom. Demersal species found in the project area include flounders and groundfish.

3.2.2.1 *Flounders* *American plaice*

The American plaice *Hippoglossoides platessoides* is a demersal species that is distributed in the Northwest Atlantic along the continental shelf from southern Labrador to Rhode Island. The American plaice is a “right-eyed” flounder that prefers substrates of mud, sand, or mud-sand mixtures. The species is generally found from the tide line down to 700 meters (2297 ft) in depth. Spawning occurs on bottom habitats of all substrate types in waters less than 90 meters (295 ft) in depth and temperatures less than 14°C from March through June. Eggs and larvae are pelagic floating/drifting in the surface water. Larvae sink to greater depths as they grow and at metamorphosis will take up residence on the bottom.

EFH Designation. EFH has been designated for American plaice larvae, juveniles and adults in the Providence River. EFH for larvae in these areas includes surface waters of a wide range of salinities where temperatures are below 14°C, and water depths are between 30 and 130 meters (98 and 427 ft). EFH for American plaice juveniles and adults includes bottom habitats with fine-grained sediments or a substrate of sand or gravel. Juveniles and adults are found in a wide range of salinities in water temperatures below 17°C, and depths ranging from 45 to 150 meters (148 to 492 ft) for juveniles and 45 to 175 meters (148 to 574 ft) for adults. The EFH range of water depths for larvae, juveniles and adults is deeper than the depths found in the Providence River and most of Narragansett Bay.

Effects. No American plaice larvae were collected in ichthyoplankton surveys from the Providence River from 1992 through 1999 (MRI Inc., 2000; 1999; 1998; 1997; 1996; 1995; 1994; 1993) or in ichthyoplankton surveys from Narragansett Bay in December 1989 through November 1990 (Keller *et al.*, 1999). Impacts from maintenance and operation of the Hurricane Barrier are therefore, likely to be minimal or non-existent to American plaice larvae. Impacts to adult and juvenile American plaice will also be minimal as few individuals are likely to be present in the area based on their depth preference.

Summer flounder

The summer flounder *Paralichthys dentatus* is a demersal species that is distributed in the northwest Atlantic from the Gulf of Maine to South Carolina. The summer flounder is a “left-eyed” flounder that is found over sand, mud, grass, around pilings, in tidal channels or salt ponds. The species is concentrated in bays and estuaries from spring to early autumn, and in early autumn, will migrate offshore to the outer continental shelf. Spawning occurs during the offshore migration in autumn and early winter. Summer flounder eggs are pelagic and float near the surface, drifting with currents. Larvae are partially benthic and may drop down to the substrate when not actively swimming. Early larvae will concentrate at depths of 22 to 57 meters (72 to 187 ft) at distances 22 to 83 km (14 to 52 miles) offshore. As larvae mature, they will move inshore with the currents, leaving postlarvae and juveniles to settle on the bottom in bays and estuaries.

EFH Designation. EFH has been described for larvae, juvenile, and adult summer flounder in the Providence River. For larvae in Providence River, EFH includes mixing (where freshwater and saltwater mix) and seawater salinity zones where summer flounder larvae are known to be common, abundant or highly abundant. In general, summer flounder larvae are most abundant between 19 and 80 km (12 and 50 miles) of the shore at depths between 10 and 70 meters (33 and 230 ft). They are most common from September through February.



EFH for summer flounder juveniles in the Providence River includes the mixing and seawater salinity zones where juvenile summer flounder are known to be common, abundant, or highly abundant. Juvenile summer flounder tend to use various habitats (seagrass beds, mudflats, salt marsh creeks and open bay areas) in estuaries and bays as nursery areas. They are found in many of these habitats when water temperatures are greater than 3°C and salinities range between 10 and 30 ppt.

EFH for adult summer flounder in the Providence River includes the mixing and seawater salinity zones where adult summer flounder are known to be common, abundant or highly abundant. In general, summer flounder are common in inshore habitats during the warmer months. They move offshore to depths of 150 meters (492 ft) during colder months.

Effects. Summer flounder larvae were collected in ichthyoplankton surveys from the Providence River (MRI Inc., 2000; 1999; 1993) and in ichthyoplankton surveys from Narragansett Bay in December 1989 through November 1990 (Keller *et al.*, 1999). Impacts to larvae, juveniles and adults are expected to be minimal and are described in Section 3.1 Summary of Potential Impacts.

Windowpane flounder

Windowpane flounder *Scophthalmus aquosus* is a demersal species that is distributed in the northwest Atlantic along the continental shelf from the Gulf of St. Lawrence to Florida, and is particularly common in large estuaries in waters less than 56 meters (184 ft). The windowpane flounder is a “left-eyed” flounder that is found over sand, mixtures of sandy silt or mud. No seasonal migration is evident in New England waters. Spawning occurs from April through December with peaks from May through October in waters below 21°C and salinities between 5.5 and 36 ppt. Eggs and larvae are pelagic and float near the surface, drifting with currents. Juveniles are most often observed in the sublittoral zones generally in water depths of 6 to 14 meters (20 to 46 ft).

EFH Designation. EFH has been designated for windowpane flounder eggs, larvae, juveniles, and adults in the Providence River. EFH for windowpane flounder eggs in the Providence River includes the surface waters in the mixing and seawater salinity zones where windowpane flounder eggs are present at common or abundant levels. Windowpane flounder eggs are most often found in surface waters where temperatures are below 20°C. EFH for windowpane flounder larvae in the Providence River includes the waters in the mixing and seawater salinity zones where windowpane flounder larvae are present at common or abundant levels. Like windowpane flounder eggs, larvae are most often found in waters where temperatures are below 20°C. EFH for windowpane flounder juveniles and adults in the Providence River includes bottom habitats in the mixing and seawater salinity zones where they are present at common or abundant levels. Both inshore and offshore juveniles and adults are found in bottom habitats with substrates of mud or fine-grained sand.

Effects. Windowpane flounder eggs and larvae were collected in ichthyoplankton surveys from 1992 through 1999 in the Providence River (MRI Inc., 2000; 1999; 1998; 1997; 1996; 1995; 1994; 1993) and in ichthyoplankton surveys from Narragansett Bay in December 1989 through November 1990 (Keller *et al.*, 1999). Impacts to eggs, larvae, juveniles and adults are expected to be minimal and are described in Section 3.1 Summary of Potential Impacts.

Winter flounder

In the Western Atlantic, the winter flounder *Pleuronectes americanus*, ranges from Labrador to Georgia. Like other flounders, winter flounder are a demersal species, common on muddy sand with patches of eelgrass, sand, clay and even gravel/cobble from the shoreline to 128 meters (420 ft) out, but are rarely seen in waters deeper than 36 meters (118 ft). Their movements are generally localized, undertaking small scale migrations into estuaries, embayments and saltwater ponds in the winter to spawn, and moving to deeper water in summer. Juveniles tend to stay in inshore areas for 2 or more years, but will



move to avoid temperature extremes. Winter flounder avoid waters cooler than 0°C and warmer than 14-15°C. Spawning occurs over bottom habitats with substrates of sand, muddy sand, mud, or gravel in water temperatures less than 15°C, and salinities between 5.5 and 36 ppt. Spawning in inshore areas occurs in water depths less than 6 meters, while spawning offshore can occur in waters as deep as 80 meters. Adult winter flounder are most often observed spawning from February through June. Adults also tend to return to the same spawning locations year after year and discrete local groups exist (Gulf of Maine, Georges Bank, Southern New England-Middle Atlantic). Winter flounder eggs are not buoyant, but sink and stick together in clusters on the bottom. Newly hatched larvae remain near bottom (generally found at depths less than 37 meters (121 ft)). The larvae are unlike other flatfishes in that even though they are pelagic, they are not completely at the mercy of tides or currents. Winter flounder larvae will alternatively swim upward and then sink to lie on the bottom as opposed to remaining constantly adrift at the surface.

EFH Designation. EFH has been described for winter flounder eggs, larvae, juveniles, and adults in the Providence River. EFH for winter flounder eggs in the Providence River includes bottom habitats with a substrate of sand, muddy sand, mud, or gravel. EFH for eggs in the Providence River includes the mixing and seawater salinity zones where winter flounder eggs are present at common or abundant levels. In general, winter flounder eggs are found where water temperatures are less than 10°C, salinities are between 10 and 30 ppt, and water depths are less than 5 meters (16 ft).

EFH for winter flounder larvae in the Providence River includes the mixing and seawater salinity zones where winter flounder larvae are present at common or abundant levels. In general, winter flounder larvae are found in pelagic and bottom waters where temperatures are less than 15°C, salinities range between 4 and 30 ppt, and water depths are less than 5 meters (16 ft).

EFH for winter flounder juveniles in the Providence River includes the mixing and seawater salinity zones where winter flounder juveniles are present at common or abundant levels. EFH for winter flounder young-of-year juveniles in the Providence River includes bottom habitats with a substrate of mud or fine-grained sand. Young-of-year winter flounder are generally found in water temperatures below 28°C, salinities between 5 and 33 ppt, and in water depths of 0.1 to 10 meters (0.3 to 33 ft). EFH for older juveniles also includes bottom habitats with a mud or fine-grained sand. Older juveniles are generally found in water temperatures below 25°C, salinities between 10 and 30 ppt, and water depths of 1 to 50 meters (3 to 164 ft).

EFH for adult winter flounder in the Providence River includes the mixing and seawater salinity zones where winter flounder adults are present at common or abundant levels. EFH for adult winter flounder includes bottom habitats with a substrate of mud, sand, or gravel. Adult winter flounder are generally found in water temperatures below 25°C, salinities between 15 and 33 ppt, and water depths of 1 to 100 meters (3 to 328 ft).

Effects. Winter flounder eggs and larvae were collected in ichthyoplankton surveys from the Providence River in the 1990's (MRI Inc., 2000; 1999; 1998; 1997; 1996; 1995; 1994; 1993) and in ichthyoplankton surveys from Narragansett Bay in December 1989 through November 1990 (Keller *et al.*, 1999). Impacts to eggs, larvae, juveniles and adults are expected to be minimal and are in Section 3.1 Summary of Potential Impacts.

3.2.2.2 *Groundfish*

Black sea bass

Two stocks of black sea bass *Centropristis striata* have been identified along the U.S. Atlantic coast from Maine to Florida. The stock north of Cape Hatteras, North Carolina winters along the 100 meter (328 ft)



depth contour off the coast of Virginia and Maryland and migrates north and inshore during spring and summer. Black sea bass are associated with structured hard bottom communities such as shellfish beds, pilings, wharves, or wrecks, offshore banks, ledges, and rocky or reef communities. Spawning occurs from March through October, with spawning occurring in May through July in Southern New England waters. Black sea bass eggs and larvae are pelagic and drift at the surface. Juveniles are found inshore in bays and estuaries, in eelgrass, around wharves and landings, and around shellfish beds. Juvenile black sea bass remain in these estuarine nursery areas until migrating south in the fall.

EFH Designation. EFH has been designated for juvenile and adult black sea bass in the Providence River. EFH for juveniles and adults in the Providence River includes the mixing and seawater salinity zones where juvenile black sea bass are common, abundant, or highly abundant. Generally, juveniles are found in waters warmer than 6°C with salinities greater than 18 ppt. Additionally, juveniles both inshore and offshore are found in association with rough bottom, shellfish and eelgrass beds, and man-made structures in sandy areas.

EFH for adult black sea bass in the Providence River includes the mixing and seawater salinity zones where adult black sea bass are common, abundant, or highly abundant. Like juveniles, adult black sea bass are also found in association with structured habitats (both natural and man-made) with a preference for sand and shell substrates. They are generally found in waters warmer than 6°C.

Effects. Eggs have not been found in Narragansett Bay and are therefore unlikely to be impacted in the project area (NMFS, 1999). Juveniles were rarely collected and therefore are unlikely to be impacted (NMFS, 1999). Impacts to eggs, larvae, juveniles and adults are expected to be minimal and are described in Section 3.1 Summary of Potential Impacts.

Haddock

Haddock *Melanogrammus aeglefinus* are a demersal species distributed in the western Atlantic from Greenland to Cape Hatteras, North Carolina. Adult haddock are generally more common in water depths from 45 to 135 meters (148 to 443 ft) and temperatures ranging from 2 to 10°C. They are found in bottom habitats with substrates of sand, rock, pebbles, gravel or broken shell. Spawning occurs between January and June, peaking during March and April. Eggs are pelagic and are generally concentrated within the upper 10 meters (33 ft) of the water column. Larvae are also pelagic, and are typically oceanic although they may be found in estuaries. Juveniles are found initially in the water column, but will descend to the bottom as they get older. Juvenile haddock tend to remain in more shallow water on banks and shoals, moving to deeper areas as adults.

EFH Designation. EFH has been described for Haddock larvae only in the Providence River. EFH for haddock larvae in the Providence River includes surface waters of the salinity mixing zone where haddock larvae are rare, common, or abundant. In general, haddock larvae are most often observed when water temperatures are below 14°C and salinities range from 34 to 36 ppt.

Effects. No haddock larvae were collected in ichthyoplankton surveys from 1992 through 1999 in the Providence River (MRI Inc., 2000; 1999; 1998; 1997; 1996; 1995; 1994; 1993) or in ichthyoplankton surveys from Narragansett Bay and northern Rhode Island Sound in December 1989 through November 1990 (Keller *et al.*, 1999). Impacts to haddock larvae from Hurricane Barrier activities are, therefore, likely to be minimal or non-existent.

Red hake

The red hake *Urophycis chuss* is distributed in the northwest Atlantic from the Gulf of St. Lawrence to North Carolina. This species undergoes extensive seasonal migrations, moving into shallow waters in the spring and summer to spawn and moving offshore to overwinter in deeper waters of the outer continental



shelf and slope, particularly the area south and southwest of Georges Bank. Spawning occurs from May through November, with Southern New England a primary spawning area. Red hake spawn in coastal waters over the continental shelf in water 46.8 to 108 meters (154 to 354 ft) in depth and temperatures between 5 and 10°C. Red hake eggs are pelagic, and float in plankton. Larvae also drift at the surface in the plankton often under eelgrass and rockweed. Young juvenile red hake are found initially at the surface, but as they grow (approximately 27 – 49 mm length) they descend to the bottom and are often found in the mantle cavity of shellfish (*i.e.*, scallops) under sponges, or in other benthic litter. Juveniles will remain in the vicinity of shellfish beds for 2 years if temperatures remain above 4°C. If temperatures fall below 4°C, juveniles will migrate to warmer, deeper water. Adult red hake stay close to objects on the bottom (*i.e.*, shellfish beds) and can be found over soft mud or silt substrates and less frequently over sand and shell, and never rocky bottoms. Two stocks have been identified – a Gulf of Maine-Northern Georges Bank stock and Southern Georges Bank-Middle Atlantic stock.

EFH Designation. EFH has been described for red hake larvae, juveniles and adults in the Providence River. EFH for red hake larvae in the Providence River includes the seawater salinity zones where red hake larvae are present at common or abundant levels. EFH for red hake larvae in the Providence River includes surface waters with temperatures below 19°C, salinities greater than 0.5 ppt, and water depths less than 200 meters (656 ft). Red hake larvae are most often observed from May through December with peaks in September and October.

EFH for red hake juveniles in the Providence River includes the seawater salinity zones where red hake juveniles are present at common or abundant levels. Impacts to eggs, larvae, juveniles and adults are described in Section 3.1 Summary of Potential Impacts. EFH for red hake juveniles in the Providence River, includes bottom habitats with substrates of shell fragments, particularly areas containing live scallops. Juvenile red hake are generally found in water temperatures below 16°C, salinities of 31 to 33 ppt, and water depths less than 100 meters (328 ft).

EFH for adult red hake in the Providence River includes the seawater salinity zones where adult red hake are present at common or abundant levels. EFH for adult red hake includes bottom habitats in depressions with substrates of sand and mud. Red hake adults generally occur in water temperatures below 12°C, salinities of 33 to 34 ppt, and water depths of 10 to 130 meters (33 to 427 ft). Adults spawn in the same types of bottom habitats (depressions with sand and mud substrates) in waters less than 100 meters (328 ft) in depth, and when water temperatures are below 10°C, and salinities are less than 25 ppt. Adult red hake are most often observed spawning from May through November with peaks in June and July.

Effects. Red hake eggs were collected in ichthyoplankton surveys from the Providence River (MRI Inc., 1998) and eggs and larvae were collected in ichthyoplankton surveys from Narragansett Bay in December 1989 through November 1990 (Keller *et al.*, 1999). Impacts to eggs, larvae, juveniles and adults are expected to be minimal and are described in Section 3.1 Summary of Potential Impacts.

Scup

Scup *Stenotomus chrysops* are distributed in the northwest Atlantic throughout the Mid-Atlantic Bight from Cape Cod, Massachusetts to Cape Hatteras, North Carolina. Scup make seasonal inshore-offshore migrations, moving inshore during spring and summer and offshore to overwinter in waters ranging from 70 to 180 meters (230 to 590 ft) in depth. While inshore, scup are generally found over rocky bottoms schooling at depths between 1.8 and 36 meters (6 and 118 ft). Spawning occurs during the summer months. Scup eggs are pelagic and drift with currents. Larvae are also likely pelagic and drift with currents.



EFH Designation. EFH has been designated for scup eggs, larvae, juveniles, and adults in the Providence River. EFH for scup eggs and larvae in the Providence River includes surface waters of the mixing and seawater salinity zones where scup eggs and larvae are identified as common, abundant, or highly abundant. In general, scup eggs and larvae are found in waters between 12 and 23°C and salinities greater than 15 ppt. Eggs are most often found from May through August and larvae are most abundant from May through September.

EFH for juveniles and adults in the Providence River includes demersal waters in the mixing and seawater salinity zones in areas where juveniles and adults are common, abundant, or highly abundant. Juvenile scup are often found in association with various sands, mud, mussel and eelgrass bed type substrates in water temperatures greater than 7°C. Generally, juveniles and adults are found in the Providence River in the spring and summer, and move offshore in the winter.

Effects. Scup eggs were collected in ichthyoplankton surveys from the Providence River (MRI Inc., 1998), and eggs and larvae were collected in ichthyoplankton surveys from Narragansett Bay in December 1989 through November 1990 (Keller *et al.*, 1999). Impacts to eggs, larvae, juveniles and adults are expected to be minimal and are described in Section 3.1 Summary of Potential Impacts.

3.2.3 Pelagic Species

Pelagic species are those species that live at the surface layers or mid depth layers within the water column. Pelagic species found within the project area include bony fish, sharks, and invertebrates.

3.2.3.1 Fish

Atlantic mackerel

The Atlantic mackerel *Scomber scombrus* is distributed in the northwest Atlantic between Labrador and North Carolina. The mackerel is a fast swimming pelagic fish found in very large schools. Atlantic mackerel are generally found offshore and are not dependent on the coastline or bottom substrate for any period of their lives. Smaller fish, however, may move inshore into estuaries and harbors in search of food. Spawning occurs in spring and early summer (typically June) at any location, resulting in pelagic egg and larval stages that are dispersed by currents.

EFH Designation. EFH has been designated for Atlantic mackerel eggs, larvae, juveniles, and adults in the Providence River. EFH for eggs in the Providence River includes inshore waters in the mixing and seawater salinity zones where Atlantic mackerel eggs are common, abundant, or highly abundant. In general, Atlantic mackerel eggs are most often collected in areas from within 15 meters (49 ft) of shore in water temperatures between 5 and 23°C.

EFH for Atlantic mackerel larvae in the Providence River includes waters in the mixing and seawater salinity zones where Atlantic mackerel larvae are common, abundant, or highly abundant. In general, Atlantic mackerel larvae are most often collected from 10 to 130 meters (33 to 427 ft) of water in temperatures between 6 and 22°C.

EFH for Atlantic mackerel juveniles and adults in the Providence River includes waters in the mixing and seawater salinity zones where juveniles and adults are common, abundant, or highly abundant. Juveniles are generally collected within 320 meters (0.1 mile) of shore in water temperatures ranging between 4 and 22°C, and adults are generally collected within 380 meters (0.21 miles) of shore in temperatures ranging between 4 and 16°C.



Effects. Impacts to eggs, larvae, juveniles and adults are expected to be minimal and are described in Section 3.1 Summary of Potential Impacts.

Atlantic Sea Herring

The Atlantic sea herring *Clupea harengus* is distributed in the northwest Atlantic in continental shelf waters from Labrador to Cape Hatteras, North Carolina. This species is an open water planktivorous fish that is found in large schools. Adult Atlantic sea herring are generally found offshore, but some populations may migrate inshore during spawning season. Spawning generally occurs in bottom habitats with substrates of gravel, sand, cobble, shell fragments, or aquatic macrophytes. Spawning generally occurs from July through November in well-mixed waters below 15°C with tidal currents between 1.5 and 3.0 knots. Water depths at spawning locations range from 20 to 80 meters (66 to 262 ft) and salinities range from 32 to 33 ppt. Atlantic sea herring eggs are demersal and adhesive, and are most often observed in large sheets directly on stone, gravel, or shell beds. Larvae are first found in the vicinity of spawning areas and within hours of hatching, they will form small schools and begin vertical movements upward at night until they become dispersed by currents. Juveniles drift with currents, and may remain in bays/estuaries or may be found offshore at sea. As adults (in large schools), the Atlantic sea herring's movements are typically local and short range and they undertake vertical migrations - rising at night and sinking by day.

EFH Designation. EFH has been designated for Atlantic sea herring larvae, juveniles and adults in the Providence River. EFH for Atlantic herring larvae in the Providence River includes waters in the seawater salinity zone where Atlantic herring larvae are common or abundant. Generally Atlantic herring larvae are collected from temperatures below 16°C, and salinities around 32 ppt. Larvae are most often observed between August and April, with peaks in abundance from September through November.

EFH for juveniles in the Providence River includes waters in the seawater and mixing zones where juvenile Atlantic herring are known to be common or abundant. EFH for adults in the Providence River includes waters in the seawater and mixing zones where adult Atlantic herring are known to be common or abundant.

Effects. Impacts to larvae, juveniles and adults are expected to be minimal and are described in Section 3.1 Summary of Potential Impacts.

Bluefish

The bluefish *Pomatomus saltatrix* is distributed in the northwest Atlantic along the coast from Maine to Florida. The bluefish is a migratory pelagic species which migrates north in the spring and south in the fall. The species forms large schools, often as large as 6 to 8 km (4 to 5 miles) long. Bluefish are found at least 148 km (92 miles) offshore at depths to 100 meters (328 ft), but will occasionally move into brackish portions of rivers. They are voracious predators that feed on a wide variety of fish and invertebrates. Bluefish spawn during the summer months in the Mid Atlantic Bight region. Spawning generally occurs over the outer half of the continental shelf in water temperatures between 18 and 26°C and salinities ranging from 27 to 35 ppt. Eggs are pelagic and float at the surface. Larvae are also pelagic and are generally found offshore in water temperatures around 21°C. Juvenile bluefish are found both inshore and offshore. Inshore, juveniles can be found along beaches, inlets, estuaries, creeks, rivers, clear and turbid water over bottoms of sand and gravel. They may also move considerable distances upstream in estuaries.

EFH Designation. EFH has been designated for juvenile and adult bluefish in the Providence River. EFH for juveniles and adult bluefish in the Providence River includes the mixing and seawater salinity zones particularly during the months of June through October. Generally, bluefish larvae are collected from April through September in temperatures greater than 18°C and salinities greater than 30 ppt.



Effects. Impacts to juveniles and adults are expected to be minimal and are described in Section 3.1 Summary of Potential Impacts.

Cobia

Cobia *Rachycentron canadum* are distributed in the western Atlantic from Massachusetts to Argentina. Cobia are a highly migratory pelagic species that tend to remain solitary. They can be found in open water, bays, harbors, the mouths of tidal creeks, over reefs, oyster beds, and around pilings, buoys and wrecks. Juveniles can also be found along beaches, in surface waters under floating objects, as well as in rivers. Cobia appear to migrate south in the fall and north and inshore in the spring. Spawning generally occurs in June through August in the Chesapeake Bay region. Eggs and larvae are pelagic and are found floating at the surface drifting with currents.

EFH Designation. EFH has been designated for eggs, larvae, juveniles, and adult cobia in the Providence River. EFH for cobia (all stages) includes sandy shoals of capes and offshore bars, high profile rocky bottom and barrier island ocean-side waters from the surf to the shelf break zone, and from the Gulf Stream shoreward. EFH for cobia also includes all coastal inlets and state-designated nursery habitats.

Effects. No cobia eggs or larvae were found in ichthyoplankton surveys of the Providence River, which is not surprising since they spawn in the Chesapeake Bay region (USACE, 2001). Impact to cobia eggs and larvae in the project area would therefore be unlikely. No juvenile or adult cobia were found in the NMFS trawl surveys, therefore impacts from project operations are likely to be minimal to non-existent (USACE, 2001).

King mackerel

The king mackerel *Scomberomorus cavalla* is distributed in coastal waters of the Atlantic from Maine to Brazil. The king mackerel is a coastal pelagic species that migrates north in spring and south in fall and is very abundant in southern waters during winter. Spawning occurs 1 to 6 km (0.6 to 4 miles) offshore in late July through September. Eggs and larvae are pelagic, floating in the surface waters, and are dispersed by the Gulf Stream.

EFH Designation. EFH has been designated for eggs, larvae, juvenile, and adult king mackerel in the Providence River. EFH for king mackerel (all stages) includes sandy shoals of capes and offshore bars, high profile rocky bottom and barrier island ocean-side waters from the surf to the shelf break zone, and from the Gulf Stream shoreward.

Effects. No king mackerel eggs or larvae were found in ichthyoplankton surveys of the Providence River, which is not surprising since they spawn in the Chesapeake Bay region (USACE, 2001). No juvenile or adult king mackerel were found in the NMFS trawl surveys, therefore impacts from project operations are likely to be minimal to non-existent (USACE, 2001).

Spanish mackerel

The Spanish mackerel *Scomberomorus maculatus* is distributed in coastal waters of the Atlantic from Maine to the northern Gulf of Mexico waters. The Spanish mackerel is a coastal pelagic species that migrates north in spring and south in fall. The Spanish mackerel is a schooling species that prefers shallow coastal waters, but will also enter tidal estuaries. Spawning occurs in tidal estuaries like Narragansett Bay in August through September. Eggs and larvae are pelagic, floating in the surface waters, and are dispersed by currents.

EFH Designation. EFH has been designated for eggs, larvae, juvenile, and adult Spanish mackerel in the Providence River. EFH for Spanish mackerel (all stages) includes sandy shoals of capes and offshore



bars, high profile rocky bottom and barrier island ocean-side waters from the surf to the shelf break zone, and from the Gulf Stream shoreward.

Effects. No Spanish mackerel eggs or larvae were found in ichthyoplankton surveys of the Providence River (USACE, 2001). Impact to Spanish mackerel eggs and larvae during project operations would therefore be unlikely. No juveniles or adult Spanish mackerel were found in the NMFS trawl surveys, therefore impacts during project operations would be unlikely (USACE, 2001). Impacts to eggs, larvae, juveniles and adults are expected to be minimal and are described in Section 3.1 Summary of Potential Impacts.

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Appendix D: Pertinent correspondence

Esten, Marie E NAE

From: Edwards, Phillip (DEM) [Phillip.Edwards@DEM.RI.GOV]
Sent: Monday, May 04, 2015 10:05 AM
To: Esten, Marie E NAE
Cc: Schneider, Eric (DEM)
Subject: [EXTERNAL] RE: Fish run in Woonasquatucket River (UNCLASSIFIED)

Hi Marie

River herring habitat restoration has occurred at the first four obstructions on the Woonasquatucket River. (2 denil fishways, and 2 dam removals)

WRWC (Alicia) is currently working on fish passage at the 4th obstruction.

Adult migration window is March 1st to June 1st, with the peak of the run typically in April.

Below are the spawning stock size estimates for the Rising Sun Fishway counts. Thanks Phil

2011-7,269

2012-9,264

2013-12,336

2014-39,518

2015- available mid June

-----Original Message-----

From: Esten, Marie E NAE [<mailto:Marie.E.Esten@usace.army.mil>]

Sent: Monday, May 04, 2015 9:28 AM

To: Edwards, Phillip (DEM)

Subject: Fish run in Woonasquatucket River (UNCLASSIFIED)

Classification: UNCLASSIFIED

Caveats: NONE

Good morning.

I was passed your name by Alan Libby in regards to current anadromous fish activity in the Providence, Moshassuck and Woonasquatucket rivers. I am working on an Environmental Assessment for the operation and maintenance of the Fox Point Hurricane Barrier and wanted to discuss this with you. Please either email or call, my contact information is below.

Thank you in advance.

Marie

Marie Esten

USACE, New England District

Engineering/Planning Division

Evaluation Branch

978-318-8965

marie.e.esten@usace.army.mil

Classification: UNCLASSIFIED

Esten, Marie E NAE

From: Edwards, Phillip (DEM) [Phillip.Edwards@DEM.RI.GOV]
Sent: Monday, May 04, 2015 10:11 AM
To: Esten, Marie E NAE
Subject: [EXTERNAL] RE: Fish run in Woonasquatucket River (UNCLASSIFIED)

Correction, WRWC currently working on 5th obstruction. First 4 complete. -Ths

-----Original Message-----

From: Esten, Marie E NAE [<mailto:Marie.E.Esten@usace.army.mil>]
Sent: Monday, May 04, 2015 9:28 AM
To: Edwards, Phillip (DEM)
Subject: Fish run in Woonasquatucket River (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Good morning.

I was passed your name by Alan Libby in regards to current anadromous fish activity in the Providence, Moshassuck and Woonasquatucket rivers. I am working on an Environmental Assessment for the operation and maintenance of the Fox Point Hurricane Barrier and wanted to discuss this with you. Please either email or call, my contact information is below.

Thank you in advance.

Marie

Marie Esten
USACE, New England District
Engineering/Planning Division
Evaluation Branch
978-318-8965
marie.e.esten@usace.army.mil

Classification: UNCLASSIFIED
Caveats: NONE

Esten, Marie E NAE

From: Kevin Madley - NOAA Federal [kevin.madley@noaa.gov]
Sent: Tuesday, June 30, 2015 3:53 PM
To: Esten, Marie E NAE
Subject: [EXTERNAL] Re: section 7 information for Fox Point Hurricane Barrier (UNCLASSIFIED)

Hello Ms. Esten,

NMFS PRD has reviewed the location of the Fox Point hurricane barrier. No species listed under the Endangered Species Act by NMFS are known to occur in the action area. Additionally, the project site has not been designated as critical habitat for any NMFS listed species. As such, no further coordination with NMFS PRD on the effects of the proposed action is necessary. If you have any questions regarding these comments, please contact Kevin Madley (978-282-8494; kevin.madley@noaa.gov).

Kevin Madley
Fisheries Biologist for the Protected Resources Division and
Acting Greater Atlantic Region Aquaculture Coordinator
National Marine Fisheries Service
Greater Atlantic Regional Fisheries Office
55 Great Republic Drive, Suite 04-400
Gloucester, MA 01930
(978) 282-8494
kevin.madley@noaa.gov

On Tue, Jun 30, 2015 at 9:02 AM, Esten, Marie E NAE <Marie.E.Esten@usace.army.mil> wrote:

Classification: UNCLASSIFIED

Caveats: NONE

Good morning Kevin,

I spoke with Mark Murray-Brown this morning and he passed me your name regarding a request for technical assistance under Section 7 for the Fox Point Hurricane Barrier located in Providence, RI. This Hurricane Barrier has been in operation for more than 30 years. Recently, USACE assumed ownership of the project. Consultation with the State of Rhode Island Fish and Wildlife service as well as through the Fish and Wildlife Service New England District web mapping tool have indicated that there are no federal/state/local species at the project location.

The Hurricane Barrier is located across the Providence River about 900 feet upstream of its confluence with the Seekonk River at Fox Point. The Corps only owns the barrier, no land is owned. Please let me know your preferred way of communicating regarding this project. I can send you a more official letter, if this email is not sufficient, just let me know. I also have a draft Continuing Operation and Maintenance EA under internal review. Feel free to call me on my cell phone 401-741-5845, my office number (below) or email.

Thank you
Marie

Marie Esten
USACE, New England District
Engineering/Planning Division

Esten, Marie E NAE

From: Raithel, Christopher (DEM) [Christopher.raithel@DEM.RI.GOV]
Sent: Friday, May 08, 2015 7:36 AM
To: Esten, Marie E NAE
Subject: [EXTERNAL] RE: Fox Point Hurricane Barrier Endangered Species (UNCLASSIFIED)

You are correct. The information is dated but there are no endangered or threatened species near the Hurricane barrier. There are no species in that area contained on the federal Endangered/Threatened list. Similarly there are no species found in that area that are listed by RI DEM.

From: Esten, Marie E NAE [<mailto:Marie.E.Esten@usace.army.mil>]
Sent: Mon 5/4/2015 9:45 AM
To: Raithel, Christopher (DEM)
Subject: Fox Point Hurricane Barrier Endangered Species (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Good morning.

I was passed your name by Alan Libby in regards to endangered species activity in the Providence, Moshassuck and Woonasquatucket rivers. I am working on an Environmental Assessment for the operation and maintenance of the Fox Point Hurricane Barrier and wanted to discuss this with you. Based on my review of the data on RIGIS, it appears there are no species of concern in this area, but this data can be dated. Please either email or call, my contact information is below.

Thank you in advance.

Marie

Marie Esten
USACE, New England District
Engineering/Planning Division
Evaluation Branch
978-318-8965
marie.e.esten@usace.army.mil

Classification: UNCLASSIFIED
Caveats: NONE



United States Department of the Interior

FISH AND WILDLIFE SERVICE

New England Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5087
<http://www.fws.gov/newengland>



January 7, 2015

To Whom It May Concern:

This project was reviewed for the presence of federally listed or proposed, threatened or endangered species or critical habitat per instructions provided on the U.S. Fish and Wildlife Service's New England Field Office website:

<http://www.fws.gov/newengland/EndangeredSpec-Consultation.htm> (accessed January 2015)

Based on information currently available to us, no federally listed or proposed, threatened or endangered species or critical habitat under the jurisdiction of the U.S. Fish and Wildlife Service are known to occur in the project area(s). Preparation of a Biological Assessment or further consultation with us under section 7 of the Endangered Species Act is not required. No further Endangered Species Act coordination is necessary for a period of one year from the date of this letter, unless additional information on listed or proposed species becomes available.

Thank you for your cooperation. Please contact Maria Tur of this office at 603-223-2541 if we can be of further assistance.

Sincerely yours,

Thomas R. Chapman
Supervisor
New England Field Office

**FEDERALLY LISTED ENDANGERED AND THREATENED SPECIES
IN RHODE ISLAND**

COUNTY	SPECIES	FEDERAL STATUS	GENERAL LOCATION/HABITAT	TOWNS
Bristol	Northern Long-eared Bat	Proposed Endangered	Winter- Unknown, Summer – wide variety of forested habitats	Statewide
Kent	Northern Long-eared Bat	Proposed Endangered	Winter-Unknown, Summer – wide variety of forested habitats	Statewide
Newport	Piping Plover	Threatened	Coastal Beaches	Little Compton, Middletown, Tiverton
	Roseate Tern	Endangered	Coastal beaches, islands and the Atlantic Ocean	Newport
	Red knot ¹	Threatened	Coastal Beaches and Rocky Shores, sand and mud flats	Coastal towns
	Northern Long-eared Bat	Proposed Endangered	Winter- Unknown, Summer – wide variety of forested habitats	Statewide
Providence	Small whorled Pogonia	Threatened	Forests with somewhat poorly drained soils and/or a seasonally high water table	Glocester
	Northern Long-eared Bat	Proposed Endangered	Winter- Unknown, Summer – wide variety of forested habitats	Statewide
Washington	Roseate Tern	Endangered	Coastal beaches, islands and the Atlantic Ocean	Westerly
	Piping Plover	Threatened	Coastal Beaches	Narragansett, Charlestown, Westerly, New Shoreham and South Kingstown.
	Red knot ¹	Threatened	Coastal Beaches and Rocky Shores, sand and mud flats	Coastal towns
	American burying beetle	Endangered	Upland grassy meadows	New Shoreham
	Sandplain Gerardia	Endangered	Sandplain grasslands	Charlestown, Exeter, Richmond
	Northern Long-eared Bat	Proposed Endangered	Winter - Unknown, Summer – wide variety of forested habitats	Statewide

¹Migratory only, scattered along the coast in small numbers

-Eastern cougar, gray wolf and Northeastern beach tiger beetle are considered extirpated in Rhode Island.

-There is no federally-designated Critical Habitat in Rhode Island.

Appendix E: Public Notice, comments received and responses