

Wallops Flight Facility Causeway Bridge Replacement Project Environmental Assessment

Draft
September 2023

National Aeronautics and Space Administration
Goddard Space Flight Center
Wallops Flight Facility
Wallops Island, VA

In Cooperation With Federal Highway Administration, United States
Coast Guard, and United States Army Corps of Engineers

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**DRAFT ENVIRONMENTAL ASSESSMENT
CAUSEWAY BRIDGE REPLACEMENT PROJECT**

**NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
GODDARD SPACE FLIGHT CENTER
WALLOPS FLIGHT FACILITY
WALLOPS ISLAND, VIRGINIA 23337**

Lead Agency: National Aeronautics and Space Administration

Participating Agencies: Federal Highway Administration

Cooperating Agencies: United States Coast Guard
United States Army Corps of Engineers

Proposed Action: Causeway Bridge Replacement Project

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Abstract

In accordance with the National Environmental Policy Act of 1969, NASA has prepared this Environmental Assessment (EA) to analyze the potential effects of replacing the existing Causeway Bridge that connects the Mainland to Wallops Island. This EA is tiered from the May 2019 *NASA WFF Site-Wide Programmatic Environmental Impact Statement*.

This EA analyzes the potential direct, indirect, and cumulative environmental effects of the Proposed Action and the No Action Alternative. Resources evaluated in detail include noise; air quality; toxic substances, hazardous and regulated materials, and waste; health and safety; land resources; water resources; vegetation; special status species; transportation; employment and income; recreational resources; and archaeological resources.

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ACRONYMS AND ABBREVIATIONS

ac	Acre(s)
ACM	Asbestos-Containing Materials
APE	Area of Potential Effect
ACWB	Accomack County Wetlands Board
AQCR	Air Quality Control Region
BGEPA	Bald and Golden Eagle Protection Act
BCC	Bird Species of Conservation Concern
BMP	Best Management Practice
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulation
cm	Centimeter(s)
CO	Carbon Monoxide
CO ₂	Carbon Dioxide
CRA	Cultural Resource Analysts, Inc.
cSEL	Cumulative Sound Exposure Level
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
dB	Decibel(s)
dBA	A-weighted Decibel(s)
dB _{Peak}	Peak Sound Pressure Level
EA	Environmental Assessment
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
ELMR	Estuarine Living Marine Resources
EO	Executive Order
ESA	Endangered Species Act
ESC	Erosion and Sediment Control
FCD	Federal Consistency Determination
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIRM	FEMA Insurance Rate Map
FMC	Fishery Management Council
FONSI	Finding of No Significant Impact
FPPA	Farmland Protection Policy Act
ft	Foot/Feet
ft ²	Square foot/feet
FWCA	Fish and Wildlife Coordination Act
gal	Gallon(s)
GARFO	Greater Atlantic Regional Fisheries Office
GHG	Greenhouse Gas
ha	Hectare(s)
HAP	Hazardous Air Pollutant
HAPC	Habitat Areas of Particular Concern

HCD	Habitat Conservation Division
HDD	horizontal directional drilling
HWR	Hassan Water Resources, PLC
HUC	Hydrologic Unit Code
Hz	Hertz
IBA	Important Bird Area
ICP	Integrated Contingency Plan
in	Inch(es)
JDH	John D. Hynes & Associates, Inc.
JPA	Joint Permit Application
kHz	Kilohertz
km	Kilometer(s)
L	Liter(s)
LBP	Lead-based Paint
LOD	Limits of Disturbance
m	Meter(s)
m ²	Square meter(s)
MARS	Mid-Atlantic Regional Spaceport
MBTA	Migratory Bird Treaty Act
MD	Maryland
MEC	Munitions or Explosives of Concern
MEMD	Medical and Environmental Management Division
MHW	Mean high water
mi	Mile(s)
mg/l	Milligrams per liter
MLW	Mean low water
MMPA	Marine Mammal Protection Act
MSA	Magnuson-Stevens Fishery Conservation and Management Act
MSL	Mean Sea Level
NAAQS	National Ambient Air Quality Standards
NASA	National Aeronautics and Space Administration
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NLAA	Not Likely to Adversely Affect
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NOTMARs	Notices-to-Mariners
NPR	NASA Procedural Requirement
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWR	National Wildlife Refuge
OSHA	Occupational Safety and Health Administration
Pa	Pascal(s)

Pb	Lead
PDC	Project Design Criteria
PEIS	Programmatic Environmental Impact Statement
PFAS	Per- and polyfluoroalkyl substances
PJD	Preliminary Jurisdictional Determination
PM _{2.5}	Particulate Matter <2.5 microns
PM ₁₀	Particulate Matter <10 microns
PRD	Protected Resources Division
PTS	Permanent Threshold Shift
RCRA	Resource Conservation and Recovery Act
RMS	Root-Mean-Square
SAV	Submerged Aquatic Vegetation
Sec	Second(s)
SEED	WFF's Stormwater, Erosion, and Environmental Development Program
SEL	Sound Exposure Level
SHPO	State Historic Preservation Office
SPCC	Spill Prevention, Control, and Countermeasure
SPL	Sound Pressure Level
SWPPP	Stormwater Pollution Prevention Plan
THPO	Tribal Historic Preservation Officer
TOYR	Time of Year Restriction
TSS	Total Suspended Solids
TTS	Temporary Threshold Shift
UAS	Unmanned Aircraft System
μPa	Micropascal(s)
U.S.	United States
USACE	United States Army Corps of Engineers
USC	United States Code
USCG	United States Coast Guard
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
V-CRIS	Virginia Cultural Resource Information System
VCZMP	Virginia Coastal Zone Management Program
VDEQ	Virginia Department of Environmental Quality
VDCR	Department of Conservation and Recreation
VDH	Virginia Department of Health
VDHR	Department of Historic Resources
VDOT	Virginia Department of Transportation
VDWR	Virginia Department of Wildlife Resources
VIMS	Virginia Institute of Marine Science
VMRC	Virginia Marine Resources Commission
VSMP	Virginia Stormwater Management Program
VWP	Virginia Water Protection
WFF	Wallops Flight Facility
WOTUS	Waters of the United States

1 Purpose and Need for Action

1.1 Introduction

The National Aeronautics and Space Administration (NASA) has prepared this Tiered Environmental Assessment (EA) to analyze potential impacts to the environment resulting from the proposed replacement of the Wallops Island Causeway Bridge over Cat Creek (the Project). This EA has been prepared in accordance with the National Environmental Policy Act of 1969 (NEPA), as amended (42 United States [U.S.] Code [USC] 4321-4347); the Council on Environmental Quality (CEQ) regulations implementing NEPA (Title 40 of the Code of Federal Regulations [CFR] Parts 1500-1508); NASA procedures for implementing NEPA (14 CFR 1216.3); and NASA Procedural Requirement (NPR), *Implementing the National Environmental Policy Act and Executive Order 12114* (NPR 8580.1).

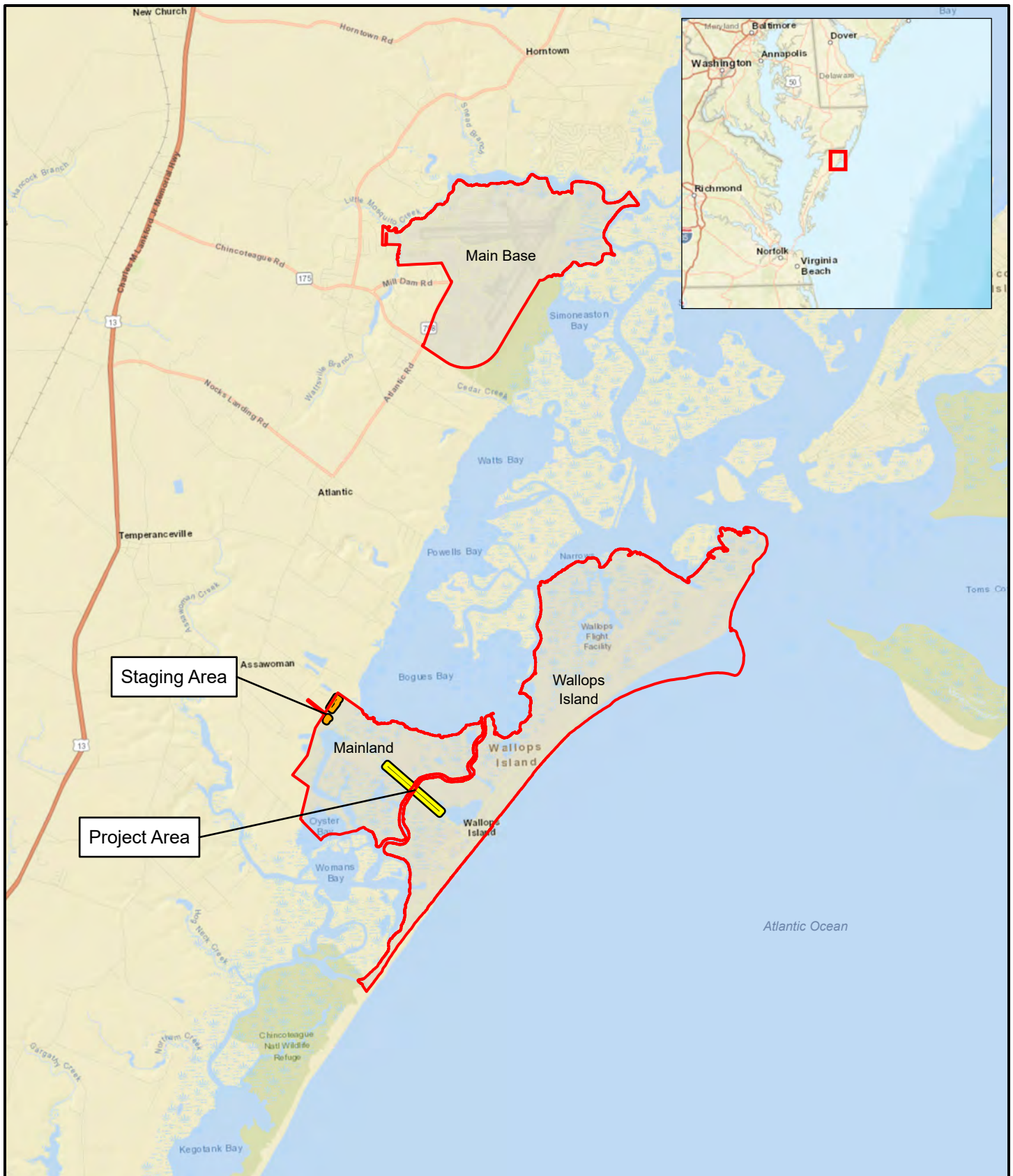
The Federal Highway Administration (FHWA), U.S. Army Corps of Engineers (USACE) Norfolk District, and U.S. Coast Guard (USCG) are Participating or Cooperating Agencies with NASA in preparation of this EA, with NASA serving as the lead agency.

This EA is tiered from the May 2019 *NASA Wallops Flight Facility Site-wide Programmatic Environmental Impact Statement (PEIS) (Final Site-wide PEIS)* (NASA 2019), in which NASA evaluated the environmental consequences of constructing and operating new facilities and infrastructure at Wallops Flight Facility (WFF). In accordance with the CEQ regulations - 40 CFR 1502.20 - actions associated with the Proposed Action in the *Final Site-wide PEIS* may be tiered from that document by incorporating the *Final Site-wide PEIS* by reference, thereby eliminating duplicate discussions.

The EA Project Area is located within the NASA Goddard Space Flight Center's WFF in Accomack County, Virginia, near the south end of Wallops Island (**Figure 1-1**). The existing Causeway Bridge was constructed in 1959-1960 and is beyond the end of its anticipated service life. The Proposed Action being evaluated by this EA consists of site preparation, construction and removal of construction access, construction of a new bridge parallel to the north side of the existing bridge on a new alignment, and demolition of the existing bridge after the new bridge opens.

1.2 Location and Setting

WFF is in northern Accomack County on the Eastern Shore of Virginia. Accomack County is bordered by Northampton County on the south, the state of Maryland on the north, the Atlantic Ocean on the east, and the Chesapeake Bay on the west. WFF consists of three separate land areas near each other: Main Base, Mainland, and Wallops Island (**Figure 1-1**). Collectively, WFF covers approximately 2,670 hectares (ha) (6,600 acres [ac]). The Proposed Action would be implemented on NASA-owned land on Wallops Island/Mainland, Commonwealth of Virginia (Virginia) submerged bottomlands, and a USACE maintained federal navigation channel.



Legend

- Project Area
- Wallops Flight Facility Boundary



FIGURE 1-1 PROJECT LOCATION



Sources: NASA, ESRI World Street Basemap / Prepared by: WSSI, 32529.01, JB
Projection: NAD 1983 StatePlane Virginia South FIPS 4502 Feet

WFF Causeway Bridge Replacement Project

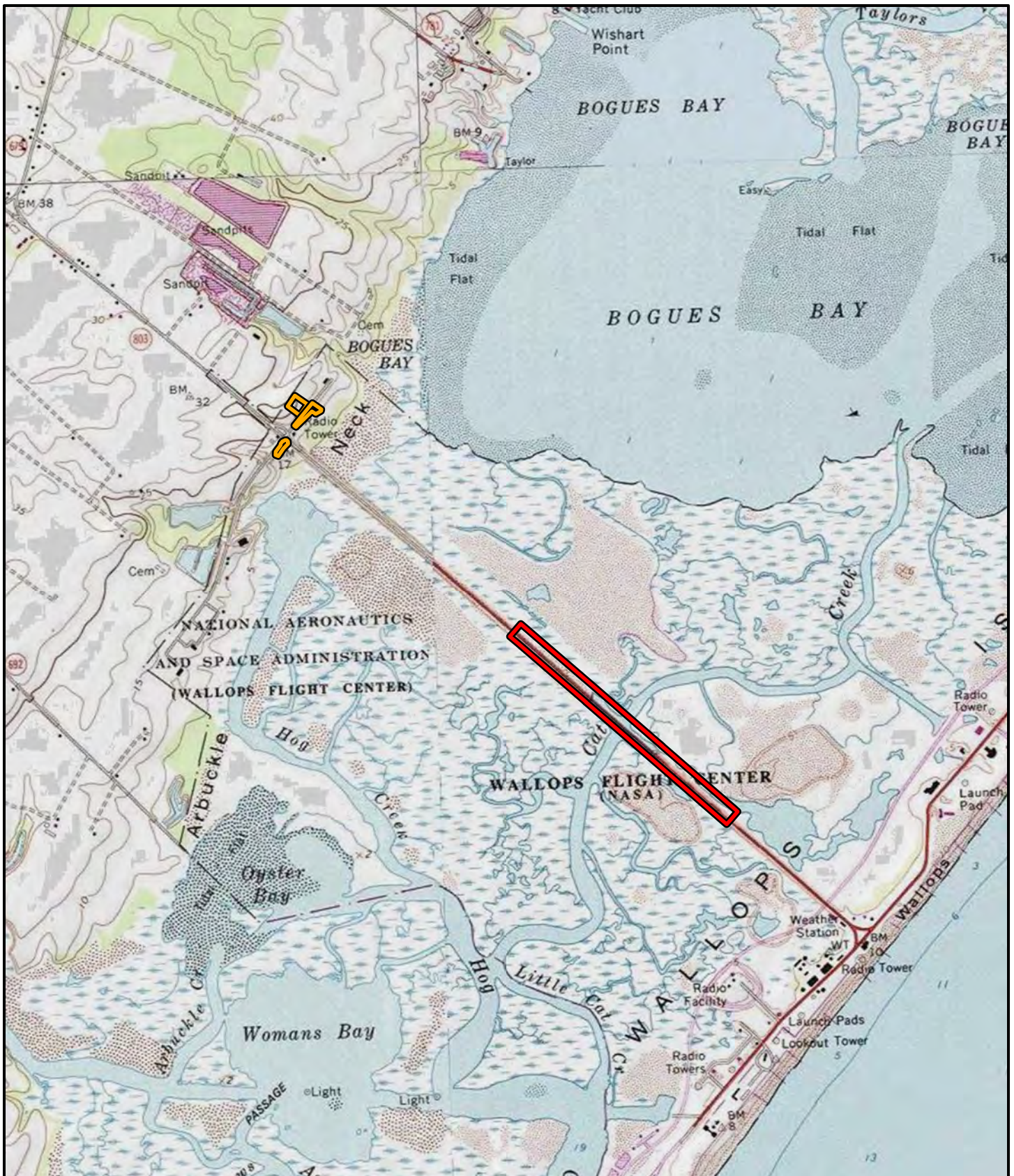
Wallops Island is a barrier island located along Virginia's Atlantic coast. The 3-kilometer (km) (2-mile [mi]) long Wallops causeway and bridge, owned and maintained by NASA, connects Wallops Island to the Mainland. Encompassing approximately 1,375 ha (3,400 ac) and surrounded by water, Wallops Island is approximately 11 km (7 mi) long by 2.4 km (1.5 mi) wide. The Atlantic Ocean borders Wallops Island to the east, and Chincoteague Inlet delineates the northern coastline. Marshland, interlaced with small creeks, covers the entire western approach to Wallops Island. As shown on **Figure 1-2**, topography in the Project Area is generally flat.

1.3 NASA's Mission

For over 70 years, WFF has flown thousands of research vehicles in the quest for information on the flight characteristics of airplanes, launch vehicles, and spacecraft, as well as to increase knowledge of the Earth's upper atmosphere and the near space environment. WFF supports aeronautical research, science, technology, and education by providing NASA Centers and other U.S. government agencies access to resources such as special use (i.e., controlled/restricted) airspace, research runways, and launch pads. WFF regularly provides launch support for the commercial launch industry, either directly or through the Mid-Atlantic Regional Spaceport (MARS). WFF facilitates a wide array of U.S. Department of Defense research, development, and training missions, including target and missile launches, and aircraft development. The flight programs and projects supported by WFF range from small sounding rockets, unmanned scientific balloons and Unmanned Aircraft Systems (UAS), manned aircraft, and orbital tracking, to next generation launch vehicle development, launch vehicles, and small and medium classed orbital spacecraft. WFF conducts many of these programs from the Main Base research airport, the MARS UAS Airstrip, and the Wallops Island launch range.

NASA and its partners use the Mainland and Wallops Island sites for testing and launch activities, U.S. Navy training, and research facilities. The Mainland facilities include storage buildings, high speed cameras, radar antennas and transmitter systems, and associated buildings.

The southern end of Wallops Island primarily houses the launch complexes and associated structures. The central part of the island includes launch integration facilities and Navy facilities including the Advanced Enterprise Global Information Technology Solutions, the Wallops Island Engineering Test Center, and Ship Self Defense System. The northern part of Wallops Island includes the MARS UAS Airstrip, blockhouses, assembly shops, dynamic balancing facilities, tracking facilities, payload processing and fueling, and other related support structures. Restricted airspace managed by NASA overlies all of Wallops Island, the Mainland, and the Main Base (NASA 2019).

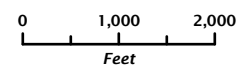


Legend

- Project Area
- Staging Area



**FIGURE 1-2
USGS TOPOGRAPHY**



Sources: NASA, USA Topo Maps/ Prepared by: WSSI, 32529.01, JB
Projection: NAD 1983 StatePlane Virginia South FIPS 4502 Feet

WFF Causeway Bridge Replacement Project

1.4 Purpose and Need

1.4.1 Background for Purpose and Need

The Wallops Island Causeway Bridge is situated on an east-west alignment above Cat Creek. Information on the existing bridge is provided below. **Photos 1-1, 1-2, and 1-3** show the existing bridge.

- The bridge was constructed in 1959-1960 and is located on a 3-km (2-mi) long causeway road connecting the Mainland with Wallops Island.
- The bridge has two 3.1 meters (m) (10 foot [ft]) lanes, 0.3 m (1 ft) shoulders, and guardrails, and curbs for a total width of 8.2 m (27 ft) (see **Photo 1-3**). It is 391 m (1,284 ft) long, has a cast-in-place concrete deck with 21 spans, and is supported by prestressed concrete beams on 20 concrete piers.
- The center of the bridge is 13.7 m (45 ft) above the mean water elevation of Cat Creek with a vertical clearance of 12.2 m (40 ft) above mean high water (MHW) and a horizontal clearance of 18 m (60 ft) through the main navigation span.



Photo 1-1. Aerial View of the Existing Causeway Bridge from the North Looking South



Photo 1-2. Photo of the Existing Causeway Bridge from the Southwest End of the Bridge Looking East.

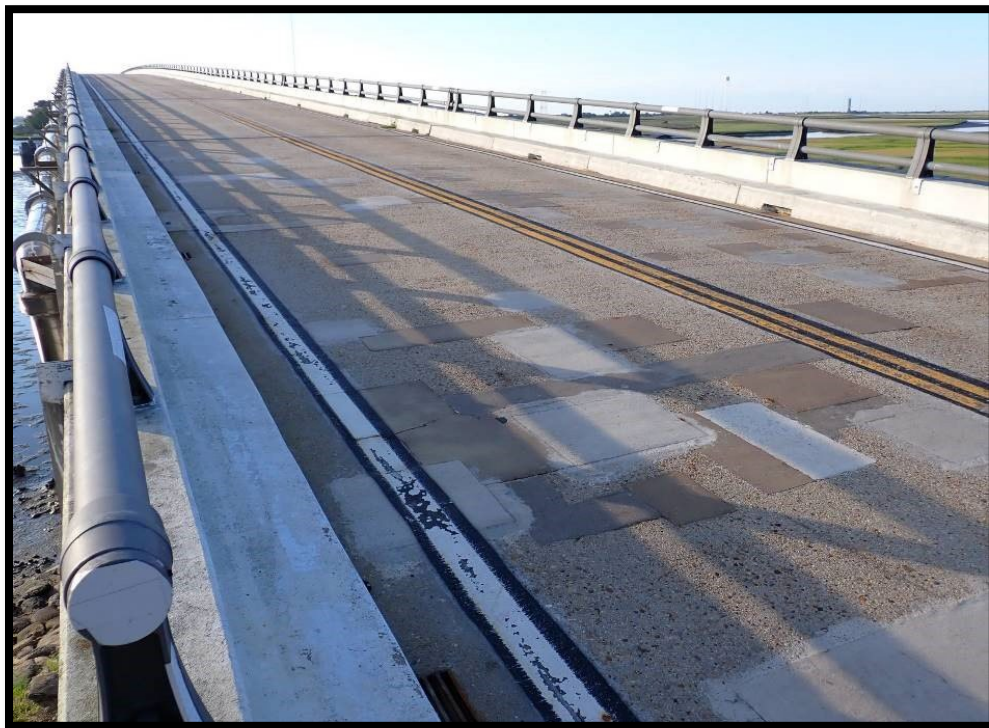


Photo 1-3. View of the Causeway Bridge Deck.

1.4.2 Purpose

The specific purpose of the Proposed Action is to allow NASA, its tenants, and customers to continue transporting personnel, mission hardware, and equipment via roadway and bridge to Wallops Island once the existing Causeway Bridge is decommissioned at the end of its service life.

The strategic purpose of the Proposed Action is to support NASA's mission by providing safe, efficient, and reliable transportation and improving the sustainability of operations by incorporating climate change resilience in the new bridge design. The new bridge, which is being designed for a longer service life than the existing bridge (the design service life will be at least 75 years), would provide cost-effective, environmentally responsible solutions for updating NASA's transportation infrastructure.

1.4.3 Need

The Causeway Bridge is approximately 65 years old and at the end of its service life. The structure was rehabilitated in 1986, including shotcrete repairs to the prestressed concrete beams. The structure was rehabilitated again in 2013 and 2021; both renovations primarily consisted of applying fiber reinforced polymer to the prestressed concrete beams, and performing major repair work on the pier caps, along with other improvements. All possible repairs on the bridge girders (the structures supporting the bridge deck) have been conducted; the next step would be full replacement of the girders, which would result in a long-term bridge closure.

The most recent bridge inspections were conducted in 2020 and 2022. The 2020 inspection report determined that bridge components are showing signs of accelerated structural deterioration (Clark Nexsen 2020). The report identified structural deficiencies and concluded that due to the current condition of the structure, the remaining design life of the 2013 repairs, and the functional obsolescence and mission critical nature of the structure, it is appropriate to prepare to replace this structure by 2025. The 2022 Clark Nexsen inspection report noted that recent repairs, completed in 2021 to address areas of immediate concern and extend the bridge life, were overall very successful. NASA would continue to conduct bridge deck repairs as needed based on routine inspections to keep the existing bridge in service until the new bridge is open.

The Causeway Bridge provides the only vehicular access to and from Wallops Island; therefore, the bridge is mission critical since NASA components, supplies, materials, staff, and visitors related to NASA and tenant operations on the island cross this structure. The amount of vehicular traffic, the size of transport trucks, and the frequency of "super-loads" crossing the bridge has increased significantly in the past decade. This level of use has exacerbated the deterioration of the bridge and is expected to continue to increase with the anticipated growth in mission activities. Therefore, additional load capacity is vital to support future flexibility.

Construction of the new bridge while the existing bridge remains open to traffic is critical; thus, a new bridge needs to be constructed such that traffic can be transferred from the existing bridge prior to the anticipated end of its service life in 2025. Not only would continual deterioration of

the existing bridge result in unsafe conditions for transport to and from Wallops Island, there is also the potential that people, vessels, and animal species under the bridge in Cat Creek could be struck by deteriorated parts from the structure. Even with ongoing maintenance and repairs to the bridge, there is a significant risk to NASA, Navy, and MARS missions if superstructure replacement or complete bridge replacement is not considered within the next few years.

To support NASA's and its tenants' missions at Wallops Island, and to protect travelers under the bridge, a new bridge is needed to provide a safe and reliable means for transportation from the Mainland to the island into the future.

1.5 Participating and Cooperating Agencies

As stated in 23 CFR § 139, a federal Lead Agency shall identify any other federal and non-federal agencies that may have an interest in the project to become Participating Agencies in the environmental review process. A Participating Agency is responsible for providing comments, responses, studies, or methodologies on those areas within the special expertise or jurisdiction of the agency and shall use the process to address any environmental issues of concern to the agency.

As defined in 40 CFR § 1508.5, and further clarified in subsequent CEQ memoranda, a Cooperating Agency can be any federal, state, tribal, or local government which has jurisdiction by law or special expertise regarding any environmental impact involved in a proposal or a reasonable alternative.

NASA, as the property owner and project proponent, is the Lead Agency and is responsible for ensuring overall compliance with the applicable environmental statutes. FHWA will serve as a Participating Agency because of its role in undertaking design and oversight of the construction of the new Causeway Bridge and approach road. USACE and USCG will serve as Cooperating Agencies since USACE would authorize permits under Section 404 of the Clean Water Act (CWA), Section 10 of the Rivers and Harbors Act, and Section 14 of the Rivers and Harbors Act (commonly referred to as Section 408), and USCG would issue a Bridge Permit for the bridge reconstruction.

1.6 NEPA Guidance and Public Participation

This EA was prepared consistent with the CEQ regulations for implementing NEPA (40 CFR 1500-1508); and NPR 8580.1 *Implementing the National Environmental Policy Act* as promulgated in 14 CFR § 1216.3.

In preparing this environmental analysis, NASA used the following process:

1. **Scoping and Consultation** – FHWA and NASA jointly conducted public, agency, and stakeholder scoping in 2020. Scoping letters were sent to federal, state, and local government agencies in August 2020, requesting comments on the proposed project to reconstruct the Causeway Bridge. Coordination and consultation with regulators began in 2021. Scoping comments are included in **Appendix A**, Participating Agency Scoping and Coordination.

2. **Draft EA** – The Draft EA analyzes the environmental consequences of the Proposed Action and the No Action alternative. It included the Purpose of and Need for the Proposed Action, the description of the alternatives, the existing environmental conditions where the Proposed Action would take place, and the environmental consequences of implementing the alternatives. The Draft EA is supported by detailed technical studies.
3. **Draft EA Notice of Availability and Notice of Public Meeting** – Advertisements will be placed in three newspapers local to WFF – the *Shore Daily News*, the *Eastern Shore News*, and the *Eastern Shore Post* – notifying the public of the availability of the Draft EA. NASA will also place notices at the WFF Visitor Center notifying the public of the availability of the Draft EA.
4. **Public Comment Period** – Federal, state, and local agencies and members of the public will be invited to provide written comments on the Draft EA over a 30-day period. Electronic versions of the Draft EA will be available to the public on the project website at <https://code200-external.gsfc.nasa.gov/250-WFF/C-BREAs>. NASA will host a public meeting at the WFF Visitor’s Center during the Draft EA public review period. Written comments on the analysis and findings presented in the Draft EA will be accepted throughout the 30-day public comment period. Comments on the Draft EA can also be submitted at the public meeting.
5. **Final EA/Finding of No Significant Impact (FONSI) or Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS)** – Following the public comment period, NASA will make an official determination on whether an EIS is required or if the EA analysis supports a FONSI. If a FONSI is warranted, NASA will prepare the Final EA based on comments received during the public comment period. Advertisement of the Final EA and signed FONSI will be published in the *Shore Daily News*, the *Eastern Shore News*, and the *Eastern Shore Post*. The Final EA will be made available at the following libraries: Chincoteague Island Library, Chincoteague, Virginia, and the Eastern Shore Public Library, Accomack, Virginia. The Final EA will also be made available online at <https://code200-external.gsfc.nasa.gov/250-WFF/C-BREAs>. If NASA determines an EIS is required, an NOI will be published in the Federal Register.

2 Description of the Proposed Action and Alternatives

2.1 Introduction

This chapter describes the Proposed Action to construct a new Causeway Bridge connecting NASA WFF's Mainland to Wallops Island. Section 2.2 describes the alternatives considered to implement the Proposed Action. Section 2.3 describes the Proposed Action and Section 2.4 describes the No Action Alternative. Section 2.5 discusses the environmental review process and use of the envelope concept in the EA analysis. Finally, Section 2.6 summarizes the potential environmental impacts of the Proposed Action and No Action alternatives.

2.2 Alternatives

NASA considered several alternatives for the Proposed Action. This Section presents the following process that was used for the development and selection of alternatives:

- 1) Alternatives initially considered;
- 2) Alternatives screening criteria;
- 3) Alternatives considered but not carried forward for EA analysis; and
- 4) Alternatives carried forward for EA analysis.

2.2.1 Alternatives Initially Considered

NASA and FHWA began discussing conceptual alternatives prior to 2018, and in 2018, NASA and FHWA conducted a Value Analysis Study (Kirk and JMT 2018) in which several design options for construction of a new bridge were identified. The design options initially considered by NASA and FHWA represent differences in structure size, materials, alignment, and construction methods (see Section 2.3.4, *Construction of a New Bridge*).

The final design options would be chosen during the Design-Build process (see Section 2.5.1, *Design-Build Process*). Through the Value Analysis process and subsequent review of design options, NASA determined there are only two action alternatives carried forward for screening analysis in the EA: construction of a new bridge and construction of a causeway.

2.2.1.1 Alternative One: Construct a New Bridge

Construct a new bridge on a new alignment and demolish the existing bridge within 5 years of opening of the new bridge. The new bridge would be constructed adjacent to the existing bridge while the existing bridge remains open. There are various options for bridge types and methods of construction (see Section 2.3.4, *Construction of a New Bridge*).

2.2.1.2 Alternative Two: Construct a Causeway

Construction of a causeway would include extending the roadway with fill and stone across the entire width of Cat Creek. This alternative could also include a combination of extending the

existing causeway on both sides of Cat Creek and constructing a shorter bridge to connect the Mainland with Wallops Island.

2.2.1.3 No Action Alternative

The No Action Alternative reflects the status quo, in which a new bridge would not be constructed, and NASA and its tenants would continue using the existing Causeway Bridge, conducting maintenance and rehabilitation of the existing bridge until structural deficiencies necessitate a full closure. A full closure would be determined based on future inspections and would be implemented to protect those using the bridge for travel and those using water-based transportation underneath the bridge.

2.2.2 Screening Criteria

NASA applied the following screening criteria to assess which alternatives met the purpose of and need for the Proposed Action. A feasible alternative must meet all screening criteria to be carried forward for analysis in the EA.

Criterion 1: Service Life of 75+ Years with Minimized Maintenance

The service life of the new bridge must exceed 75 years, and to minimize maintenance, the construction material would need to be appropriate for the marine water environment.

Criterion 2: Transport of Large Loads Cannot be Constrained

Transportation across the bridge cannot be constrained, i.e., there must be no overhead or wide-width clearance restrictions due to cables or other bridge infrastructure that are above the bridge deck.

Criterion 3: Cat Creek Must Remain a Navigable Waterway

Cat Creek must remain a viable waterway for public transportation, commercial vessels, and recreation. Cat Creek is considered a “navigable” waterway by USACE and must remain open to vessel traffic. Therefore, the new bridge must provide at least 3.9 m (12.8 ft) of vertical clearance above MHW and at least 18.3 m (60 ft) of horizontal clearance through the main navigation span of the bridge (USCG 2021).

Criterion 4: Minimizes Disturbance to Sensitive Environmental Resources

Potential impacts to Waters of the U.S. (WOTUS) and other environmental resources must be minimized.

Criterion 5: Incorporate Climate Change and Storm Surge Resiliency

To improve the efficiency, reliability, and sustainability of operations, climate change and storm surge resilience must be incorporated into the new bridge design.

2.2.3 Alternatives Considered but Not Carried Forward

NASA dismissed Alternative Two: Construct a full or additional Causeway (beyond existing abutments) from further consideration because it failed to meet Criterion 2, 3, and 4, and is not considered a practicable alternative. Construction of a Causeway would result in substantial impacts to WOTUS, would close Cat Creek to navigation, and would not incorporate climate change or storm surge resilience.

2.2.4 Alternatives Carried Forward for Analysis

NASA will carry the following alternatives forward in the EA for analysis:

- **Alternative One (the Proposed Action):** Construct a new bridge on a new alignment and demolish the existing bridge within 5 years of the new bridge opening. While variations in the construction methods and bridge design would be determined during the Design-Build process, NASA has determined that this is the only action alternative that meets the Purpose and Need.
- **No Action Alternative:** The No Action Alternative reflects the status quo, in which a new bridge would not be constructed, and NASA and its tenants would continue using the existing Causeway Bridge indefinitely, conducting maintenance and rehabilitation of the existing bridge until structural deficiencies necessitate a full closure. NASA has conducted all repairs possible on the bridge girders (the structures supporting the bridge deck); the next step would be full replacement of the girders, which would result in a long-term bridge closure.

The Proposed Action (Alternative One: Construct a New Bridge), and the No Action Alternative are described in Sections 2.3, *Proposed Action*, and 2.4, *No Action Alternative*, respectively.

2.3 Proposed Action

Under the Proposed Action, NASA would construct a new Causeway Bridge on a new alignment between the WFF Mainland and Wallops Island. The new bridge would be constructed parallel to the existing bridge, using the same Wallops Island causeway road for ingress and egress.

The Proposed Action also includes demolition of the existing bridge within 5 years after the new bridge is opened. The Proposed Action consists of the following project elements, which are listed in approximate order of sequence. Each element is discussed in further detail below.

1. Site preparation and staging areas
2. Construction of temporary construction access(es)
3. Construction of a new bridge including the installation of all superstructure and substructure elements such as abutments, piers, beams, and decks
4. Removal of temporary construction access
5. Construction of temporary access for demolition of existing bridge

6. Demolition of the existing bridge
7. Removal of temporary access used to demolish the bridge
8. Periodic maintenance and repairs over the 75+ year life of the bridge

Figure 2-1 shows the existing bridge, proposed new bridge alignment, proposed maximum limits of disturbance (LOD), and staging areas.

2.3.1 Site Preparation and Staging Areas

Site preparation would include establishing staging areas, clearing, grading, building embankments for approaches to the new bridge, installing cofferdams, excavating, and filling (as needed) to install temporary construction access(es). NASA has identified three staging areas, all near the security gate to the WFF Mainland, which are shown on **Figures 2-1** and **2-2**. The three staging areas combined encompass 0.91 ha (2.52 ac) (the individual areas are 0.42 ha [1.04 ac], 0.32 ha (0.79 ac), and 0.17 ha [0.43 ac]). They are currently open space covered with grass that is maintained by mowing. The Causeway Road shoulders may also be used for temporary parking and staging of materials and equipment in accordance with FHWA and NASA safety standards as the Causeway Road will remain open during the entirety of the project.

Permanent and temporary erosion and sediment control (ESC) measures would be implemented during site preparation and throughout construction. The type of measures would depend on final bridge design (see Section 2.5.1, *Design-Build Process*) and may include slope reinforcement, riprap for armoring, retaining walls, perimeter controls (such as silt fence), timber mats, slope stabilization (such as mulching and seeding), cofferdams, and turbidity curtains/controls.

2.3.2 Construction and Demolition Equipment





Construction and demolition are expected to occur primarily from land and from temporary construction access platforms. Equipment used may include excavators, backhoes, skid loaders, cranes, aerial lifts, pile driving equipment, generators, and hydro platforms (hydro platforms are essentially scaffolding that hangs under the bridge).

Additionally, some of the work may be accomplished from vessels, including boats, tugboats, and small barges. Regardless of the construction methods selected, the use of vessels is anticipated to be minor. Cat Creek has not been dredged or maintained by USACE in recent years and the shallow depth limits the size of vessels that could access the Causeway bridge; however, dredging is not included in the methods of this Proposed Action. Although work could occur from floating barges, which could be sunk into the mud, due to shallow water in the Project Area, NASA anticipates that most work would be done from land and temporary construction access.

Temporary lighting would be used to illuminate shadowed areas on the underside of the bridge(s) or if night work is needed.

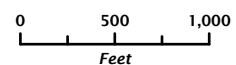


Legend

-  Staging Area
-  Proposed Causeway Bridge
-  Bridge Envelope Limits of Disturbance
-  Wallops Flight Facility Boundary



**FIGURE 2-1
PROJECT OVERVIEW**



WFF Causeway Bridge Replacement Project



Sources: NASA, VGIN / Prepared by: WSSI, 32529.01, JB
Projection: NAD 1983 StatePlane Virginia North FIPS 4501 Feet



WFF Mainland
Security Gate

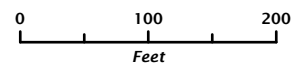


Legend

-  Staging Area
-  Wallops Flight Facility Boundary



**FIGURE 2-2
STAGING AREAS
LIMITS OF DISTURBANCE**



WFF Causeway Bridge Replacement Project

Sources: NASA, VGIN / Prepared by: WSSI, 32529.01, JB
Projection: NAD 1983 StatePlane Virginia North FIPS 4501 Feet

2.3.3 Temporary Construction Access

To access the areas needed to construct the new bridge and demolish the existing bridge, the following methods could be used:

- “on-grade” access,
- construction of a temporary bridge, or
- a combination of on-grade access and construction of a temporary bridge.

2.3.3.1 On-Grade Access

Portions of the work would be done “on-grade,” meaning equipment would operate from existing ground and bridge surfaces. Matting would be placed on the ground in areas that are soft or environmentally sensitive (such as tidal wetlands) from which heavy equipment could access construction areas and operate. Rock and fill could be used to extend the working land area, and barges could be sunk into mud to provide a stable surface from which to conduct construction and demolition activities.

2.3.3.2 Temporary Bridge

Typically, for this type of environment and bridge size, a temporary access may have vertical steel piles driven into the creek bed and intertidal mud flats to support the bridge beams and deck, on which the construction vehicles, workers, cranes, etc. would operate. The piles may be formed by using multiple steel liner plates or pipe piles, driven using vibratory or drop hammers, and braced using diagonal braces. On the top of steel-piles, cross beams and seating girders would likely be placed to support the load from main longitudinal beams. Usually, longitudinal beams/trusses are used to directly support the load of heavy construction equipment such as a crane, on the top of which a concrete deck slab or alternate decking would be placed.

The FHWA 30% design plans estimate that up to 144, 12-inch (in) steel piles would be installed for each temporary construction access (for a total of approximately 300 piles if two temporary bridges [one for new bridge construction and one for existing bridge demolition] are used), though other design solutions may not include piles or a different number of piles for construction access.

Temporary accesses are often constructed using an “end-on” method, which means the crane and piling rig stand on the shoreline and drive the first row of piles in the water. When the first row of piles is driven, the crane places steel beams or trusses on the top of the pile and abutment, followed by the deck elements (concrete or wooden planks or steel plates, handrails, etc.). Once the first span is ready, the crane rig moves forward on the span to drive the second row of piles, and then to place the second span, following the same process as the first span. This process would be repeated until the temporary access is completed.

A temporary construction access, if used to construct the new bridge, would likely be removed soon after completion of the new bridge. If a separate temporary construction access is used to aid in demolishing the existing bridge, it would either be removed in parts along with the existing

bridge or after the bridge is fully demolished. The temporary construction access would be removed with construction vessels such as tugboats or barge-mounted cranes or from the temporary bridges themselves.

2.3.4 Construction of a New Bridge

NASA would construct a new bridge in the approximate alignment shown on **Figure 2-3**. The information presented in this section is based on FHWA's 30% design plans for the bridge. Relevant plan sheets of the FHWA 30% design plans are provided in **Appendix B**. However, because the structure and type of the bridge, the alignment, and the bridge geometry may vary based on the proposal of the Design-Build contractor (see Section 2.5.1, *Design-Build Process*), the elements and details presented here are subject to change. NASA has established an "envelope" with a range of designs that meet the Purpose and Need (see Section 2.5.2, *Envelope Concept*).

2.3.4.1 Design Standards

The Causeway Bridge replacement project would follow the guidelines of the FHWA's *Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects* FP-14 manual (FHWA 2014). Both NASA and FHWA will review and approve of design plans from preliminary through final.

2.3.4.2 Material

The material used would most likely be concrete, which could include cast-in-place or precast deck and pier caps, precast prestressed beams and piles, or concrete box girder (girders are essentially large beams [FHWA 2023]). Prestressed concrete has tension or stress applied to the concrete beam before it is placed in position. Box girders may be comprised of concrete sections that are post-tensioned together after they are placed in position. While other material options are available, they are not likely to be used; for example, a steel bridge would require a high degree of maintenance given its expected corrosion over time in a marine environment.

2.3.4.3 Bridge Size

The length of the new bridge would depend on the design but is anticipated to be longer than the existing bridge (i.e., 391 m [1,284 ft]), up to approximately 600 m (1,950 ft) long. It would have multiple spans and may vary in the number of segments and length of each segment. The FHWA 30% design is for a bridge consisting of nine main spans totaling 411 m (1,350 ft) with 45 m (150-ft) spans and ten approach spans totaling approximately 180 m (600 ft) with 18-m (60-ft) spans.

The weight capacity of the proposed bridge does not need to be increased, but it may increase depending on final design.

The existing bridge has a 6% maximum slope, which is based on a previous USCG height requirement above MHW. With a 6% slope on the existing bridge, large materials and equipment travelling to Wallops Island, such as rocket components, require the aid of special transport equipment that has independently controlled axles.



Existing Bridge
to be Demolished

Cat Creek

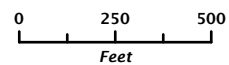


Legend

- Proposed Causeway Bridge
- FHWA 30% Plan Limits of Disturbance
- Bridge Envelope Limits of Disturbance



**FIGURE 2-3
FHWA 30% DESIGN PLAN
LIMITS OF DISTURBANCE**



WFF Causeway Bridge Replacement Project

Sources: NASA, VGIN / Prepared by: WSSI, 32529.01, JB
Projection: NAD 1983 StatePlane Virginia North FIPS 4501 Feet

NASA prefers a low-profile bridge with a lesser slope than 6% so that special transport equipment would no longer be required. **Exhibit 2-1** illustrates a potential design for a low-profile bridge for comparison alongside the existing bridge. A lower bridge height over a longer bridge length would decrease the slope of the new bridge.



Exhibit 2-1. Illustration of a Low-Profile Bridge Compared to the Existing Bridge.

USCG and USACE regulate the vertical and horizontal clearance of bridges and may impose conditions relating to the construction, maintenance, and operation of the bridge that would be in the interest of public navigation. In a Preliminary Navigation Clearance Determination dated May 11, 2021, USCG stated that the proposed new bridge should provide at least 3.9 m (12.8 ft) of vertical clearance above mean high water (the existing bridge has a higher vertical clearance of 12.2 m [40 ft] above mean high water) and at least 18 m (60 ft) of horizontal clearance through the main navigation span of the bridge (the existing bridge meets this requirement). The Preliminary Navigation Clearance Determination was valid for 3 years (USGS 2021). NASA and FHWA are in the process of renewing the Preliminary Navigation Clearance Determination with USCG to include the proposed construction timeline of the new bridge.

NASA anticipates a total bridge width of approximately 12 m (40 ft). To support larger materials and equipment, including “super-loads,” NASA would require two 3.7 m (12 ft)-wide travel lanes. The width of the shoulders and curbs may vary depending on final design; using the example of a 12 m (40 ft)-wide bridge, the shoulders and railings would be 4.9 m (16 ft) combined.

2.3.4.4 Design Options

The bridge design would be determined during the Design-Build process. Some design options are listed below; however, the Design-Build contractor may propose other design solutions.

- Precast prestressed concrete bulb-tee bridge with varying span lengths such as 18.3 to 45.7 m (60 ft to 150 ft) long spans.
- Precast concrete segmental bridge with 60 m (200 ft) long spans.

- Precast prestressed concrete bridge with shorter spans (18 to 36 m [60 to 120 ft] long spans).
- Long span concrete segmental bridge. This design is possible but unlikely because it would create a deep superstructure that would result in an increase in bridge height compared to the existing bridge.
- Long span cable stay bridge. A cable bridge is unlikely because the cables and bridge structure above the bridge deck would inhibit movement of large loads.
- Precast tub girder superstructure. This bridge type is ideal for curved applications and not for straight design and creates a heavy structure that can support 9,800 kilograms per square meter (m²) (2,000 pounds per square foot [ft²]). Deck components would be cast in place.

2.3.4.5 *Methods of Construction*

While the method of bridge construction would be up to the Design-Build contractor (with NASA and FHWA approval), this section provides examples of two methods that could reasonably be used for this bridge replacement: the “Temporary Bridge Method” and “Top-Down Method.”

- *Temporary Bridge Method.* This method follows the same initial approach for temporary staging clearing, subgrade work, and grading for the on-ramps, but a temporary bridge would be constructed from which cranes and other equipment would be placed to build the new bridge adjacent to the trestle. The temporary bridge would be supported by temporary piles driven into the ground to support the trestle network. Once the new Causeway Bridge was completed, the temporary bridge and supporting temporary piles would be removed. Restoration of wetlands that may have been temporarily impacted by the temporary bridge construction may be required. The construction design could call for a temporary earthen causeway into the marsh to begin construction of the temporary bridge. Cofferdams (i.e., a wall that is sealed into the creek bed around a designated workspace, which is then dewatered) could also be used with this method.
- *Top-Down Method.* The approach would be to install ESC measures before beginning construction. Clearing of brush for the temporary construction staging areas proximal to either end of the existing bridge would take place. The cleared vegetation would be transferred to an approved landfill for disposal. Subgrade excavation would be required to remove unsuitable soils, if they exist, and placement of subgrade foundation rock for footings and ramps on either side of the waterway would occur. New grades would be established leading to the on-ramp for each end of the Causeway Bridge. With the Top-Down Method, bridge segments would be built in stages. As each new section is completed, that section would then be used to extend out for construction of the next new section. This approach could be used starting at one end and building across the waterway to the other side, or construction could begin on both sides and meet in the middle. To conduct work in the water, such as installing bridge supports, cofferdams may be used.

2.3.4.6 Substructure Support (Piles or Drilled Shafts)

Different types of permanent deep foundations could be used in construction depending on the bridge design; however, NASA anticipates that the piles would be concrete, and that no other material (such as steel or timber) would be used. Drilled shafts can most likely be built without needing to install temporary cofferdams. However, the use of piles may require the installation of temporary cofferdams at some locations. The FHWA 30% design plans estimate that up to 196 concrete piles that are 91-centimeters (cm) (36-in) in diameter would be installed for the new bridge.

The existing Causeway Bridge has several utilities attached to it including water, sewer, electric, and communications. A recent leak in the water line necessitates an imminent replacement of the damaged line. Therefore, new utility infrastructure is currently being planned under a separate action prior to the implementation of this Proposed Action. NASA anticipates that new utilities (i.e., water, sewer, electric, and communications) would be installed under Cat Creek via horizontal directional drilling (HDD) before construction would start on the new Causeway Bridge.

There would likely be several additional piles installed in the upland areas on both sides of the new bridge under the bridge approaches (Sheet B02 on the FHWA 30% plans in **Appendix B** illustrates upland piles in cross-section view).

2.3.5 Demolition

Once the new bridge is open, NASA would demolish the existing Causeway Bridge and remove all bridge debris. It is possible that cofferdams would be used to drive sheet walls around the base support structures, which would allow the area to be dewatered to enable work to occur on the creek bottom and intertidal mud flats. The existing support pilings would likely be left in place and cut off at least 2 feet below the “mud line” (the creek bottom).

Concrete piles or pieces of debris created during removal of the bridge and support piles would be removed, brought to shore, transferred to a dump truck, and hauled either to an onsite stockpile area or directly to a recycling facility. The debris may be removed partially by barge in the deeper waters, or by a “top down” method where debris is loaded onto trucks and carried off the bridge, or through use of a temporary platform placed south of the existing bridge. Materials determined not to be recyclable or reusable would be properly disposed of at an approved landfill, in accordance with local, state, and federal regulations. The amount of demolition debris generated is estimated to be approximately 18,000 metric tons (20,000 tons). The use of explosives would not be authorized for any demolition-related activities.

In scoping comments dated September 22, 2022, the Virginia Marine Resources Commission (VMRC) recommended coordination with the VMRC Artificial Reef Program to determine if bridge demolition debris could be used in the program. NASA initiated coordination with the VMRC Artificial Reef program on February 21, 2023; NASA, FHWA and VMRC discussed the

project on March 9, 2023, and will continue to work together through the Design-Build process to identify how demolition debris could be used as artificial reefs.

2.3.6 Project Timeline

The Design-Build contract is planned to be awarded in the spring of 2024. Although the design award can be given prior to concluding the NEPA process, construction would not begin until the NEPA decision document is signed. NASA anticipates that project design would conclude approximately 1 year after award (2025) and that construction of the new bridge, including site preparation and temporary construction access(es), would be completed 2 years after design (2027). Once the bridge is open to traffic, the existing bridge would be demolished. Dismantling and removal would take approximately 5 to 9 months and is anticipated to begin within 5 years of the new bridge opening, depending on funding (i.e., demolition is anticipated to occur as early as 2027 or as late as 2032). The new bridge would be designed to have a service life of at least 75 years.

2.4 No Action Alternative

CEQ regulations (40 CFR Part 1502.14(c)) for implementing NEPA require analysis of a No Action Alternative. “No Action” means that implementing the Proposed Action would not occur. The resulting environmental effects from taking No Action are compared to the anticipated effects of implementing the Proposed Action. Under the No Action Alternative, NASA would not construct a new Causeway Bridge and the existing bridge would remain in place. NASA would conduct maintenance and rehabilitation of the existing bridge until structural deficiencies necessitate a full closure.

2.5 Use of this Environmental Assessment

This EA evaluates the environmental effects of constructing a new bridge and demolishing the existing Causeway Bridge. As several different methods of design and construction could be used, the largest “footprint” was chosen as the demonstration, or “envelope,” bridge design to provide a benchmark for assessing impacts to resources at WFF and the surrounding environment. The envelope concept is described below in more detail.

2.5.1 Design-Build Process

NASA is using the Design-Build process for design and construction of the Proposed Action. With Design-Build, the federal agency typically completes between 5 to 30 percent of the preliminary design before it is released to a Design-Build contractor for final design. This process is unlike traditional construction projects where 100 percent of the project is designed in advance of the construction contractor being selected.

Prior to the Design-Build process, NASA and FHWA conducted a Value Analysis Study, including a workshop with key members from the NASA and FHWA, to identify risks (technical, environmental, financial, etc.) and project goals, and to determine if the project scope should be

adjusted to adequately address identified risks. Although project alternatives were identified (and some dismissed) during the Value Analysis, as noted in Section 2.2.3, *Alternatives Considered but Not Carried Forward*, the Design-Build contractor would have the opportunity to propose their own structural design and construction and demolition methods. From here, all project team members (NASA, FHWA, and the Design-Build contractor) would work together to develop the best possible design for project success. A benefit of the Design-Build delivery method is that it provides an opportunity for the Contractor to incorporate alternative technical concepts at the design and construction phases to deliver projects and provide cost savings more efficiently.

FHWA prepared preliminary design plans in 2020, and in January 2023, FHWA updated those plans to a 30% level of design (**Appendix B**). The FHWA preliminary and 30% designs provide an overview of the potential construction methods, bridge style, and LOD that convey enough information about the project to assess the potential environmental impacts. However, the FHWA design may be changed by the Design-Build contractor, and therefore is considered conceptual.

For Design-Build projects, FHWA, as the design lead would ensure that the requirements set by 23 CFR Part 636, which include those imposed to protect the objectivity and integrity of the NEPA process during the environmental review and Design-Build process, would be met. The Design-Build process provides flexibility by allowing projects to be advertised and selected while the NEPA process is being concluded. The process recognizes the requirement for obtaining NEPA approval (e.g., issuance of a FONSI) before ground disturbance can commence.

2.5.2 Envelope Concept

The nature of the Design-Build process in which NASA would obtain a contractor to design the new bridge could result in the final design differing from the January 2023 FHWA 30% design plans provided in this EA. Therefore, to adequately understand the potential footprint and to evaluate the environmental impacts of the Proposed Action, NASA is applying the envelope concept to the EA analysis.

The envelope concept facilitates the environmental analysis and documentation process by providing a threshold below which, if not exceeded, further in-depth NEPA analysis would not be needed. For this EA, an “envelope” for the LOD has been identified and is presented in **Figures 2-1 and 2-3** as a scenario with the greatest potential for environmental impacts.

The total area of the envelope is 9.96 ha (24.6 ac). The envelope extends:

- 45.7 m (150 ft) to the north of the existing roadway centerline
- 30.5 m (100 ft) south of the existing roadway centerline
- 1,306 m (4,284 ft) east to west (along the long edge of the envelope rectangle)

Although FHWA has prepared 30% design plans, they represent a reference design that can be used to identify potential footprints of disturbance (both temporary and permanent) on which the EA analysis can be based. Once a Design-Build contractor provides bridge construction and demolition designs, NASA would review the plans to determine if the designs fall within the

envelope identified in **Figures 2-1 and 2-3**. The LOD at the bridge associated with FHWA's 30% design plans encompasses 3.5 ha (8.7 ac).

Note that the LOD at the staging areas (2.3 ha [5.7 ac] total for all three staging areas) are not part of the envelope; the envelope only applies to the work area around the Causeway Bridge.

Any proposed bridge design (including construction and demolition) that presents lesser or equal disturbance than presented in **Figures 2-1 and 2-3** may be considered within the purview of this EA. If the new plans do not exceed the envelope, then the NEPA review trigger is not met, and NASA would rely on the findings of this EA. If the new design exceeds the thresholds in this EA, additional NEPA review would be required. Supplemental NEPA analysis would document what changes, if any, have occurred with the project including changes in the design, project limits, scope, new or modified laws and regulations, circumstances, or other new information affecting the project, and provide an analysis of potential impacts to resources.

3 Affected Environment and Environmental Consequences

NEPA requires focused analysis of the areas and resources potentially affected by an action or alternative. The results of the analysis should be presented in a comparative fashion that allows decision makers and the public to differentiate among the alternatives.

CEQ regulations for implementing NEPA (40 CFR Parts 1500-1508) also require the discussion of impacts in proportion to their significance, with only enough discussion of non-significant issues to show why more study is not warranted. The analysis in this EA considers the current conditions of the affected environment and compares those to conditions that might occur should WFF implement either of the Alternatives.

The geographic area for this EA includes any area that would be disturbed by construction and demolition activities and by the staging activities, including uplands, wetlands, and water. **Figures 2-1 and 2-3** show the “envelope” for the LOD for construction and demolition activities. The proposed staging areas are shown on **Figures 2-1 and 2-2**.

Resources Considered but Eliminated from Detailed Analysis

Numerous resources were considered in the *Final Site-wide PEIS* but warrant no further examination in this EA because the resource is not present within the affected environment. **Table 3-1** presents resources that were analyzed in the *Final Site-wide PEIS* and indicates which resources are not discussed in this EA because they are not present within the affected environment, have not measurably changed since the *Final Site-wide PEIS* was completed, or would not be notably affected by the Causeway Bridge Replacement project.

Table 3 1. Resources Considered in this EA

		Resource	Analyzed in Detail in this EA?	If Yes, EA Section If No, Rationale for Elimination
Physical Environment		Noise	Yes	Section 3.1
		Air Quality	Yes	Section 3.2
		Toxic Substances, Hazardous and Regulated Materials, and Waste	Yes	Section 3.3
		Environmental Compliance and Restoration Program, Storage Tank Management	No	No buildings, storage tanks, or historic Areas of Concern in the Project Area
		Munitions and Explosives of Concern (MEC)	No	No MEC within or near the Project Area
		Health and Safety	Yes	Section 3.4
		Land Use	No	Land use would not change
		Land Resources	Yes	Section 3.5
		Surface Waters	Yes	Section 3.6.1
		Stormwater Management (combined with Surface Waters for this EA)	Yes	Section 3.6.1
		Groundwater	Yes	Section 3.6.2
		Wetlands	Yes	Section 3.6.3
		Marine Waters	No	Marine waters are defined as the Atlantic Ocean in <i>Final Site-wide PEIS</i> and would not be directly affected by the proposed project.
		Floodplains	Yes	Section 3.6.4
		Coastal Zone	Yes	Section 3.6.5
		Sea-Level Rise	Yes	Section 3.6.6
Biological Environment		Vegetation	Yes	Section 3.7
		Submerged Aquatic Vegetation (SAV)	No	No SAV in the Project Area (VMRC 2022)
		Wildlife (Terrestrial, Aquatic)	Yes	Section 3.8
		Special Status Species	Yes	Section 3.9
Social and Economic		Airspace Management	No	Project would not affect airspace
		Roads	Yes	Section 3.10
		Rails	No	Project would not affect or use rails

Table 3 1. Resources Considered in this EA			
Resource		Analyzed in Detail in this EA?	If Yes, EA Section If No, Rationale for Elimination
	Water	Yes	Section 3.10
	Potable Water	No	Project site is not near potable water source and would not involve use of potable water
	Wastewater Treatment	No	Project would not involve wastewater treatment
	Electric Power	No	Project would not involve electrical power infrastructure
	Communication	No	Project would not affect communication
	Waste Collection and Disposal Services	No	Project waste collection and disposal services are outlined in the <i>Final Site-wide PEIS</i> . Additionally, demolition debris disposal is addressed in Section 3.3.
	Population	No	Project has no potential to result in changes to population
	Employment and Income	Yes	Section 3.11
	Housing	No	Project has no potential to result in loss or addition of housing
	Environmental Justice (Including Protection of Children)	No	Project has no potential to affect communities outside of WFF
	Visual Resources	No	Project would not result in changes to the viewshed
	Recreation	Yes	Section 3.12
Cultural Resources	Archaeological Resources	Yes	Section 3.13
	Architectural Resources	No	Project has no potential to affect architectural resources

3.1 Noise

Noise is often defined as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, diminishes the quality of the environment, or is otherwise annoying. Noise may be intermittent or continuous, steady or impulsive, and may be generated by stationary or mobile sources. The individual response to similar noise events can vary widely and is influenced by the type and characteristics of the noise source, distance between source and receptor, receptor sensitivity, and time of day.

Noise regulations applicable to the Proposed Action include the Noise Control Act, the Accomack County Code, and those required by the U.S. Occupational Safety and Health Administration (OSHA). Although noted in the *Final Site-wide PEIS* as potentially applicable to the Causeway Bridge Replacement project, FHWA's highway noise regulations *Procedures for Abatement of Highway Traffic Noise and Construction Noise* would not apply since the project would not significantly change the horizontal or vertical alignment of the highway or increase the number of traffic lanes. Details outlining noise metrics, thresholds, and ordinances are available in the *Final Site-wide PEIS*.

Sound is expressed in decibels (dB). A-weighting (dBA) provides a good approximation of the response of the average human ear and correlates well with the average person's judgment of the relative loudness of a noise event. A sound level of 0 dBA is the approximate threshold of human hearing and is barely audible under extremely quiet conditions. By contrast, normal speech has a sound level of approximately 60 dBA. Sound levels above 100 dBA begin to be felt as discomfort inside the human ear. Sound levels between 110 and 130 dBA are felt as pain. Levels exceeding 140 dBA could involve tissue damage to the ear (Berglund and Lindvall 1995).

Noise levels continuously vary with location and time. Sound disperses as it travels from the source, and the Sound Pressure Level (SPL) diminishes, or "attenuates," with distance. In addition to distance attenuation, air absorbs sound energy. Atmospheric effects (wind, temperature, precipitation) and terrain/vegetation effects also influence sound propagation and attenuation over distance from the source. An individual's sound exposure is determined by measurement of the noise that the individual experiences over a specified time interval.

Airborne Noise

Human hearing is more sensitive to medium and high frequencies than to low and very high frequencies, so it is common to use maximum dBA metrics (also shown as dB L_{Amax}) representing the maximum A-weighted sound level during an event, such as an aircraft overflight. According to OSHA, an employee should not be subjected to continuous noise exceeding 90 dBA for durations lasting more than 8 hours per day, with a maximum limit of 115 dBA for durations of 15 minutes or less.

Underwater Acoustics

Sound waves can travel much farther in water than in air. Unlike airborne noise, underwater noise is not weighted to match frequencies that can be heard by the human ear. Instead, two common descriptors of underwater noise are instantaneous Peak SPL (dB_{Peak}) and the Root-Mean-Square (RMS) (dB_{RMS}) pressure level during the impulse. The (dB_{Peak}) is the instantaneous maximum overpressure or under pressure observed during each sound pulse and can be presented in Pascals (Pa) or SPL in dB, referenced to a pressure of 1 micropascal (μPa) at 1 m ($\text{dB re } 1\mu\text{Pa-m}$). The dB_{RMS} is the square root of the energy divided by the duration of the sound pulse and is often used for continuous sounds. The National Oceanic and Atmospheric Administration (NOAA) Fisheries, also known as, National Marine Fisheries Service (NMFS), typically utilizes dB_{Peak} thresholds for physiological injury and dB_{RMS} thresholds for behavioral effects to fish, sea turtles, and marine mammals.

3.1.1 Affected Environment

This section describes the existing airborne and underwater noise environments and major noise sources in the Project Area. There are no noise-sensitive receptors near the site.

Airborne Noise

Generally, the noise environment at the Causeway Bridge is relatively quiet, with the dominant noise sources being naturally occurring wind and wave action. Intermittent airborne noise occurs from commercial fishing, recreational boating, personal watercraft, vehicular traffic, and ongoing operations at Wallops Island such as UAS flights, target launches, and rocket launches. According to the *Final Site-wide PEIS*, ambient noise at WFF is below 52 dB Day-Night Average Sound Level. Noise generated by rocket launches is short-term in duration lasting less than 10 minutes with the peak noise levels occurring within the first one to two minutes.

Underwater Acoustics

Generally, the waters surrounding the Project Area are relatively quiet, with the major human-generated noise sources coming from commercial fishing vessels, recreational boats, and personal watercraft. The main natural sound source that may be found near the Causeway Bridge is thunderstorms.

3.1.2 Environmental Consequences

Noise-related impacts would be considered significant if the Proposed Action generated noise levels that were incompatible with surrounding land uses, resulted in long-term adverse impacts at noise-sensitive receptors, or created a situation that endangered human health and safety. Potential noise impacts to ecological receptors in terrestrial and aquatic habitats, as well as special status species are discussed in Sections 3.8, *Wildlife* and 3.9, *Special Status Species*, respectively.

3.1.2.1 *No Action Alternative*

Under the No Action Alternative, current baseline sound conditions would continue. Periodic bridge maintenance and repairs would occur as needed, until bridge closure is required. It is likely that noise from maintenance and repairs would not be heard beyond Wallops Island and workers would adhere to noise standards and guidelines, as outlined below. Therefore, noise impacts would be minor and short-term.

3.1.2.2 *Proposed Action*

Construction and Demolition

Construction and demolition noise is generally temporary and intermittent in nature, as it typically occurs only on weekdays and during daylight hours. Noise produced from roadway construction, especially bridge construction, can cause substantial adverse, but temporary, impacts to the surrounding noise environment. The use of explosives is not authorized at WFF and therefore explosives would not be used for demolition of the existing Causeway Bridge.

Construction Vehicle/Equipment Noise: In the *Final Site-wide PEIS*, NASA noted that the U.S. Department of Transportation's FHWA Road Construction Noise Model showed that airborne construction noise from typical bridge construction equipment (e.g., impact pile driver, crane, excavator, dump truck, etc.) would attenuate to less than 60 dBA in approximately 2,135 m (1.3 mi) (FHWA 2006). Therefore, while some noise could be heard at the closest residence to the Causeway Bridge, which is approximately 1.6 km (1 mi) west of the bridge, no adverse impacts would occur to the surrounding communities.

Pile Driving: Generally, the greatest noise impacts during bridge construction are from pile driving, which is impulsive but occurs over long durations (e.g., weeks to months for installing all necessary piles). Pile driving would impact noise conditions in the airborne and underwater environments. A number of parameters are considered when estimating pile driving noise impacts, such as the size and type of piles, the number of piles, and the average number of strikes per day from the impact pile driving equipment. Under the Proposed Action, temporary construction access may require the installation of approximately 144 piles over a period of several weeks during construction. According to the *Final Site-wide PEIS*, underwater noise from pile driving is unlikely to create any noise impacts to humans; however, the potential for impacts to special status species, marine mammals, and fish exists. These impacts are discussed in Section 3.9, *Special-Status Species*.

Worker Protection: OSHA 8-hour thresholds (90 dBA) would be exceeded within 53 m (175 ft) of bridge construction and demolition activity. Construction and demolition equipment often produce noise in excess of 90 dBA (e.g., jackhammers, bulldozers, or other heavy equipment); however, the maximum noise levels would likely be caused by pile driving (120 dB). Although construction and demolition noise are not likely to be heard at most facilities on Wallops Island, on days with little to no wind, there may be minor annoyance to personnel who are outside on the central portion

of Wallops Island or the Mainland. Noise levels would be far below OSHA noise guidelines and would not result in adverse impacts to human health. NASA would comply with local noise ordinances and state and federal standards and guidelines for potential impacts to humans caused by construction and demolition activities (e.g., hearing protection) to minimize potential impacts to NASA and construction contractor personnel.

Vehicle Traffic Noise: Traffic-related construction and demolition noise would result from the movement of construction equipment as well as the movement of related vehicles (i.e., worker trips, and material and equipment trips) on the bridge and surrounding roadways. The level of noise from construction-related traffic would vary depending on the phase of construction. Noise levels associated with construction traffic would increase ambient noise levels adjacent to the construction site and along roadways used by construction-related vehicles. However, the noise levels generated by construction-related traffic would be minor and temporary.

Following completion of construction and demolition activities, the ambient sound environment would return to existing levels and there would be no long-term impacts to the noise environment.

Operation

The new Causeway Bridge would not increase the amount of traffic using the bridge; as such, long-term traffic noise on the Causeway Bridge is not anticipated to increase due to the Proposed Action. There would be noise associated with ongoing maintenance and repairs of the bridge during its 75-year lifespan; however, maintenance- and repair-related noise is not anticipated to exceed thresholds described for construction and demolition. Workers would adhere to all noise-related standards and guidelines as described for construction and demolition. Depending on the magnitude of repairs, impacts would be minor, likely last for short periods of time, and occur infrequently. There would be no long-term adverse noise impacts.

3.2 Air Quality

Air quality is described by the concentration of various pollutants in the atmosphere. The significance of the pollutant concentration is determined by comparing it to the federal and state ambient air quality standards. The Clean Air Act (CAA), and its subsequent amendments, established the National Ambient Air Quality Standards (NAAQS) for “criteria” pollutants: ozone, carbon monoxide (CO), nitrogen dioxide, sulfur dioxide, particulate matter less than 10 (PM₁₀) and 2.5 (PM_{2.5}) microns in diameter, and lead (Pb). These standards represent the maximum allowable atmospheric concentrations that may occur while ensuring protection of public health and welfare, with a reasonable margin of safety. Air quality at WFF is regulated by the U.S. Environmental Protection Agency (USEPA), Virginia Department of Environmental Quality (VDEQ), and the State Air Pollution Control Board (Code of Virginia § 10-1.1300).

Hazardous Air Pollutants

In addition to the ambient air quality standards for criteria pollutants, national standards exist for hazardous air pollutants (HAPs) for both stationary and mobile source emissions. The National

Emission Standards for Hazardous Air Pollutants regulate 187 HAPs based on available control technologies (VDEQ 2023). Examples of HAPs regulated by VDEQ include toxins such as benzene, methylene chloride, dioxin, toluene, and metals such as cadmium, mercury, chromium, and Pb compounds. The majority of HAPs are volatile and semi-volatile organic compounds. Unlike the criteria pollutants, toxics do not have NAAQS. HAP impacts are based on exposure concentration and duration.

Greenhouse Gases

Greenhouse gases (GHGs) include carbon dioxide (CO₂), methane, nitrous oxide, ozone, and several hydro- and chloro-fluorocarbons. For simplification, total GHG emissions are often expressed as a CO₂ equivalent. As GHGs are relatively stable in the atmosphere and are essentially uniformly mixed throughout the troposphere and stratosphere, the climatic impact of GHG emissions does not depend upon the source location. Therefore, regional GHG impacts are likely a function of global emissions.

On January 9, 2023, CEQ issued interim guidance, *National Environmental Policy Act Guidance on Consideration of Greenhouse Gas Emissions and Climate Change*, that directs federal agencies to include analyses of GHG emissions and climate change in NEPA reviews. In addition, Executive Orders (Eos) 14057 *Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability*, 14008 *Tackling the Climate Crisis at Home and Abroad*, and EO 13990 *Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis* direct federal agencies to consider climate change, including GHG emissions, in their operations.

3.2.1 Affected Environment

The region of influence for air quality for this EA is defined as the Northeastern Virginia Intrastate Air Quality Control Region (AQCR) (defined in 40 CFR Part 81.144), which includes Accomack County. This AQCR is designated as “in attainment/unclassifiable” for all criteria pollutants. Because the Proposed Action is in an attainment area for all criteria pollutants, a General Conformity Review (under Section 176(c) of the CAA) does not apply to this project.

3.2.2 Environmental Consequences

Air quality impacts would be significant if emissions associated with the Proposed Action would: 1) increase ambient air pollution concentrations above the NAAQS, 2) contribute to an existing violation of the NAAQS, or 3) interfere with, or delay timely attainment of the NAAQS. The Northeastern Virginia Intrastate AQCR is designated as “in attainment/unclassifiable” for all criteria pollutants; therefore, significant impacts to air quality would result only if the Proposed Action were to increase ambient air pollution concentrations above the NAAQS.

3.2.2.1 No Action Alternative

The No Action Alternative would have no impacts to air quality because the proposed Causeway Bridge would not be replaced; therefore, none of the associated construction or demolition activities with potential to affect air quality would occur. There would be emissions associated

with ongoing maintenance and repairs of the bridge, and depending on the extent of activities, may occur for months at a time, until bridge closure. However, emissions from maintenance and repair activities would not increase ambient air pollution concentrations above the NAAQS.

3.2.2.2 *Proposed Action*

Construction and Demolition

Air quality effects would occur from combustion emissions of mobile sources due to the use of fossil fuel-powered equipment during construction and demolition activities and from the commute of construction workers to and from the site. The equipment used during construction would likely vary in age and have a range of pollution reduction effectiveness. However, construction equipment would be operated intermittently over a large area and would produce negligible ambient HAPs in a localized area. Construction equipment and worker vehicles would be operated in compliance with applicable USEPA regulations for emissions from vehicles and engines and would be used intermittently over the construction period. Any fuel-burning equipment (e.g., generators, pumps, cranes) that are anticipated to remain on-site for 12 months or longer and thereby qualify as stationary sources would be evaluated by equipment owner(s) for permitting through VDEQ.

Equipment and vehicle use would produce minimal pollutant emissions in a localized area. Additionally, ground disturbance would create fugitive dust emissions (PM₁₀ and PM_{2.5}). The Design-Build construction contractor would be required to adhere to VDEQ's Open Burning Restrictions and Fugitive Dust Precautions (e.g., water may be sprayed to lessen impacts from activities that generate dust). Architectural coatings and sealants used in construction activities would be required to comply with VDEQ's volatile organic compound limits. Regional adverse impacts to air quality would be localized, short-term, and negligible.

The air analysis in the *Final Site-wide PEIS* includes a calculation of projected emissions of normal operations at WFF combined with NASA projects proposed to occur in the foreseeable future. All projected emissions in the *Final Site-wide PEIS* were calculated on an annual basis and take into account all operations and projects that were projected to occur in a future year. The air emissions analysis in *Final Site-wide PEIS* showed that in the year 2023, air emissions of the Causeway Bridge Replacement Project, combined with all other operations and projects planned for 2023 would be well below the 227 metric tons (250 tons) per year comparative mobile source threshold. Under the current schedule for the Causeway Bridge, NASA plans to begin construction activities in 2025. NASA does not have any other major projects planned for 2025 that would be outside the parameters of the air analysis considered in the *Final Site-wide PEIS* for 2023. Therefore, for the duration of the Proposed Action, annual emissions from construction and demolition, including GHG emissions, even when combined with other WFF projects and operations, would have a negligible adverse impact on regional air quality and climate change.

Operation

Periodic maintenance and repair during the 75-year lifespan of the bridge would result in similar types of emissions, including GHGs, as described for construction and demolition activities. Emissions would be periodic and could last for several days to months depending on the work required to conduct the maintenance and/or repairs. The amounts of air pollutants associated with these emissions would likely be similar to those from construction and demolition and are expected to have negligible short-term adverse effects on regional air quality or climate change.

3.3 Toxic Substances, Hazardous and Regulated Materials, and Waste

Hazardous materials are generally defined as any substance that, due to quantity, concentration, or physical, chemical, or infectious characteristics, may present substantial danger to public health, welfare, or the environment. Hazardous and toxic materials and wastes are regulated at the federal level by the USEPA in accordance with the CWA; Toxic Substances Control Act; Resource Conservation and Recovery Act (RCRA); Comprehensive Environmental Response, Compensation, and Liability Act; CAA; and at the state level by VDEQ under applicable state authorization to the federal regulations. The federal government is required to comply with these acts and all applicable state regulations under EO 12088 *Federal Compliance with Pollution Control Standards*. Additionally, EO 12088, under the authority of USEPA, ensures that necessary actions are taken for the prevention, management, and abatement of environmental pollution from hazardous materials.

The WFF *Integrated Contingency Plan* (ICP) serves as WFF's primary guidance document for the prevention and management of oil, hazardous material, and hazardous waste releases (NASA 2023a).

3.3.1 Affected Environment

The affected environment for hazardous materials consists of all areas associated with the construction of the proposed new Causeway Bridge and demolition of the existing bridge, the proposed staging areas, and the road between the staging areas and the bridge on which construction equipment would regularly travel. Based on the information provided in Section 3.3.1.4, *Environmental Compliance and Restoration Program* of the *Final Site-wide PEIS*, there are no existing hazardous materials Areas of Concern that may pose a risk to human health or the environment in or near the proposed Project Area. There are also no areas containing MECs in the Project Area.

Due to the age of the structure, the existing Causeway Bridge may have Asbestos-Containing Materials (ACM), as well as lead-based paint (LBP). Since this paint has historically been used to inhibit the rusting and corrosion of iron and steel in marine environments, NASA anticipates that LBP is likely present on the existing bridge.

3.3.2 Environmental Consequences

The magnitude of potential impacts associated with hazardous materials, toxic substances, and hazardous waste depends on the toxicity, transportation, storage, and disposal of these substances. The threshold of significance would be met if hazardous materials, hazardous waste, or interaction with restoration sites substantially increase the human health risk or environmental exposure through storage, use, transportation, or disposal of these substances.

3.3.2.1 No Action Alternative

Under the No Action Alternative, further maintenance and repairs of the bridge would result in the use and disposal of regulated wastes; the type and magnitude of impacts would be similar to those from the Proposed Action, described below.

3.3.2.2 Proposed Action

Construction and Demolition

The primary sources of regulated waste generated during the Proposed Action would be demolition debris from the existing bridge and the use of petroleum products in machinery and equipment. Construction and demolition activities would include the use of regulated hazardous materials and could generate the following types of hazardous and non-hazardous waste:

- LBP contaminated demolition waste,
- Solvents, anticorrosives, hydraulic fluid, oil, and antifreeze used in construction equipment,
- On-site storage of materials such as petroleum products (fuels), oils, lubricants, anticorrosives, and solvents, and
- General refuse generated during construction (i.e., non-hazardous solid waste).

Mobile equipment (e.g., trucks, boats, barges, excavators) would be powered by diesel and gasoline engines, with on-board fuel tank capacities expected to range from 10 to 1,900 liters (L) (2 to 500 gallons [gal]). Some of the equipment would have on-board hydraulic oil systems with capacities estimated to range between 60 to 120 L (15 to 30 gal).

Demolition debris may contain ACM. The Design-Build contractor would be responsible for sampling the debris to determine whether it must be managed as a RCRA hazardous waste, including surveying for ACM prior to demolition. If ACM is found, in addition to the federal waste-related regulations mentioned above, state regulations for ACM must be followed. ACM would be properly removed and disposed of prior to or during demolition in accordance with 40 CFR 61.40 through 157 and Goddard Procedural Requirements 8500.3 (Waste Management).

Demolition debris may also contain LBP (including older paint that may be sealed under newer layers of paint), and the Design-Build contractor would be responsible for sampling the debris to determine whether it contains LBP prior to demolition. If LBP is found, demolition of the bridge

and removal of LBP would be conducted in accordance with OSHA's Lead Standard for the Construction Industry.

NASA would require the Design-Build contractor to evaluate the debris for potential use in VMRC's Artificial Reef Program. NASA discussed the project on March 9, 2023, with VMRC Artificial Reef Program staff, and would continue to work with VMRC through the Design-Build process. NASA would follow all requirements for cleaning and/or use of demolition debris that is considered for use as a reef in accordance with VMRC's Artificial Reef Program.

Debris not used as artificial reef would be recycled to the extent practicable and would otherwise be disposed of in accordance with local, state, and federal regulations. Debris would either be temporarily stockpiled onsite, including at one of the staging areas, or immediately hauled off site. Concrete piles removed from open water areas under the bridge, or pieces of concrete debris created during the pile removal, could be removed from the project site, brought to shore, and then hauled either to an onsite stockpile area or directly to a recycling or waste facility.

Under the Proposed Action, NASA would require the Design-Build contractor to prepare a project-specific Spill Prevention, Control, and Countermeasure (SPCC) if the contractor plans to store more than 5,000 L (1,320 gal) of petroleum products on site. The SPCC plan would include an equipment maintenance and fueling plan. Protective control measures (e.g., oil-absorbent socks, temporary containment areas) would be installed around the fuel transfer equipment prior to fueling operations. The SPCC plan would include provisions for controls and countermeasures during land-based and marine-based activities. USEPA/OSHA Safety Data Sheets for all regulated materials would be kept on-site at each project work area. In accordance with Virginia Stormwater Management Program (VSMP) requirements, the Design-Build contractor would also be required to prepare and submit for approval a Stormwater Pollution Prevention Plan (SWPPP).

WFF is currently in the planning stages for an investigation of per- and polyfluoroalkyl substances (PFAS) concentrations in groundwater on the Mainland and Wallops Island. If PFAS is detected above USEPA Regional Screening Levels, any dewatering of PFAS contaminated groundwater must be containerized and be handled in accordance with the NASA PFAS Investigation Derived Waste Policy and applicable federal and state guidance or regulations. If the Design-Build process determines that dewatering would be treated and discharged on site, a dewatering plan must first be approved by the WFF Medical and Environmental Management Division (MEMD). The plan should include pumping rate, dewatering depth, estimated duration of dewatering (hours/days), estimated amount to be dewatered (gallons), dewatering sequence (if applicable), proposed discharge location, and controls to be used to prevent direct or indirect discharge to surface water.

NASA would require the contractor to manage all hazardous wastes and regulated materials in accordance with the WFF ICP (NASA 2023a); NASA requirements; and applicable federal, state, and local regulations. The contractor would be responsible for coordinating with WFF MEMD for the disposal of any hazardous or solid waste generated. NASA anticipates that use of hazardous materials would have negligible potential to adversely impact human health and the environment,

and would not exceed the capabilities of NASA and its contractors to manage in accordance with current procedures.

Materials used for the new bridge would require approval from NASA and FHWA and would need to meet federal standards including those of NASA, FHWA, and USEPA/OSHA. Because the handling of hazardous and solid wastes, and the removal of toxic substances as part of construction and demolition activities would be conducted in accordance with all applicable regulations, impacts to human health or the environment, if an accidental release, or spill occurred, are anticipated to be short-term and minor.

Operation

The Causeway Bridge would be used for transport of fuels and other hazardous substances associated with operations on Wallops Island, including launches; therefore, an accidental release during transportation could occur. The quantities and types of products transported over the bridge would be the same as existing conditions. If a spill were to occur, the vehicle operator would notify NASA (and USCG if the spill entered Cat Creek) and implement the appropriate response plans. The types, duration, and intensity of impacts for maintenance and repairs would be like those during construction and demolition. NASA and its contractors would implement plans and best management practices (BMPs) similar to those described for construction and demolition. With proper control, prevention, and clean-up, any adverse impacts are expected to be short-term and minor.

3.4 Health and Safety

The health and safety analyses for this EA consider occupational hazards, risks to the public, NASA personnel, contractors, and civilians from potentially hazardous activities during construction and demolition and ongoing maintenance and operation of the Causeway Bridge.

3.4.1 Affected Environment

Institutional construction and demolition activities conducted at WFF are performed in accordance with applicable NASA institutional safety programs and controls. The WFF Safety Office plans, develops, and implements facility programs and controls for the safety of personnel, protection of property, and operations of facilities, including occupational health and safety and emergency (i.e., fire, crash, and rescue) planning and operations. The WFF Safety Office manages the WFF Fire Department with fire stations on the Main Base and on Wallops Island. The WFF Safety Office also reviews contractor-prepared safety plans for construction, modification, or demolition of facilities and infrastructure. Safety controls are established to minimize the potential hazards associated with institutional and workplace activities.

NASA requires that all activities occurring at WFF be conducted in accordance with federal and state OSHA regulations. Federal contractors are required to follow regulations defined in Federal Acquisition Regulation 52.236-13, Accident Prevention. Proposed activities are initially reviewed through Goddard Space Flight Center's online Environmental and Safety Review portal. The WFF

Safety Office then determines which health and safety plans contractors would be required to submit for approval prior to working onsite.

A single gate at the entrance to the WFF Mainland provides a monitoring and control point for access to Wallops Island by road. Wallops Island is patrolled 24 hours a day to prevent unauthorized access via boat. Badges are provided to all WFF personnel, contractors, range users, tenants, and visitors.

3.4.2 Environmental Consequences

The threshold of significance would be met if construction and demolition activities and/or ongoing maintenance and operation would substantially increase the potential for occupational hazards or risks to the public, NASA personnel, contractors, and civilians.

3.4.2.1 No Action Alternative

The No Action Alternative would result in the potential for long-term adverse impacts to health and safety because the Causeway Bridge would not be replaced, and there would be an increasing risk for the bridge to fail a safety inspection. In the event the existing bridge failed an inspection, NASA would close the bridge temporarily, or permanently, as needed, and there would be no way for vehicles (including emergency vehicles) to get from the Mainland to Wallops Island (and vice versa).

There would be potential impacts associated with maintenance and repairs of the bridge until closure; these would be similar to those described from the Proposed Action. Any bridge maintenance and repairs would be conducted following all applicable local, state, and federal regulations for worker health and safety. NASA would work with the WFF Safety and Communications offices and USCG to notify mariners of any maintenance operations in Cat Creek or if the bridge was not safe to travel under (and thus closed).

Under the No Action Alternative, it is also possible that people, vessels, and species under the bridge in Cat Creek could be struck by deteriorated parts from the structure, which could cause major adverse short- and long-term health and safety impacts.

3.4.2.2 Proposed Action

Construction and Demolition

Proposed construction and demolition activities could present safety risks to construction personnel, anyone traveling along Causeway Road between the staging areas and Causeway Bridge, and boaters that could access the Project Area via Cat Creek. These risks would be from the presence and movement of large vehicles, boats, and equipment; workers operating or near construction equipment such as cranes and large sections of concrete; and the handling, use, and transport of hazardous materials.

The Design-Build contractor would be required to designate Safety Officers who would perform regular inspections and document compliance. Safety briefings for workers would occur during

construction and demolition. Emergency plans, procedures, and contacts would be documented along with locations of first aid stations, emergency transport, and local emergency facilities.

In addition to the standard safety practices, bridge construction would also follow the procedures presented in Standard Specifications for the Construction of Roads and Bridges on Federal Highway Projects administered by FHWA, and the new bridge would be designed to current FHWA specifications, including safety. For example, the new rail design would meet current crash-worthiness standards. Wider shoulders (likely a 1.8 m (6 ft) shoulder) would be added on each side of the bridge to provide enough space for two-way traffic to continue if a vehicle is stopped on the shoulder as well as increased safety for maintenance workers and bridge inspectors who occasionally require foot access to the bridge.

Prior to construction, the Design-Build contractor would obtain a Bridge Permit from USCG and follow any safety measures outlined by USCG, such as lighting requirements. In the May 2021 Preliminary Navigation Clearance Determination, USCG stated that the proposed new bridge should provide at least 3.9 m (12.8 ft) of vertical clearance above mean high water and at least 18 m (60 ft) of horizontal clearance through the main navigation span of the bridge.

WFF would coordinate all in-water activities that have a potential to affect watercraft with USCG and other organizations to clear potential hazard areas. Notices-to-Mariners (NOTMARs) depicting the hazard areas would be published at least 24 hours prior to in-water operations. Additionally, the WFF Office of Communications would distribute both electronic and faxed notices of the construction-related hazard area to a group of more than 100 recipients that includes local watermen, marinas, and marine transportation companies. Public signage, as appropriate, would be placed on Cat Creek to alert boaters of project activities at the Causeway Bridge.

With the implementation of the safety measures described in this section, adverse health and safety impacts would be minimized to the greatest extent practicable and are expected to be short-term and minor. Safety concerns related to construction and demolition would be temporary and would cease when these activities are complete.

Operation

A new Causeway Bridge would provide long-term beneficial impacts to Wallops Island by providing a reliable mode of transport between the Mainland and Wallops Island, during its 75-year lifespan. The new bridge would also provide safer conditions when carrying super-loads across the bridge since special equipment, and thus traffic control, would no longer be needed to transport these large loads. All personnel involved with operations at WFF, including those conducting maintenance and repairs to the bridge, would follow appropriate safety protocols, including OSHA regulations and training requirements.

The handling, processing, storage, and disposal of hazardous materials or hazardous wastes from operations and routine maintenance activities would be accomplished in accordance with all applicable federal and state requirements. A new Causeway Bridge would ensure the continued safety not only of users, but also of boaters beneath the bridge.

With implementation of the measures described above, there would be beneficial impacts over the long-term.

3.5 Land Resources

Land resources for this EA describe the physical surface characteristics such as topography, geology, and soils in the affected land areas.

3.5.1 Affected Environment

3.5.1.1 Topography

The topography of the Causeway Bridge Project Area varies, with the Causeway Road elevated by artificial fill (to create the causeway) to approximately 2.7 m (9 ft) above the natural topography of the tidal marsh (see **Photo 1-2**), which lies at approximately 0.3 to 0.6 m (1 to 2 ft) above sea level. The approaches to the existing bridge deck are further built up with fill, slightly higher than the rest of the Causeway Road, to the east and west of the approaches. Topography at the staging areas is relatively flat, between 0 to 5 percent slope.

3.5.1.2 Geology

In June 2021 and March 2022, John D. Hynes & Associates, Inc. (JDH), conducted a geotechnical survey for the Project Area. The survey limits included the envelope maximum LOD as described in Section 2.5.2 and shown on **Figure 2-3**. The study included a total of 27 drilled test borings. All boring were taken from the north side of the Causeway Bridge, with ten taken on the west side of Cat Creek, eight taken in Cat Creek, and nine on the east side of Cat Creek. Results of geotechnical land borings showed a mix of sand, silt, and clay layers with gravel of varying textures to a depth of approximately 30 m (100 ft) below the ground surface. The boring results from the Cat Creek samples showed a mix of peat, sand, silt, and clay layers with gravel and shells of varying textures to a depth of approximately 30 m (100 ft) below subaqueous bottom (JDH 2022 a, b). No bedrock was encountered during either geotechnical survey. No geotechnical investigations were conducted at the staging areas because no excavation or other disturbances below the ground surface are planned.

3.5.1.3 Soils

The Farmland Protection Policy Act (FPPA) requires that federal agencies examine the impacts of their actions on prime or unique agricultural lands and minimize any potential impacts.

Soils in the Project Area at the Causeway Bridge are comprised of two soil map units as classified by the Natural Resources Conservation Service (NRCS): udorthents and Chincoteague silt loam (NRCS 2023). An udorthent is a classification for native soils that have been completely removed from the landscape or so altered by cut and/or fill that they do not fit into any other native soil categories (they are typical of urban environments). The fill used in 1959 to construct the Causeway Road created this soil type. These udorthents are very deep soils that range from well-

drained to somewhat poorly drained and are not hydric (meaning they are not permanently or seasonally saturated by water resulting in anaerobic conditions and are not indicative of wetlands).

The Chincoteague silt loam is a naturally occurring soil that is found on nearly level slopes (0-1%), very frequently floods, is very poorly drained, is very deep, and the water table is at the surface (NRCS 2023). This soil is classified as hydric. Most of the soils in the Causeway Bridge Project Area have been previously disturbed during construction of the existing Causeway Road and Bridge. Neither of the soil types are classified as prime farmland or unique agricultural lands.

The soils within the two staging areas on the north side of the Causeway Road are both classified entirely as Bojac loamy sand. The soil in the staging area south of Causeway Road is classified entirely as Magotha fine sandy loam. Neither of these soils is hydric; the Magotha soil has hydric inclusions in the low-lying areas, but none within the proposed staging area site. The Magotha soil is poorly drained and has low runoff. The Bojac soil is well drained with very low runoff. These soils have been previously disturbed by activities at WFF. The Bojac soil is classified as prime farmland (NRCS 2023).

3.5.2 Environmental Consequences

Impacts to land resources would be considered significant if major adverse changes to topography, underlying geology, or conversion of prime agricultural land to non-agricultural uses occurred. This would involve the alteration of unique geologic formations or creating a situation that would cause degradation or irreparable damage to natural landforms, topography, or exceptional loss of soils through erosion.

3.5.2.1 No Action Alternative

Under the No Action Alternative, there would be no ground disturbance, including during maintenance and repairs; therefore, no impacts would occur to topography, geology, or soils.

3.5.2.2 Proposed Action

Construction and Demolition

Under the Proposed Action, long-term changes to topography would occur in the approach areas to the new bridge from placement of fill, contouring, and grading that would be required to build up the causeway and roadbed in a proposed new bridge alignment. Because the new alignment would be constructed north of the existing alignment, the changes to topography would primarily occur in the areas north of the existing causeway, west and east of Cat Creek. Plan Sheet B02 from the FHWA 30% design plans (**Appendix B**) provides an example of the embankment and road build-up compared to the existing ground. Although the final design is not known, it is likely that nearly all potential designs would result in similar build-up of the causeway in the approach areas shown on Plan Sheet B02. The Design-Build contractor would be required to use clean fill for use in construction.

The demolition of the existing Causeway Bridge would also alter topography due to the excavation of existing approaches and bridge. Excavations would be filled upon completion of the project and re-contoured to pre-disturbance elevations, to the extent practicable. The changes in topography due to construction and demolition would be minor. Therefore, there would be adverse short- and long-term minor impacts to topography.

Based on the JDH geotechnical boring results (2022a, b), pile driving for the temporary construction access or the permanent bridge piers is not anticipated to reach bedrock. No adverse impacts to the underlying geology are anticipated.

The Proposed Action would result in adverse minor short- and long-term impacts to soils from erosion and from being removed and/or covered by cut and fill activities. Short-term impacts would occur from ground disturbances associated with installation and removal of the temporary construction access, excavation, fill, and grading. Long-term impacts would occur from the placement of fill over existing soils north of the existing causeway in the new bridge approach areas on both sides of Cat Creek. Placement of permanent piles would also result in long-term impacts to soils. Placement of certified clean fill on top of the existing ground surface would bury existing soils, or in some areas, would result in the mixing/restructuring of soil horizons. Fill used for the new alignment embankments and roadbed would be compacted per design specifications. Excavated soils would be temporarily stored on-site, with any stockpiles being removed after work is complete.

At the staging areas, there would be negligible short-term minor impacts to soils due to disturbances of the surface from heavy equipment, storage of materials and piers, and accessory equipment. Soils have been previously disturbed when the sites were cleared of vegetation. No grading or excavations would occur at the staging areas; however, gravel may be added to portions of the areas to prepare them for use as parking and for equipment access. There would be negligible long-term minor impacts to any native topsoil from the addition of gravel and compaction from equipment and vehicles. Access to both staging areas with Bojac sandy loam, a prime farmland soil, is restricted to authorized personnel and NASA has permanently designated the land for non-agricultural use. However, in accordance with the FPPA, NASA submitted a scoping request including a copy of the AD-1006 Form to NRCS on April 26, 2023, regarding potential impacts to prime farmland. NRCS responded on May 4, 2023, providing the required NRCS information for the AD-1006 Form; NASA then completed the form and sent it back for NRCS approval. NRCS responded on May 10, 2023, stating no further action will be taken by NRCS regarding the project (**Appendix A**).

To minimize impacts to soils from erosion, the Design-Build contractor would develop site-specific ESC plans prior to ground-disturbing activities in compliance with the VSMP regulations and WFF's Stormwater, Erosion, and Environmental Development (SEED) Program. The contractor would implement ESC BMPs before, during, and after construction to stabilize soils. These BMPs could include using silt fencing, soil stabilization blankets, and matting. Bare soils would be revegetated with native, non-invasive plants immediately after construction to reduce

erosion and stormwater runoff. Spills or leaks from construction vehicles and equipment could affect soils. The Design-Build contractor would implement BMPs addressing spill prevention and control measures in accordance with the site-specific SWPPP and WFF's ICP. Therefore, there would be adverse short- and long-term minor impacts to topography, no impacts to geology, and negligible to adverse short- and long-term minor impacts to soil.

Operation

Under the Proposed Action, periodic maintenance and repairs would continue throughout the 75-year lifespan of the new causeway. While this could result in short-term disturbance of soils, BMPs would be implemented to prevent any significant impacts. No VSMP permit would be required.

With implementation of the measures described above, there would be adverse short-term and minor long-term impacts to land resources from the Proposed Action.

3.6 Water Resources

Water resources for this EA refer to surface and subsurface waters, wetlands, estuarine and tidal waters, floodplains, and the coastal zones that exist in and around the Causeway Bridge.

Regulations and Approvals

The CWA is the primary federal law that protects the nation's waters. Section 10 of the Rivers and Harbors Act prohibits the obstruction or alteration of navigable WOTUS without a permit from USACE.

USACE Federal Navigation Project Review

The Causeway Bridge spans Cat Creek, a tidal channel that connects the Hog Creek and Bogues Bay Channel elements of the Waterway on the Coast of Virginia Federal Navigation Project, a 140 km (87-mi)-long inland waterway system connecting the Chesapeake Bay to the Chincoteague Bay. The Waterway on the Coast of Virginia serves as a channel for recreational and commercial navigation along the Eastern Shore. The Waterway on the Coast of Virginia is a Federal Navigation Project and is a USACE federally authorized civil works project that is subject to periodic maintenance activities such as dredging. USACE reviews actions proposed within Federal Navigation Projects to determine whether the proposed action is injurious to the public interest or affects the ability of the Federal Navigation Project to meet its authorized purpose.

3.6.1 Surface Waters and Stormwater Management

VDEQ has designated WFF's SEED Program with the responsibility for administering VSMP regulations. VSMP requires that construction and land development activities incorporate measures to protect aquatic resources from the effects of non-point source pollution and the increased volume, frequency, and peak rate of stormwater runoff. The VSMP also requires that land-disturbing activities of 0.4 ha (1 ac) or greater, develop a SWPPP and acquire a General

Virginia Pollutant Discharge Elimination System Permit for Discharges of Stormwater from Construction Activities from the WFF SEED prior to construction.

The VDEQ designated the surface waters in Cat Creek as Class II–Estuarine Waters, which establishes limits for the concentrations of various bacteria and toxic compounds, minimum dissolved oxygen concentrations, pH, and maximum temperature for the different surface water classifications.

3.6.1.1 *Affected Environment*

WFF is in two watersheds: the Eastern Lower Delmarva and the Chincoteague. Due to its elevation above natural topography, the causeway between the Mainland and Wallops Island (Causeway Road) forms the local divide between these two watersheds. All waters north of the causeway are part of the Chincoteague watershed drainage, and all waters south of the causeway are part of the Eastern Lower Delmarva watershed drainage (NASA 2016).

Cat Creek is part of a complex estuary system, connected to the Atlantic Ocean, where the flow of water (referred to as hydrodynamics) is driven predominantly by the tides and combined storm surges (such as Nor'easters and hurricane events). The MHW of Cat Creek is 0.2 m (0.7 ft), the mean tide line is -0.12 m (-0.4 ft), and the mean low water (MLW) is -0.46 m (-1.5 ft). The Cat Creek watershed drainage area is approximately 43.5 square km (16.8 square mi) (HWR 2021a).

The existing Causeway Road drains by sheet flow through a vegetated embankment, and stormwater flows naturally into the tidal marshes and Cat Creek. The existing bridge has a drainage system to collect and dissipate stormwater runoff.

3.6.1.2 *Environmental Consequences*

The significance of potential impacts to water resources is determined if large scale adverse impacts were to occur to the hydrologic function of the Project Area, or if runoff from the Project Area would include concentrations of pollutants and/or sediments that exceed Virginia saltwater criteria. Significance determination would depend on the nature of the water resource, its importance to the ecosystem, and the ability of the system to function if that resource were altered or removed completely.

No Action Alternative

Routine maintenance and repair, including stormwater infrastructure associated with the bridge (e.g., gutter replacement, removing blockages of storm drains), would continue to occur, as needed, until bridge closure. Any in-water work needed to conduct repairs could result in disturbance of the aquatic environment, including disturbances in the tidal marsh and sediments on the bottom of Cat Creek. Impacts would be minimized with the use of BMPs, as described for the Proposed Action; impacts are anticipated to be adverse, short-term, and minor.

Proposed Action

Construction and Demolition

The Proposed Action could result in adverse impacts to the water quality of surface waters in the following ways:

- Land disturbance and subsequent erosion and sedimentation from stormwater runoff,
- Sedimentation in estuarine waters from disturbances of the subaqueous bottom (e.g., pile driving), and
- Contamination from leaks and spills of pollutants during construction.

Construction and demolition activities on land have the potential to cause soil erosion, which could elevate turbidity levels in the tidal marsh and Cat Creek. Construction of the new alignment embankment would alter stormwater runoff patterns, and removal of vegetation or placement of fill would temporarily result in bare soils.

In-water work, such as installing and removing piles for the temporary construction access, installing piles for the new approaches and bridge, and demolishing piles of the existing approaches and bridge, would result in disturbance of the aquatic environment, including disturbances in the tidal marsh and sediments on the bottom of Cat Creek.

The number and type of piles would be determined during the design phase of the new Causeway Bridge. Construction of the new bridge and temporary construction access could involve both land-based and in-water work to install piles depending on design and construction methods. Construction could involve equipment such as tugboats, barge-mounted cranes, construction crew support vessels, and pile driving equipment with the potential to cause increased temporary turbidity in shallow marsh areas and Cat Creek during pile driving activities.

In-water pile driving activity can also result in increased turbidity from the pressure of the blows to the piles to drive the piles down into the channel bottom. Cofferdams, turbidity curtains, or other instruments to control turbidity, when operationally feasible, would minimize potential impacts to water quality. Therefore, although NASA anticipates that these impacts would be adverse, they would be short-term, minor, and localized to the area directly around where each pile would be installed.

NASA anticipates that any existing piles in what will become the old alignment of the bridge approaches and where the existing bridge spans the water would be left in place and cut below the creek/marsh bottom as needed for navigation safety. Piles left-in-place would likely be cut at least 0.6 m (2 ft) below the mudline.

Piles installed for temporary construction access would be removed, which could be accomplished with a vibratory hammer or by direct pull with a crane. Depending on the embedment, the use of a high-pressure water jet may be required to loosen or remove mud keeping some of the piles stuck in place. Any debris from the piles would be contained using measures such as tarps and/or floating

booms. Debris booms could be placed around the in-water construction work areas to catch debris that would be removed from the water. Locations, types, and size of debris booms would depend on the type of equipment, wave action, and currents anticipated during construction/demolition. With implementation of these measures, impacts would be adverse, short-term, and minor.

The Design-Build contractor would obtain a WFF SEED construction site stormwater permit and develop a site-specific SWPPP. The SWPPP would identify all stormwater discharges at the site, actual and potential sources of stormwater contamination, and would require the implementation of both structural and non-structural BMPs to reduce the impact of stormwater runoff. ESC BMPs such as silt fencing, soil stabilization blankets, and matting would be installed around areas of soil disturbance.

Riprap may be used to protect abutments from scour and for slope stabilization. Bare soils would be vegetated immediately after construction to reduce erosion and sediment-laden runoff from entering Cat Creek. With implementation of BMPs, impacts would be adverse, short-term, and minor.

Since the proposed bridge would have wider shoulders and lanes, the new deck and approach ramps would have a larger surface area compared to the existing bridge. The new bridge's stormwater conveyance system could be designed to carry stormwater from the bridge to stabilized outfalls, and potentially into a stormwater treatment BMP at the outlets. Permanent BMPs to capture, convey, and manage stormwater from the bridge deck and approaches would be included in the final bridge design in accordance with FHWA design specification and VSMP regulations for stormwater discharge. With implementation of BMPs, impacts would be short-term and minor.

In accordance with Virginia's Offsite Compliance Options and the February 2022 VDEQ Guidance Memo GM21-2007 on "Local Water Quality Protections for Nonpoint Source Nutrient Credit Use for Regulated Land Disturbing Activities," Hassan Water Resources, PLC (HWR) determined that the Proposed Action qualifies for the use of nutrient credits to meet project pollution reduction requirements for water quality (HWR 2021b).

Potential short-term minor impacts to nearshore water quality could result from the accidental release of petroleum products, or other contaminants, from construction vehicles and heavy equipment used during construction and demolition activities. Impacts would be adverse and could range from negligible to major depending on the size of the release and how quickly it could be controlled and remediated. The potential for spills or releases would be minimal, as contractors would implement BMPs for vehicle and equipment fueling and maintenance and adhere to WFF's ICP and site-specific spill prevention and control measures. With these measures in place, adverse impacts are anticipated to be minimized to the greatest extent practicable.

The Design-Build contractor would submit a Joint Permit Application (JPA) to VMRC, which serves as the clearinghouse for federal, state, and local levels of CWA permitting including:

- Accomack County Wetlands Board permit,
- VMRC Habitat Management Subaqueous Lands and Tidal Wetland permit,
- VDEQ Virginia Water Protection (VWP) Permit/401 certification,
- USACE CWA Section 404 permit, and
- USACE Section 10 River and Harbors permit.

The Design-Build contractor would also be required to obtain the following:

- USACE Section 408 (Section 14 the Rivers and Harbors Act) for authorization to occupy a USACE Federal Navigation Project, and
- VSMP permits from the WFF SEED.

Operation

Under the Proposed Action, there would be ongoing maintenance and repairs to the Causeway Bridge during its 75-year lifespan. These activities could impact surface waters through the transport of sediments, some of which may carry contaminants. With implementation of ESC controls and stormwater collection BMPs similar to those for construction and demolition, these adverse impacts would be short-term and minor.

3.6.2 Groundwater

Groundwater is subsurface water that occupies the space between sand, clay, and rock formations. Aquifers are areas of mostly high porosity soil where water can be stored between soil particles and within soil pore spaces.

3.6.2.1 Affected Environment

The Columbia aquifer and the Yorktown-Eastover multi-aquifer system lie under the Eastern Shore and are designated and protected by USEPA as a sole-source aquifer (USEPA 2023). WFF receives its potable water from seven groundwater supply wells, five of which are on the Main Base, and two of which are on the Mainland. The two Mainland wells, which supply the Mainland and Wallops Island with water, are in the Yorktown-Eastover aquifer, withdrawing water at 60 m to 80 m (195 ft to 255 ft) below ground surface. Neither of these groundwater supply wells are in or adjacent to the proposed bridge and staging area LODs.

Groundwater levels measured in June 2021 and March 2022 during a geotechnical investigation showed depth to groundwater is expected to be within 0.31 m to 5.2 m (1 to 17 ft) below ground surface (JDH 2022 a, b). The water table in the envelope Project Area is tidally influenced and can vary daily and seasonally.

3.6.2.2 *Environmental Consequences*

Significant impacts to groundwater would occur if the Proposed Action caused a long-term change in underground hydrologic patterns or caused adverse effects to groundwater quality that could not be mitigated.

No Action Alternative

The No Action Alternative would have no impacts to groundwater; including during maintenance and repairs; therefore, the existing conditions would remain unchanged.

Proposed Action

Construction and Demolition

Given the shallow depth to groundwater across the Causeway Bridge Project Area, de-watering may be required for excavations that may be needed for construction and demolition. The de-watering volume would be determined by the Design-Build contractor and could result in highly localized and temporary lowering of surficial groundwater levels in the immediate vicinity of the excavated area. Groundwater levels would quickly (i.e., within several hours) return to pre-disturbance levels. As noted in Section 3.3.2.2, if dewatering is planned, the Design-Build contractor would need to prepare a dewatering plan that addresses PFAS, which must be approved by the WFF MEMD. Impacts would be adverse, short-term, and minor, and the de-watering activities would be performed in accordance with VSMP and CWA permit conditions and BMPs.

Groundwater contamination could occur from an inadvertent spill of fuel or hazardous liquids from construction equipment or vehicles. Hazardous liquids and materials and petroleum-based fuels would be stored and handled according to the WFF ICP and the VSMP permit conditions. In accordance with these plans, NASA and the Design-Build contractor would immediately implement control and remediation measures in the event of an inadvertent release of petroleum-based or hazardous materials. With the implementation of spill prevention and control measures, adverse short-term impacts to groundwater resources would be minimized and impacts are anticipated to be localized and minor. Due to the depth of the Yorktown-Eastover aquifer, NASA anticipates that there would be no impacts from a spill on this water source. Moreover, due to the distance of the Mainland water supply wells from the project LOD, no impacts to these wells are anticipated.

Operation

Under the Proposed Action, there would be ongoing maintenance and repairs to the Causeway Bridge throughout its 75-year lifespan. These activities could impact groundwater through the transport of sediments, some of which may carry contaminants such as road salts and fuel. Adherence to BMPs similar to those of construction and demolition, would ensure that any adverse impacts are minor and short-term.

3.6.3 Wetlands

Wetlands are lands where saturation with water is the dominant factor determining the nature of soil development and the types of plant and animal communities living in the soil and on its surface. Wetlands are transitional areas between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water (Cowardin 1979).

USACE, VDEQ, and VMRC regulate impacts to waters and wetlands and issue permits for projects in Virginia. USACE has regulatory authority over activities involving the discharge of dredged or fill material into WOTUS, pursuant to Section 404 of the CWA. VDEQ administers the VWP Permit Program for impacts to surface waters (all waters that are not groundwater) which may include isolated wetlands not under federal jurisdiction, and grants CWA Section 401 certification that state water quality standards would not be violated by proposed work. VMRC, in conjunction with the Accomack County Wetlands Board (ACWB), regulates encroachments into state-owned submerged lands, non-vegetated wetlands (e.g., mudflats) between mean low tide and mean high tide, and vegetated wetlands from mean low tide to 1.5 times the mean tide range.

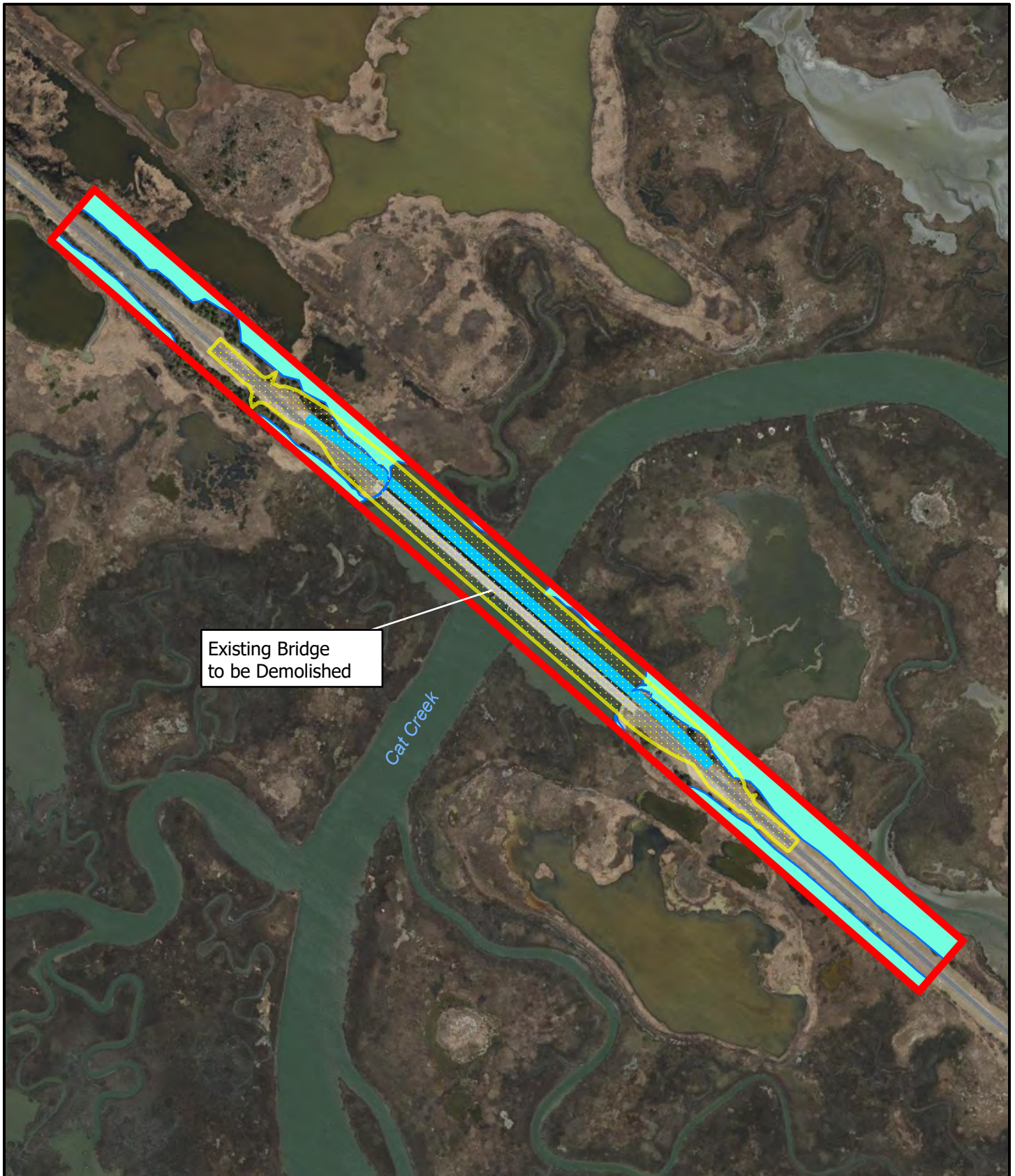
USACE also regulates activities in navigable waters (i.e., waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce) under Section 10 of the Rivers and Harbors Act. By definition, navigable waters include all tidal waterbodies. Additionally, EO 11990 *Protection of Wetlands* directs federal agencies to minimize the destruction, loss, and degradation of wetlands and to preserve and enhance the natural and beneficial values of wetland communities.

3.6.3.1 Affected Environment

On behalf of NASA and FHWA, a delineation of WOTUS within the FHWA 30% plan LOD was performed in August 2020 (NASA and FHWA 2020), pursuant to the USACE 1987 *Wetlands Delineation Manual* and USACE 2010 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region, Version 2.0* (**Figure 3-1**) (USACE 1987, USACE 2010). The delineation figures are provided in **Appendix C**.

Two areas of “estuarine, regularly flooded, intertidal emergent wetlands” (E2EM1N) jurisdictional WOTUS were identified in the delineation area as follows:

- **Wetland A:** 1.4 ha (3.36 ac) E2EM1N wetland on the west side of Cat Creek, including wetlands identified on both the north and south of Causeway Road.
- **Wetland B:** 1.9 ha (4.78 ac) E2EM1N wetland delineated on the east side of Cat Creek.
- **Total Vegetated (E2EM1N) Wetlands in the Causeway Bridge Envelope:** 3.29 ha (8.14 ac) (Wetlands A and B)



Existing Bridge
to be Demolished

Cat Creek

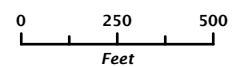


Legend

- Wetlands
- Proposed Causeway Bridge
- FHWA 30% Plan Limits of Disturbance
- Bridge Envelope Limits of Disturbance



FIGURE 3-1
FHWA DELINEATED WETLANDS



WFF Causeway Bridge Replacement Project

Sources: NASA, VGIN, Wetland Delineation Report
FHWA - September 29, 2020 / Prepared by: WSSI, 32529.01, JB
Projection: NAD 1983 StatePlane Virginia North FIPS 4501 Feet

Additionally, 77 m (251 ft) of perennial stream/open water associated with Cat Creek were identified. While not classified in the Wetland Delineation Report, these waters include “estuarine intertidal unconsolidated shore” (E2US) and “estuarine subtidal unconsolidated bottom” (E1UB). The delineation was confirmed by USACE, and a Preliminary Jurisdictional Determination (PJD) (NAO-2020-1762) was issued in November 2020. The PJD is valid for 5 years (through November 2025). If the PJD expires prior to the end of construction, NASA would obtain an extension or a new PJD. There are no jurisdictional wetlands or waters at any of the staging areas.

3.6.3.2 *Environmental Consequences*

Significant impacts to wetlands would occur if the action caused a net loss of wetlands, or if direct impacts could not be mitigated.

No Action Alternative

It is unlikely that maintenance and repairs would result in impacts to wetlands, under the No Action Alternative. However, if equipment needs to be placed in a wetland to conduct any maintenance or repairs, NASA would obtain authorization from appropriate regulatory agencies for impacts through the JPA process prior to starting work. Adverse impacts, if any, would likely be negligible to minor and may be short or long-term. Impacts would be mitigated through the JPA process, as necessary.

Proposed Action

Construction and demolition activities would result in adverse, negligible to minor, short-term and long-term direct and indirect impacts to wetlands as described below. Impacts could be major if a spill occurred; the magnitude of the spill and the amount of permanent direct impacts, would determine the degree of the impact. The evaluation of potential impacts assumed that all areas of wetlands within the FHWA 30% plan LOD would be impacted. Final quantification of impacts would occur during the Design-Build design and permitting process and may differ from preliminary impacts presented here.

Secondary Impacts

Secondary, or indirect, impacts to wetlands may occur from the ground disturbances associated with placement and operation of equipment on uplands, particularly in areas adjacent to wetlands, and from the placement of fill to build the embankments and roadbed, which could result in the transport of sediment into wetlands or waterways. Site-specific BMPs to minimize impacts could include silt fencing, soil stabilization blankets, and matting around areas of soil disturbance. Bare soils would be vegetated immediately after construction to reduce erosion and stormwater runoff velocities. The area of secondary impacts has not been quantified; secondary impacts only require permit authorizations if they result in loss of wetlands (e.g., hydrology is cut off). Secondary impacts, if they occur, would likely be negligible to minor and short-term. Although they would likely not require permitting, any secondary impacts would be identified in the JPA.

Temporary Direct Impacts

Temporary direct impacts may occur from construction and removal of temporary construction access, pile driving for temporary construction access, excavation to be returned to original contours, and from the removal of infrastructure during demolition of the existing bridge. Impacts would be minor and short-term. Based on FHWA 30% design, 1.34 ha (3.30 ac) of wetlands and waters, including estuarine emergent, estuarine intertidal, and estuarine open water (**Table 3-2**) would be temporarily impacted.

Classification of Water/Wetland	Area	Agency with Jurisdiction	Source of the Impact
Vegetated wetland (Estuarine emergent) (E2EM1N)	0.19 ha (0.47 ac)	USACE, VDEQ, ACWB ⁴	Construction ²
Vegetated wetland (Estuarine emergent) (E2EM1N)	0.001 ha (0.003 ac)	USACE, VDEQ, ACWB ⁴	Demolition
Estuarine intertidal (E2US) ³	0.69 ha (1.7 ac)	USACE, VDEQ, ACWB	Construction ²
Estuarine intertidal (E2US) ³	0.24 ha (0.59 ac)	USACE, VDEQ, ACWB	Demolition
Estuarine open water (E1UB)	0.16 ha (0.40 ac)	USACE, VDEQ, VMRC	Construction ²
Estuarine open water (E1UB)	0.06 ha (0.14 ac)	USACE, VDEQ, VMRC	Demolition
Total	1.34 ha (3.30 ac)		

¹ Plan Sheets M05 and M06 in **Appendix B**

² Includes construction of the new bridge and any temporary construction access (for both construction and demolition)

³ The intertidal zone includes areas between MHW and MLW

⁴ Up to 1.5 mean tide range

To the extent practicable, the Design-Build contractor would use synthetic composite mats where equipment access is required in wetland areas to minimize impacts. Although permits are required for temporary impacts, no compensatory mitigation is required. Once work is completed, any previously vegetated bare areas would be revegetated with appropriate species known to occur near the Project Area, likely saltmeadow cordgrass (*Spartina patens*), and smooth cordgrass (*Spartina alterniflora*). Impacts would be minor and short-term.

There is also a potential for temporary direct wetland impacts from accidental leaks or spills from construction equipment. Temporary direct impacts could range from negligible to major depending on the size of the release of petroleum-based fluids (fuel, hydraulic oil, etc.) and how quickly it could be controlled and remediated. Any spills would be minimized through compliance with all applicable spill prevention and control requirements. With implementation of a site-specific

SWPPP and BMPs to avoid potential impacts to surface waters including wetlands, and adherence to permit requirements, the WFF ICP, and a project-specific SPCC, if a release occurred during the Proposed Action, impacts to wetlands would likely be localized and short-term.

Permanent Impacts

Based on FHWA 30% design, 0.45 ha (1.10 ac) of wetlands and waters, including estuarine emergent, estuarine intertidal, and estuarine open water (**Table 3-3**) would be permanently impacted for construction of the new bridge. Permanent impacts would include 0.01 ha (0.02 ac) of vegetated wetland impacts. All other permanent impacts would occur in non-vegetated wetlands. Impacts would be minor and long-term, and would be mitigated as described below.

Table 3-3. Permanent Impacts to Waters and Wetlands ¹			
Classification of Water/Wetland	Area	Agency with Jurisdiction	Source of the Impact
Vegetated wetland (Estuarine emergent) (E2EM1N)	0.01 ha (0.02 ac)	USACE, VDEQ, ACWB ³	Construction
Estuarine intertidal (E2US) ²	0.36 ha (0.88 ac)	USACE, VDEQ, ACWB	Construction
Estuarine open water (E1UB)	0.08 ha (0.20 ac)	USACE, VDEQ, VMRC	Construction
Total	0.45 ha (1.10 ac)		

¹ Plan Sheets M05 and M06 in **Appendix B**

² The intertidal zone includes areas between MHW and MLW

³ Up to 1.5 mean tide range

Summary of Impacts to Jurisdictional Wetlands

A summary of the direct temporary and permanent impacts to wetlands associated with FHWA's proposed 30% design is shown in **Table 3-4**.

Table 3-4. Direct Impacts to Jurisdictional Waters and Wetlands	
Type of Impacts	Total
Temporary Impacts	1.34 ha (3.30 ac)
Permanent Impacts	0.45 ha (1.10 ac)

The FHWA 30% design avoided wetland impacts to the greatest extent practicable. However, the potential wetland impacts from the Design-Build contractor's design may vary from FHWA's 30% plans. NASA would work with the Design-Build contractor to avoid and minimize temporary and permanent impacts to wetlands to the greatest extent practicable.

Permits and Mitigation

Permits would be required for unavoidable permanent and temporary direct impacts to jurisdictional waters and wetlands. The Design-Build contractor would submit a JPA to VMRC for concurrent review by USACE, VMRC, VDEQ, and ACWB. Impacts to WOTUS would be regulated through permits issued by USACE pursuant to Section 404 of the CWA and Section 10 of the Rivers and Harbors Act, VDEQ pursuant to their VWP permit regulations and Section 401 of the CWA, and VMRC for waters and wetlands under their jurisdiction. VDEQ may waive their permitting requirements if VMRC issues a permit.

The Design-Build contractor would be responsible for preparing the JPA. Final permit and mitigation requirements would be determined after the Design-Build final design and in coordination with the regulatory agencies and would be the responsibility of NASA. A VMRC permit for impacts to subaqueous lands and tidal wetlands would be required. NASA anticipates that Individual Permits from USACE and VDEQ would be required. Individual Permits require formal description of ‘purpose and need’ public notices, adjacent property owner notifications, and an alternatives evaluation to verify wetlands and waters are avoided to the maximum extent practicable. Individual Permits are open to greater scrutiny by the public, USEPA, and other review agencies. Agency review times for Individual Permits vary with typical review times ranging from 8 to 14 months.

USACE requires compensatory mitigation for all permanent impacts to streams and wetlands, which would be developed during the Section 404/401 permitting process. Mitigation ratios are typically 1:1 for impacts to estuarine emergent wetlands; mitigation for intertidal impacts is typically determined on a per case basis and is generally in the range of 1:1; no mitigation is typically required for open water impacts but could be requested by the regulatory agencies during the permitting process.

As of April 2023, per the USACE Regulatory In-lieu Fee and Bank Tracking System, no commercial credits are available in the project watersheds (Hydrologic Unit Code [HUC] 2040304, HUC 2040303). NASA may purchase Advance/In-lieu Fee credits from the Virginia Aquatic Resources Trust Fund, if credits become available. Otherwise, NASA would evaluate on-site mitigation options. In accordance with existing regulations and standard permit conditions, all areas with temporary impacts, if any, would be restored to original contours and re-vegetated with the same or similar species.

Operation

Periodic maintenance and repair during the 75-year lifespan of the bridge is not likely to have impacts on wetlands; however, NASA would evaluate the proposed activities on a case-by-case basis and would obtain permits as needed for impacts to waters and wetlands.

NASA would implement ESC BMPs to minimize secondary impacts to wetlands. If a spill occurs, impacts would likely be adverse and could be negligible to major, short- or long-term, depending on the magnitude and location of the spill.

3.6.4 Floodplains

Floodplains are lowland areas located adjacent to bodies of water in which the ordinary high-water level fluctuates on an annual basis. EO 11988 *Floodplain Management* requires federal agencies to minimize occupancy and modification of the floodplain. Flood Insurance Rate Maps (FIRMs) are produced by the Federal Emergency Management Agency (FEMA) and delineate the scope of potentially affected floodplains in the Project Area.

3.6.4.1 Affected Environment

The entire Causeway Bridge project area is included on FIRM Community Panel 51001C0480G. The bridge project area is in the 100-year floodplain Zone VE. Zone VE is defined as areas along coasts subject to inundation by the 1-percent-annual-chance flood event with additional hazards associated with storm-induced waves (FEMA 2015). FIRM Community Panel 51001C0460G, shows that no staging areas are within a floodplain (FEMA 2015).

Cat Creek and the proposed bridge are located in a tidal zone where daily flows and flood flows are influenced by tides and storm surge from events such as Nor'easters and hurricanes.

3.6.4.2 Environmental Consequences

Significant impacts to floodplains would occur if the Proposed Action resulted in adverse changes to hydrologic function of the floodplain in the proposed Project Area.

No Action Alternative

The No Action Alternative would have no impacts to floodplains, including during maintenance and repairs, because there would be no changes to existing floodplain conditions.

Proposed Action

Construction and Demolition

Because the bridge project area is entirely in the 100-year floodplain, there are no practicable alternatives to avoid construction and demolition activities in the floodplain. During construction and demolition, if a weather event is predicted that could result in flooding of the Project Area, NASA would have equipment and materials associated with the project removed from the floodplain. With these contingency measures in place, the Proposed Action would have no impacts to floodplain functionality.

NASA would ensure that the Proposed Action complies with EO 11988, *Floodplain Management*, and NASA Regulations on Floodplain and Wetland Management. Since the Proposed Action would involve federally funded and authorized construction in the 100-year floodplain, this EA serves as NASA's means for facilitating public review as required by EO 11988.

Operation

In 2021, HWR conducted a detailed hydrologic and hydraulic analysis of the proposed bridge replacement project, including sea level rise impact, hydrodynamic modeling, and combined storm

surge (HWR 2021a). The proposed bridge design used in the 2021 hydrologic and hydraulic analysis was similar to FHWA's 30% design plans, with the proposed bridge elevation ranging from approximately 2.8 m (9.26 ft) above mean sea level (MSL) at the start of the approaches to 9.5 m (31 ft) above MSL at the center of the bridge. The conclusions in HWR's (2021a) analysis for future flood events state "100-year flood elevations show no increase in the flood elevations at the proposed bridge location."

The new bridge would result in permanent encroachments to the floodplain beneath the bridge with installation of permanent piers that may differ in number and size from the existing bridge. However, with removal of the existing bridge and piers, the addition of new piers would likely result in a similar footprint, or "encroachments" within the floodplain. Encroachments are defined in FHWA's CFR §650.105 as "an action within the limits of the base flood plain." Encroachments resulting from the Proposed Action would not be "significant encroachments¹" as defined in 23 CFR §650.105(q).

The Design-Build contractor would be required to conduct hydraulic and hydrologic modeling of the final bridge design to determine the bridge's effects on flood elevations and floodplain functionality, with NASA and FHWA review to reach a final design that would not have adverse impacts to the functionality of the floodplain. Additionally, the proposed bridge footings would not induce flooding. Therefore, the Proposed Action would have no adverse impacts to the floodplain.

Under the Proposed Action, ongoing maintenance and repairs to the Causeway Bridge throughout its 75-year lifespan would occur in the floodplain. Impacts would be similar to those for construction and demolition; therefore, no long-term adverse impacts to the floodplain from maintenance and repairs are expected.

3.6.5 Coastal Zone

Pursuant to the Coastal Zone Management Act (CZMA) of 1972 and federal consistency regulations, all federal actions that have reasonably foreseeable effects on any land or water use or natural resources in Virginia's designated coastal resources management area must be consistent with the enforceable policies of Virginia's Coastal Zone Management Program (VCZMP). As the lead agency for the VCZMP, VDEQ is responsible for coordinating Virginia's review of federal consistency.

¹ Significant encroachment shall mean a highway encroachment and any direct support of likely base flood-plain development that would involve one or more of the following construction-or flood-related impacts:

- (1) A significant potential for interruption or termination of a transportation facility which is needed for emergency vehicles or provides a community's only evacuation route.
- (2) A significant risk, or
- (3) A significant adverse impact on natural and beneficial flood-plain values.

3.6.5.1 *Affected Environment*

Virginia has developed and implemented the federally approved VCZMP, which includes 12 enforceable policies pertaining to:

- Tidal and Non-Tidal Wetlands
- Subaqueous Lands
- Dunes and Beaches
- Chesapeake Bay Preservation Areas
- Marine Fisheries
- Wildlife and Inland Fisheries
- Plant Pests and Noxious Weeds
- Commonwealth Lands
- Point Source Air Pollution
- Point Source Water Pollution
- Non-point Source Water Pollution
- Shoreline Sanitation

3.6.5.2 *Environmental Consequences*

No Action Alternative

Under the No Action Alternative periodic maintenance and repair of the existing bridge may be required. NASA would evaluate proposed activities on a case-by-case basis and coordinate with VDEQ pursuant to the CZMA, as necessary. If a spill occurs impacts, would likely be adverse and negligible to major and could be short or long-term, depending on the magnitude and location of the spill.

Proposed Action

NASA has determined that the Proposed Action would be consistent, to the maximum extent practicable, with the enforceable policies of VCZMP. NASA has prepared a Federal Consistency Determination (FCD) evaluating the effects of the Proposed Action on Virginia's coastal zone resources, which will be submitted to VDEQ for review concurrently with the Draft EA public review period. A copy of the FCD is included in **Appendix D**. VDEQ concurrence with NASA's determination is pending.

3.6.6 *Sea-Level Rise and Climate Change Resilience*

On January 9, 2023, CEQ issued interim guidance, *National Environmental Policy Act Guidance on Consideration of Greenhouse Gas Emissions and Climate Change*. This guidance directs federal agencies to consider GHG emissions and climate change in NEPA reviews. Evaluation of GHGs is provided in Section 3.2, *Air Quality*. This section discusses sea level rise and climate change resilience.

Per the CEQ guidance, NEPA evaluations should consider (1) potential effects of a proposed action on climate change, and (2) potential effects of climate change on the proposed action and its environmental impacts. The guidance stresses the need to ensure climate-resilient infrastructure by considering the reasonably foreseeable effects of climate change on infrastructure investments and the resources needed to protect such investments over their lifetime and the importance of adaptation planning.

NASA's *Climate Action Plan* (NASA 2021) provides NASA's vision for adapting to climate change effects on its mission, facilities, infrastructure, natural lands, and other assets. It is NASA's policy to integrate climate considerations into agency actions. To implement this policy, NASA commits to identify and implement adaptation strategies to avert potential mission impacts from climate change; integrate climate change adaptation planning actions into agency programs, policies, and operations; and minimize impacts to climate from agency programs, policies, and operations.

3.6.6.1 *Affected Environment*

Coastal environments are highly dynamic and particularly vulnerable to climate change and rising sea levels. The Project Area is in a coastal system that is highly influenced by the tides and storm surge (such as Nor'easters and hurricane events). Climate change impacts that may be experienced at WFF include rising sea levels, more frequent flooding, and increasingly intense, unevenly distributed rain events. These impacts may threaten infrastructure and lead to greater damage from hurricanes and storm events due to higher storm surge, which is the abnormal rise of water generated by a storm, over and above the predicted tide. The Project Area that includes the bridge structure is in FEMA flood zone VE with a base flood (100-year flood event) elevation of 2.7 m (9 ft) (FEMA Map Panel 51001C0480G).

The recently released federal report *Global and Regional Sea Level Rise Scenarios for the United States: Updated Mean Projections and Extreme Water Level Probabilities Along U.S. Coastlines (2022 Sea Level Rise Technical Report)* (Sweet et al. 2022) is a synthesis of the latest available science on sea level rise. The *2022 Sea Level Rise Technical Report* provides global, regional, and local sea level rise scenarios and considers a variety of processes that could influence sea level across a wide range of future warming conditions, as well as observation-based extrapolations that represent an estimated continuation of sea level changes based on extending observed tide-gauge trends from 1970-2020.

The *2022 Sea Level Rise Technical Report* provides five plausible sea level change scenarios through 2150 (Low, Intermediate-Low, Intermediate, Intermediate-High, and High) that correspond to average global sea level rise magnitudes relative to a baseline of year 2000. Projections for the northeast region for year 2100 (which covers the life of Proposed Action) are provided in **Table 3-5**. The *2022 Technical Report* includes regional extrapolations out to year 2050 based on tide-gauge records for coastal regions (**Table 3-5**) and includes information on projected increased magnitude and frequency of flooding. The report found that all coastal U.S. regions can expect a shift in flood regime in the next 30 years, with damaging and dangerous flood events occurring more frequently as sea levels rise.

Table 3-5. Sea Level Scenarios (m) relative to 2000 baseline- Northeast Region					
Year	Low	Intermediate-Low	Intermediate	Intermediate-High	High
2050*	0.36 [0.27-0.45]	0.40 [0.31-0.49]	0.43 [0.34-0.54]	0.49 [0.38-0.64]	0.54 [0.40-0.69]
2100	0.6	0.8	1.3	1.6	2.1

*Observation based, [likely ranges] are provided

Source: Sweet et al. 2022

3.6.6.2 *Environmental Consequences*

Significant impacts would occur if either the action caused an appreciable increase in the factors that affect sea level rise or if sea level rise would affect the ability of the action to function as designed.

No Action Alternative

There would be no effects to sea level rise under the No Action Alternative because no new human-built infrastructure or facilities contributing to sea level rise would be constructed. Sea level rise would impact the existing bridge and approaches under the No Action Alternative. Climate change may create long-term adverse impacts by accelerating the deterioration of the existing bridge structure through various mechanisms including accelerated materials degradation (e.g., CO₂ corrosion of concrete structures), exposure to more frequent flooding, damage to pavement (e.g., from more frequent precipitation events), higher scour rates, including scour at abutments and piers (e.g., due to higher rates of runoff), and more intense storm surges (Nasr et al. 2020). Depending on the magnitude of effects, sea level rise could affect the ability of the existing structure to function as designed. Impacts could range from minor to major and would be long-term.

Proposed Action

The Proposed Action's contributions to GHG emissions are discussed in Section 3.2, *Air Quality*.

The Envision program developed by the Institute for Sustainable Infrastructure provides a framework for assessing sustainability and resilience of infrastructure. It was developed as a tool to assist government agencies in delivering infrastructure that helps tackle climate change by utilizing sustainability and resiliency criteria including 'Climate and Resilience.' The 'Climate and Resilience' criteria focus on minimizing emissions that may exacerbate climate change and magnify short- and long-term risks (ISI 2018). NASA is voluntarily pursuing Envision certification for the Proposed Action.

One 'Climate and Resilience' criterion is the reduction of net embodied carbon, which addresses the embodied carbon of materials (as a proxy for various impacts) used over the life of a project.

This combines concepts of sourcing local materials, using materials more efficiently, and using lower-impact materials to reduce the combined environmental impacts of material use. By designing projects to use less material, use materials efficiently, and/or specifying materials with lower embodied carbon, projects can reduce their overall impact on climate change. NASA is investigating materials, including concrete mixes that incorporate pozzolan materials (blast furnace slag and/or fly ash) that would lower embodied carbon, and would encourage the Design-Build contractor to use such materials, where applicable.

The 2021 HWR hydraulic and hydrologic study provided preliminary bridge scour evaluation for a proposed bridge that was similar to FHWA's 30% design. Cat Creek and overbank areas were determined to be stable with no long-term scour potential in the Project Area. Based on preliminary plans, contraction scour (removal of material from the bed and banks across all or most of the channel width from contraction of the flow area) from the 100-year storm surge was calculated as 2.1 m (6.8 ft). Local scour (removal of bed materials from around piers, abutments, and embankments) at the proposed abutments and piers from the 100-year storm surge was calculated as 3.99 to 4.36 m (13.1 to 14.3 ft) (HWR 2021a). The Design-Build contractor would be required to conduct hydraulic and hydrologic modeling of the final bridge design to determine the bridge's effects on scour.

Sea level rise and climate change resilience has been incorporated into planning and FHWA's preliminary project design. FHWA requires that freeboard shall be provided, where practicable, to protect bridge structures from debris and scour-related failure. As noted in Section 3.6.4, *Floodplains*, the preliminary FHWA 30% design plans provide freeboard above the 2.7 m (9 ft) base flood elevation. This bridge elevation would also remain above year 2100 sea level rise projections for all scenarios (Sweet et al. 2022).

Rock riprap as a scour countermeasure would likely be used at the proposed abutments. Based on preliminary FHWA 30% design, the riprap protection mat should be approximately 0.5 m (1.5 ft) and should extend from the toe of the embankment to an approximate elevation of 4 m (14 ft) (HWR 2021a).

Although final design would occur during the Design-Build process, scour protection and bridge elevations would be incorporated to meet all applicable specifications. Final design would incorporate sea level rise considerations over the 75-year lifespan of the bridge to meet minimum regulatory height requirements for the life of the new bridge.

Given the scale of the project, impacts of the Proposed Action on climate change and sea level rise would be negligible and, therefore, would have no foreseeable potential to significantly impact either climate change or sea level rise. Sea level rise impacts would be incorporated into the final design and are not anticipated to shorten the projected life of the proposed bridge or impact the ability of the Proposed Action to function as designed. Impacts are anticipated to be negligible and long-term.

3.7 Vegetation

Vegetation at Wallops Mainland and Wallops Island are discussed in detail in the *Final Site-wide PEIS*. There is one federally listed plant species; it is discussed in greater detail in Section 3.9, *Special Status Species*.

3.7.1 Affected Environment

Vegetation within the proposed bridge area of the Project Area consists primarily of estuarine emergent wetland vegetation, e.g., saltmeadow cordgrass, smooth cordgrass, and common reed (*Phragmites australis*, '*Phragmites*'). Upland vegetation is found on the fill slopes of the causeway and includes eastern white pine (*Pinus strobus*), eastern red cedar (*Juniperus virginiana*), chokecherry (*Prunus virginiana*), southern wax myrtle (*Myrica cerifera*), poison ivy (*Toxicodendron radicans*), beaked panic grass (*Panicum anceps*), black rush (*Juncus roemerianus*), redtop (*Agrostis gigantea*), wild rye (*Elymus riparius*), hairy crabgrass (*Digitaria sanguinalis*) and other herbaceous plants (NASA and FHWA 2020). Vegetation within proposed staging areas consists of grasses and herbaceous species typical of disturbed areas. These habitats do not represent rare vegetation communities. Grasses that grow to the surface of, but do not emerge from, shallow water are called SAV. No SAV beds are within the Project Area (VMRC 2022).

Invasive species are species that are not native to a given ecosystem and whose introduction causes, or is likely to cause, economic or environmental harm and/or harm to human health (EO 13112 *Invasive Species*; EO 13751 *Safeguarding Nation from the Impacts of Invasive Species*). Invasive species typically thrive in disturbed conditions and can readily displace native species and create monoculture habitats threatening biodiversity, with *Phragmites* being a common threat in wetland systems in the Project Area. *Phragmites* is a tall (5 m [15 ft]) perennial grass that forms a dense vegetative mat, preventing other species from becoming established. *Phragmites* is an opportunistic species, which takes advantage of disturbances to local vegetative communities including from construction activities. *Phragmites* has been designated on the Virginia Invasive Species List as having a high invasiveness rank with demonstrable evidence that it poses a threat to Virginia's habitats. Species are ranked based on their potential to alter ecosystem processes, invade undisturbed natural communities, and cause substantial impacts to rare or vulnerable species or natural communities; their ability to disperse readily, and difficulty of controlling the species (Heffernan et al. 2014).

3.7.2 Environmental Consequences

Impacts to vegetation would be considered significant if species or habitats would be substantially affected over relatively large areas, habitat disturbances would result in reductions in the population size or distribution of a species, or invasive species (e.g., *Phragmites*) would be introduced to rare habitats.

3.7.2.1 *No Action Alternative*

Under the No Action Alternative, maintenance and repairs would occur until bridge closure. Vegetation could be affected by maintenance or repair activities; adverse impacts would likely be minor and short-term. Vegetation would continue to be managed in accordance with NASA WFF policies and procedures.

3.7.2.2 *Proposed Action*

Minor impacts to upland vegetation would occur from construction access along roadway shoulders, embankments, and the base of the approaches where fill would be imported, and at the proposed staging areas. Vegetation would be temporarily disturbed by vehicle and equipment access and would be permanently impacted in proposed staging areas anywhere that gravel pads would be constructed. In general, these areas have been previously disturbed, are maintained by mowing, and consist of low-growing vegetation.

The removal of mature trees may occur along the embankment and at the base of the causeway and would be minimized to the extent practicable. Effects would occur at the individual rather than the community, population, or species level and would not prevent or delay the continued propagation of any species. After construction, disturbed areas would be replanted with native vegetation in accordance with NASA WFF vegetation management policies.

Vegetated wetland impacts are discussed further in Section 3.6.3, *Wetlands*. Wetland areas that are disturbed may become more susceptible to colonization by invasive species, including *Phragmites*. NASA may require the Design-Build contractor to prepare and implement project-specific *Phragmites* management/control measures. These measures may include mowing of small infestations, restricted access, and cleaning measures for tracked equipment entering areas of known *Phragmites*, and post-construction monitoring. If possible, the top 30 cm (12 in) of material removed from wetlands would be preserved for use as wetland seed and rootstock in the excavated area unless the material contains *Phragmites*.

In its September 18, 2020, scoping comments, the Virginia Institute of Marine Science (VIMS) recommended that after the existing Causeway Bridge is removed, the area be regraded to tie into adjacent marsh contours and planted with appropriate tidal wetlands vegetation and stated that any construction access and/or disturbance should also be replanted. VIMS further recommended the development of a planting plan that includes monitoring and replanting as necessary as well as a *Phragmites* control plan.

Species or habitats would not be substantially affected over large areas, habitat disturbances would not result in reductions in the population size or distribution of a species, and invasive species would not be introduced to rare habitats. Short- and long-term adverse impacts to vegetation from the Proposed Action would be minor.

3.8 Wildlife

Common wildlife at Wallops Mainland and Wallops Island are discussed in detail in the *Final Site-wide PEIS*. Special status species, including federally listed threatened and endangered species, fish species managed under the Magnuson-Stevens Fishery Conservation and Management Act (MSA), marine mammals, Migratory Bird Treaty Act (MBTA) protected species, and bald eagles (*Haliaeetus leucocephalus*) are discussed in greater detail in Section 3.9, *Special Status Species*.

3.8.1 Affected Environment

3.8.1.1 Terrestrial Wildlife

Terrestrial wildlife includes mammals, reptiles, amphibians, invertebrates, and birds.

Mammals

Most common mammals at WFF, such as white-tailed deer (*Odocoileus virginianus*), opossum (*Didelphis marsupialis*), raccoon (*Procyon lotor*), red fox (*Vulpes vulpes*), white-footed mouse (*Peromyscus leucopus*), meadow vole (*Microtus pennsylvanicus*), eastern cottontail (*Sylvilagus floridanus*), and grey squirrel (*Sciurus carolinensis*) use upland and freshwater habitats (NASA 2017). However, transient individuals may be found in or near the Project Area. River otters (*Lontra canadensis*) and muskrat (*Ondatra zibethicus*) may use tidal marshes in the Project Area (NASA 2017).

Reptiles and Amphibians

While most reptiles and amphibians found at WFF use freshwater or upland habitats, diamondback terrapins (*Malaclemys terrapin*) may be found in the tidal marshes and tidal flats in the Project Area (NASA 2017).

Invertebrates

Wallops Island, particularly the tidal marsh areas, has an extensive variety of invertebrates. Salt marsh cordgrass wetlands are home to herbivorous insects such as the salt marsh grasshopper (*Orchelimum fidicinium*) and the tiny plant hopper (*Magamelus spp.*), and snail species such as periwinkle snail (*Littorina irrorata*) and mud snail (*Ilyanassa obsoleta*). Tidal marshes are home to parasitic flies, wasps, spiders, and mites. Salt marsh mosquitos (*Ochlerotatus sollicitans*) and greenhead flies (*Tabanus nigrovittatus*) are common insects (NASA 2017).

Birds

WFF is home to a wide variety of bird species. The Project Area is within the boundaries of the Audubon-designated Virginia Barrier Island Lagoon System Important Bird Area (IBA). IBAs are designated due to their importance to bird species as places that are critical to birds during some part of their life cycle (breeding, wintering, feeding, migrating) (CCB 2009 in VCZMP 2023). The Virginia Barrier Island Lagoon System IBA includes the most pristine chain of barrier islands along the Atlantic Coast, extensive salt marshes, intertidal mudflats, and open water that support

significant populations of multiple sensitive bird species (Audubon 2023). Internationally, the IBA has also been designated a UNESCO Biosphere Reserve and a Western Hemisphere Shorebird Reserve Site (Audubon 2023).

While many of these sensitive species nest on beaches, the IBA also supports the most significant breeding populations in the state of waders such as little blue heron (*Egretta caerulea*), tricolored heron (*Egretta tricolor*), snowy egret (*Egretta thula*), glossy ibis (*Plegadis falcinellus*), black-crowned night heron (*Nycticorax nycticorax*), as well as other wading birds including American bittern (*Botaurus lentiginosus*), horned grebe (*Podiceps auratus*), and pied-billed grebe (*Podilymbus podiceps*) which may be found in the Project Area (Audubon 2023, NASA 2019).

Marsh-nesting species including the seaside sparrow (*Ammodramus maritimus*), saltmarsh sharp-tailed sparrow (*Ammodramus caudacutus*), least bittern (*Ixobrychus exilis*), Nelson's sharp-tailed sparrow (*Ammodramus nelsoni*), and sedge wren (*Cistothorus stellaris*) may inhabit the Project Area. Other species that are non-breeding in the region that may be found in marsh areas of WFF include the marbled godwit (*Limosa fedoa*), red-throated loon (*Gavia stellata*), short-billed dowitcher (*Limnodromus griseus*), and solitary sandpiper (*Tringa solitaria*) (NASA 2019). Raptors, including peregrine falcon (*Falco peregrinus*), northern harriers (*Circus cyaneus*), and osprey (*Pandion haliaetus*) as well as a variety of waterfowl may utilize tidal marshes in the Project Area (NASA 2017). No bald eagle nests are known to occur in the Project Area (CCB 2023).

Most of the bird species in the Project Area are protected by the MBTA. Bird species protected under the MBTA are discussed in Section 3.9, *Special Status Species*.

3.8.1.2 Aquatic Wildlife

Common aquatic species in the Project Area include fish and invertebrate species.

Fish

The tidal marshes in and around the Project Area serve as nursery habitat providing both shelter and forage for a variety of fish species, including spot (*Leiostomus xanthurus*), northern pipefish (*Syngnathus fuscus*), dusky pipefish (*Syngnathus floridae*), and bay anchovy (*Anchoa mitchilli*) (NASA 2017). The waters and wetlands in and around WFF also serve as important habitat for Atlantic menhaden (*Brevoortia tyrannus*), and anadromous species alewife (*Alosa pseudoharengus*), blueback herring (*Alosa aestivalis*), American shad (*Alosa sapidissima*), and striped bass (*Morone saxatilis*) (NASA 2019). Transient individuals of these species may be present in the Project Area.

Invertebrates

Important invertebrate species known to occur in the Project Area include eastern oyster (*Crassostrea virginica*) and ribbed mussel (*Guekensia demissa*). Blue crab (*Callinectes sapidus*) may also be in the Project Area. Blue crabs, particularly juveniles, use structured habitats including oyster reefs as refuges and nursery areas (Longmire et al. 2021). While less likely to be present, hard clams or quahogs (*Mercenaria mercenaria*) have the potential to occur in the Project Area.

Habitat conditions do not favor this species, as hard clams prefer sand over mud substrates (Roegner and Mann 1990).

Eastern oysters and ribbed mussels provide a variety of important habitat functions including improving water quality, providing forage for larger organisms, and supporting commercially important fisheries. Eastern oyster reefs are important features structuring the estuarine landscape. Oyster populations and reefs provide a suite of ecosystem services such as habitat for benthic macrofauna (Zimmerman et al. 1989 in Colden and Lipcius 2015), enhanced nutrient cycling (Kellogg et al 2013 in Colden and Lipcius 2015), and shoreline stabilization (Piazza et al. 2005 in Colden and Lipcius 2015). Ribbed mussels generally aggregate along marsh edges around *Spartina alterniflora* plant growth, stabilizing the marsh and reducing erosion (Bertness 1984), as well as enhancing water quality by filtering particulate matter (Moody and Kreeger 2020).

Due to their economic importance, the fisheries supported by these species are regulated by state agencies including the Virginia Department of Health (VDH) and VMRC. Under VDH, the Department of Shellfish Sanitation is responsible for approving the safety and health of the waters from which shellfish are harvested.

There are no shellfish condemnation areas in the project vicinity (VMRC 2022). VMRC promotes and regulates clam and oyster aquaculture in subaqueous lands. VMRC issues private aquaculture leases and designates public Baylor Grounds which are mandated to be held in trust for the benefit of the people of Virginia. There are no private oyster ground leases or oyster ground applications in the Project Area, but Cat Creek is designated as a public Baylor Ground (**Figure 3-2**).





VMRC also designates Fisheries Management Areas, which include blue crab sanctuaries, hard clam harvest areas, oyster management areas, and shellfish management areas. There are no Fisheries Management Areas in the Project Area or vicinity (VMRC 2022).

During project scoping, in comments dated September 22, 2020, the VMRC recommended that a survey be conducted of shellfish resources in the Project Area. The FHWA conducted both a presence/absence and a preliminary density survey of a representative portion of the shellfish beds fringing the tidal wetlands in the Project Area in May 2021 (FHWA 2021). Oysters were identified in the mudflats along the perimeter of the tidal wetlands and adhering to the concrete bridge piers, and mussels were identified in the spaces between concrete riprap at the base of the embankment.

Oyster beds generally extended an average of 6 m (20 ft) (0 to 12 m [40 ft] range) waterward from the vegetated wetland limit in the intertidal mudflats. Density was slightly higher on the western side of the bridge where 134.5 oysters per m² (12.5 oysters per ft²) were observed. There are 0.6 ha (1.45 ac) of shellfish beds within the Project Area (**Figure 3-3**).



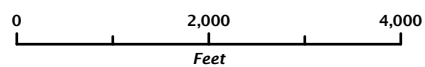
Legend

-  Staging Area
-  Bridge Envelope Limits of Disturbance
-  Private Oyster Ground Leases
-  Public Baylor Grounds

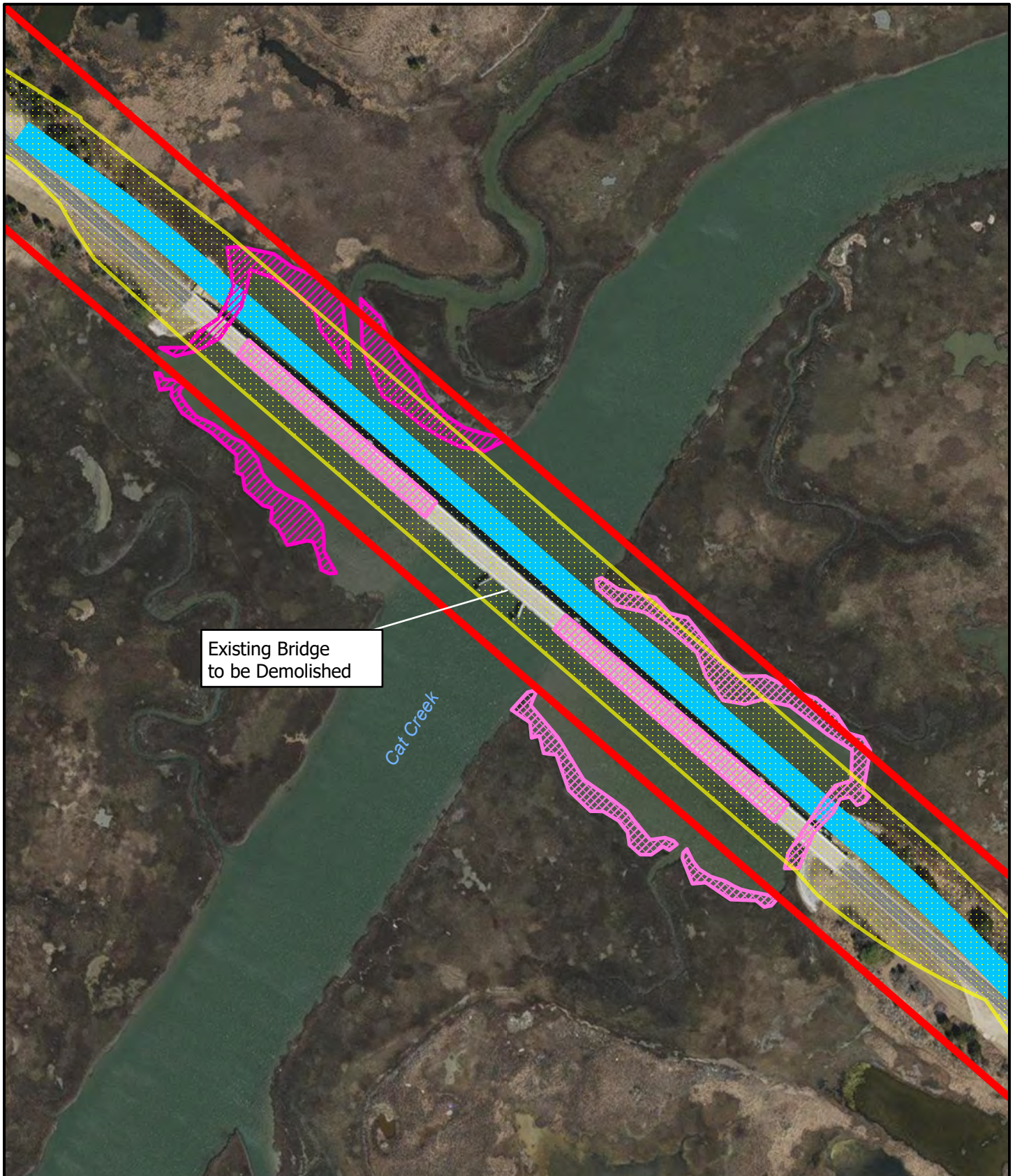


Sources: NASA, VGIN, VMRC / Prepared by: WSSI, 32529.01, JB
Projection: NAD 1983 StatePlane Virginia North FIPS 4501 Feet

**FIGURE 3-2
PUBLIC BAYLOR GROUNDS AND
PRIVATE OYSTER LEASES**

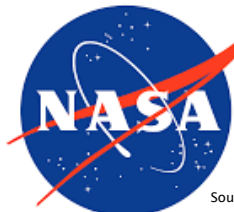


WFF Causeway Bridge Replacement Project



Existing Bridge
to be Demolished

Cat Creek



Legend

Oyster Beds and Reefs

Digitized to FHWA Map - 2021

Data Provided by FHWA - 2021

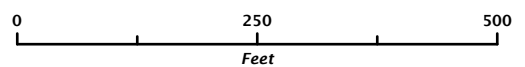
Proposed Causeway Bridge

FHWA 30% Plan Limits of Disturbance

Bridge Envelope Limits of Disturbance



FIGURE 3-3
LOCATION OF OYSTER BEDS AND REEFS



WFF Causeway Bridge Replacement Project

Sources: NASA, VGIN, FHWA Shellfish Survey Report 2021 / Prepared by: WSSI, 32529.01, JB
Projection: NAD 1983 StatePlane Virginia North FIPS 4501 Feet

3.8.2 Environmental Consequences

Determination of the significance of the potential impacts to common terrestrial and aquatic species is based on the sensitivity of the species to the proposed activities and the amount of habitat that would be temporarily or permanently impacted. Impacts would be considered significant if a species would be substantially affected over relatively large areas or if disturbances would result in a reduction in the population size or distribution of one or more species.

3.8.2.1 *No Action Alternative*

Under the No Action Alternative, there would be no construction or demolition activities and current conditions would continue. Periodic maintenance and repair of the existing bridge may impact terrestrial and aquatic species due to the presence of humans and equipment/vessels, disturbances to vegetation/habitat, or in-water work. In-water work would have the potential for increased underwater noise and turbidity. The predominant reaction among mobile species would likely be avoidance of the area. Maintenance and repair events would be similar to those of the Proposed Action and background conditions would be expected to return quickly. Impacts, if they occur, would likely be adverse, minor, and short-term.

3.8.2.1 *Proposed Action*

Terrestrial Wildlife

The Proposed Action would adversely impact terrestrial wildlife through removal of habitat as well as disturbance and displacement by construction and demolition activities, including associated noise, light, and increased activity. Mobile and faster-moving species, including most mammals and birds, would likely relocate to undisturbed areas offering similar habitat in or near the Project Area. Slower-moving or less mobile species, such as insects, may be injured or killed by construction equipment and vehicles. If construction occurs during breeding season (generally spring and summer), marsh-nesting birds could be adversely affected. Impacts to marsh-nesting birds protected by the Endangered Species Act (ESA) and MBTA are discussed further in Section 3.9, *Special Status Species*.

Impacts on terrestrial wildlife would occur at the individual level rather than the population or species level. The Proposed Action would not substantially affect species over large areas or result in a reduction in the population size or distribution of one or more species. Impacts would be minor and may be short- or long-term.

Aquatic Wildlife

The Proposed Action would adversely impact aquatic species through in-water work associated with bridge construction and demolition. Impacts on aquatic wildlife would occur at the individual level rather than the population or species level. The Proposed Action would not substantially affect species over large areas or result in a reduction in the population size or distribution of one or more species. Impacts would be minor and may be short- or long-term.

Impacts to species protected by the ESA and Marine Mammal Protection Act (MMPA) are discussed further in Section 3.9, *Special Status Species*.

Fish

Potential adverse impacts to fish would be associated with underwater noise, increased turbidity and sedimentation, entanglement and increases in vessel traffic. In general, highly mobile species like fish would relocate to nearby similar habitats during construction and demolition. Avoidance of the Project Area by individuals would not be anticipated to substantively affect behaviors such as migration, mating, or foraging for food.

Underwater noise – Underwater sound pressure waves can injure or kill fish, with fish species having swim bladders (a chamber of air in the abdominal cavity) most susceptible to physical injury. Fish species lacking a swim bladder (e.g., flatfish including flounder) or those that have a small or reduced swim bladder (many benthic species including some flatfish) tend to have poor auditory sensitivity and are less susceptible to injury (NMFS 2016). For fish with swim bladders, as a pressure wave passes through a fish, the swim bladder is rapidly squeezed due to high pressure and then rapidly expanded as the under-pressure component of the wave passes through the fish; this may rupture capillaries in the internal organs (Hastings and Popper 2005).

In-water work, including pile driving and bridge demolition activities, would create temporary adverse underwater noise impacts. Sound levels generated during pile driving operations depend on numerous factors including pile size, shape, and material; hammer type and energy; sediment or bedrock type; and water depth and bathymetry. As the distance from the source increases, underwater sound levels dissipate rapidly. As described further in Section 3.9, *Special Status Species*, the NMFS Greater Atlantic Regional Fisheries Office (GARFO) Acoustics Tool using the Simplified Attenuation Formula for riverine systems (NMFS 2020) was used to determine potential acoustic effects of proposed pile driving activities based on preliminary design plans including both concrete bridge piles and steel piles for temporary construction access trestles.

Modeling results indicate that noise levels would be below the physiological injury threshold for fish. However, injury to a fish could occur if an individual remained in the immediate vicinity while the pile was being driven. This is unlikely to occur as fish are expected to vacate the pile driving area. Cat Creek at the Causeway Bridge is approximately 70 m (230 ft) wide; adequate passage exists for fish to vacate the area. Modeled noise levels are above the threshold for behavioral effects, which would most likely include avoidance behavior. The GARFO Acoustics Tool also estimates the distance of potential acoustic effects from the point of pile driving. Fish may experience behavioral effects within 50 m (165 ft) of concrete pile driving activity and 60 m (200 ft) of steel pile driving activity. No impacts to ambient noise levels are anticipated.

Water Quality and Benthic Habitat Effects – Adverse water quality and benthic habitat effects may occur due to direct loss of benthic habitat, direct disturbances to the benthic environment from boat anchors, as well as temporary increases in water turbidity due to construction and demolition activity. Increased turbidity has the potential to affect the foraging and escape abilities of fish

species that rely on visual means for feeding and navigation and may impact fish health by reducing the ability of fish's gills to extract dissolved oxygen from the water.

Sediment resuspension from pile driving is anticipated to be minimal and any increase in turbidity would be localized to the area around the pile being driven. Suspended sediment is expected to settle out of the water column within a few hours and any increase in turbidity would be short term and localized. Pile removal during bridge demolition would also cause a temporary increase in turbidity. The magnitude of this impact would depend on demolition means and methods as determined under the Design-Build Process. Directly pulling broken piles may suspend a larger amount of sediment, as sediments clinging to the pile slough off as it is raised through the water column. Clamshell buckets may suspend additional sediment if they penetrate the substrate while grabbing the pile. Conversely, vibratory pile removal can cause the sediments to slough off within the substrate, resulting in lower levels of suspended sediments (Hansen et al. 2003 in NOAA Fisheries and FHWA 2017). Breaking or cutting the pile below the mudline may suspend small amounts of sediment, if the stub is left in place and little digging is required. If project vessels, such as barge-mounted cranes, are used in shallow water, resuspension of bottom sediments may occur. The degree of sediment resuspension and turbidity produced in the water column from vessel activity is generally dependent on the wave energy and wake produced by the vessel, size of the sediment particles, water depth, and number of vessels passing through an area (NOAA Fisheries and FHWA 2017) and may be more pronounced in shallow water habitats with fine sediments (Johnson et al. 2008 in NOAA Fisheries and FHWA 2017).

Studies of the effects of turbid water on fish suggest that concentrations of suspended solids can reach thousands of milligrams per L (mg/L) before an acute toxic reaction is expected for most species, while sensitive species may be impacted at 580 mg/L (Burton 1993 in NOAA Fisheries 2023b). Benthic communities may be impacted at 390 mg/L (USEPA 1986 in NOAA Fisheries 2023b). Pile driving activities can be expected to produce total suspended solids (TSS) concentrations of approximately 5 to 10 mg/L above ambient levels within approximately 90 m (300 ft) of the pile being driven (FHWA 2012 in NOAA Fisheries 2023b). Therefore, the TSS levels expected for pile driving are below those shown to have adverse effect on fish or benthic prey communities. Inadvertent smothering of benthic prey species by increased turbidity and sedimentation would be localized and would not substantially affect the quantity or prey available in waters near the Project Area.

Entanglement – Cables, turbidity curtains, cofferdams, or other objects associated with construction or demolition could be a potential entanglement risk. Less mobile organisms, such as juvenile fish, may be more susceptible (Nightingale and Simenstad 2001). Entanglement in in-water lines or detached turbidity curtains can cause serious injury or mortality. Entanglement can cause fish to become impaired or incapacitated, leading to starvation, increased vulnerability to predators, or physical wounds (Milliken and Lee 1990; Johnson et al. 2008 in NOAA Fisheries and FHWA 2017). Proper deployment and monitoring of in-water construction and turbidity control devices would minimize entanglement impacts.

Vessel Traffic – Collision with vessels (boat hulls and propellers) is a potential source of mortality and injury for fish. The Proposed Action would not lead to a permanent increase in vessel traffic above existing levels; however, the proposed work may result in a small, temporary increase in the number of vessels moving through the Project Area during construction and demolition. Generally, fish are more vulnerable to being struck by faster moving, deep-draft vessels in narrow channels. Project related construction vessels are anticipated to be generally slow moving or anchored, minimizing risks.

Invertebrates

Eastern oysters and ribbed mussels are known to be in the Project Area. Blue crabs and hard clams may be in the Project Area. Potential adverse impacts to invertebrate species include habitat loss associated with disturbance to the existing embankment during bridge demolition, pile placement and vessel anchoring during bridge construction, and disturbance to benthic habitat from increased turbidity and sedimentation during construction and demolition. Impacts would be minor and short- or long-term.

Habitat Conversion – Ribbed mussels occupying the existing embankment may be killed or suffer reduced fitness from trauma or suffocation during bridge demolition. The Proposed Action may directly impact oyster beds through the placement of bridge piers as well as trestles or anchoring of construction vessels for construction access, if required. Based on FHWA's 30% plans, approximately 0.40 ha [1.0 ac]) of shellfish beds may be directly impacted. Final bridge design as well as construction and demolition means and methods would be determined during the Design-Build process. NASA anticipates that final impacts to shellfish beds would be of similar magnitude to the FHWA 30% plans and would remain within the Project Area evaluated in this EA.

Water Quality and Benthic Habitat Effects – Eastern oysters and ribbed mussels may be adversely impacted by sedimentation and increased turbidity during construction and demolition. Mobile organisms such as fish can move away from areas of increased sediment loads, but filter feeding benthic organisms such as oysters and mussels are at particular risk due to their sessile nature. Turbidity affects the ability of oysters to filter feed because high sediment loads trigger oysters to close and stop filtering. Excessive sedimentation can also bury oyster beds, smothering the organisms and increasing mortality (NMFS 2007). In its September 18, 2020, scoping comments, VIMS stated that impacts to oysters could be reduced through strict ESC measures, and, if necessary, a time of year restriction (TOYR) for instream work.

Thresholds for lethal effects on eastern oyster egg development have been reported to occur at sedimentation rates as low as 188 mg/l (Nightengale and Simenstad 2001). Suspended solids concentrations <750 mg/l have been shown to allow for continued larval development, but higher concentrations for durations of 10 to 12 days have been shown to have lethal effects for oysters. One study found that oysters are tolerant of partial burial in terms of survival; however, burial may adversely affect metabolic processes and therefore negatively impact reef persistence (Colden and Lipcius 2015). Given the expected TSS concentrations from pile driving activities, direct mortality is not anticipated, but oysters may suffer reduced fitness. To mitigate impacts, in correspondence

dated October 15, 2021 (**Appendix E**), VMRC recommended that oyster shells and clusters within the project footprint be relocated to an adjacent reef, outside the Project Area. The Design-Build contractor would be responsible for oyster relocation and coordination with VMRC and VIMS regarding additional appropriate mitigation, based on final bridge design and as necessary.

Thresholds for lethal effects on hard clam egg development have been reported at 1,000 mg/l TSS (Mullholland 1984 in Nightengale and Simenstad 2001). As such, if they are in the Project Area, significant population level impacts to clams are not anticipated. Clams would be expected to re-establish following construction due to the extensive presence of local benthic habitat for recruitment. Turbidity is not anticipated to impact blue crabs, as they rely on chemosensory methods for foraging and do not rely on visual methods (Lunt and Smee 2015). Turbidity has been found to be positively correlated with juvenile blue crab abundance (Hyman et al 2022).

Operation

Periodic maintenance and repair during the 75-year lifespan of the bridge may adversely impact terrestrial and aquatic species due the presence of humans and equipment/vessels, disturbances to vegetation/habitat, or in-water work. In-water work would have the potential for increased underwater noise and turbidity. The predominant reaction among mobile species would likely be avoidance of the area due to increased human/vessel activity, noise, etc. Maintenance and repair events would be infrequent and short in duration, and background conditions would be expected to return quickly. Impacts would likely be minor and short-term.

3.9 Special Status Species

This section addresses species that have a special, legally protected status based on the following federal legislation:

ESA: The U.S. Fish and Wildlife Service (USFWS) and NOAA Fisheries designate, regulate, and protect federally listed threatened or endangered species, proposed and candidate for listing species, and proposed and designated critical habitat under Section 7 of the ESA. USFWS primarily has jurisdiction over terrestrial and freshwater aquatic species (as well as sea turtles when nesting onshore), and NOAA Fisheries primarily has jurisdiction over marine species (including sea turtles when in water).

MSA: The MSA established regional Fishery Management Councils (FMCs) which are responsible for the management and protection of marine fishes. The Sustainable Fisheries Act, which amended the MSA, created a requirement for FMCs to describe and identify Essential Fish Habitat (EFH). The MSA requires all federal agencies to consult with NOAA Fisheries on proposed actions that may impact designated EFH. EFH includes “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.” and may be designated for an individual species or an assemblage of species. NOAA Fisheries and the FMCs also identify Habitat Areas of Particular Concern (HAPCs). HAPCs are considered high priority areas for conservation, management, or research because they are rare, sensitive, stressed by development, or important to ecosystem function.

Fish and Wildlife Coordination Act (FWCA): The FWCA requires that all federal agencies consult with NOAA Fisheries when proposed actions might result in modifications to a natural stream or body of water. The FWCA also requires federal agencies consider the effects that these projects would have on fish and wildlife. Under the FWCA, NOAA Fisheries works to protect, conserve, and enhance species and habitats for a wide range of aquatic resources such as shellfish, diadromous species, and other commercially and recreationally important species that are not federally managed and do not have designated EFH. NOAA Fisheries typically provides comments for resources protected under the FWCA during MSA consultation.

MMPA: The MMPA established requirements for federal agencies to prevent or minimize effects from their actions on marine mammals. NOAA Fisheries has jurisdiction over most marine mammals, including whales, dolphins, porpoises, seals, and sea lions. USFWS has jurisdiction over manatees, dugongs, polar bears, sea otters, and walrus.

Bald and Golden Eagle Protection Act (BGEPA): The BGEPA prohibits "taking" (pursuing, shooting, poisoning, wounding, killings, capturing, trapping, collecting or disturbing) of bald and golden eagles or nests by anyone without a USFWS permit.

MBTA /EO 13186 Responsibilities of Federal Agencies to Protect Migratory Birds: The MBTA prohibits the taking (killing, capturing, selling, trading, and transport) of protected migratory bird species including eggs and nests without prior coordination and authorization by USFWS. In October 2021, USFWS issued a Final Rule reinstating the incidental take prohibition. Incidental take means the taking or killing of migratory birds that results from but is not the purpose of an activity. EO 13186 provides a framework for federal agencies to comply with the MBTA and aids in incorporating bird conservation planning into agency programs.

Fish and Wildlife Conservation Act: The Fish and Wildlife Conservation Act mandates USFWS to identify species, subspecies, and populations of all migratory nongame birds, that without additional conservation actions, are likely to become candidates for listing under the ESA.

3.9.1 Affected Environment

The special status species that may occur in the Project Area are discussed below. The species are grouped for discussion in the following sub-sections: Section 3.9.1.1 *ESA Listed Threatened and Endangered Species*, Section 3.9.1.2 *Essential Fish Habitat*, Section 3.9.1.3 *Marine Mammals*, Section 3.9.1.4 *Bald Eagles*, and Section 3.9.1.5 *Migratory Birds*.

3.9.1.1 *ESA Listed Threatened and Endangered Species*

Federally listed species that may occur within or in the vicinity of the ESA Action Area were identified using the USFWS Information for Planning and Consultation system (USFWS 2022), the NOAA Fisheries Greater Atlantic Region ESA Section 7 Mapper (NOAA Fisheries 2022a), and the Virginia Department of Wildlife Resources (VDWR) Virginia Fish and Wildlife Information Service (VDWR 2023a) (**Appendix F**) and are summarized in **Table 3-6**. The ESA Action Area is defined as “all areas to be affected directly or indirectly by the federal action and

not merely the immediate area involved in the action.” The Action Area includes portions of Cat Creek and adjacent mudflats, shellfish areas, and tidal wetlands in the vicinity of the proposed project, as well as a radius of approximately 60 m (200 ft) in Cat Creek where ensonification from pile driving may impact protected species. For each species, the table provides the habitats preferred by the species, and its potential or documented occurrence in the ESA Action Area. Species other than tri-colored bat (*Perimyotis subflavus*) and eastern black rail (*Laterallus jamaicensis jamaicensis*) are discussed in greater detail in the *Final Site-wide PEIS*; these two species are described below **Table 3-6**. No critical habitat has been designated in or near the ESA Action Area.

Table 3-6. Federally Listed Species with Potential to Occur in the ESA Action Area				
Common Name	Scientific Name	Status ¹	Habitat Type	Notes
Seabeach amaranth ²	<i>Amaranthus pumilus</i>	FT, ST	Seaward of primary dunes	Species has not been documented at WFF since monitoring began in 2010; nearest documented occurrence is on Assateague Island. No primary dunes or beaches in the ESA Action Area; therefore, no suitable habitat present.
Northern long-eared bat	<i>Myotis septentrionalis</i>	FE, SE	<u>Summer:</u> Under bark, or in cavities or crevices of live and dead trees <u>Winter:</u> Caves and mines <u>Any time:</u> Anthropogenic structures including bridges	Suitable habitat including the bridge structure and trees are within the ESA Action Area. Per the ‘Northern Long Eared Bat Winter Habitat and Roost Trees’ database maintained by the VDWR (VDWR 2023b), there are no known occupied maternity roosts (summer habitat) or hibernaculum on the Eastern Shore. An acoustic and visual presence/absence survey was conducted in the Project Area in May 2023 in accordance with the <i>2023 Range-wide Indiana Bat and Northern Long-Eared Bat Survey Guidelines</i> (USFWS 2023a) and <i>Federal Transportation Agency/State Department of Transportation Bridge/Structure Bat Assessment Guidelines</i> (FHWA, FRA, FTA & USFWS 2022). No echolocation call sequences of the northern long-eared bat were recorded, therefore this species is presumed absent. No indicators of bat presence were found during the survey of the existing bridge. The survey results are being reviewed by the USFWS; this section will be updated with USFWS’s response.

Table 3-6. Federally Listed Species with Potential to Occur in the ESA Action Area				
Common Name	Scientific Name	Status ¹	Habitat Type	Notes
Tri-colored bat	<i>Perimyotis subflavus</i>	PE, SE	<p><u>Summer</u>: caves, trees, cliffs and barns</p> <p><u>Winter</u>: caves</p>	Suitable habitat may be present in the ESA Action Area. Per the ‘Little Brown Bat and Tri-colored Bat Winter Habitat and Roosts Application’ maintained by VDWR (VDWR 2023c), there are no known hibernaculum on the Eastern Shore. An acoustic and visual presence/absence survey was conducted in the Project Area in May 2023 in accordance with the 2023 <i>Range-wide Indiana Bat and Northern Long-Eared Bat Survey Guidelines</i> (USFWS 2023a) and <i>Federal Transportation Agency/State Department of Transportation Bridge/Structure Bat Assessment Guidelines</i> (FHWA, FRA, FTA & USFWS 2022). No echolocation call sequences of the tri-colored bat were recorded, therefore this species is presumed absent. No indicators of bat presence were found during the survey of the existing bridge. The survey results are being reviewed by the USFWS; this section will be updated with USFWS’s response.
Monarch butterfly ²	<i>Danaus plexippus</i>	FC	<u>Breeding</u> : meadows and weedy fields with milkweed	No suitable breeding habitat in ESA Action Area. Proposed staging areas are maintained by mowing and do not harbor mature herbaceous species.
Red knot ²	<i>Calidris canutus rufa</i>	FT, ST	Coastal marine and estuarine habitats with large areas of exposed intertidal sediments	Regularly forages on Wallop Island beaches during northerly spring migration. The Proposed Action would not occur on beaches or near red knot habitat; therefore, no suitable habitat present.
Piping plover ²	<i>Charadrius melodus</i>	FT, ST	Coastal beaches and tidal flats	Transient and summer resident of the upper Virginia barrier islands. Regularly nests and forages on Wallops Island beaches. The Proposed Action would not occur on beaches or near piping plover habitat; therefore, no suitable habitat present.
Roseate tern ²	<i>Sterna dougallii dougallii</i>	FE, SE	Offshore ocean waters	Rarely observed along the U.S. coast south of New Jersey; may transit over oceanic waters off WFF during seasonal migration. No suitable habitat present.
Eastern black rail ²	<i>Laterallus jamaicensis jamaicensis</i>	FT, SE	Salt and brackish marshes with dense cover and upland areas of such marshes (USFWS 2021a)	Potential habitat exists within ESA Action Area. NASA completed three rounds of acoustic surveys during the 2022 breeding season. No visual or auditory observations of eastern black rails were recorded (Stein et al. 2022).

Table 3-6. Federally Listed Species with Potential to Occur in the ESA Action Area				
Common Name	Scientific Name	Status ¹	Habitat Type	Notes
Atlantic sturgeon	<i>Acipenser oxyrinchus oxyrinchus</i>	FE, SE	Spawn in flowing fresh waters between the salt front and fall line then migrate to estuarine and marine waters as sub-adults and adults	Species have been documented in deeper waters off WFF (NASA 2019). Potential occurrence in ESA Action Area: adults and subadults migrating and foraging from January 1 to December 31. Per the NOAA Fisheries ESA Section 7 Consultation database (NOAA Fisheries 2022a), Atlantic sturgeon adults and sub-adults may be found migrating or foraging in the ESA Action Area any time of the year. As there are no known spawning or congregation areas in the project vicinity, presence is likely limited to transient individuals that enter Cat Creek while opportunistically foraging.
Loggerhead sea turtle	<i>Caretta caretta</i>	FT, ST	Coastal and offshore waters <u>Nesting:</u> ocean beaches and occasionally on estuarine shoreline	No loggerhead sea turtle nests have been observed on Wallops Island since 2013 (NASA 2022a). There is no suitable nesting habitat within the ESA Action Area. Per the NOAA Fisheries ESA Section 7 Consultation database (NOAA Fisheries 2022a), adult and juvenile loggerheads may be found in the ESA Action Area migrating and foraging between May and November.
Leatherback sea turtle	<i>Dermochelys coriacea</i>	FE, SE	Coastal and offshore waters	No nesting habitat in the ESA Action Area. Leatherbacks have never been sighted on WFF but are known to occur in the water offshore of Accomack County (NASA 2017). Per the NOAA Fisheries ESA Section 7 Consultation database (NOAA Fisheries 2022a), adult and juvenile leatherback sea turtles may be found in the ESA Action Area migrating and foraging between May and November.
Kemp's ridley sea turtle	<i>Lepidochelys kempii</i>	FE, SE	Coastal ocean waters	This species has never been observed at WFF (NASA 2017). No nesting habitat is found in the ESA Action Area. Per the NOAA Fisheries ESA Section 7 Consultation database (NOAA Fisheries 2022a), adult and juvenile Kemp's ridley sea turtles may be found in the ESA Action Area migrating and foraging between May and November.
Green sea turtle	<i>Chelonia mydas</i>	FT, ST	Coastal ocean waters	No nesting habitat in the ESA Action Area. This species has been observed in waters off WFF (NASA 2017). Per the NOAA Fisheries ESA Section 7 Consultation database (NOAA Fisheries 2022a), adult and juvenile green sea turtles may be found in the ESA Action Area migrating and foraging between May and November.
Hawksbill sea turtle	<i>Eretmochelys imbricata</i>	FE, SE	Coastal ocean waters	No nesting habitat in the ESA Action Area. Hawksbill sea turtles have never been observed at WFF. They may

Table 3-6. Federally Listed Species with Potential to Occur in the ESA Action Area

Common Name	Scientific Name	Status ¹	Habitat Type	Notes
				occur in offshore waters, but they prefer tropical waters and are unlikely to occur in the ESA Action Area (NASA 2017).

¹FE = federally listed as endangered; FT = federally listed as threatened; PE= proposed for federal endangered listing, C= candidate for federal listing, SE = state listed as endangered; ST = state listed as threatened; (SE and ST species are only listed for species that are federally listed)

²This species has not been documented at WFF and is unlikely to be present in the ESA Action Area or affected by the Proposed Action. Therefore, it is not addressed further in this EA.

Sources: VDWR 2023a, USFWS 2022, NOAA Fisheries 2022a, NASA 2017

Tri-colored bat: The tri-colored bat is proposed for federal listing as endangered and is state listed as endangered. This species roosts in caves in the winter and in caves, trees, cliffs, and barns in summer months (VDWR 2023a). Per the ‘*Little Brown Bat and Tri-colored Bat Winter Habitat and Roosts Application*’ maintained by DWR (VDWR 2023c), there are no known hibernaculum on the Eastern Shore.

Eastern black rail: The eastern black rail was federally listed as threatened in November 2020. It is state listed as endangered. This species is a small marsh bird that occurs in salt, brackish, and freshwater wetlands and is most often found in coastal areas. They historically inhabited the Virginia barrier Islands (Watts 2016). This species requires dense overhead cover and occurs between lower and wetter portions of marshes and their contiguous uplands (USFWS 2019).

WFF administers a *Protected Species Management Plan* (NASA 2023b). The Plan is reviewed annually in cooperation with USFWS and revised as necessary. The Plan outlines procedures for monitoring protected species that are likely to occur at Wallops Island including: seabeach amaranth, red knot, piping plover, northern long-eared bat, and sea turtles; as well as sea turtle and marine mammal stranding protocols. Monitoring reports for the protected species are prepared annually.

3.9.1.2 *Essential Fish Habitat*

EFH includes open water, shallow water habitat, areas of benthic habitat (intertidal mudflats, hard bottom habitat, SAV, shellfish areas), and tidal wetlands. EFH types in the Project Area include open water, tidal wetlands, intertidal mudflats, shellfish areas, and shallow water habitat.

Managed Species

Managed species found in the Project Area fall under the responsibility of the Mid-Atlantic Fishery Management Council and New England Fishery Management Council. The NOAA Fisheries' online EFH Mapper (NOAA Fisheries 2022b, **Appendix G**) identified eight species as having EFH for adult or juvenile life stages in Cat Creek: Atlantic butterfish, Atlantic herring, black sea bass,

bluefish, clearnose skate, summer flounder, windowpane flounder, and winter skate (**Table 3-7**). Additional species descriptions are provided in **Appendix G**.

Table 3-7. Species and Life States with Designated EFH			
Species Common Name (Scientific Name)	Juveniles	Adults	Potential Presence in Project Area
Atlantic butterfish (<i>Peprilus triacanthus</i>)		X	Atlantic butterfish are unlikely to be in Cat Creek, although transient individuals may be present primarily during the summer months.
Atlantic herring (<i>Clupea harengus</i>)		X	Atlantic herring are unlikely to be in Cat Creek, although transient individuals may be present.
Black sea bass (<i>Centropristis striata</i>)	X	X	Juvenile and adult black sea bass are most likely to be in the Project Area in the summer.
Bluefish (<i>Pomatomus saltatrix</i>)	X	X	Bluefish are unlikely to be in Cat Creek, although transient individuals may be present.
Clearnose skate (<i>Raja eglanteria</i>)	X	X	Clearnose skate are unlikely to be in Cat Creek, although transient individuals may be present.
Summer flounder (<i>Paralichthys dentatus</i>)	X	X	Juvenile and adult summer flounder are most likely to be in the Project Area during spring through fall.
Windowpane flounder (<i>Scophthalmus aquosus</i>)		X	Juvenile and adult windowpane flounder are most likely to be in the Project Area during spring through fall.
Winter skate (<i>Leucoraja ocellata</i>)	X	X	Winter skate are unlikely to be in Cat Creek, although transient individuals may be present.

Note: An "X" indicates that EFH has been designated within the Project Area for that species and life stage.

Source: NOAA Fisheries 2022b. No eggs or larvae/neonates have been designated for any species in the Project Area.

The NOAA Estuarine Living Marine Resources Database (ELMR; Nelson and Monaco 2000) that identifies distribution and relative abundance of estuarine fishes was used to determine life-stages present for summer flounder and black sea bass. In the absence of site-specific listings in the ELMR for Cat Creek and Bogue Bay, listings from the nearby Chincoteague Bay were utilized. EFH for egg or larval life stages has not been designated in the project vicinity.

None of the identified species are listed as threatened or endangered by NOAA Fisheries. HAPC for summer flounder is defined as all native species of macroalgae, seagrasses, and freshwater and tidal macrophytes in any size bed, as well as loose aggregations, within adult and juvenile summer flounder EFH. The Project Area contains no macroalgae, seagrass, or macrophyte beds. Therefore, no summer flounder HAPC is located within the Project Area. No other HAPC areas were identified in the project vicinity by the EFH Mapper (NOAA Fisheries 2022b).

3.9.1.3 *Marine Mammals*

The following marine mammals protected under the MMPA have the potential to be in the Project Area.

Bottlenose dolphin (*Tursiops truncatus*)

Bottlenose dolphins are found in both offshore and coastal waters, including harbors, bays, and estuaries. The ‘Western North Atlantic Southern Migratory Coastal Stock’ of bottlenose dolphin is considered depleted under the MMPA which means that the species or stock is below its optimum sustainable population. During the warm water months (July and August), this stock is presumed to occupy coastal waters from Cape Lookout, North Carolina to Assateague, Virginia (NMFS 2021). Transient individuals may be found in the Project Area.

Harbor porpoise (*Phocoena phocoena*)

Harbor porpoises prefer coastal areas and are commonly found in bays, estuaries, and harbors. In the North Atlantic, they range from Greenland to Cape Hatteras, North Carolina (NOAA Fisheries 2023a). This species is the only member of the porpoise family seasonally endemic to the waters of Virginia. This species is most common in the region in winter and spring (Hayes et al. 2022, Wingfield et al. 2017). Transient individuals may be found in the Project Area.

3.9.1.4 *Bald Eagles*

The bald eagle is protected under the BGEPA, which prohibits disturbance of eagles, which may include human activities or alteration of habitat surrounding a nest, without prior authorization. Both the USFWS and VDWR have developed guidelines for minimizing disturbance to bald eagles and defining threshold distances where impacts may occur: the *National Bald Eagle Management Guidelines* (USFWS 2007) and ‘*Virginia Exceptions to the National Bald Eagle Management Guidelines*’ in *Management of Bald Eagle Nests, Concentration Areas, and Communal Roosts in Virginia* (DGIF & CCB 2012). Per the Center for Conservation Biology Virginia Eagle Nest Locator (CCB 2023) there are no known bald eagle nests within the threshold distance of 200 m (660 ft) of the Project Area. This species will not be discussed further.

3.9.1.5 *Migratory Birds*

For the purposes of the MBTA and EO 13186, migratory birds have been defined to include all native birds in the U.S., except certain non-migratory game species managed by the state (e.g., quail [*Colinus virginianus*], turkey [*Meleagris gallopavo*]), grouse [*Bonasa umbellus*]). The Project Area includes habitats that are used by a variety of birds protected under the MBTA.

In accordance with the FWCA, under the Migratory Bird Program, USFWS designates Bird Species of Conservation Concern (BCCs) (USFWS 2021b). BCC are species that, without additional conservation measures, are likely to become candidates for listing under the ESA. BCCs that have suitable habitat and may be found in the Project Area are shown in **Table 3-8**, with ruddy

turnstone (*Arenaria interpres morinella*), short-billed dowitcher (*Limnodromus griseus*), and willet (*Tringa semipalmata*) being most likely (USFWS 2022).

Table 3-8. Birds of Conservation Concern

Species Common Name (Scientific Name)	Breeding population	Breeding Season
Chimney swift (<i>Chaetura pelagica</i>)	X	March 15-Aug 25
King rail (<i>Rallus elegans</i>)	X	May 1- Sep 5
Lesser yellowlegs (<i>Tringa flavipes</i>)		
Ruddy turnstone (<i>Arenaria interpres morinella</i>)		
Rusty blackbird (<i>Euphagus carolinus</i>)		
Short-billed dowitcher (<i>Limnodromus griseus</i>)		
Willet (<i>Tringa semipalmata</i>)	X	Apr 20-Aug 5

Source: USFWS 2022

3.9.2 Environmental Consequences

3.9.2.1 *No Action Alternative*

Potential adverse impacts associated with maintenance and repairs of the bridge may occur; these would be similar to those described from the Proposed Action below. NASA would evaluate the proposed activities on a case-by-case basis and would coordinate with NOAA Fisheries and USFWS, as needed, and would implement BMPs to minimize the potential for adverse effects to species. NASA would continue monitoring and management of species of concern in accordance with the *Protected Species Management Plan* (NASA 2023b). Impacts, if they occur, would likely be minor and may be short- or long-term.

3.9.2.2 *Proposed Action*

ESA Listed Species

Evaluation of potential impacts to ESA federally listed species is based on the sensitivity of the species to the proposed activities and the amount of habitat that would be temporarily or permanently affected. Adverse impacts would be considered significant if an unauthorized take were to occur, if habitats of concern were substantially affected over relatively large areas, or if disturbances resulted in reductions in the population size or distribution of a species.

Per USFWS and NOAA Fisheries guidance, a ‘no effect’ determination is only appropriate in cases where 1) no listed species or critical habitat occurs in the ESA Action Area, 2) listed species are in the ESA Action Area seasonally, but the action is timed to avoid the presence of listed species, or 3) the listed species occur in the ESA Action Area and may be present at the time of the project, but there is no plausible route of effects to the species. A ‘may affect but is not likely to adversely affect (NLAA)’ finding is appropriate when effects on listed species are expected to be

discountable (extremely unlikely to occur), insignificant (so small they cannot be meaningfully measured, detected, or evaluated), or wholly beneficial.

ESA listed or proposed bats (northern long-eared bat, tri-colored bat), sea turtles (loggerhead sea turtle, leatherback sea turtle, Kemp’s ridley sea turtle, green sea turtle, hawksbill sea turtle), and fish (Atlantic sturgeon) have potential to be in the ESA Action Area.

Table 3-9 summarizes effect determinations for federally listed species. A discussion of the effects to species is included after the table.

Table 3-9. ESA Effect Determinations	
Common Name	Determination of Effect
Seabeach amaranth	No Effect
Northern long-eared bat	To be Determined
Tri-colored bat	To be Determined
Monarch butterfly	No Effect
Red knot	No Effect
Piping plover	No Effect
Roseate tern	No Effect
Eastern black rail	No Effect
Atlantic sturgeon	NLAA ¹
Loggerhead sea turtle	NLAA ¹
Leatherback sea turtle	NLAA ¹
Kemp’s ridley sea turtle	NLAA ¹
Green sea turtle	NLAA ¹
Hawksbill sea turtle	NLAA ¹

¹In accordance with the FHWA GARFO 2018 NLAA Program (NMFS and FHWA 2018a)

Bat Species

In May 2023, NASA conducted acoustic presence/absence surveys for bat species including the northern long-eared bat and tri-colored bat in the Project Area, and a visual survey of the existing bridge structure from land and from the water in accordance with the *2023 Range-wide Indiana Bat and Northern Long-Eared Bat Survey Guidelines* (USFWS 2023a) and the *Federal Transportation Agency/State Department of Transportation Bridge/Structure Bat Assessment Guidelines* (FHWA, FRA, FTA & USFWS 2022), respectively. No echolocation call sequences of either the northern long-eared bat or the tri-colored bat were recorded during the acoustic survey. No indicators of the presence of bats (visual observation, hearing a bat, the presence of bat

droppings and staining) were observed during the bridge inspection. Therefore, both species are presumed absent in the Project Area.

NASA submitted the survey results to USFWS on July 18, 2023. The USFWS has not responded to date.

Sturgeon species

While Atlantic sturgeon sub-adults and adults may be found in the ESA Action Area any time of the year (NOAA Fisheries 2022a), presence is likely limited to transient individuals that enter Cat Creek while opportunistically foraging. The likelihood of sturgeon being present in the ESA Action Area would be greatest during fall and early spring, which are times of peak migration (NASA 2019). Potential stressors to sturgeon species may include underwater noise, water quality and benthic habitat effects, entanglement, and interaction with construction vessels, and are discussed further below. Adverse impacts to sturgeon would be minor and short-term.

Underwater noise – As described in Section 3.8.2.2, in-water work, including pile driving and bridge demolition activities, would create temporary underwater noise impacts. Based on FHWA's 30% design plans, NASA assumes that up to 90, 91-cm (36-in) square, prestressed, concrete piles would be installed during bridge construction, and 186, 30-cm (12-in) steel H-type piles would be installed for temporary construction and demolition trestles below MHW. Land-based pile driving would also be required for east and west-bound bridge approaches and to provide stability for the road base at the east-bound approach.

NOAA Fisheries uses threshold criteria for physiological effects of Peak SPL 206 dB_{Peak} (re 1μPa) and Cumulative Sound Exposure Level (cSEL) 187 dBcSEL (re 1μPa²/second [sec]) for impulsive sounds for all fish, including sturgeon, except those that are less than two grams in mass (FHWG 2008 in NMFS 2023). Physiological effects could range from minor injuries that a fish is expected to completely recover from with no impairment to major injury that increase potential for mortality (Oestman et al. 2009). NOAA Fisheries uses a threshold for behavioral effects of RMS SPL of 150 dB (re 1μPa_{RMS}), which could range from a temporary startle to avoidance of an ensonified area (NMFS 2023, Oestman et al. 2009).

The NMFS GARFO Acoustics Tool using the Simplified Attenuation Formula for riverine systems (NMFS 2020) was used to determine potential acoustic effects of proposed pile driving activities based on preliminary design plans. The NMFS GARFO Acoustics Tool models anticipated noise levels associated with proposed pile types and site conditions using noise measurements collected from pile driving projects throughout the country as proxy projects. In cases where model data was not available for the exact combination of pile type, size, hammer size and water depth, the most conservative model proxy was used. Ground-radiated noise is dominated by low frequencies, which cannot propagate efficiently through shallow water (Buehler et al. 2015). As such, land-based pile driving is not anticipated to impact aquatic species.

Modeling results indicate that the estimated Peak SPL for all pile types is 190 dB_{Peak} (re 1μPa) which is below the physiological injury threshold for sturgeon. However, based on the sound

exposure level (SEL) exposure criterion, injury to a sturgeon potentially could occur if the individual remained within 30 m (100 ft) while the pile was being driven. This is unlikely to occur as sturgeon are expected to vacate the pile driving area. At the Project Area, Cat Creek is approximately 70 m (230 ft) wide; adequate passage exists for sturgeon to vacate the area.

The estimated RMS SPL for all modeled scenarios ranges from 170 to 175 dB (re 1 μ Pa_{RMS}), which is above the 150 dB (re 1 μ Pa_{RMS}) threshold for behavioral effects. The GARFO Acoustics Tool also estimates the distance of potential acoustic effects from the point of pile driving. Sturgeon may experience behavioral effects within 50 m (165 ft) of concrete pile driving activity and 60 m (200 ft) of steel pile driving activity. Individuals would likely vacate and avoid the area, representing a temporary loss of foraging habitat; however, similar habitat would continue to be available in the vicinity. It is unlikely that avoidance of the area would affect essential sturgeon behaviors such as spawning, foraging, resting, or migration. Project Design Criteria (PDC), in accordance with the ‘FHWA GARFO NLAA Program’ as listed in **Appendix F**, including a soft start for pile driving activities would further minimize potential impacts.

Noise generated by vessels during project construction also has the potential to adversely impact sturgeon. The noise produced by vessels during project construction would vary depending on the vessel size, speed, and whether it uses dynamic positioning thrusters. Project vessels are anticipated to be shallow-draft, slow moving, and would likely produce noise levels less than behavioral effect levels for sturgeon. Tug and barge operations have been found to have an average Peak SPL 128.7 dB (re 1 μ Pa) (Grette Associates 2022). Noise from project vessels during construction and demolition would not be expected to cause more than local and temporary behavioral responses if sturgeon are nearby. PDCs in accordance with the ‘FHWA GARFO 2018 NLAA Program’, as listed in **Appendix F**, including limiting vessel speeds to below 10 knots, which generally decreases noise levels, would further minimize potential impacts. Underwater noise effects to Atlantic sturgeon are expected to be insignificant.

Water Quality and Benthic Habitat Effects – Construction and demolition activities may cause a temporary increase in the amount of turbidity in the ESA Action Area; however, sedimentation is expected to be short term and localized. Eggs and non-mobile larvae of sturgeon are life stages most vulnerable to burial and suffocation from suspended sediment; however, the life stages of sturgeon expected in the project vicinity are sub-adults and adults.

It has been recommended (Johnson 2018) that sturgeon should not be exposed to TSS levels of 1,000 mg/l above ambient levels for longer than 14 days at a time to avoid behavioral and physiological effects. TSS from pile driving is expected to be well below the impact threshold. Sedimentation may also impact benthic communities used as forage by sturgeon. The temporary loss of benthic communities would have minimal impacts of prey availability given the limited area of disturbance and widespread availability of benthic habits in the project vicinity. PDCs, as listed in **Appendix F**, including use of cofferdams, turbidity curtains, or other instruments to control turbidity, when operationally feasible, would further minimize potential impacts to insignificant levels.

Entanglement – As described in Section 3.8.2.2, cables, turbidity curtains, cofferdams, or other objects associated with construction or demolition could be a potential entanglement risk for fish, including sturgeon. Less mobile organisms, such as juvenile sturgeon, may be more susceptible (Nightingale and Simenstad 2001). Proper deployment and monitoring of in-water construction and turbidity control devices would minimize entanglement impacts. Entanglement impacts are expected to be insignificant.

Vessel Traffic – Collision with vessels (i.e., boat hulls and propellers) is a potential source of mortality and injury for sturgeon. The Proposed Action would not lead to a permanent increase in vessel traffic above existing levels; however, the proposed work may result in temporary increases in the number of vessels moving through the ESA Action Area and vicinity during construction and demolition. Sturgeon are more vulnerable to being struck by faster moving, deep-draft vessels in narrow channels. Construction barges and vessels are likely to be shallow draft vessels. PDCs, as listed in **Appendix F**, including limiting construction vessels and construction vessel speed limits would minimize potential impacts to insignificant levels.

As all impacts to sturgeon are expected to be insignificant (so small they cannot be meaningfully measured, detected, or evaluated), a determination of NLAA is appropriate.

Sea Turtle Species

While sea turtle species may be found migrating and foraging in the ESA Action Area between May and November (NOAA Fisheries 2022a), their presence is unlikely. Leatherback, Kemps' ridley, and hawksbill sea turtles have never been observed at WFF (NASA 2017). Given the absence of SAV/sea-grass beds in the ESA Action Area, foraging loggerhead or green sea turtles are unlikely. If transient individuals are in the ESA Action Area, potential stressors to sea turtles may include underwater noise, water quality and benthic habitat effects, entanglement, interaction with construction vessels, and artificial lighting, which are discussed further below. Adverse impacts would be minor and short-term.

Underwater Noise – The biological significance of hearing in sea turtles remains largely unstudied, but it seems likely that they use sound for navigation, to locate prey, to avoid predators, and for general environmental awareness; sea turtles do not appear to use sound for communication (NMFS 2016). The effects of exposure to sound may include physical injury, behavioral modifications, or masking of important sounds in the environment. Behavioral effects can range from minor effects (such as brief startle or avoidance) to those being potentially severe or sustained (such as abandonment of higher quality habitat).

The NMFS GARFO Acoustics Tool (NMFS 2020) was used to evaluate potential underwater noise impacts to sea turtles from pile driving during construction of the Proposed Action. Exposure to impulsive noise levels of Peak SPL 232 dB_{Peak} (re 1μPa) or cumulative SEL 204 dBcSEL² (re 1μPa²/sec) (DoN 2017 in NMFS 2023) can result in a permanent threshold shift (PTS) or

² The accumulation period for sea turtles is generally 24 hours (NMFS 2023)

permanent injury to sea turtle hearing, and exposure to lower levels can result in temporary threshold shifts (TTS). Behavioral effects may occur in sea turtles exposed to RMS SPL above the behavioral threshold of 175 dB (re 1 μ PARMS). Based on modeling results, permanent physiological injury to sea turtles is not anticipated. Behavioral effects may occur within 10 m (30 ft) of steel pile driving activity. As sea turtles are highly mobile, they are expected to avoid the ESA Action Area during pile driving activities. The Design-Build contractor would be required to have sea turtle observers on site to ensure that pile driving activities are not occurring when sea turtles are present in the ESA Action Area. Additionally, PDCs, in accordance with the FHWA GARFO 2018 NLAA Program as listed in **Appendix F**, including a soft start for pile driving activities, would further minimize potential impacts.

Sea turtles in the ESA Action Area may also be affected by noise generated by vessels during construction. Similar to the discussion of sturgeon, project vessels would likely produce noise levels less than behavioral effect levels for sea turtles and would not be expected to cause more than local and temporary behavioral responses if sea turtles are nearby. PDCs, as listed in **Appendix F**, including limiting vessel speeds to below 10 knots would further minimize potential impacts. Underwater noise impacts to sea turtles are anticipated to be insignificant.

Water Quality and Benthic Habitat Effects – Construction and demolition activities in subaqueous bottoms may cause a temporary increase in the amount of turbidity in the ESA Action Area; however, increases in turbidity are expected to be short term and localized. One of the major issues associated with suspended sediments is its effect on the respiration of marine fauna. However, sea turtles breathe air and increased suspended sediments are not likely to affect turtle respiration. Elevated turbidity may reduce visibility and alter movement patterns and behaviors of sea turtles. Effects to turtle species can also be caused by disturbance to the substrate that reduces the availability of prey species or alters the composition of forage. However, the Proposed Action would not measurably reduce the ability of sea turtle species to opportunistically forage, rest, and migrate in nearby suitable habitat. PDCs, as listed in **Appendix F**, including use of cofferdams, turbidity curtains, or other instruments to control turbidity when operationally feasible, would further minimize potential impacts to insignificant levels.

Entanglement – Cables, turbidity curtains, cofferdams, or other objects associated with construction or demolition could be a potential entanglement risk for sea turtles. Proper deployment and monitoring of in-water construction or turbidity control devices would minimize entanglement impacts. Entanglement impacts are expected to be insignificant.

Vessel Traffic – Collision with vessel hull and propellers is a potential source of mortality and injury for sea turtles. Sea turtles are vulnerable to vessel strikes as they surface to breath and often forage in shallow water or on prey near the sea surface. The proposed project would not lead to a permanent increase in vessel traffic above existing levels; however, the proposed work would result in temporary increase in the number of vessels moving through the ESA Action Area and vicinity during construction and demolition activities. PDCs, as listed in **Appendix F**, including

limiting construction vessels and construction vessel speed limits, would minimize potential impacts to insignificant levels.

Artificial Lighting – Artificial lighting has been shown to affect sea turtles, specifically during their nesting season, when hatchlings use light cues to guide their movement from the nest to the marine environment (NMFS 2013). The Proposed Action would not impact potential nesting habitat. As such, impacts to sea turtles from artificial light are unlikely and discountable.

As all impacts to sea turtle species are expected to be discountable (extremely unlikely to occur) or insignificant (so small they cannot be meaningfully measured, detected, or evaluated), a determination of NLAA is appropriate.

Federal ESA Listed Species Consultations

FHWA, a Participating Agency and design lead for the project, initiated informal consultation with the USFWS on December 20, 2022, providing USFWS with FHWA/NASA's determination of No Effect or NLAA for all ESA-listed species under USFWS jurisdiction potentially impacted by the Proposed Action (**Appendix F**). No comments from USFWS were received within the 60-day review period. After completion of the bat surveys for the Project in May 2023, FHWA provided the USFWS with updated informal consultation. The USFWS has not responded to date.

FHWA also completed a Verification Form pursuant to the NOAA Fisheries *FHWA Programmatic Determination of Not Likely to Adversely Affect* (FHWA GARFO 2018 NLAA Program) (NMFS and FHWA 2018a) which was developed to streamline consultation for project types routinely funded, authorized, or carried out by FHWA, including bridge demolition and replacement. The Verification Form identifies potential stressors that may impact listed species including underwater noise, impingement/entrainment and entanglement, water quality/turbidity, habitat alteration, and vessel traffic. GARFO Protected Resources Division (PRD) concurred with FHWA/NASA's NLAA determination on December 12, 2022 (**Appendix F**).

Final bridge design, and bridge construction and demolition means and methods would be determined during the Design-Build process. If design and/or construction means and methods differ significantly from the preliminary design evaluated via the FHWA GARFO 2018 NLAA Program, or if new information becomes available that affects the basis for the evaluation, re-coordination with NOAA Fisheries GARFO PRD may be required. The Verification Form assumed up to 40 permanent concrete piles and 180 temporary steel piles may be used.

To qualify for certification under the FHWA GARFO 2018 NLAA Program, the project would be required to adhere to the PDCs and conditions listed in **Appendix F**, which must be included as commitments in project bid documents. Adherence to these PDCs would avoid and minimize the effects of stressors produced by the Proposed Action to levels that are insignificant or discountable.

Essential Fish Habitat

An adverse effect on EFH would be deemed significant if the effect was considered substantial under the MSA. Substantial adverse effects may pose a serious threat to EFH and typically could

not be alleviated through minor modifications to a Proposed Action. The determination of substantial adverse effects should be based on project-specific considerations, such as the ecological importance or sensitivity of an area, the type and extent of EFH affected, and the type of activity (NMFS 2004).

Adverse impacts to managed fish species including underwater noise and entanglement would be the same as those presented for fish in Section 3.8.2.2. EFH Conservation Recommendations, as listed in **Appendix G** including pile driving soft starts, and proper deployment and monitoring of turbidity control devices would minimize impacts. Underwater noise and entanglement effects are not anticipated to be substantial. Additional stressors that could impact habitats considered EFH include water quality/turbidity effects, alteration of habitat, and vessel traffic which are discussed below.

Water Quality/Turbidity – Construction and existing bridge demolition could result in temporary, localized impacts from turbidity and sedimentation. Sediment resuspension from pile driving and pile removal would be minimal and any increase in turbidity would be localized to the area around the pile being driven. Suspended sediment is expected to settle out of the water column within a few hours and any increase in turbidity would be short term and localized. EFH prey species including filter feeding benthic organisms are at particular risk from increased turbidity due to their sessile nature (refer to Invertebrates in Section 3.8.2.2). Due to relatively low levels and temporary nature of TSS resulting from pile driving and demolition activities, impacts to benthic organism populations are not anticipated. Benthic prey species would be expected to re-establish in the Project Area following construction due to the extensive presence of benthic habitat in the vicinity for recruitment. EFH Conservation Recommendations, as listed in **Appendix G**, including appropriate turbidity controls would further minimize impacts. Water quality/turbidity impacts are not expected to be substantial.

Habitat Alteration – Open water and intertidal mudflat benthic habitat would be permanently lost for placement of bridge support piles. There may be some shading of minimal areas of tidal vegetated wetlands. Submerged portions of piles would provide substrate for colonization by invertebrates, and shelter and foraging habitat for fish. Open water, intertidal mudflats, and tidal vegetated wetland habitats could be temporarily disturbed during installation of construction access. Pile extraction could result in altered sediment composition in the depressions that may fill in with fine sediments and silt, changing the characteristics of the benthic habitat (Johnson et al. 2008). EFH Conservation Recommendations as described below would minimize impacts. Habitat alteration impacts are not expected to be substantial.

Vessel Traffic – EFH within Cat Creek could be disturbed by movement and anchoring of barges for construction and/or demolition access. The presence of vessels can interrupt migrating, foraging, or sheltering of prey species (NOAA Fisheries and FHWA 2017). Direct disturbances to bottom habitat include propeller scouring and vessel wake impacts to sensitive benthic habitats and direct contact from bottoming out (NOAA Fisheries and FHWA 2017). Barges would be positioned, and barge anchors deployed in such a manner as to avoid disturbance to oyster beds to

the maximum extent practicable. Accidental spills of fuel, oil, hydraulic fluid, or other potentially hazardous substances would be prevented or minimized through the contractor's adherence to spill prevention and control measures. Vessel traffic EFH Conservation Recommendations, as listed in **Appendix G**, would further minimize impacts. Vessel traffic impacts are not expected to be substantial.

EFH Effect Determination

Per the MSA 'adverse effect' means any impact that reduces quality and/or quantity of EFH. Adverse effects may include direct or indirect physical, chemical, or biological alterations of the waters or substrate and loss of, or injury to, benthic organisms, prey species and their habitat, and other ecosystem components, if such modifications reduce the quality and/or quantity of EFH.

While the Proposed Action may adversely affect EFH, impacts would generally be localized to the Project Area or vicinity, and their extent, intensity, and duration would vary throughout implementation of the project. Areas of undisturbed EFH would remain outside the Project Area and potential impacts would occur at the individual rather than the population or species level and would not prevent or delay the continued propagation of any species. In general, individuals are expected to relocate to nearby areas offering similar habitat conditions. Adverse effects on EFH would not be substantial.

EFH Consultations

FHWA, a Participating Agency and design lead for the project, completed an EFH Verification Form in accordance with the NFMS *FHWA Programmatic Essential Fish Habitat Consultation for Select Transportation Actions in the NMFS Greater Atlantic Region* (EFH Programmatic Consultation) (NMFS and FHWA 2018b), which was submitted to NOAA Fisheries GARFO Habitat Conservation Division (HCD) on December 13, 2022 (**Appendix G**). The EFH Programmatic Consultation was developed to streamline consultation for project types routinely funded, authorized, or carried out by FHWA, including bridge demolition and replacement. Work impacting oyster beds, an area $\geq 93 \text{ m}^2$ (1,000 ft^2) containing shellfish or intertidal areas, new fill/stabilization placed below MLW in excess of 60 m (200 linear feet), as well as any replacement causeways (raised roadways across waters or wetlands) are typically excluded from utilizing the EFH Programmatic Consultation. However, FHWA provided justification in the EFH Verification Form that the Proposed Action is consistent with the EFH Programmatic Consultation. No comments were received from NOAA Fisheries GARFO HCD within the 30-day review period. Per EFH Programmatic Consultation guidance, NOAA Fisheries GARFO HCD concurrence can be assumed.

Final bridge design, and bridge construction and demolition means and methods would be determined during the Design-Build process. If design and/or construction means and methods differ significantly from the preliminary design evaluated via the EFH Programmatic Consultation, or if new information becomes available that affects the basis for the EFH Conservation Recommendations, re-coordination with NOAA Fisheries GARFO HCD may be required.

In accordance with the EFH Programmatic Consultation, the project would adhere to the EFH Conservation Recommendations listed in **Appendix G** that must be included as commitments in project bid documents. These EFH Conservation Recommendations provide recommended measures to avoid, minimize, and offset substantial adverse effects to EFH (NOAA Fisheries and FHWA 2017). Adherence to these Conservation Recommendations ensures that the project would not be likely to have a substantial adverse effect on EFH.

Marine Mammals

Effects to marine mammals protected under the MMPA would be significant if disturbances resulted in reductions in the population size or distribution of a species. Potential stressors include underwater noise, entanglement, and vessel traffic which are discussed below.

Underwater Noise – In-water work including pile driving and bridge demolition would create underwater noise impacts. The duration of these adverse impacts would be limited to the construction period; no long-term changes to underwater noise are anticipated. As described in Section 3.9.2.2, the NMFS GARFO Acoustics Tool (NMFS 2020) was used to determine potential acoustic effects of proposed pile driving activities.

Marine mammals are considered harassed when exposed to elevated sound levels that may lead to mortality, PTS or TTS, non-auditory physical or physiological effects, and behavioral disturbance (NMFS 2022). Based on differing hearing sensitivities, bottlenose dolphins are classified as mid-frequency cetaceans (hearing range between 150 hertz [Hz] to 160 kilohertz [kHz]) and harbor porpoises are classified as high-frequency cetaceans (hearing range between 275 Hz to 160 kHz). NOAA Fisheries has established auditory injury or PTS thresholds at Peak SPL 230 dB_{Peak} (re 1μPa) or cumulative SEL 185 dBcSEL (re 1μPa²/sec) for mid-frequency cetaceans and Peak SPL 202 dB_{Peak} (re 1μPa) or cumulative SEL 155 dBcSEL (re 1μPa²/sec) for high-frequency cetaceans (NMFS 2018). NOAA Fisheries assumes that marine mammals are likely to be behaviorally harassed when exposed to underwater RMS SPL above 160 dB (re 1μPa_{RMS}) for non-explosive, impulsive or intermittent sources, such as pile driving (NMFS 2022).

Based on model results, peak SPL would be below physiological injury thresholds. However, based on the SEL exposure criterion, physiological injury to bottlenose dolphins, as mid-frequency cetaceans, potentially could occur if an individual remained within the immediate area while the pile was being driven. This is unlikely to occur as marine mammals are expected to vacate the pile driving area. At the Project Area, Cat Creek is approximately 70 m (230 ft) wide with adequate passage for marine mammals to vacate the area.

Behavioral impacts are possible within 30 m (100 ft) of concrete pile driving and 40 m (130 ft) of steel pile driving activities. Behavioral effects may include avoidance of the area or disruption of foraging activities. Dolphins and porpoises are highly mobile and would be expected to vacate and avoid areas impacted by pile driving noise. It is unlikely that these movements would affect essential behaviors such as migration, breathing, nursing, breeding, feeding, or sheltering. A soft-

start for pile driving activities would allow individuals to vacate the area and avoid adverse impacts of pile driving noise.

Noise generated by vessels during project construction also has the potential to impact marine mammals. Noise from project vessels during construction and demolition would not be expected to cause more than local and temporary behavioral responses if marine mammals are nearby. PDCs discussed in Section 3.9.2.2, which would be instituted for the protection of ESA-listed species, including limiting vessel speeds to below 10 knots, would also be protective of marine mammals. Underwater noise effects to marine mammals are expected to be minor and short-term.

Final bridge design, and bridge construction and demolition means and methods would be determined during the Design-Build process. If design and/or construction means and methods differ significantly from the preliminary design evaluated in the GARFO Acoustics Tool, or if new information becomes available that affects the basis for the evaluation, model results may need to be re-evaluated.

Vessel Traffic – Collision with vessel hulls and propellers is a potential source of mortality and injury for marine mammals. Construction barges and vessels are likely to be shallow draft vessels. PDCs as discussed in Section 3.9.2.2, which would be instituted for the protection of ESA-listed species, including limiting construction vessels and construction vessel speed limits, would also be protective of marine mammals. Vessel traffic effects are expected to be adverse, minor, and short-term.

Migratory Birds

Adverse impacts to migratory birds would be considered significant if an activity would diminish the capacity of a population of migratory bird species to maintain genetic diversity or limit the ability of a local or regional population to sustain itself.

The Project Area includes habitats that are used by a variety of birds protected under the MBTA. As described in Section 3.8, *Wildlife*, marsh nesting species may be found in the Project Area. Adult birds are highly mobile and able to avoid construction activities that could cause injury. Immobile nestlings or eggs have the greatest susceptibility to injury or mortality. Construction in estuarine wetlands could result in direct mortality of eggs and nestlings. While less likely, direct take of adult birds may occur during vegetation clearing or vehicle strikes. Most of these conflicts would occur during breeding and nesting season (generally May to August [VDWR 2023a]). Some loss of foraging habitat would occur, but adequate foraging habitat would remain in the project vicinity.

The USFWS Migratory Bird Program maintains a comprehensive list of beneficial practices to avoid and minimize the incidental take of migratory birds (USFWS 2023b, USFWS 2015), including practices specific to transportation projects (USFWS 2023b). These include:

- A qualified wildlife biologist would inspect the area for MBTA-listed nesting birds from March 15 to August 31 prior to tree trimming, tree removal, brush clearing, or clearing of other vegetation.
- Projects should be designed in a manner that does not unnecessarily disturb migratory bird habitat during project implementation.
- Projects should avoid destroying active nests and injuring migratory birds during demolition, repair, or cleaning.
- Projects should use downcast, shielded lights to reduce the potential for fallout and should avoid steady burning lights. Fallout may occur when birds become disoriented and land instead of continuing their migration.

Project adherence to these beneficial practices, to the extent practicable, would minimize potential impacts. Adverse impacts are not anticipated to diminish the capacity of a population of migratory bird species to maintain genetic diversity or limit the ability of a local or regional population to sustain itself and as such are anticipated to be negligible and short-term.

Operation

Periodic maintenance and repair during the 75-year lifespan of the bridge may result in disturbances to special status species due to in-water work, removal of vegetation/habitat, the presence of humans and noise, or the presence of vessels. The predominant reaction among mobile species (both terrestrial and marine) would likely be avoidance of the area due to increased human activity, noise, and similar activities. In-water work would have the potential for increased underwater noise and turbidity. Maintenance and repair events would be infrequent and short in duration, and background conditions would be expected to return quickly. In the long term, adverse impacts on special species would occur at the individual level rather than the population or species level and would not prevent or delay the continued propagation of any species or population in or around the Project Area. NASA would evaluate the proposed activities on a case-by-case basis and would coordinate with NOAA Fisheries and USFWS as needed, and would implement BMPs as discussed above to minimize the potential for adverse effects to species. Impacts, in they occur, would likely be minor and may be short- or long-term.

3.10 Transportation

Transportation resources refer to the infrastructure and equipment required for the movement of people and goods in geographic space. For this EA, transportation refers to the movement of vehicles on roads, primarily along Causeway Road, and boats in Cat Creek and the waterways surrounding the Project Area. There are no ferries, shipping lanes, or other large commercial maritime transportation uses in the Project Area. There are no air transportation routes that would be affected by the proposed project.

3.10.1 Affected Environment

Roads

Details on access to WFF Mainland and to Route 803 (Causeway Road) are provided in the *Final Site-wide PEIS*. Route 803 is the only way to access the WFF Mainland and, therefore, Wallops Island by road. Public access to the Mainland is restricted by a manned security gate across Route 803. The gate is approximately 1.9 km (1.2 mi) west of the Causeway Bridge. The proposed staging areas are only accessible after passing through the security gate and are along dead-end roads off Route 803 (**Figures 2-1 and 2-2**).

The Wallops Island Space Transit Corridor is a special zoning district established by Accomack County to (1) provide safe transit for over-sized loads from the WFF Payload Processing Facility on the Main Base to the MARS launch facilities at Wallops Island; and (2) to promote the health, safety, and general welfare by providing a corridor for space transportation and commerce that is vital to the economic interest and the economic development potential of Accomack County. The Wallops Space Transit Corridor runs along the VDOT right-of-way from the WFF Main Base, through the town of Atlantic, to Wallops Island. Accomack County has buried existing utility lines and cleared the overhead path along the Space Transit Corridor. This zoning ensures a clear pathway free from overhead obstruction along the route taken by large rockets and payloads.

Traffic occurs along Causeway Road and over the Causeway Bridge daily from employees, visitors, and other authorized personnel accessing the facilities on Wallops Island. On weekdays, a larger number of vehicles typically use the Causeway Bridge to access Wallops Island compared to weekends. However, depending on launch schedules and other training and activities at Wallops Island that may occur on weekends, traffic can vary throughout the week. The Causeway Bridge has a weight limit that restricts the weight of unpermitted vehicles crossing the bridge onto Wallops Island. Other restrictions such as limiting speed for specific loads, positioning of vehicles, and closure to other traffic are periodically required.

FHWA requested comments on the project from the Virginia Commercial Space Flight Authority/MARS on August 18, 2020, regarding any potential impacts of the Proposed Action on future operations of the Spaceport. MARS responded on September 10, 2020, stating they had no comments and no concerns about the project (**Appendix A**).

Water

Although the water off the coast of Wallops Island is one of the busiest in the world in terms of maritime traffic (commercial, recreational, and military), almost all of this maritime traffic remains in the Atlantic Ocean and does not enter Cat Creek. Waterways near Wallops Island, including Cat Creek, are open year-round for commercial and recreational fishing and boating. However, natural processes and severe weather negatively impact water depths, resulting in restricted navigability. The area of Cat Creek at the Causeway Bridge is primarily used for recreation since the water depth is too shallow for larger vessels. In a USCG Bridge Project Questionnaire form completed in 2023, NASA identified the following recreational vessels as possibly using Cat Creek: canoes,

row boats, small motor boats, and pontoon boats. According to the Marine Cadastre database, from 2017-2021 between 1 and 25 vessels each year have traveled Cat Creek (the data does not specify how many vessels within the range of 1 to 25); none of these vessels were cargo, fishing, passenger, tanker, or tug and tow related (BOEM and NOAA 2023).

Cat Creek connects the Hog Creek and Bogues Bay Channel elements of the Waterway on the Coast of Virginia Federal Navigation Project, which connects the Chesapeake Bay to the Chincoteague Bay. Although Cat Creek has not been dredged or maintained by USACE in recent years, the Waterway on the Coast of Virginia is subject to periodic operation and maintenance activities (e.g., dredging).

Cat Creek is also part of the 160-km- (100-mi-) long Virginia Seaside Water Trail that runs between Chincoteague Island and the Eastern Shore of Virginia National Wildlife Refuge (NWR) at Cape Charles. This water trail is for non-motorized use by paddlers using kayaks or canoes, and has several public access points, the closest of which is approximately 5 km (3 mi) north of the Causeway Bridge (Virginia Water Trails 2023).

USACE has the authority to designate maritime danger zones and to set specific requirements, limit access, and control navigation activities by closing the danger zone to the public on a full-time or intermittent basis. NOTMARs are published prior to the temporary USACE closure of an area of interest within a danger zone or for the entire danger zone.

3.10.2 Environmental Consequences

Significant impacts would occur if the Proposed Action created long-term traffic congestion on waterways or roadways that could not be alleviated or resulted in unsafe transportation conditions that could not be mitigated.

3.10.2.1 No Action Alternative

There would be adverse short- and long-term minor impacts to transportation under the No Action Alternative. In the short-term, the bridge would require extensive and regular maintenance to remain functional and may cause disruptions in road and water transportation due to potential road and Cat Creek closures. However, in the long-term, the bridge would eventually be closed for safety. Closure of the bridge would eliminate the means to access Wallops Island by road, which would not uphold NASA's mission, and would not meet the Purpose and Need of the Proposed Action.

3.10.2.2 Proposed Action

Roads

Construction-related traffic could include heavy equipment and transport vehicles, cranes, concrete trucks, dump/haul trucks, personnel transport vehicles, and other vehicles as necessary. Because Route 803 (Causeway Road), including the Causeway Bridge, are critical to provide daily access to Wallops Island, the road would remain open during construction and demolition. The

road along the bridge approaches and deck would likely be narrowed to one lane during portions of the work. Temporary closures would occur periodically for moving equipment and construction/demolition activities; closures are expected to be short in duration and would result in minor traffic backups on either side of the bridge.

There would be an increase in traffic on the Causeway Road from construction-related vehicles and equipment traveling between the staging areas and the project site at the bridge. The additional traffic could cause temporary delays to drivers traveling to/from Wallops Island due to slow-moving and turning vehicles. Use of the Causeway Road shoulders for temporary parking and/or staging of equipment or materials may result in slower-moving traffic along the road as motorists take precautions. Delays would be short-term and minor. The Design-Build contractor would be required to adhere to all NASA and FHWA traffic and safety measures for temporary use of the shoulder, such as providing flaggers, signage, and temporary lane closures. Therefore, adverse impacts would be minor and short-term.

No public roads would be closed or rerouted, and although there would be an increase in construction-related traffic on local public roads, adverse impacts would be short-term and negligible. NASA would notify staff, visitors, and authorized personnel that may travel to Wallops Island during the project regarding the potential for temporary lane or road closures and traffic control along Causeway Road.

The new bridge would be built to FHWA specifications. Although an increase in weight capacity is not required for the new bridge, depending on final design, the weight capacity of the new bridge may increase. The height of the new bridge above Cat Creek would be decreased compared to the height of the existing bridge and a corresponding lower percent slope of the bridge deck would result in less time required to haul large loads across the bridge with special equipment. Compared to existing conditions, the need for temporary road closures to transport these large loads across the bridge would be substantially reduced.

The Proposed Action would result in major long-term beneficial impacts to transportation for the next 75+ years to/from Wallops Island, providing vehicles with safe access to/from Wallops Island.

Water

Cat Creek would remain open for navigation during construction and demolition activities; however, portions of the waterway where work would be actively occurring would be inaccessible to boaters. USCG issues Bridge Permits that approve the location and plans of bridges and causeways and impose any necessary conditions relating to the construction, maintenance, and operation of these bridges in the interest of public navigation. As stated in Section 2.3.4.3, *Bridge Size*, NASA and FHWA are also in the process of reviewing the Preliminary Navigation Clearance Determination with USCG.

USCG would issue NOTMARs prior to construction to warn boaters who may plan to be in the project vicinity of the need to proceed with caution for the duration of the construction and demolition activities. The new Causeway Bridge would not restrict access in Cat Creek for boats

less than 3.9 m (12.8 ft) high; larger boats would be restricted from passing underneath the bridge. However, any adverse impacts would be long-term and negligible since Cat Creek is not currently used for navigation purposes by larger vessels.

Since the Proposed Action would occur within a Federal Navigation Project, the Design-Build contractor would be required to submit materials in accordance with USACE guidance *Policy and Procedural Guidance for Processing Requests to Alter U.S. Army Corps of Engineers Civil Works Projects Pursuant to 33 USC 408 dated September 10, 2018* (Engineer Circular 1165-2-220) to facilitate Section 408 review. The Section 408 process may also require stakeholder outreach with navigation stakeholders and the development of a Navigation/Marine Operations Plan to describe proposed in-water operations and vessel traffic.

Maintenance activities over the life of the new bridge would result in similar types of impacts to transportation as discussed above for construction and demolition, but impacts would be less due to the smaller scale of maintenance and repairs. There would be short-term minor adverse impacts to traffic from the Proposed Action, including maintenance and repairs. Long-term, there would be substantial beneficial impacts to transportation from replacing the existing bridge.

3.11 Employment and Income

Socioeconomics is defined as the study and analysis of the human environment, specifically the study of human population, employment, personal income, and housing. Only employment and income are evaluated in this EA, as housing and population would not be affected by the Proposed Action.

3.11.1 Affected Environment

The region of influence for employment is Accomack County which includes the town of Chincoteague, a popular tourist destination north of Wallops Island. Data for Virginia is provided as a comparison.

The median household income for 2021 (the most recent year data is accessible) for Accomack County is \$50,601. This is lower than the 2021 reported median household income for Virginia (\$80,615) (USCB 2021). In Accomack County, the largest industries were educational services, health care, and social assistance (19.8 percent); manufacturing (19.1 percent); and retail trade (9.4 percent). By comparison, the three largest industries in Virginia were educational, health, and social services (22.2 percent); professional, scientific, management, administrative, and waste management services (16.2 percent); and retail trade (9.9 percent) (USCB 2021).

The Eastern Shore, including the waters and back bays surrounding Wallops Island and the Project Area, provides ecotourism destinations for boating, paddling, birdwatching, and fishing, which benefit local businesses.

3.11.2 Environmental Consequences

Significant impacts would occur if the Proposed Action were to substantially alter availability of employment.

3.11.2.1 No Action Alternative

The No Action Alternative would have major, long-term adverse impacts to employment and income because the Causeway Bridge would not be replaced and therefore, would eventually be closed, substantially affecting operations at Wallops Island, and thus employment and income of those whose jobs rely on facilities and activities at Wallops Island. There would be indirect long-term adverse impacts associated with cancelled, reduced, or modified NASA, Navy, and MARS activities on Wallops Island due to bridge closure, which would impact their missions and supporting industries. There would be beneficial short-term minor impacts to the local economy, similar to those of the Proposed Action, for maintenance and repair activities that last for more than a few days.

3.11.2.2 Proposed Action

Construction and Demolition

Under the Proposed Action, construction and demolition activities would potentially provide short-term benefits to local stores and businesses due to workers associated with the construction and demolition activities purchasing food and goods, using local lodging, and fueling vehicles and equipment. However, such effects would be minor in the context of the regional economy.

A reduced width of Cat Creek would remain open during construction and demolition activities. However, commercial fishing boats and charter boats for recreational fishing would be adversely affected from the inability to use the other portions of Cat Creek directly around the Causeway Bridge during the construction and demolition. Therefore, adverse impacts to income and employment from ecotourism, commercial, and recreational fishing would be short-term and minor.

Operation

The height of the new Causeway Bridge over Cat Creek would likely be lower than the existing bridge; this may alter the ability of some commercial vessels to travel the extent of Cat Creek by going under the bridge. NASA anticipates that the number of vessels this affects is negligible, since Cat Creek is not currently used for navigation purposes by larger vessels (vessels typically include row boats, canoes, small motorboats, and pontoons). Periodic maintenance and repairs over the 75-year lifespan of the bridge would not likely result in closures of Cat Creek, although there could be temporary adverse effects to using some of the areas of Cat Creek around the bridge during these activities. Impacts are expected to be minor.

3.12 Recreation

Recreation resources include primarily outdoor recreational activities that occur away from a participant's residence. This includes natural resources and built facilities that are designated or available for public recreational use.

3.12.1 Affected Environment

There are water-based recreational opportunities at the project site including boating, paddling, fishing, and shellfish harvesting. VMRC regulates aquaculture (shellfish harvest) in tidal waters, including recreational harvests by the public in areas designated as Baylor Grounds. Boaters can travel along Cat Creek and in the tidal waters underneath and around the Causeway Bridge. Although Cat Creek is open to the public year-round for commercial and recreational fishing, shellfish harvesting, and boating; recreation primarily occurs in the warmer months of the year between spring and fall.

In 2006, the VCZMP developed the Virginia Seaside Water Trail, which runs along the seaside coast of the Delmarva Peninsula in the state of Virginia between Chincoteague Island and the Eastern Shore of Virginia NWR at Cape Charles. A portion of a 14-km (8.5-mi) section of this Trail, referred to as the NASA Docks to Water's Edge Restaurant leg, runs directly underneath the Causeway Bridge. Recreational access to the Virginia Seaside Water Trail and the Causeway Bridge area is provided for NASA employees on the south side of the Causeway Bridge ramp – this location is not open to the public. There is one main area designated for employee recreational use on Wallops Island, but it is a beach on the east side of the island facing the Atlantic Ocean and not near the Project Area.

3.12.2 Environmental Consequences

Impacts to recreation would be considered significant if a large portion of a particular type of recreation was lost and could not be suitably substituted with a similar activity, or if demand could not be met by similar facilities or natural areas.

3.12.2.1 No Action Alternative

Maintenance and repair events could result in partial or full closure of Cat Creek depending on the nature of the repairs, and the eventual permanent closure of the bridge would likely result in closure of Cat Creek under the bridge for safety. Therefore, the No Action Alternative would have long-term minor adverse impacts to recreation.

3.12.2.2 Proposed Action

Construction and Demolition

Although a portion of Cat Creek would remain open under the Proposed Action, boaters and fisherman would not be able to access all waters under and in the immediate vicinity of the Causeway Bridge for approximately 2 to 3 years during construction and demolition activities.

The portion of the Virginia Seaside Water Trail that runs under the Causeway Bridge would remain open throughout construction and demolition; however, portions of Cat Creek in the Project Area would be inaccessible for most of the project duration. Lack of access to all waters would cause short-term moderate adverse impacts to recreational boaters. The waters north and south of the Causeway Bridge, including other sections of the Virginia Seaside Water Trail, would be accessible.

The presence of humans and anthropogenic noise are likely to scare away wildlife that is the focus of recreational viewers and hunters. Additionally, human presence and noise would temporarily alter the characteristic of the natural setting that would be expected by recreational users. Therefore, the presence of project-related boats, barges, and the use of construction and demolition equipment would result in adverse impacts to recreation. These effects would be periodic and last approximately 2 to 3 years. Cat Creek would reopen to public use once the new bridge is opened. USCG would issue NOTMARs, and the WFF Office of Communications would issue notices to warn boaters who may be in the vicinity of the activity to proceed with caution for the duration of construction and demolition activities.

Operation

The height of the new Causeway Bridge over Cat Creek would likely be lower than the existing bridge; this may alter the ability of some recreational vessels to travel the extent of Cat Creek by going under the bridge. NASA anticipates that the number of recreational boaters this would affect would be negligible, and the boaters can access both sides of the bridge via alternate routes. Periodic maintenance and repairs over the 75-year lifespan of the bridge would not likely result in closures of Cat Creek, although there could be temporary adverse effects to using some of the areas of Cat Creek around the bridge during these activities. Impacts are expected to be minor.

3.13 Archaeological Resources

Cultural resources are defined as prehistoric or historic sites, buildings, structures, objects, or other physical evidence of human activity that are considered important to a culture or community for scientific, traditional, or religious reasons. These include both architectural and archaeological resources. Archaeological resources are places where humans changed the ground surface or left artifacts or other physical remains (e.g., arrowheads or bottles). Section 106 of the National Historic Preservation Act (NHPA), as amended, requires federal agencies to consider the effects of their actions on historic properties that are listed or eligible for listing in the National Register of Historic Places (NRHP). The NRHP administered by the National Park Service (NPS), is the official inventory of cultural resources including National Historic Landmarks.

In consideration of NHPA, federal agencies are required to initiate consultation with the State Historic Preservation Office (SHPO) informing them of a planned action and requesting their comments or concerns. As described in Section 3.18 of the *Final Site-wide PEIS*, in accordance with Sections 106 and 110 of the NHPA, NASA developed a Programmatic Agreement with the Virginia SHPO and the President's Advisory Council on Historic Preservation to outline how WFF

manages its cultural resources as an integral part of its operations and missions (NASA 2014, NASA 2022b). As part of this process, NASA identified parties who have an interest in, or knowledge of, cultural resources at WFF and included them in the development of the terms of the Programmatic Agreement.

The discussion of cultural resources in this EA is limited to archaeological resources because the Proposed Action would have no potential to affect architectural resources.

3.13.1 Affected Environment

The affected environment for archaeological resources consists of the areas where ground disturbance, including disturbances to underwater substrate, would occur in association with construction, demolition, and operational activities, collectively referred to as the Area of Potential Effect (APE). The APE includes the envelope at the Causeway Bridge and the staging areas.

A review of the Virginia Cultural Resource Information System (V-CRIS) identified four archaeological sites, Virginia 44AC0567, 44AC0562, 44AC0563, and 44AC0558, approximately 0.6 km (1 mi) northwest of the APE (VDHR 2023). No portion of these four archaeological resources overlap with the Proposed Action's APE. According to V-CRIS, no previously recorded archaeological resources are in the APE.

To support prior projects, NASA had Phase I Archaeological surveys performed at the proposed staging areas; these surveys either confirmed “no effect to historic properties,” or in accordance with the Programmatic Agreement, that they have low sensitivity for cultural resources. No excavation would occur at the staging areas.

In November 2020, Cultural Resources Analysts, Inc. (CRA), on behalf of NASA and FHWA, conducted a Phase I Archaeological Survey of the Causeway Bridge Project Area that included a terrestrial archaeological and geoarchaeological survey, and a marine survey (CRA 2021). The APE used for this survey consisted of all areas within the LOD shown on **Figure 2-3**, which corresponds to the Causeway Bridge envelope.

The terrestrial survey included a pedestrian survey of the APE, geoarchaeological testing with 18 probe tests, and 110 shovel test pits. The objective of the pedestrian survey was to identify any aboveground cultural resources such as cemeteries, artifact scatters, etc. The goal of the geoarchaeological survey was to differentiate causeway fill sediment and preexisting native tidal marsh sediments, and to assess the potential for either sediment to hold archaeological evidence such as human remains, pottery, etc. This was completed by taking samples ranging in depth from 78 to 345 cm (2.5 to 28.8 ft) and screened through a mesh hardware cloth.

The survey results indicated that the two sediments demonstrate no potential for the causeway fill, and limited potential for the tidal marsh, to contain archaeological content. During field work, no cultural material or features were identified.

The underwater survey consisted of marine remote sensing. Data analysis resulted in the identification of nine magnetometer anomalies, two side scan sonar contacts, and no sub-bottom

profiler reflectors; these anomalies and contacts represent modern infrastructure, bridge pilings, and former overhead transmission cable piling pieces. No submerged cultural resources were identified within the data.

No cultural resources were identified during the geoarchaeological, terrestrial, or underwater surveys for the Proposed Action.

3.13.2 Environmental Consequences

Impacts to archaeological resources would be significant if a measurable effect could not be resolved through the Section 106 consultation process.

3.13.2.1 No Action Alternative

The No Action Alternative would have no impacts to archaeological resources because the Causeway Bridge would not be replaced and therefore, none of the associated construction and demolition activities with potential to affect archaeological resources would occur. Maintenance and repair activities would have no impacts on archaeological resources based on the results from the Phase I Archaeological Survey provided below.

3.13.2.2 Proposed Action

In August of 2020, FHWA, on behalf of NASA, sent scoping letters to the Virginia Department of Historic Resources (VDHR) which initiated Section 106 coordination for the project. VDHR responded on September 21, 2020, recommending that a Phase I Archaeological Survey be completed for the Causeway Bridge envelope. As discussed above, in late 2020, CRA conducted a Phase I Archaeological Survey for the Project Area and did not identify any cultural resources during the geoarchaeological, terrestrial, or underwater surveys. In February 2021, CRA, on behalf of NASA, submitted the Phase I Archaeological Survey results to VDHR. VDHR responded on February 9, 2021, stating that they concur that "...no further archaeological work is necessary for the proposed project. No historic properties will be affected by the project." Therefore, there would be no impacts to archaeological resources during construction, demolition, or operational maintenance. Please refer to **Appendix H** for VDHR consultation.

Additionally, on behalf of NASA, FHWA sent scoping letters to five federally recognized and one state recognized Native American Tribes with potential cultural affiliation to the project site in August 2020. These tribes were the Catawba Indian Nation, Chickahominy Indian Tribe, Nansemond Indian Tribal Association, Pamunkey Indian Nation, Rappahannock Tribe of Virginia, and Pocomoke Indian Nation. On September 23, 2020, the Pamunkey Indian Tribe responded stating that the Tribe would like to be a consulting party for the proposed undertaking, they concurred with the plans for an archaeological survey, and would like to review the results of the survey and review the draft EA once complete. No other responses were received.

On January 12, 2021, FHWA on behalf of NASA, sent a scoping letter to the Chickahominy Indians Eastern Division initiating Section 106 consultation. This letter shared results from the draft

Phase I Archaeological Survey and general project information. No response from this tribe has been received to date.

In late January and early February 2023, FHWA on behalf of NASA, sent another set of letters to the same seven tribes listed above. This letter outlined the results from the Phase I Archaeological Survey and VDHR's concurrence that "...no further archaeological work is necessary for the proposed project. No historic properties will be affected by the project." On March 1, 2023, Caitlin Rogers, the Tribal Historic Preservation Officer (THPO) for the Catawba Indian Nation, responded stating that the Tribe had "no immediate concerns with regard to traditional cultural properties, sacred sites or Native American archaeological sites within the boundaries of the proposed project areas." Additionally, Caitlin Rogers stated that the Tribe requests notification if any Native American artifacts and/or human remains are discovered during ground disturbance. No other responses have been received to date. Please refer to **Appendix H** for all Tribal consultation.

In the case of inadvertent discovery of human or ancestral remains and/or cultural resources during construction, the WFF Cultural Resources Manager would immediately halt activities and notify the appropriate Tribal governments; the VDHR; and, for remains, the coroner and local law enforcement, as to the treatment of the remains and/or archaeological resources. NASA WFF personnel would make all reasonable efforts to avoid disturbing any gravesites including those containing Native American human remains and associated funerary artifacts. All human remains would be treated in a manner consistent with Section XIII Human Remains of the *WFF Programmatic Agreement for Management of Facilities, Infrastructure, and Sites* (NASA 2014, NASA 2022b).

4 Permits, Plans, BMPs, and Mitigation

As defined in CEQ regulations (40 CFR 1508.1(s)) mitigation includes: 1) avoiding the impact altogether by not taking a certain action or parts of an action; 2) minimizing impacts by limiting the degree or magnitude of the action and its implementation; 3) rectifying the impact by repairing, rehabilitating, or restoring the affected environment; 4) reducing or eliminating the impact over time by preservation and maintenance operations during the lifetime of the action; and 5) compensating for the impact by replacing or providing substitute resources or environments. Section 4.1 provides a summary of proposed permits NASA would secure prior to implementing the Proposed Action as well as those existing and project-specific plans that would be followed during implementation of the Proposed Action.

Once implementation of a Proposed Action is underway, a federal agency has a responsibility to continually monitor that implementation to ensure that mitigation or other protective measures are being employed. Section 4.2 provides a summary of NASA's proposed mitigation and monitoring of various resource areas during and after implementation of the Proposed Action.

4.1 Summary of Permits and Plans Required

As part of the NEPA process, NASA is obtaining the following approvals:

- VDEQ CZMA Consistency Determination
- USFWS ESA Section 7 Letter of Concurrence
- NOAA Fisheries ESA Section 7 Letter of Concurrence
- NOAA Fisheries EFH Letter of Concurrence

The Design-Build contractor, on behalf of NASA and FHWA, would need to obtain the following permits and concurrence prior to starting construction:

- Accomack County Wetlands Board Permit
- VMRC Tidal Wetlands and Subaqueous Bottom Permits
- VDEQ CWA Section 401, Water Quality Certification/VSMP Permit
- VDEQ CWA Section 402, National Pollutant Discharge Elimination System (NPDES) Permit and project specific SWPPP
- VMRC Offshore Reef Program Coordination
- VMRC Habitat Management Subaqueous Lands and Tidal Wetland Permit
- USACE CWA Section 404 Dredge and Fill Permit
- USACE Section 408 Authorization to Use or Alter a Federal Civil Works Project
- USACE Rivers and Harbors Act Section 10, Navigable Waters Permit

- USCG Preliminary Navigation Clearance Determination
- USCG Bridge Permit
- WFF SEED Construction Site Stormwater Permit
- Agreement with USACE for Dredging Equipment Access

If fuel-burning equipment is anticipated to remain on site for 12 months or longer, the Design-Build contractor may need to obtain an air quality permit from VDEQ for stationary sources.

Additionally, the following plans would be implemented prior to starting construction:

- WFF ICP
- Project specific SPCC
- ESC and stormwater best practices
- Project specific Dewatering Plan
- WFF Phragmites Control Plan
- Envision Objectives and Requirements

4.2 BMPs, Mitigation and Monitoring

Table 4-1 outlines the BMPs, mitigation, and monitoring responsibilities of NASA and the Design-Build contractor during construction and demolition activities.

Table 4-1. Summary of BMPs, Mitigation and Monitoring Measures	
Resource Area	Measures
Noise	<ul style="list-style-type: none"> • A soft start for pile driving activities would allow individuals to vacate the area • The number and speed of in-water construction vessels may be limited to reduce noise impacts • Pile driving associated with construction of the pier may require the use of mitigation measures (e.g., bubble curtains) to minimize underwater noise impacts
Air Quality	<ul style="list-style-type: none"> • BMPs would be followed for operation of diesel-powered equipment to prevent excessive emissions • VDEQ air pollution regulations for Open Burning Restrictions (i.e., no open burning of waste would be permitted) and Fugitive Dust Precautions (e.g., water may be sprayed to lessen impacts from activities that generate dust), and volatile organic compound content of architectural coatings would be followed • If fuel-burning equipment is anticipated to remain on site for 12 months or longer, the Design-Build contractor would obtain any required air quality permit from VDEQ for stationary sources
Toxic Substances, Hazardous and Regulated Materials and Waste	<ul style="list-style-type: none"> • BMPs for operation of diesel-powered equipment to prevent spills or releases would be employed, and an SPCC plan would be prepared and implemented if more than 5,000 L (1,320 gal) of petroleum products are stored on site • WFF ICP BMPs would be implemented to prevent and minimize impacts of potentially hazardous substances • Sampling of demolition debris for ACM and LBP would be conducted to identify waste disposal requirements

Table 4-1. Summary of BMPs, Mitigation and Monitoring Measures	
Resource Area	Measures
	<ul style="list-style-type: none"> If dewatering is required due to PFAS levels, a WFF MEMD-approved dewatering plan would be implemented
Health and Safety	<ul style="list-style-type: none"> Safety Plans would be prepared, implemented, and followed Safety Officers would be identified to perform regular inspections and document compliance Bridge Permit conditions would be adhered to including the approved vertical clearance over the water, and installation of navigational lights and/or markers, as needed
Land Resources	<ul style="list-style-type: none"> SWPPP, ESC, and stormwater management BMPs could include using silt fencing; soil stabilization blankets; and matting construction entrances at material laydown areas, and around areas of land disturbance during construction Bare soils would be vegetated immediately after construction to reduce erosion and stormwater runoff WFF ICP would be implemented and followed to prevent or swiftly respond to spills or releases Heavy equipment, located in temporarily impacted wetland areas, would be placed on mats, geotextile fabric, or other suitable measures to minimize soil disturbance to the maximum extent practicable Certified clean fill would be used, as needed
Water Resources	<ul style="list-style-type: none"> The need for dewatering, requirements regarding handling of PFAS (as needed), and de-watering volumes and methods would be identified Hydraulic modeling of the final bridge design would be conducted to determine the effects on scour Machinery and construction vehicles would be operated outside of wetlands to the greatest extent practicable; synthetic mats, low-pressure tires, and/or other best practices may be used when wetland work is unavoidable If possible, the top 30 cm (12 in) of material removed from wetlands would be preserved for use as wetland seed and rootstock in the excavated area unless the material contains <i>Phragmites</i> ESC would be designed in accordance with the most current edition of the Virginia Erosion and Sediment Control Handbook, controls would be in place prior to clearing and grading and maintained in good working order to minimize impacts to state waters, and the controls would remain in place until the area stabilizes WFF ICP and project specific SWPPP would be implemented to reduce impacts of stormwater runoff and fueling and maintenance of vehicles and equipment Wetland ground and vegetation disturbance would be returned to pre-construction conditions, in accordance with permit requirements Monitoring of wetlands, streambeds, channels, etc. in construction areas would occur in accordance with all project permits Turbidity curtains would be used, if necessary, for open water work Materials including concrete mixes that incorporate pozzolan materials (blast furnace slag and/or fly ash) that would lower embodied carbon, would be used, where applicable
Vegetation	<ul style="list-style-type: none"> As required by permits (e.g., VMRC and USACE permits), construction and post-construction monitoring would be conducted to identify and document if and when disturbed areas achieve final stabilization as specified in the permits; NASA would implement corrective action measures such that permit requirements are met

Table 4-1. Summary of BMPs, Mitigation and Monitoring Measures	
Resource Area	Measures
Wildlife, Special Status Species, Essential Fish Habitat	<ul style="list-style-type: none"> • TOYRs that are required as a result of NOAA Fisheries or USFWS coordination would be implemented • Conditions of the existing WFF Protected Species Monitoring Plan for tree clearing would be followed • A soft start for pile driving activities would allow individuals to vacate the area and avoid adverse impacts of pile driving noise • The number and speed of in-water construction vessels may be limited to reduce strike impacts. • Mitigation of invasive species (e.g., <i>Phragmites</i>) would occur in accordance with the WFF Phragmites Control Plan • Turbidity curtains or other measures may be deployed to reduce turbidity • Project would adhere to the WFF ICP, SWPPP, and other applicable permits and plans • Bubble curtains could be utilized for noise attenuation during pile driving • Vegetation disturbance would be minimized, and vegetation returned to existing conditions as practicable to restore habitat • Oysters would be relocated as needed, and coordination with VMRC and VIMS regarding additional mitigation for shellfish would be conducted as necessary • Sea turtle observers would be on site to ensure that pile driving activities are not occurring when sea turtles are present in the ESA Action Area • Periodic vegetation maintenance would be conducted
Transportation	<ul style="list-style-type: none"> • All transportation activities, including road closures, traffic control, safety issues, etc., would be coordinated with Accomack County and VDOT Accomack Residency Office • Adherence to Bridge Permit conditions and coordination with USCG would occur for any required waterway closures, as needed • NOTMARs would be issued for all in-water work and in-water signage of construction area would be posted
Employment and Income	<ul style="list-style-type: none"> • VMRC, USCG, and Virginia Department of Conservation and Recreation (VDCR) would be notified prior to project start so they can notify the public, as needed, regarding work which may affect commercial activities
Recreation	<ul style="list-style-type: none"> • VMRC, USCG, and VDCR would be notified prior to project start so they can notify the public, as needed, regarding work which may affect recreational activities
Archaeological Resources	<ul style="list-style-type: none"> • Work would halt and WFF Historic Preservation Officer would be contacted immediately if cultural resources are discovered during ground disturbing activities

5 Cumulative Effects

CEQ regulations define cumulative effects as “...the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such actions.”

Section 5 of the *Final Site-wide PEIS* provided a detailed analysis of potential cumulative effects from the NASA actions evaluated in the PEIS, including the Causeway Bridge Replacement Project, along with past, present, and reasonably foreseeable future actions. The analysis covered a temporal range from the mid-1940’s (when federal activities began on the Main Base and Wallop’s Island) through 2039.

The geographic scope of the cumulative effects analysis for this project includes a radius of approximately 0.8 km (0.5 mi), which was determined as the range in which direct impacts on resources would be expected to occur. The temporal range of this cumulative effects analysis is from the start of construction, which is anticipated to be 2024 through the 75-year lifespan of the new bridge (75 years beyond when the new bridge is open), which is anticipated to be approximately 2100. Because of the nature of the Proposed Action and the smaller geographical review area, only two of the projects evaluated in the *Final Site-wide PEIS* were considered in this EA:

- NASA *Phragmites* Control and Monitoring Program, and
- USACE Federal Navigation Projects.

Because the *Final Site-wide PEIS* is incorporated into this EA by reference, details of these projects/actions are not repeated here. However, there are two activities that were not included in the *Final Site-wide PEIS* that are being evaluated due to their potential for cumulative impacts.

- **Ongoing commercial, recreational, and USCG vessel traffic in the area between Wallops Island and the Mainland, including anchoring**

The waters surrounding the Causeway Bridge would continue to be used for recreation, and commercial and recreational fishing, commercial charters, and by USCG vessels. These activities are not anticipated to increase during the temporal scale of this analysis.

- **Relocating utilities from the existing Causeway Bridge**

Several utility lines providing electric, water, and sewer services to Wallops Island are currently attached to the existing Causeway Bridge. In the next 2 years (2023-2025), NASA plans to reroute all utilities attached to the bridge and bury them, with the preferred burial method being HDD underneath Cat Creek. In addition to the main HDD bore underneath Cat Creek, which would terminate immediately beyond the existing Causeway Bridge abutments, NASA would extend the utilities past the anticipated LOD of the new bridge through shallow HDD bores and then reconnect to the existing utilities along the south shoulder of Causeway

Road. Recent inspections of the water utility infrastructure showed catastrophic deterioration of the potable water supply to Wallops Island, which require immediate attention. Therefore, this utility relocation project has independent utility from the Causeway Bridge Replacement project and would be completed regardless of whether NASA constructed a new bridge.

5.1 Potential Cumulative Effects by Resource

NASA has determined that the following resources would have a potential for cumulative impacts due to past, present, and reasonably foreseeable future actions.

- Soils – Short-term impacts from ground disturbances. Site-specific ESC Plans and BMPs would be implemented to reduce erosion and stormwater runoff. Cumulative impacts would be negligible.
- Water quality – Negligible short-term impacts could occur from upland erosion during the HDD project to bury utilities. NASA would implement the WFF ICP, ESC BMPs, and the project SWPPP to reduce turbidity and erosion that leads to sedimentation of stormwater runoff. Cumulative impacts would be short-term, adverse, minor.
- Water-based Transportation and Recreation – Minor short-term impacts to boaters on Cat Creek from the presence of boats and/or barges during maintenance and repair activities during the service life of the bridge. Waterway closures are unlikely, but implementation of a safety lane may be required for transportation of large and heavy water-based equipment to the Project Area. Cumulative impacts would be short-term, adverse, and minor.
- Wildlife – Short-term minor impacts from disturbances during construction activities on terrestrial and aquatic species (e.g., noise, habitat impacts, turbidity), but wildlife would not experience cumulative, long-term impacts as they currently reside in an area dominated by WFF operations.

6 Agencies and Persons Consulted

On behalf of NASA, FHWA began outreach to participating and cooperating agencies, tribes with a demonstrated cultural affiliation with the Project Area, and interested members of the public in 2020. **Table 6-1** provides a list of the parties who were consulted as part of the project review process.

Table 6-1. List of Agencies and Persons Consulted for the EA			
Name	Organization	Letter	Draft EA
Federal Agencies			
Barbara Rudnick	USEPA, Office of Environmental Programs	✓	✓
Carrie Traver	USEPA, Office of Environmental Programs	✓	✓
Ryan Kimberley	FHWA, Eastern Federal Lands Division		✓
Kevin Rose	FHWA, Eastern Federal Lands Division		✓
Katerina Roman	FHWA, Eastern Federal Lands Division		✓
Brian Hopper	NOAA Fisheries, PRD	✓	✓
David O'Brien	NOAA Fisheries, HCD	✓	✓
Victor Grycenkov	NOAA, Wallops Command and Data Acquisition Station	✓	✓
Deborah Darden	NPS, Assateague Island National Seashore	✓	✓
Kayleen Meinen	NRCS	✓	✓
Peter Kube	USACE, Norfolk District	✓	✓
Michael Anderson	USACE, Norfolk District		✓
Robert Berg	USACE, Norfolk District		✓
Hal Pitts	USCG, Commander, Fifth Coast Guard District	✓	✓
Mickey Sanders	USCG, Bridge Administration Branch Fifth District	✓	✓
LT Joshua Zirbes	USCG, Sector Field Office Eastern Shore	✓	✓
Kevin Holcomb	USFWS, Chincoteague NWR	✓	✓
Robert Leffel	USFWS, Chincoteague NWR	✓	✓
Nancy Finley	USFWS, Chincoteague NWR	✓	✓
Cindy Schulz	USFWS, Virginia Field Office	✓	✓
Emily Argo	USFWS, Virginia Field Office	✓	✓
State Agencies			
Sean Mulligan	MARS	✓	✓
Rene Hypes	VDCR	✓	✓

Table 6-1. List of Agencies and Persons Consulted for the EA			
Name	Organization	Letter	Draft EA
Sheri Kattan	VDEQ, Office of Wetlands and Water Protection	✓	✓
Ruth Boettcher	VDWR, Fish and Wildlife Information Services	✓	✓
Amy Ewing	VDWR, Fish and Wildlife Information Services	✓	✓
Laura Lavernia	VDHR, Review and Compliance	✓	✓
Karen Duhring	VIMS	✓	✓
Lyle Varnell	VIMS	✓	✓
Hank Badger	VMRC, Habitat Management Division	✓	✓
Allison Lay-Norris	VMRC, Habitat Management Division	✓	✓
Tony Watkinson	VMRC, Habitat Management Division	✓	✓
Alicia Nelson	VMRC, Artificial Reef Program	✓	✓
Local Government*			
Michael Mason	Accomack County Administration	✓	✓
C. Renata Major	Accomack County Board of Supervisors	✓	✓
William Tarr	Accomack County Board of Supervisors	✓	✓
Ronald Wolff	Accomack County Board of Supervisors	✓	✓
Vanessa Kay Johnson	Accomack County Board of Supervisors	✓	✓
Rich Morrison	Accomack County Department of Building and Zoning	✓	✓
Program Staff	Accomack County Environmental Programs	✓	✓
Chontese Ridley	Accomack County Wetlands Board	✓	✓
Shannon Alexander	Accomack-Northampton Planning District Commission	✓	✓
Ashley Mills	Accomack-Northampton Planning District Commission	✓	✓
Craig Mathies, Sr.	Somerset County, MD, Board of Supervisors	✓	✓
Mayor J. Arthur Leonard	Town of Chincoteague	✓	✓
Mike Tolbert	Town of Chincoteague	✓	✓
Craig Mathies, Sr.	Town of Princess Anne, MD	✓	✓
Kevin Smith	Maryland Coastal Bays Program	✓	✓
Julie Wheatley	Wallops Research Park	✓	✓
Other Organizations and Individuals			
Peter Bale	Wallops Island Regional Alliance	✓	✓
Chet Chesterfield	Chincoteague Bay Field Station	✓	✓

Table 6-1. List of Agencies and Persons Consulted for the EA			
Name	Organization	Letter	Draft EA
Dr. Bryan Watts	College of William and Mary, Center for Conservation Biology	✓	✓
John Haag	US Navy	✓	✓
Tribes			
Norris Howard, Sr. Paramount Chief	Pocomoke Indian Nation	✓	✓
Lee Lockamy, Chief	Nansemond Indian Nation	✓	✓
Chief Stephen Adkins	Chickahominy Indian Tribe	✓	✓
Anne Richardson, Chief	Rappahannock Tribe	✓	✓
Caitlin Rogers, THPO	Catawba Indian Nation	✓	✓
Chief Dr. Robert Gray	Pamunkey Indian Tribe	✓	✓
Gerald Steward	Chickahominy Indians Eastern Division	✓	✓

*Unless otherwise indicated, local officials are in the state of Virginia

Ten of the agencies/individuals that were consulted responded: EPA, USACE, USFWS, VDHR, VDCR, VIMS, VMRC, MARS, NRCS, the Catawba Indian Tribe, and the Pamunkey Indian Tribe. Details on the responses are provided in the appropriate subsections of Section 3.

7 List of Preparers

The individuals listed in **Table 7-1** were involved in the preparation of this document.

Table 7-1. List of Preparers		
Name	Title, Education and Years of Experience	Area of Responsibility in EA
NASA		
Shari Miller	Environmental Engineer, BS Chemistry, BS Biology, 26 years	Center NEPA Manager, Document Development and Review
Douglas Bruner, PG	Environmental Engineer, MS Engineering Geology, 23 years	NEPA Project Co-Lead, Document Development and Review
John Saeker	Civil Engineer, 23 years	Facilities Management Division, Project Manager
Wetland Studies and Solutions, Inc. (Contractor to NASA)		
Suzie Richert, AICP, CEP	NEPA Specialist, MS Soil Science, 22 years	Contractor Project Manager, Document Development
Susan Liszeski, CEP	NEPA Specialist, MS Wildlife Management, 33 years	Document Preparation and Review
Zaneta Hough	NEPA Specialist, MS Ecology, 16 years	Document Preparation and Review
Jeremy Bradley, GISP, CFM	Environmental Scientist, MS Natural Resources, 13 years	Figures
Abby Spotswood	Environmental Technician, BS Environmental Resource Management, 3 years	Document Preparation

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National Aeronautics and Space Administration
Goddard Space Flight Center
Wallops Flight Facility
Wallops Island, VA

NASA Causeway Bridge Replacement Project
Environmental Assessment

Appendix A
Scoping Responses

Matthew J. Strickler
Secretary of Natural Resources

Clyde E. Cristman
Director



COMMONWEALTH of VIRGINIA
DEPARTMENT OF CONSERVATION AND RECREATION

Rochelle Altholz
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Dam Safety & Floodplain
Management and Soil & Water
Conservation*

Nathan Burrell
*Deputy Director of
Government and Community Relations*

Thomas L. Smith
*Deputy Director of
Operations*

September 18, 2020

Ryan Kimberley
Federal Highway Administration
21400 Ridgetop Circle
Sterling, VA 20166

Re: Wallops Island Causeway Bridge Replacement Scoping

Dear Mr. Kimberley:

The Department of Conservation and Recreation's Division of Natural Heritage (DCR) has searched its Biotics Data System for occurrences of natural heritage resources from the area outlined on the submitted map. Natural heritage resources are defined as the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations.

Biotics documents the presence of natural heritage resources within the project boundary including a 100ft buffer. However, due to the scope of the activity we do not anticipate that this project will adversely impact these natural heritage resources.

In addition, the proposed project may fragment a C1 and C2 Ecological Core as identified in the Virginia Natural Landscape Assessment (<https://www.dcr.virginia.gov/natural-heritage/vaconvisvnl>), one of a suite of tools in Virginia ConservationVision that identify and prioritize lands for conservation and protection.

Ecological Cores are areas of unfragmented natural cover with at least 100 acres of interior that provide habitat for a wide range of species, from interior-dependent forest species to habitat generalists, as well as species that utilize marsh, dune, and beach habitats. Cores also provide benefits in terms of open space, recreation, water quality (including drinking water protection and erosion prevention), and air quality (including carbon sequestration and oxygen production), along with the many associated economic benefits of these functions. The cores are ranked from C1 to C5 (C5 being the least ecologically relevant) using many prioritization criteria, such as the proportions of sensitive habitats of natural heritage resources they contain.

Fragmentation occurs when a large, contiguous block of natural cover is dissected by development, and other forms of permanent conversion, into one or more smaller patches. Habitat fragmentation results in biogeographic changes that disrupt species interactions and ecosystem processes, reducing biodiversity and habitat quality due to limited recolonization, increased predation and egg parasitism, and increased invasion by weedy species.

Therefore minimizing fragmentation is a key mitigation measure that will reduce deleterious effects and preserve the natural patterns and connectivity of habitats that are key components of biodiversity. DCR recommends

efforts to minimize edge in remaining fragments, retain natural corridors that allow movement between fragments and designing the intervening landscape to minimize its hostility to native wildlife (natural cover versus lawns). Mapped cores in the project area can be viewed via the Virginia Natural Heritage Data Explorer, available here: <http://vanhde.org/content/map>.

There are no State Natural Area Preserves under DCR's jurisdiction in the project vicinity.

Under a Memorandum of Agreement established between the Virginia Department of Agriculture and Consumer Services (VDACS) and the DCR, DCR represents VDACS in comments regarding potential impacts on state-listed threatened and endangered plant and insect species. The current activity will not affect any documented state-listed plants or insects.

New and updated information is continually added to Biotics. Please re-submit project information and map for an update on this natural heritage information if the scope of the project changes and/or six months has passed before it is utilized.

The Virginia Department of Wildlife Resources (VDWR) maintains a database of wildlife locations, including threatened and endangered species, trout streams, and anadromous fish waters that may contain information not documented in this letter. Their database may be accessed from <https://vafwis.dgif.virginia.gov/fwis/> or contact Ernie Aschenbach at 804-367-2733 or Ernie.Aschenbach@dwr.virginia.gov.

Should you have any questions or concerns, please contact me at 804-225-2429. Thank you for the opportunity to comment on this project.

Sincerely,

A handwritten signature in cursive script, appearing to read "Tyler Meader".

Tyler Meader
Natural Heritage Locality Liaison

From: [Okorn, Barbara](#)
To: [Kimberley, Ryan \(FHWA\)](#)
Cc: [Spagnolo, Ralph](#); [Rudnick, Barbara](#)
Subject: Wallops Island Causeway Bridge
Date: Friday, September 18, 2020 10:11:58 AM

CAUTION: This email originated from outside of the Department of Transportation (DOT). Do not click on links or open attachments unless you recognize the sender and know the content is safe.

Mr. Kimberly,

Thank you for your August 5, 2020 letter inviting comments on the National Aeronautics and Space Administration (NASA) and the Federal Highway Administration's (FHWA) joint effort to develop an Environmental Assessment (EA) for the replacement of the Wallops Island Causeway Bridge at Goddard Space Flight Center's Wallops Flight Facility in Accomac County, Virginia. The letter indicates that the EA is being prepared to satisfy obligations under the National Environmental Policy Act of 1969 (NEPA) and will also serve as a means for ensuring compliance with other Federal statutes.

Generally, the EA should include a discussion of the need for the proposal, the alternatives considered, the environmental impacts of the proposed action and alternatives, mitigation as appropriate, and a listing of the agencies and persons consulted. Specific recommendations for your consideration in the development of the EA include the following:

- We recommend that alternative locations and methods to limit permanent and temporary disturbance to aquatic resources, and wildlife, be evaluated and presented in the EA in a comparative form. The rationale for selection of the preferred alternative should be clearly stated in the analysis.
- We recommend the EA discuss construction/demolition techniques and how these methods were selected along with direct, indirect, and temporary impacts that are associated with each, and how impacts will be avoided or minimized. In particular, the EA should examine avoiding impacts associated with the siting of staging areas and any other associated disturbance areas. The analysis should also include using proper barriers when installing new bridge abutments to minimize impacts to aquatic resources.
- We suggest that the document thoroughly evaluate potential aquatic resources impacts, including estimated acreage of direct and indirect impacts, including impacts on hydrology, ecological communities, vegetative communities, soils, and functions. Wetlands present on or immediately surrounding the site should be delineated. Including data such as delineation or functional assessment information in the EA is helpful, and photos are recommended to characterize the resources.
- We recommend that the EA provide a detailed description of the habitat resources in the study area and suggest an assessment of benthic and finfish to help identify

avoidance and minimization measures.

- Salt marshes, Submerged Aquatic Vegetation (SAV) beds and mudflats are important habitats because they provide critical habitat for marine and estuarine species of flora and fauna. Loss of these habitats could impact important recreational and commercial finfish and shellfish habitat that are critical for the local and national economy. The alternatives studied in the EA should avoid and minimize impacts to these habitats.
- Potential construction impacts should be assessed in detail, including timing, measures taken to protect surface waters, and noise impacts. Also, as construction may introduce or spread invasive species, we recommend the project's potential contribution to the spread of invasive species be evaluated and prevention or mitigation measures addressed in the EA.
- Mitigation measures for adverse environmental impacts should be described. Permanent impacts to aquatic resource may require compensatory mitigation. Where disturbance is indicated to be temporary, restoration of aquatic resources should be discussed.
- We recommend that coordination with the applicable agencies be documented in the EA, including correspondence regarding state and federal threatened and endangered species.
- We recommend time of year restrictions be followed to avoid finfish migration during the spawning season. Fish migrate into tidal and non-tidal headwaters to spawn at certain times of year; especially from January through April.
- We suggest consideration be given to conducting a sediment grain size analysis to determine the amount of sand, silt and clay in the sediment. This information can be used to determine appropriate techniques to reduce sedimentation rates

We look forward to working with you as more information becomes available. Please feel free to reach out if you have any questions on the recommended topics above or if we are able to contribute to the analysis. We request that you provide a copy of the EA to EPA when it is available for review.

Sincerely,
Barb

Barbara Okorn
Office of Communities, Tribes, & Environmental Assessment
US EPA, Region III
1650 Arch Street (3RA10)
Philadelphia, PA 19103
215-814-3330

From: [Daryl Moore](#)
To: ["Miller, Shari A. \(WFF-2500\)"; Kimberley, Ryan \(FHWA\)](#)
Cc: [Sean Mulligan](#)
Subject: Wallops Island Causeway Bridge Replacement, Accomack County, VA, Scoping Notification
Date: Thursday, September 10, 2020 7:13:32 AM

Shari / Kimberley,

Virginia Commercial Space Flight Authority has no comments or concerns on the subject project.

*Daryl Moore
VCSFA / MARS
Safety & Environmental Manager
Cell: 540-450-4044*

Dear Potential Stakeholder,

The National Aeronautics and Space Administration (NASA) and the Federal Highway Administration (FHWA) are initiating an Environmental Assessment (EA) that will evaluate potential impacts associated with replacement of the Wallops Island Causeway Bridge over Cat Creek at Goddard Space Flight Center's Wallops Flight Facility, in Accomack County, VA.

The attached documents provide additional information about the proposed project and EA. Please review the scoping materials and provide comments on behalf of your department. Feel free to forward this email to others in your office who may be interested. The scoping period is open until September 20, 2020. The attached scoping materials are summarized as follows:

1. Stakeholder Scoping Letter- This letter includes project descriptions, internet links, and information about the EA and scoping process.
2. Attachment A- Satellite image, topographic map, photos of the existing bridge, and a rendering of the proposed bridge
3. Attachment B- Preliminary/proposed engineer plans, including the type, size, and location of the bridge.

We greatly appreciate your participation in the scoping process,



COMMONWEALTH of VIRGINIA

*Marine Resources Commission
380 Fenwick Road
Bldg 96
Fort Monroe, VA 23651-1064*

Matthew J. Strickler
Secretary of Natural Resources

Steven G. Bowman
Commissioner

September 22, 2020

Federal Highway Administration
Attn: Ryan Kimberley
21400 Ridgetop Circle
Sterling, VA 20166

Re: Draft Environmental Assessment
Wallops Island Causeway Bridge Replacement

Dear Mr. Kimberley:

This will respond to the request for comments regarding the Draft Environmental Assessment for the Wallops Island Causeway Bridge Replacement Project, prepared by the Federal Highway Administration (FHWA), on behalf of the National Aeronautics and Space Administration (NASA). Specifically, NASA has proposed to replace the existing Wallops Island Causeway Bridge over Cat Creek at Goddard Space Flight Center's Wallops Flight Facility in Accomack County, Virginia.

The Wallops Island Causeway Bridge crosses over public shellfish grounds that are open for harvest. VMRC recommends that a survey of shellfish resources be conducted as part of the environmental assessment. Stringent erosion and sediment control measures should also be used during any construction or maintenance on the bridge to protect shellfish in the area. Additionally, VMRC recommends that demolished bridge materials be considered for placement on artificial reefs in the area. The VMRC Artificial Reef Program can be contacted to determine which materials would be acceptable for placement on artificial reefs.

Please be advised that the VMRC pursuant to Chapter 12, 13, & 14 of Title 28.2 of the Code of Virginia administers permits required for submerged lands, tidal wetlands, and beaches and dunes. Any jurisdictional impacts will be reviewed by the VMRC during the Joint Permit Application process. Should the proposed project change, a new review by this agency may be required relative to these jurisdictional areas.

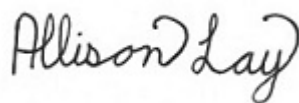
An Agency of the Natural Resources Secretariat
www.mrc.virginia.gov

Telephone (757) 247-2200 (757) 247-2292 V/TDD Information and Emergency Hotline 1-800-541-4646 V/TDD

Federal Highway Administration
September 22, 2020
Page Two

If you have any questions please contact me at (757) 247-2254 or by email at Allison.lay@mrc.virginia.gov. Thank you for the opportunity to comment.

Sincerely,

A handwritten signature in black ink that reads "Allison Lay". The signature is written in a cursive, flowing style.

Allison Lay
Environmental Engineer, Habitat Management

AEL
HM



Reply to
Attention of

DEPARTMENT OF THE ARMY
US ARMY CORPS OF ENGINEERS
NORFOLK DISTRICT
FORT NORFOLK
803 FRONT STREET
NORFOLK VA 23510-1011

September 18, 2020

CENAO-WR-E
Eastern Projects Section

Ryan Kimberley
Federal Highway Administration
21400 Ridgetop Circle
Sterling, VA 20166

Shari Miller
Center NEPA Manager &
Environmental Planning Lead
NASA GSFC Wallops Flight Facility
Wallops Island, VA 23337

Dear Mr. Kimberley and Ms. Miller:

This letter is in response to a letter from Kevin Rose, Environment Team Leader with the US Department of Transportation, Federal Highways Administration (FHWA), Eastern Federal Lands Highway Division, dated August 5, 2020 soliciting scoping comments for a study to assess the potential environmental impacts associated with replacing the Wallops Island Causeway Bridge over Cat Creek at Goddard Space Flight Center's Wallops Flight Facility, in Accomack County, VA. In accordance with the National Environmental Policy Act (NEPA) and other federal and state laws and regulations, NASA, in cooperation with the FHWA, is assessing potential impacts to be documented in an Environmental Assessment (EA) for this project. USACE will participate as a cooperating agency in the preparation of the EA. We recommend the use of a collaborative process for the study of this project, documenting concurrence of the pertinent Federal agencies at important steps, to provide the local governments and the public with a more dependable framework for planning decisions.

Depending on the construction method as well as the LEDPA, it is likely the project will impact waters and/or wetlands regulated by the Norfolk District Army Corps of Engineers (USACE) under Section 10 of the Rivers and Harbors Act (33 U.S.C. § 403) and Section 404 of the Clean Water Act (33 U.S.C. §1344). A permit will be required for impacts to these waters not under the purview of the US Coast Guard under Section 9 of the Rivers and Harbors Act.

To determine the limits of our jurisdiction, our office will require a wetland delineation be performed for all areas of disturbance including laydown areas.

This project will also require a Section 408 review by our Operations Branch as the bridge and its support pilings are within a waterway containing a Federal Project Navigation Channel. All future correspondence should also be sent to Mike Anderson, (michael.l.anderson@usace.army.mil) our 408 coordinator. Operations Branch has provided the following comments:

“Currently we can identify two primary concerns that need to be addressed by your Review. An RFI or a more thorough technical evaluation of their plans may be required.

1. First, we want to make sure the minimum bridge clearance is the same or higher than the existing bridge.
2. Second, we want to ensure that they perform all construction activities in a manner that will maintain safe navigation.”

Historic Resources. The project may affect historic and cultural resources. As per 36 CFR 800.2(a)(2), the FHWA is hereby designated as the lead Federal agency to fulfill the collective federal responsibilities under Section 106 of the National Historic Preservation Act for the undertaking. We authorize your agency to conduct Section 106 coordination on our behalf. Any Memorandum of Agreement prepared by your agency under 36 CFR 800.6 should include the following clause in the introductory text:

"Whereas, pursuant to Section 10 and/or Section 404 of the Clean Water Act, a Department of the Army permit will likely be required from the Corps of Engineers for this project, and the Corps has designated FHWA as the lead federal agency to fulfill federal responsibilities under Section 106;"

Threatened and Endangered Species: Pursuant to 50 CFR 402.07, the Corps authorizes your agency to conduct Section 7 coordination with the U.S. Fish and Wildlife Service (USFWS) as well as the National Marine Fisheries Service (NMFS) on our behalf as well, concerning potential effects to Federally-listed threatened and endangered species. FHWA will be responsible for completing all coordination pursuant to ESA, regardless of whether it occurs during the NEPA process or during the permitting process. In addition, we recommend that all documentation and coordination, including the IPAC determination, be included in the NEPA document.

Essential Fish Habitat. Pursuant to 50 CFR 600.920(b), the Corps authorizes your agency to conduct MSA consultation with the National Oceanic and Atmospheric Administration (NOAA) Fisheries on our behalf as well, concerning potential effects to Essential Fish Habitat. FHWA is responsible for completing all coordination pursuant to MSA, regardless of whether it occurs during the NEPA process or during the permit process. In addition, we recommend that all documentation and coordination be included in the NEPA document.

Thank you for the opportunity to comment on the preparation of the EA. To the extent that workload and scheduling allow, we will participate in stakeholder meetings. However, we request that NASA will consider separate meetings with the Cooperating Agencies as needed to resolve issues.

You may contact Mr. Brian Denson at brian.c.denson@usace.army.mil or 757-201-7792 if you have any questions.

Sincerely,

KUBE.PETER.R.122883
2908

Digitally signed by
KUBE.PETER.R.1228832908
Date: 2020.09.18 11:53:13 -04'00'

Peter. R. Kube
Chief, Eastern Virginia Regulatory Section

cc:

Environmental Protection Agency, Philadelphia

18 September 2020

Ryan Kimberly
Federal Highway Administration
21400 Ridgetop Circle
Stirling, VA 20166

Dear R. Kimberly:

This letter responds to the request for scoping comments for the development of an Environmental Assessment for the Wallops Island Causeway Bridge Replacement over Cat Creek in Accomack County. The preliminary plans involve constructing a replacement causeway supported by precast concrete piles adjacent to the existing structure. Once complete, the old structure will be removed.

There has been no submerged aquatic vegetation (SAV) mapped within Cat Creek since our mapping began in 1971. Installation of the proposed precast concrete piles will result in lesser impacts to aquatic fauna as compared with hollow steel piles. Additional direct marine and wetland environmental impacts will be from the footprint of the pilings and indirectly from shading from the deck. Once the old causeway is removed, we recommend that the area be regraded to tie into adjacent marsh contours and planted with appropriate tidal wetlands vegetation. Any construction access and/or disturbance should also be replanted. We recommend the development of a planting plan that includes monitoring and replanting as necessary as well as a *Phragmites australis* control plan.

Cat Creek is designated as public shellfish ground and potential impacts to oysters in the project vicinity will depend on finalized designs and construction methods. Turbidity caused by construction and demolition can impact settlement of oyster spat. These impacts can be reduced through strict erosion and sediment control measures and, if necessary depending on oyster density, a time of year restriction on instream work.

Thank you for the opportunity to comment on this project at this early stage. We can review and provide additional detailed comments once the EA and project designs are complete.

Sincerely,



Emily Hein

Assistant Director for Advisory Services

2023
Natural Resources Conservation Service
Consultation

From: [Bruner, Douglas W. \(WFF-2500\)](#)
To: [Meinen, Kayleen - FPAC-NRCS, VA](#)
Cc: [Lindsey, Matthew R. \(WFF-250.0\)\[Bluestone Environmental Group, Inc\]](#); [Simko, Marianne F. \(WFF-250.0\)\[Bluestone Environmental Group, Inc\]](#); [Saecker, John R. \(WFF-2280\)](#); [Richert, Suzie](#); [Kimberley, Ryan \(FHWA\)](#); [Spotswood, Abby](#); [Simko, Marianne F. \(WFF-250.0\)\[Bluestone Environmental Group, Inc\]](#)
Subject: RE: NRCS letter for FPPA coordination
Date: Friday, May 5, 2023 7:31:59 AM
Attachments: [NASA WFF Bridge Replacement Project AD-1006AD updated.pdf](#)

Kayleen, good morning,

NASA has completed Parts VI and VII (Step 6 on page 2 of the form) for the Causeway Bridge Replacement project. Please let me know if you require additional information.

Respectfully,

Doug Bruner

From: Meinen, Kayleen - FPAC-NRCS, VA <Kayleen.Meinen@usda.gov>
Sent: Thursday, May 4, 2023 11:01 AM
To: Bruner, Douglas W. (WFF-2500) <douglas.w.bruner@nasa.gov>
Cc: Miller, Shari A. (WFF-2500) <shari.a.miller@nasa.gov>; Saecker, John R. (WFF-2280) <john.r.saecker@nasa.gov>; Kimberley, Ryan (FHWA <ryan.kimberley@dot.gov>; Simko, Marianne F. (WFF-250.0)[Bluestone Environmental Group, Inc] <marianne.f.simko@nasa.gov>; Spotswood, Abby <ASpotswood@wetlands.com>; Richert, Suzie <SRichert@wetlands.com>; Lindsey, Matthew R. (WFF-250.0)[Bluestone Environmental Group, Inc] <matthew.r.lindsey@nasa.gov>
Subject: RE: [EXTERNAL] RE: NRCS letter for FPPA coordination

Good morning,

Attached is the completed AD-1006 form for the NASA Wallops Flight Facility bridge replacement project.

Thank you,
Kayleen Meinen

From: Bruner, Douglas W. (WFF-2500) <douglas.w.bruner@nasa.gov>
Sent: Thursday, May 4, 2023 7:19 AM
To: Meinen, Kayleen - FPAC-NRCS, VA <Kayleen.Meinen@usda.gov>
Cc: Miller, Shari (WFF-2500) <shari.a.miller@nasa.gov>; Saecker, John R. (WFF-2280) <john.r.saecker@nasa.gov>; Kimberley, Ryan (FHWA <ryan.kimberley@dot.gov>; Simko, Marianne F. (WFF-250.0)[Bluestone Environmental Group, Inc] <marianne.f.simko@nasa.gov>; Spotswood, Abby <ASpotswood@wetlands.com>; Richert, Suzie <SRichert@wetlands.com>; Lindsey, Matthew R. (WFF-250.0)[Bluestone Environmental Group, Inc] <matthew.r.lindsey@nasa.gov>
Subject: RE: [EXTERNAL] RE: NRCS letter for FPPA coordination

Ms. Kayleen, good morning,

Please see the attached map for option “(a)”. Feel free to contact me if you require additional information.

Respectfully,

Doug Bruner

From: Meinen, Kayleen - FPAC-NRCS, VA <Kayleen.Meinen@usda.gov>

Sent: Tuesday, May 2, 2023 11:25 AM

To: Bruner, Douglas W. (WFF-2500) <douglas.w.bruner@nasa.gov>

Subject: [EXTERNAL] RE: NRCS letter for FPPA coordination

Good morning Mr. Bruner,

I hope this email finds you well.

Thank you for the descriptive letter and attachments; I hope to review and complete the AD-1006 form and return it by the end of this week. The soils information was helpful, but in order to complete this request in an accurate and timely manner I need either **(a)** the farmland classification map and legend for the acres to be converted from Web Soil Survey, which can be downloaded from the web browser as a pdf, or **(b)** a zipped shapefile of the acres being converted so I can create a farmland classification map and legend in WSS.

Follow this link to access Web Soil Survey: [Web Soil Survey - Home \(usda.gov\)](https://websoilsurvey.sciserver.usda.gov/)

Please respond to this email with one of the two options above, and I will begin working on this request as soon as possible.

Don't hesitate to reach out if you have any questions and feel free to forward this email to anyone else who may need it.

Thank you,
Kayleen Meinen

Soil Science Pathways Intern | USDA NRCS | Chesapeake Service Center | 310 Shea Drive,
Chesapeake, VA 23322

From: Bruner, Douglas W. (WFF-2500) <douglas.w.bruner@nasa.gov>

Sent: Wednesday, April 26, 2023 9:12 AM

To: Meinen, Kayleen - FPAC-NRCS, VA <Kayleen.Meinen@usda.gov>

Cc: Bermand, Cameron - FPAC-NRCS, VA <Cameron.Bermand@usda.gov>; Miller, Shari (WFF-2500) <shari.a.miller@nasa.gov>; Saecker, John R. (WFF-2280) <john.r.saecker@nasa.gov>; Kimberley, Ryan (FHWA) <ryan.kimberley@dot.gov>; Simko, Marianne F. (WFF-250.0)[Bluestone Environmental

Group, Inc] <marianne.f.simko@nasa.gov>; Spotswood, Abby <ASpotswood@wetlands.com>;
Richert, Suzie <SRichert@wetlands.com>; Lindsey, Matthew R. (WFF-250.0)[Bluestone
Environmental Group, Inc] <matthew.r.lindsey@nasa.gov>

Subject: NRCS letter for FPPA coordination

Dear Ms. Meinen,

NASA Wallops Flight Facility is proposing to replace the existing bridge that provides access to Wallops Island. The project requires use of staging areas on NASA property that include prime farmland soils. Please see the attached PDF that includes a description of the project, a map of the soils, and Form AD-1006 for NRCS review in accordance with the Farmland Protection Policy Act.

We respectfully request your review within 30 days and look forward to your input on the project.

Respectfully,

Douglas W. Bruner, P.G.
Environmental Engineer
Code 250, Medical and Environmental Management Division
NASA Wallops Flight Facility
Building F-160, Rm C-166
Wallops Island, Virginia 23337
douglas.w.bruner@nasa.gov
Office (757) 824-2441
Cell: 651-276-9864

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FARMLAND CONVERSION IMPACT RATING

PART I (To be completed by Federal Agency)		Date Of Land Evaluation Request 04/24/2023				
Name of Project Causeway Bridge Replacement Project		Federal Agency Involved National Aeronautics and Space Administration				
Proposed Land Use Road and Staging Areas		County and State Accomack County, Virginia				
PART II (To be completed by NRCS)		Date NRCS 4/26/2023 est Received		Person Completing Form: Kayleen Meinen		
Does the site contain Prime, Unique, Statewide or Local Important Farmland? (If no, the FPPA does not apply - do not complete additional parts of this form)		YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>	Acres Irrigated 0	Average Farm Size 321 acres	
Major Crop(s) corn	Farmable Land In Govt. Jurisdiction Acres: 78.8 % 304,500 acres	Amount of Farmland As Defined in FPPA Acres: 46.6 % 179,875 acres				
Name of Land Evaluation System Used Accomack Area	Name of State or Local Site Assessment System None	Date Land Evaluation Returned by NRCS 5/4/2023				
PART III (To be completed by Federal Agency)		Alternative Site Rating				
		Site A	Site B	Site C	Site D	
A. Total Acres To Be Converted Directly		0				
B. Total Acres To Be Converted Indirectly		2.52				
C. Total Acres In Site		27.12				
PART IV (To be completed by NRCS) Land Evaluation Information						
A. Total Acres Prime And Unique Farmland		1.8				
B. Total Acres Statewide Important or Local Important Farmland		0				
C. Percentage Of Farmland in County Or Local Govt. Unit To Be Converted		0				
D. Percentage Of Farmland in Govt. Jurisdiction With Same Or Higher Relative Value		46.7				
PART V (To be completed by NRCS) Land Evaluation Criterion Relative Value of Farmland To Be Converted (Scale of 0 to 100 Points)		72				
PART VI (To be completed by Federal Agency) Site Assessment Criteria (Criteria are explained in 7 CFR 658.5 b. For Corridor project use form NRCS-CPA-106)		Maximum Points	Site A	Site B	Site C	Site D
1. Area In Non-urban Use		(15)	15			
2. Perimeter In Non-urban Use		(10)	10			
3. Percent Of Site Being Farmed		(20)	0			
4. Protection Provided By State and Local Government		(20)	0			
5. Distance From Urban Built-up Area		(15)	10			
6. Distance To Urban Support Services		(15)	10			
7. Size Of Present Farm Unit Compared To Average		(10)	0			
8. Creation Of Non-farmable Farmland		(10)	0			
9. Availability Of Farm Support Services		(5)	0			
10. On-Farm Investments		(20)	0			
11. Effects Of Conversion On Farm Support Services		(10)	0			
12. Compatibility With Existing Agricultural Use		(10)	0			
TOTAL SITE ASSESSMENT POINTS		160	45			
PART VII (To be completed by Federal Agency)						
Relative Value Of Farmland (From Part V)		100	72			
Total Site Assessment (From Part VI above or local site assessment)		160	45			
TOTAL POINTS (Total of above 2 lines)		260	117			
Site Selected: A		Date Of Selection 5/4/23		Was A Local Site Assessment Used? YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>		
Reason For Selection: As stated in CFR § 658.4(c)(2) "Sites receiving a total score of less than 160 need not be given further consideration for protection and no additional sites need to be evaluated." Therefore, with a total combined score of 117, NASA intends to use the proposed sites as staging areas for the project.						
Name of Federal agency representative completing this form: Douglas W. Bruner				Date: 05/05/2023		

(See Instructions on reverse side)

Form AD-1006 (03-02)

STEPS IN THE PROCESSING THE FARMLAND AND CONVERSION IMPACT RATING FORM

- Step 1 - Federal agencies (or Federally funded projects) involved in proposed projects that may convert farmland, as defined in the Farmland Protection Policy Act (FPPA) to nonagricultural uses, will initially complete Parts I and III of the form. For Corridor type projects, the Federal agency shall use form NRCS-CPA-106 in place of form AD-1006. The Land Evaluation and Site Assessment (LESA) process may also be accessed by visiting the FPPA website, <http://fppa.nrcs.usda.gov/lesa/>.
- Step 2 - Originator (Federal Agency) will send one original copy of the form together with appropriate scaled maps indicating location(s) of project site(s), to the Natural Resources Conservation Service (NRCS) local Field Office or USDA Service Center and retain a copy for their files. (NRCS has offices in most counties in the U.S. The USDA Office Information Locator may be found at http://offices.usda.gov/scripts/ndISAPI.dll/oip_public/USA_map, or the offices can usually be found in the Phone Book under U.S. Government, Department of Agriculture. A list of field offices is available from the NRCS State Conservationist and State Office in each State.)
- Step 3 - NRCS will, within 10 working days after receipt of the completed form, make a determination as to whether the site(s) of the proposed project contains prime, unique, statewide or local important farmland. (When a site visit or land evaluation system design is needed, NRCS will respond within 30 working days.
- Step 4 - For sites where farmland covered by the FPPA will be converted by the proposed project, NRCS will complete Parts II, IV and V of the form.
- Step 5 - NRCS will return the original copy of the form to the Federal agency involved in the project, and retain a file copy for NRCS records.
- Step 6 - The Federal agency involved in the proposed project will complete Parts VI and VII of the form and return the form with the final selected site to the servicing NRCS office.
- Step 7 - The Federal agency providing financial or technical assistance to the proposed project will make a determination as to whether the proposed conversion is consistent with the FPPA.

INSTRUCTIONS FOR COMPLETING THE FARMLAND CONVERSION IMPACT RATING FORM (For Federal Agency)

Part I: When completing the "County and State" questions, list all the local governments that are responsible for local land use controls where site(s) are to be evaluated.

Part III: When completing item B (Total Acres To Be Converted Indirectly), include the following:

1. Acres not being directly converted but that would no longer be capable of being farmed after the conversion, because the conversion would restrict access to them or other major change in the ability to use the land for agriculture.
2. Acres planned to receive services from an infrastructure project as indicated in the project justification (e.g. highways, utilities planned build out capacity) that will cause a direct conversion.

Part VI: Do not complete Part VI using the standard format if a State or Local site assessment is used. With local and NRCS assistance, use the local Land Evaluation and Site Assessment (LESA).

1. Assign the maximum points for each site assessment criterion as shown in § 658.5(b) of CFR. In cases of corridor-type project such as transportation, power line and flood control, criteria #5 and #6 will not apply and will, be weighted zero, however, criterion #8 will be weighed a maximum of 25 points and criterion #11 a maximum of 25 points.
2. Federal agencies may assign relative weights among the 12 site assessment criteria other than those shown on the FPPA rule after submitting individual agency FPPA policy for review and comment to NRCS. In all cases where other weights are assigned, relative adjustments must be made to maintain the maximum total points at 160. For project sites where the total points equal or exceed 160, consider alternative actions, as appropriate, that could reduce adverse impacts (e.g. Alternative Sites, Modifications or Mitigation).

Part VII: In computing the "Total Site Assessment Points" where a State or local site assessment is used and the total maximum number of points is other than 160, convert the site assessment points to a base of 160.

Example: if the Site Assessment maximum is 200 points, and the alternative Site "A" is rated 180 points:

$$\frac{\text{Total points assigned Site A}}{\text{Maximum points possible}} = \frac{180}{200} \times 160 = 144 \text{ points for Site A}$$

For assistance in completing this form or FPPA process, contact the local NRCS Field Office or USDA Service Center.

NRCS employees, consult the FPPA Manual and/or policy for additional instructions to complete the AD-1006 form.

STEPS IN THE PROCESSING THE FARMLAND AND CONVERSION IMPACT RATING FORM

- Step 1 - Federal agencies (or Federally funded projects) involved in proposed projects that may convert farmland, as defined in the Farmland Protection Policy Act (FPPA) to nonagricultural uses, will initially complete Parts I and III of the form. For Corridor type projects, the Federal agency shall use form NRCS-CPA-106 in place of form AD-1006. The Land Evaluation and Site Assessment (LESA) process may also be accessed by visiting the FPPA website, <http://fppa.nrcs.usda.gov/lesa/>.
- Step 2 - Originator (Federal Agency) will send one original copy of the form together with appropriate scaled maps indicating location(s) of project site(s), to the Natural Resources Conservation Service (NRCS) local Field Office or USDA Service Center and retain a copy for their files. (NRCS has offices in most counties in the U.S. The USDA Office Information Locator may be found at http://offices.usda.gov/scripts/ndISAPI.dll/oip_public/USA_map, or the offices can usually be found in the Phone Book under U.S. Government, Department of Agriculture. A list of field offices is available from the NRCS State Conservationist and State Office in each State.)
- Step 3 - NRCS will, within 10 working days after receipt of the completed form, make a determination as to whether the site(s) of the proposed project contains prime, unique, statewide or local important farmland. (When a site visit or land evaluation system design is needed, NRCS will respond within 30 working days.
- Step 4 - For sites where farmland covered by the FPPA will be converted by the proposed project, NRCS will complete Parts II, IV and V of the form.
- Step 5 - NRCS will return the original copy of the form to the Federal agency involved in the project, and retain a file copy for NRCS records.
- Step 6 - The Federal agency involved in the proposed project will complete Parts VI and VII of the form and return the form with the final selected site to the servicing NRCS office.
- Step 7 - The Federal agency providing financial or technical assistance to the proposed project will make a determination as to whether the proposed conversion is consistent with the FPPA.

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Part I: When completing the "County and State" questions, list all the local governments that are responsible for local land use controls where site(s) are to be evaluated.

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$$\frac{\text{Total points assigned Site A}}{\text{Maximum points possible}} = \frac{180}{200} \times 160 = 144 \text{ points for Site A}$$

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NRCS employees, consult the FPPA Manual and/or policy for additional instructions to complete the AD-1006 form.

From: [Bruner, Douglas W. \(WFF-2500\)](#)
To: kayleen.meinen@usda.gov
Cc: cameron.bermand@usda.gov; [Miller, Shari A. \(WFF-2500\)](#); [Saecker, John R. \(WFF-2280\)](#); [Kimberley, Ryan \(FHWA\)](#); [Simko, Marianne F. \(WFF-250.0\)\[Bluestone Environmental Group, Inc\]](#); [Spotswood, Abby](#); [Richert, Suzie](#); [Lindsey, Matthew R. \(WFF-250.0\)\[Bluestone Environmental Group, Inc\]](#)
Subject: NRCS letter for FPPA coordination
Date: Wednesday, April 26, 2023 9:12:30 AM
Attachments: [NRCS Letter_042523.pdf](#)
[NASA WFF Bridge Replacement Project_AD-1006AD.PDF](#)

Dear Ms. Meinen,

NASA Wallops Flight Facility is proposing to replace the existing bridge that provides access to Wallops Island. The project requires use of staging areas on NASA property that include prime farmland soils. Please see the attached PDF that includes a description of the project, a map of the soils, and Form AD-1006 for NRCS review in accordance with the Farmland Protection Policy Act.

We respectfully request your review within 30 days and look forward to your input on the project.

Respectfully,

Douglas W. Bruner, P.G.
Environmental Engineer
Code 250, Medical and Environmental Management Division
NASA Wallops Flight Facility
Building F-160, Rm C-166
Wallops Island, Virginia 23337
douglas.w.bruner@nasa.gov
Office (757) 824-2441
Cell: 651-276-9864

National Aeronautics and Space Administration



Goddard Space Flight Center

Wallops Flight Facility
Wallops Island, VA 23337

Reply to Attn of: 250.W

April 25, 2023

Ms. Kayleen Meinen
Natural Resources Conservation Service
Accomac Service Center
22545 Center Parkway
Accomac, Virginia 23301

Dear Ms. Meinen,

The National Aeronautics and Space Administration (NASA), in cooperation with the Federal Highway Administration (FHWA), is preparing an Environmental Assessment (EA) that will evaluate potential impacts associated with replacement of the Wallops Island Causeway Bridge over Cat Creek at Goddard Space Flight Center's Wallops Flight Facility (WFF) in Accomack County, VA. The EA is being prepared to satisfy NASA's and FHWA's obligations under the National Environmental Policy Act of 1969 (NEPA). The U.S. Army Corps of Engineers and the U.S. Coast Guard are serving as cooperating agencies on the EA.

This letter is being submitted to request your review of the Proposed Action's impacts on prime farmland in accordance with the Farmland Policy Protection Act.

The existing bridge, which would be demolished, was constructed in 1959 and is approaching the end of its anticipated service life. Approximately 1,000 feet of the causeway road at each bridge approaches would be realigned to allow construction of the new bridge parallel to the existing bridge. The limits of disturbance around the bridge would be approximately 25 acres.

The project would include three staging areas approximately 1 mile west of the bridge on NASA property (see Figure 4 in Attachment A). All three staging areas encompass approximately 2.5 acres and are currently open space covered with grass that is maintained by mowing. These areas would be used to store heavy equipment, materials, and demolition debris, and would serve as worker parking. Figures showing the project area, including the staging areas, and Natural Resources Conservation Service (NRCS) soil classifications at the staging areas are provided in Attachment A.

Soils in the project area at the Causeway Bridge are comprised of two soil map units: udorthents (UpD) and Chincoteague silt loam (ChA). The udorthents are likely due to the fill used to construct the Causeway Road. Most of the soils in the Causeway Bridge project area have been previously disturbed during construction of the Causeway Road and Bridge. Neither of the soil types are classified as prime farmland.

The soils within the two staging areas on the north side of the Causeway Road are both classified as Bojac loamy sand (BhB), with the eastern staging area having a small inclusion of Magotha fine sandy loam (MaA). The soil in the staging area south of Causeway Road is classified entirely as MaA. These soils have been previously disturbed by activities at WFF. The Bojac loamy sand is classified as prime farmland.


Of the approximately 2.5 acres within the staging areas, approximately 1.8 acres is prime farmland (BhB). No grading or excavations would occur for use as a staging area; however, gravel may be added to portions of the area to prepare them for use as parking and for equipment access. There would be minor long-term impacts to any native topsoil from the addition of gravel and compaction from equipment and vehicles. Access to the staging areas is restricted to government-authorized personnel, and the land is designated for non-agricultural use by NASA; none of the staging area sites are in active agriculture nor are they planned for agricultural use.

To minimize impacts to soils from erosion, NASA's construction contractor would develop site-specific erosion and sediment control (ESC) plans prior to ground-disturbing activities in compliance with the Virginia Stormwater Management Program regulations (9 VAC 25-870). The contractor would implement ESC best management practices (BMPs) throughout the site and before and after construction to stabilize soils. These BMPs could include using silt fencing, soil stabilization blankets, and matting.

We have completed the NRCS Farmland Conversion Impact Rating Form (AD-1006), which is enclosed as Attachment B. We respectfully request your review and completion of this form and welcome any comments you may have regarding the Proposed Action. We would appreciate a response within 30 days. Please do not hesitate to contact me at douglas.w.bruner@nasa.gov or (757) 824-2441 if you have questions regarding this project.

Sincerely,

Douglas
Bruner

 Digitally signed by Douglas
Bruner
Date: 2023.04.25 13:07:00
+04'00'

Douglas W. Bruner, P.G.
Environmental Engineer

2 Enclosures

cc:

250/Ms. Shari A. Miller
780/Mr. John R. Saecker
FHWA/Mr. Ryan Kimberley
NRCS/Mr. Cameron Bermand

FARMLAND CONVERSION IMPACT RATING

PART I (To be completed by Federal Agency)		Date Of Land Evaluation Request 04/24/2023				
Name of Project Causeway Bridge Replacement Project		Federal Agency Involved National Aeronautics and Space Administration				
Proposed Land Use Road and Staging Areas		County and State Accomack County, Virginia				
PART II (To be completed by NRCS)		Date NRCS 4/26/2023 <small>Form Received</small>		Person Completing Form: Kayleen Meinen		
Does the site contain Prime, Unique, Statewide or Local Important Farmland? (If no, the FPPA does not apply - do not complete additional parts of this form)		YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>		Acres Irrigated 0	Average Farm Size 321 acres	
Major Crop(s) corn	Farmable Land In Govt. Jurisdiction Acres: 78.8 % 304,500 acres	Amount of Farmland As Defined in FPPA Acres: 46.6 % 179,875 acres				
Name of Land Evaluation System Used Accomack Area	Name of State or Local Site Assessment System None	Date Land Evaluation Returned by NRCS 5/4/2023				
PART III (To be completed by Federal Agency)		Alternative Site Rating				
		Site A	Site B	Site C	Site D	
A. Total Acres To Be Converted Directly		0				
B. Total Acres To Be Converted Indirectly		2.52				
C. Total Acres In Site		27.12				
PART IV (To be completed by NRCS) Land Evaluation Information						
A. Total Acres Prime And Unique Farmland		1.8				
B. Total Acres Statewide Important or Local Important Farmland		0				
C. Percentage Of Farmland in County Or Local Govt. Unit To Be Converted		0				
D. Percentage Of Farmland in Govt. Jurisdiction With Same Or Higher Relative Value		46.7				
PART V (To be completed by NRCS) Land Evaluation Criterion Relative Value of Farmland To Be Converted (Scale of 0 to 100 Points)		72				
PART VI (To be completed by Federal Agency) Site Assessment Criteria (Criteria are explained in 7 CFR 658.5 b. For Corridor project use form NRCS-CPA-106)		Maximum Points	Site A	Site B	Site C	Site D
1. Area In Non-urban Use	(15)	15				
2. Perimeter In Non-urban Use	(10)	10				
3. Percent Of Site Being Farmed	(20)	0				
4. Protection Provided By State and Local Government	(20)	0				
5. Distance From Urban Built-up Area	(15)	10				
6. Distance To Urban Support Services	(15)	10				
7. Size Of Present Farm Unit Compared To Average	(10)	0				
8. Creation Of Non-farmable Farmland	(10)	0				
9. Availability Of Farm Support Services	(5)	0				
10. On-Farm Investments	(20)	0				
11. Effects Of Conversion On Farm Support Services	(10)	0				
12. Compatibility With Existing Agricultural Use	(10)	0				
TOTAL SITE ASSESSMENT POINTS	160	45				
PART VII (To be completed by Federal Agency)						
Relative Value Of Farmland (From Part V)		100	72			
Total Site Assessment (From Part VI above or local site assessment)		160	45			
TOTAL POINTS (Total of above 2 lines)		260	117			
Site Selected: A	Date Of Selection 5/4/23	Was A Local Site Assessment Used? YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>				
Reason For Selection: As stated in CFR § 658.4(c)(2) "Sites receiving a total score of less than 160 need not be given further consideration for protection and no additional sites need to be evaluated." Therefore, with a total combined score of 117, NASA intends to use the proposed sites as staging areas for the project.						
Name of Federal agency representative completing this form: Douglas W. Bruner					Date: 05/05/2023	

(See Instructions on reverse side)

Form AD-1006 (03-02)

STEPS IN THE PROCESSING THE FARMLAND AND CONVERSION IMPACT RATING FORM

- Step 1 - Federal agencies (or Federally funded projects) involved in proposed projects that may convert farmland, as defined in the Farmland Protection Policy Act (FPPA) to nonagricultural uses, will initially complete Parts I and III of the form. For Corridor type projects, the Federal agency shall use form NRCS-CPA-106 in place of form AD-1006. The Land Evaluation and Site Assessment (LESA) process may also be accessed by visiting the FPPA website, <http://fppa.nrcs.usda.gov/lesa/>.
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NRCS employees, consult the FPPA Manual and/or policy for additional instructions to complete the AD-1006 form.



United States Department of the Interior

FISH AND WILDLIFE SERVICE



Virginia Field Office
6669 Short Lane
Gloucester, VA 23061

October 30, 2015

Greetings:

Due to increased workload and refinement of our priorities in Virginia, this office will no longer provide individual responses to requests for environmental reviews. However, we want to ensure that U.S. Fish and Wildlife Service trust resources continue to be conserved. When that is not possible, we want to ensure that impacts to these important natural resources are minimized and appropriate permits are applied for and received. We have developed a website that provides the steps and information necessary to allow any individual or entity requiring review/approval of their project to complete a review and come to the appropriate conclusion. This site can be accessed at: <http://www.fws.gov/northeast/virginiafield/endangered/projectreviews.html>.

The website is frequently updated to provide new species/trust resource information and methods to review projects. Refer to the website for each project review to ensure that current information and methods are utilized.

If you have any questions about project reviews or need assistance, please contact Troy Andersen of this office at (804) 824-2428 or troy_andersen@fws.gov.

Sincerely,

Cindy Schulz
Field Supervisor
Virginia Ecological Services

From: [Kimberley, Ryan \(FHWA\)](#)
To: brian.d.hopper@noaa.gov; David.L.O'Brien@noaa.gov; victor.n.grycenkov@noaa.gov; Deborah.Darden@nps.gov; Brian.C.Denson@usace.army.mil; Joshua.j.zirbes@uscg.mil; Traver.Carrie@epa.gov; Rudnick.Barbara@epa.gov; cindy_schulz@fws.gov; emily_argo@fws.gov; kevin_holcomb@fws.gov; robert_leffel@fws.gov; nancy_finley@nps.gov
Cc: [Miller, Shari A. \(WFF-2500\)](#)
Subject: Wallops Island Causeway Bridge Replacement, Accomack County, VA, Scoping Notification
Date: Tuesday, August 18, 2020 11:15:00 AM
Attachments: [Attachment B preliminary plans.pdf](#)
[Attachment A maps and photos.pdf](#)
[Stakeholder Scoping Letter.pdf](#)

Dear Potential Stakeholder,

The National Aeronautics and Space Administration (NASA) and the Federal Highway Administration (FHWA) are initiating an Environmental Assessment (EA) that will evaluate potential impacts associated with replacement of the Wallops Island Causeway Bridge over Cat Creek at Goddard Space Flight Center's Wallops Flight Facility, in Accomack County, VA.

The attached documents provide additional information about the proposed project and EA. Please review the scoping materials and provide comments on behalf of your agency. Feel free to forward this email to others in your office who may be interested. The scoping period is open until September 20, 2020. The attached scoping materials are summarized as follows:

1. Stakeholder Scoping Letter- This letter includes project descriptions, internet links, and information about the EA and scoping process.
2. Attachment A- Satellite image, topographic map, photos of the existing bridge, and a rendering of the proposed bridge
3. Attachment B- Preliminary/proposed engineer plans, including the type, size, and location of the bridge.

We greatly appreciate your participation in the scoping process.

Ryan Kimberley
Environmental Protection Specialist
Federal Highway Administration
Eastern Federal Lands Highway Division
21400 Ridgetop Circle
Sterling, VA 20166
540-622-3069 (CELL- TEMPORARY NUMBER)

From: [Kimberley, Ryan \(FHWA\)](#)
To: ["ksmith@mdcoastalbays.org"](#); ["sean.mulligan@vaspace.org"](#); ["rene.hypes@dcv.virginia.gov"](#); ["sheri.kattan@deq.virginia.gov"](#); ["amy.ewing@dgif.virginia.gov"](#); ["ruth.boettcher@dgif.virginia.gov"](#); ["karend@vims.edu"](#); ["lyle@vims.edu"](#); ["Hank.Badger@mrc.virginia.gov"](#); ["tony.watkinson@mrc.virginia.gov"](#); ["ALLISON.NORRIS@MRC.VIRGINIA.GOV"](#)
Cc: ["Miller, Shari A. \(WFF-2500\)"](#)
Subject: FW: Wallops Island Causeway Bridge Replacement, Accomack County, VA, Scoping Notification
Date: Tuesday, August 18, 2020 11:28:00 AM
Attachments: [Attachment B preliminary plans.pdf](#)
[Attachment A maps and photos.pdf](#)
[Stakeholder Scoping Letter.pdf](#)

Dear Potential Stakeholder,

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Ryan Kimberley
Environmental Protection Specialist
Federal Highway Administration
Eastern Federal Lands Highway Division
21400 Ridgetop Circle
Sterling, VA 20166
540-622-3069 (CELL- TEMPORARY NUMBER)

From: [Kimberley, Ryan \(FHWA\)](#)
To: crmajor@co.accomack.va.us; vanessajohnson@co.accomack.va.us; rwoff@co.accomack.va.us; btarr@co.accomack.va.us; commissioners@somersetmd.us; ALeonard@chincoteague-va.gov; administration@co.accomack.va.us; planning@co.accomack.va.us; envprograms@co.accomack.va.us; critley@co.accomack.va.us; salexander@a-npdc.org; mtolbert@chincoteague-va.gov; JulieWheatley@co.accomack.va.us
Cc: [Miller, Shari A. \(WFF-2500\)](#)
Subject: Wallops Island Causeway Bridge Replacement, Accomack County, VA, Scoping Notification
Date: Tuesday, August 18, 2020 10:53:00 AM
Attachments: [Attachment B preliminary plans.pdf](#)
[Attachment A maps and photos.pdf](#)
[Stakeholder Scoping Letter.pdf](#)

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Ryan Kimberley
Environmental Protection Specialist
Federal Highway Administration
Eastern Federal Lands Highway Division
21400 Ridgetop Circle
Sterling, VA 20166
540-622-3069 (CELL- TEMPORARY NUMBER)

From: [Kimberley, Ryan \(FHWA\)](#)
To: [Chet@cbfieldstation.org](#); [bdwatt@wm.edu](#); [john.haag@navy.mil](#); [peter.bale@srsgrp.com](#)
Cc: [Miller, Shari A. \(WFF-2500\)](#)
Subject: Wallops Island Causeway Bridge Replacement, Accomack County, VA, Scoping Notification
Date: Tuesday, August 18, 2020 11:19:00 AM
Attachments: [Attachment B preliminary plans.pdf](#)
[Attachment A maps and photos.pdf](#)
[Stakeholder Scoping Letter.pdf](#)

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Ryan Kimberley
Environmental Protection Specialist
Federal Highway Administration
Eastern Federal Lands Highway Division
21400 Ridgetop Circle
Sterling, VA 20166
540-622-3069 (CELL- TEMPORARY NUMBER)

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NASA Causeway Bridge Replacement Project
Environmental Assessment

Appendix B

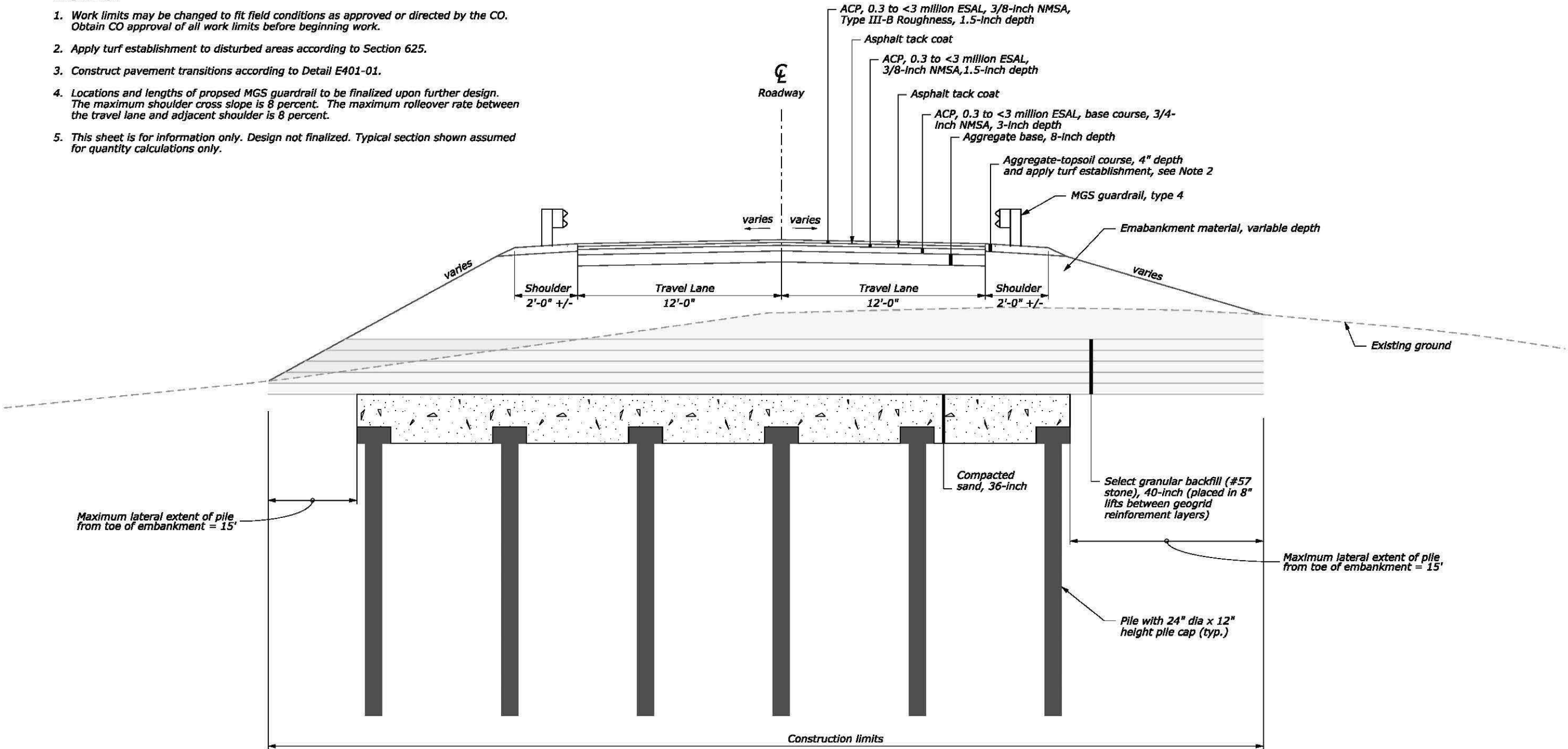
FHWA 30% Design Plan Sheets
(Select Sheets for the EA)

STATE	PROJECT	SHEET NUMBER
VA	VA ST NASA 1(9)	B02

NOTES:

- 1. Work limits may be changed to fit field conditions as approved or directed by the CO. Obtain CO approval of all work limits before beginning work.
- 2. Apply turf establishment to disturbed areas according to Section 625.
- 3. Construct pavement transitions according to Detail E401-01.
- 4. Locations and lengths of proposed MGS guardrail to be finalized upon further design. The maximum shoulder cross slope is 8 percent. The maximum rollover rate between the travel lane and adjacent shoulder is 8 percent.
- 5. This sheet is for information only. Design not finalized. Typical section shown assumed for quantity calculations only.

PROPOSED PAVEMENT STRUCTURE



LOAD TRANSFER PLATFORM SECTION

Sta. 23+50.00 - Sta. 25+86.95
Sta. 45+36.95 - Sta. 47+75.00

M:\PROJECTS\ SPECIAL\NASA\NASA1(9)\HWY DES\CAUSEWAY-NASA 1(9).typ.dgn [B02 Sheet]

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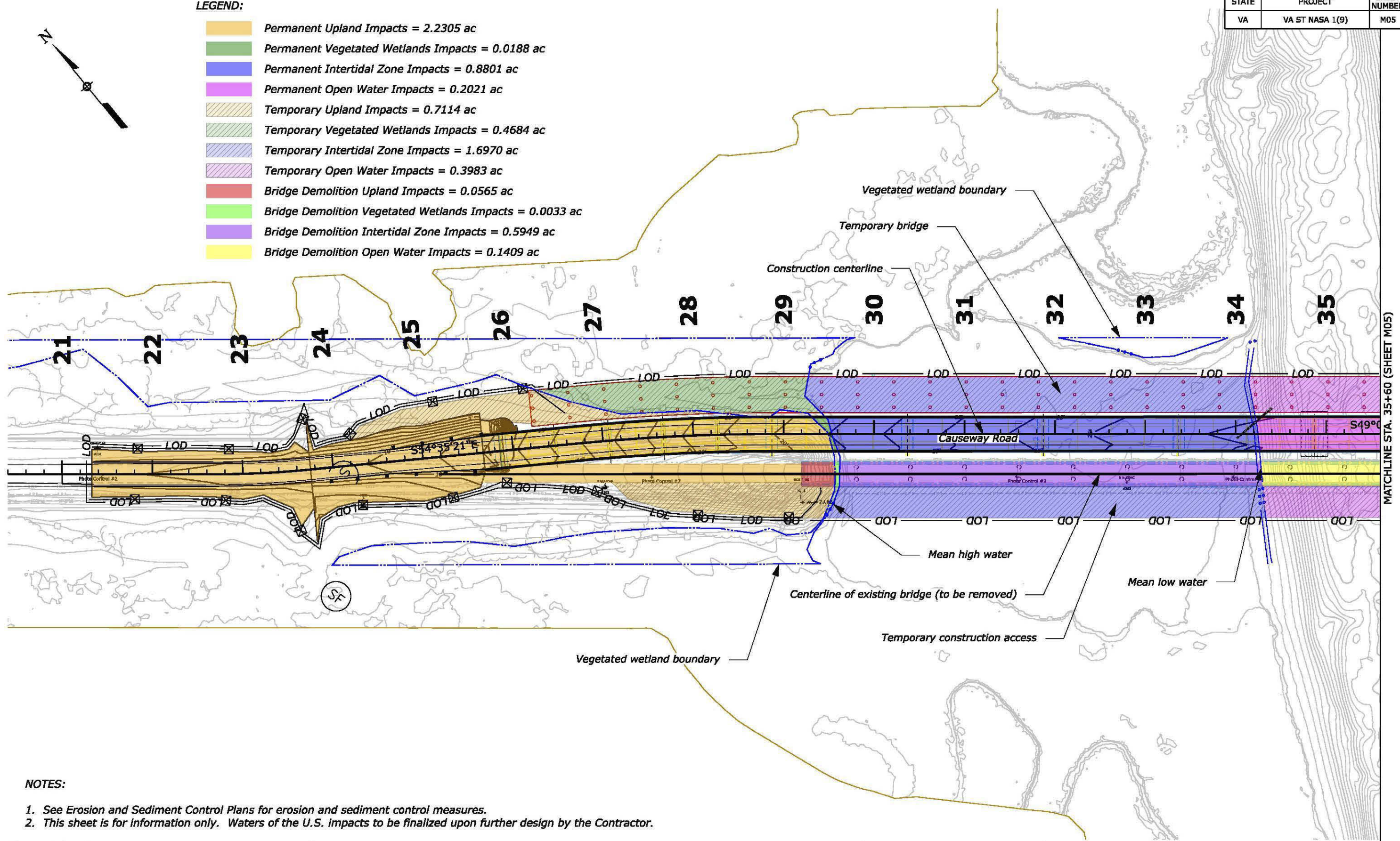
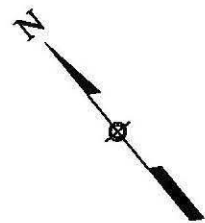
U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION OFFICE OF FEDERAL LANDS HIGHWAY
NO SCALE

NASA WALLOPS FLIGHT FACILITY
TYPICAL SECTIONS
CAUSEWAY ROAD
SCHEDULE A

STATE	PROJECT	SHEET NUMBER
VA	VA ST NASA 1(9)	M05

LEGEND:

- Permanent Upland Impacts = 2.2305 ac
- Permanent Vegetated Wetlands Impacts = 0.0188 ac
- Permanent Intertidal Zone Impacts = 0.8801 ac
- Permanent Open Water Impacts = 0.2021 ac
- Temporary Upland Impacts = 0.7114 ac
- Temporary Vegetated Wetlands Impacts = 0.4684 ac
- Temporary Intertidal Zone Impacts = 1.6970 ac
- Temporary Open Water Impacts = 0.3983 ac
- Bridge Demolition Upland Impacts = 0.0565 ac
- Bridge Demolition Vegetated Wetlands Impacts = 0.0033 ac
- Bridge Demolition Intertidal Zone Impacts = 0.5949 ac
- Bridge Demolition Open Water Impacts = 0.1409 ac



MATCHLINE STA. 35+60 (SHEET M05)

NOTES:

- 1. See Erosion and Sediment Control Plans for erosion and sediment control measures.
- 2. This sheet is for information only. Waters of the U.S. impacts to be finalized upon further design by the Contractor.

M:\PROJECTS\ SPECIAL\NASA\NASA(9)\HWY DES\CAD\W-NASA_1(9)_Impacts.dgn [M05] 12 January 2023 12:17 PM

NO.	DATE	BY	REVISIONS

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
OFFICE OF FEDERAL LANDS HIGHWAY



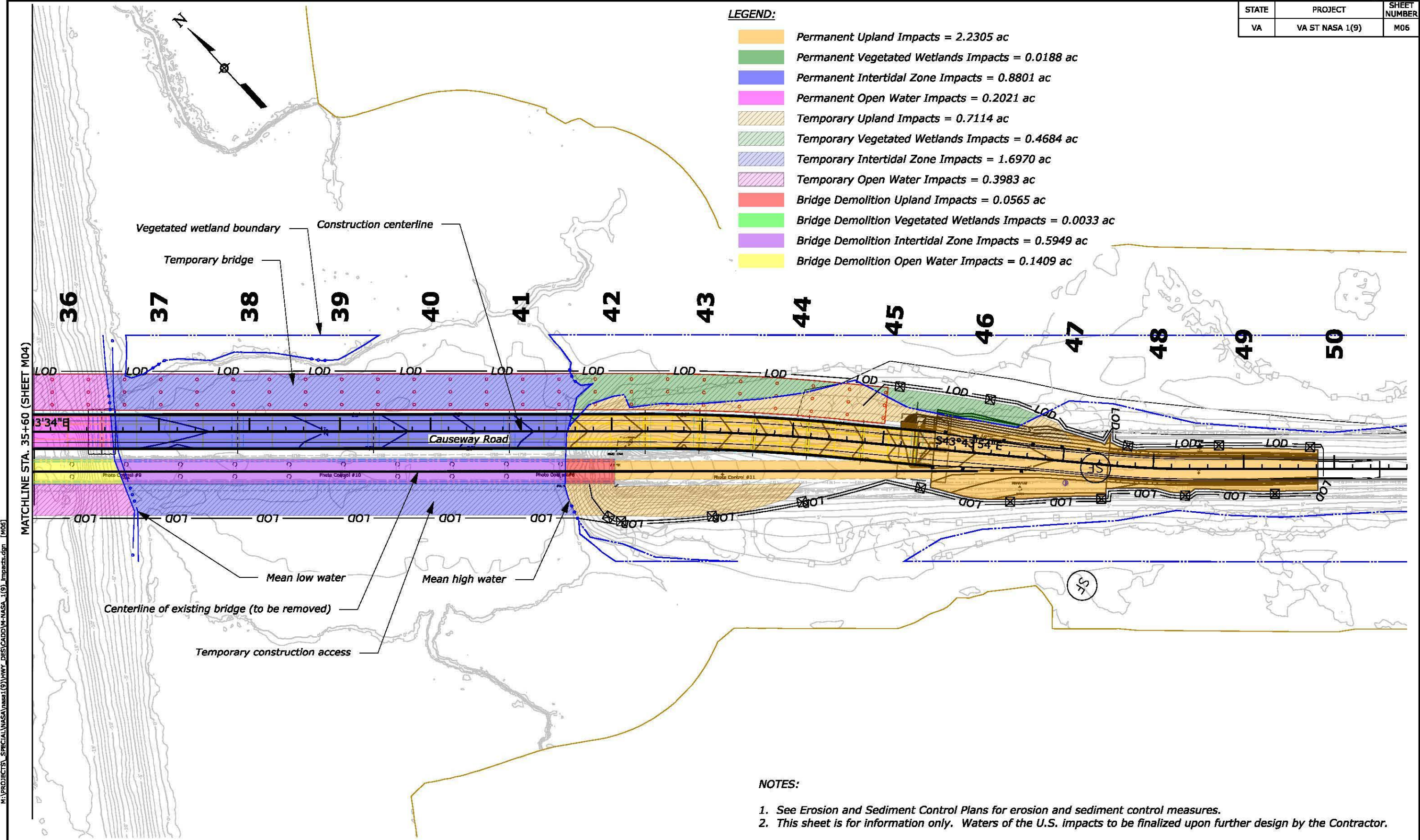
NASA WALLOPS FLIGHT FACILITY

WATERS OF THE U.S. IMPACTS
CAT CREEK

STATE	PROJECT	SHEET NUMBER
VA	VA ST NASA 1(9)	M06

LEGEND:

- Permanent Upland Impacts = 2.2305 ac
- Permanent Vegetated Wetlands Impacts = 0.0188 ac
- Permanent Intertidal Zone Impacts = 0.8801 ac
- Permanent Open Water Impacts = 0.2021 ac
- Temporary Upland Impacts = 0.7114 ac
- Temporary Vegetated Wetlands Impacts = 0.4684 ac
- Temporary Intertidal Zone Impacts = 1.6970 ac
- Temporary Open Water Impacts = 0.3983 ac
- Bridge Demolition Upland Impacts = 0.0565 ac
- Bridge Demolition Vegetated Wetlands Impacts = 0.0033 ac
- Bridge Demolition Intertidal Zone Impacts = 0.5949 ac
- Bridge Demolition Open Water Impacts = 0.1409 ac



NOTES:

- See Erosion and Sediment Control Plans for erosion and sediment control measures.
- This sheet is for information only. Waters of the U.S. impacts to be finalized upon further design by the Contractor.

NO.	DATE	BY	REVISIONS

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
OFFICE OF FEDERAL LANDS HIGHWAY

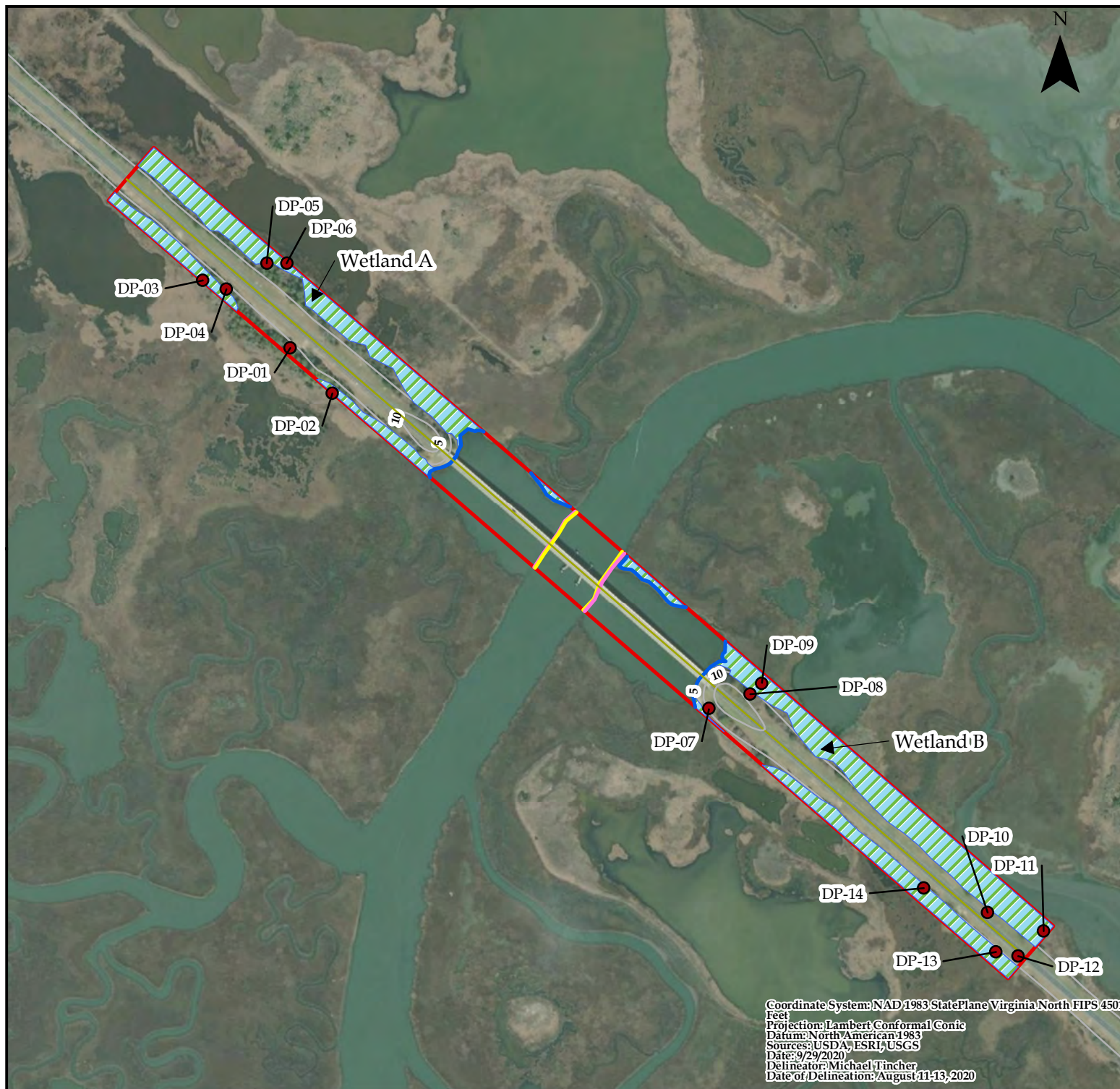


NASA WALLOPS FLIGHT FACILITY

WATERS OF THE U.S. IMPACTS
CAT CREEK

NASA Causeway Bridge Replacement Project
Environmental Assessment

Appendix C
Delineation Figures



Prepared for:

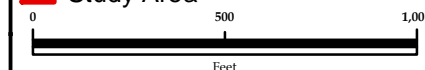
Federal Highway Administration

FIGURE 5-1:

Wetland and Stream Delineation Map
NASA 1(9) - Wallops Island
Causeway Bridge
Accomack County, VA

Legend

- Data Points
- 5ft Contour
- Mean High Water
- Mean Low Water
- Mean Tide Line
- ▨ E2EM1N Wetland
- ▭ Study Area



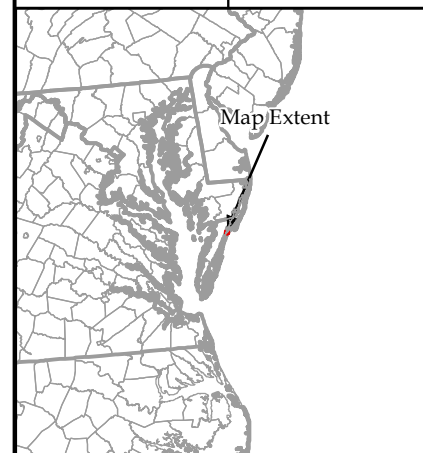
Scale: 1 in = 500 ft

Prepared by :

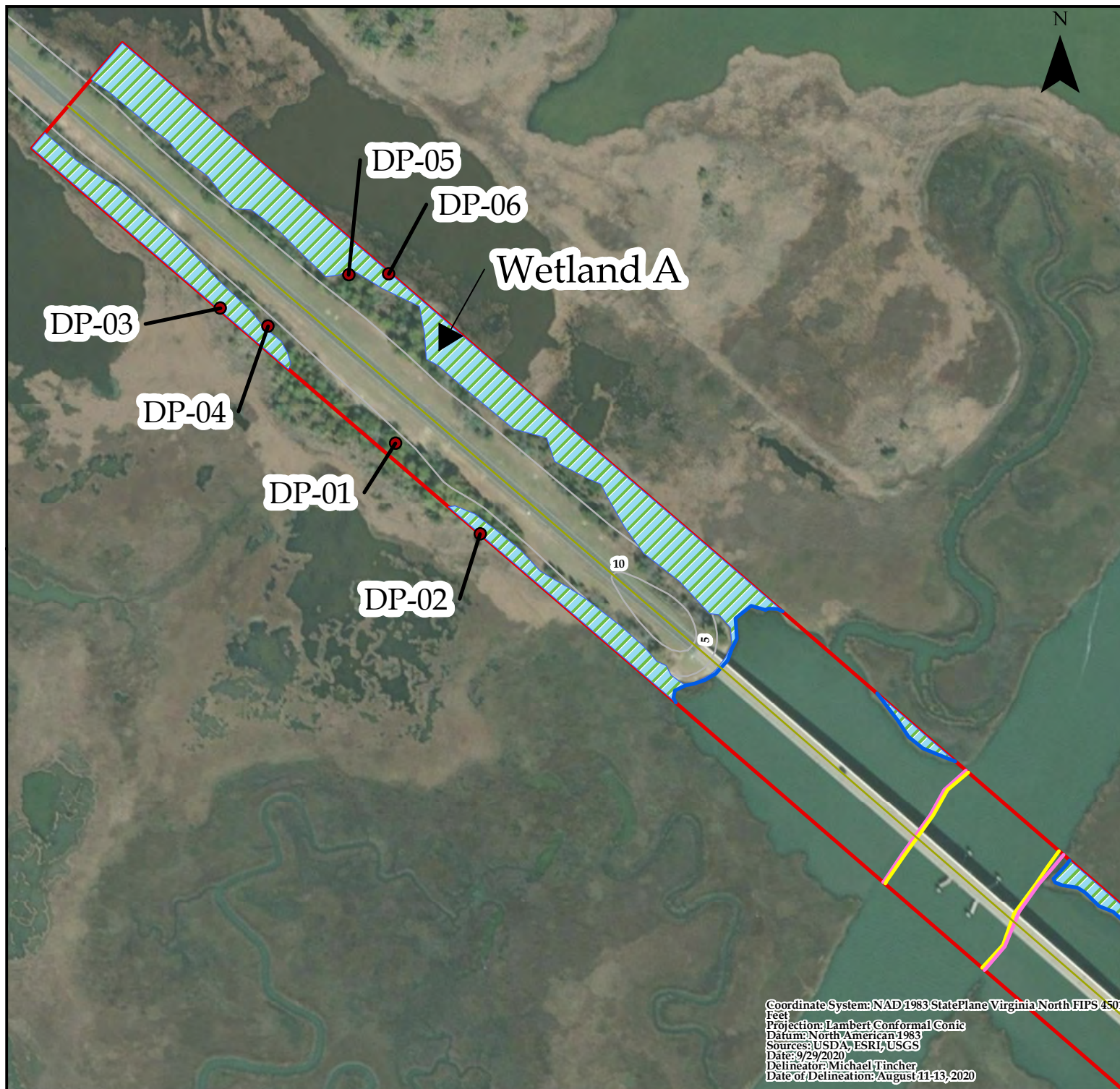
Copperhead Environmental Consulting, Inc.
471 Main Street
P.O. Box 73
Paint Lick, Kentucky 40461

Drawn by: MRT Date: 9/29/2020

Checked by: RWE Revision: 00



Coordinate System: NAD 1983 StatePlane Virginia North FIPS 4501
Feet
Projection: Lambert Conformal Conic
Datum: North American 1983
Sources: USDA, ESRI, USGS
Date: 9/29/2020
Delineator: Michael Tischer
Date of Delineation: August 11-13, 2020



COPPERHEAD
ENVIRONMENTAL CONSULTING

Prepared for:

Federal Highway Administration

FIGURE 5-2:

Wetland and Stream Delineation Map

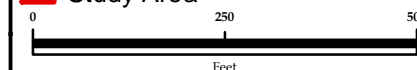
NASA 1(9) - Wallops Island

Causeway Bridge

Accomack County, VA

Legend

- Data Points
- 5ft Contour
- Mean High Water
- Mean Low Water
- Mean Tide Line
- ▨ E2EM1N Wetland
- ▭ Study Area



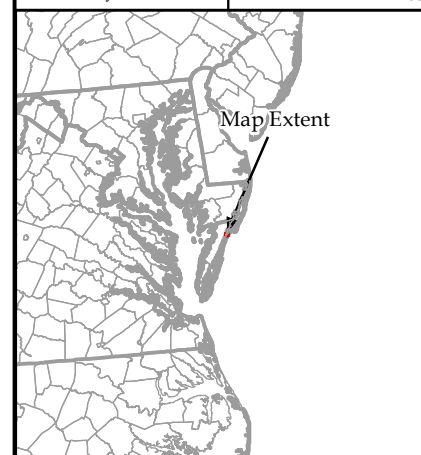
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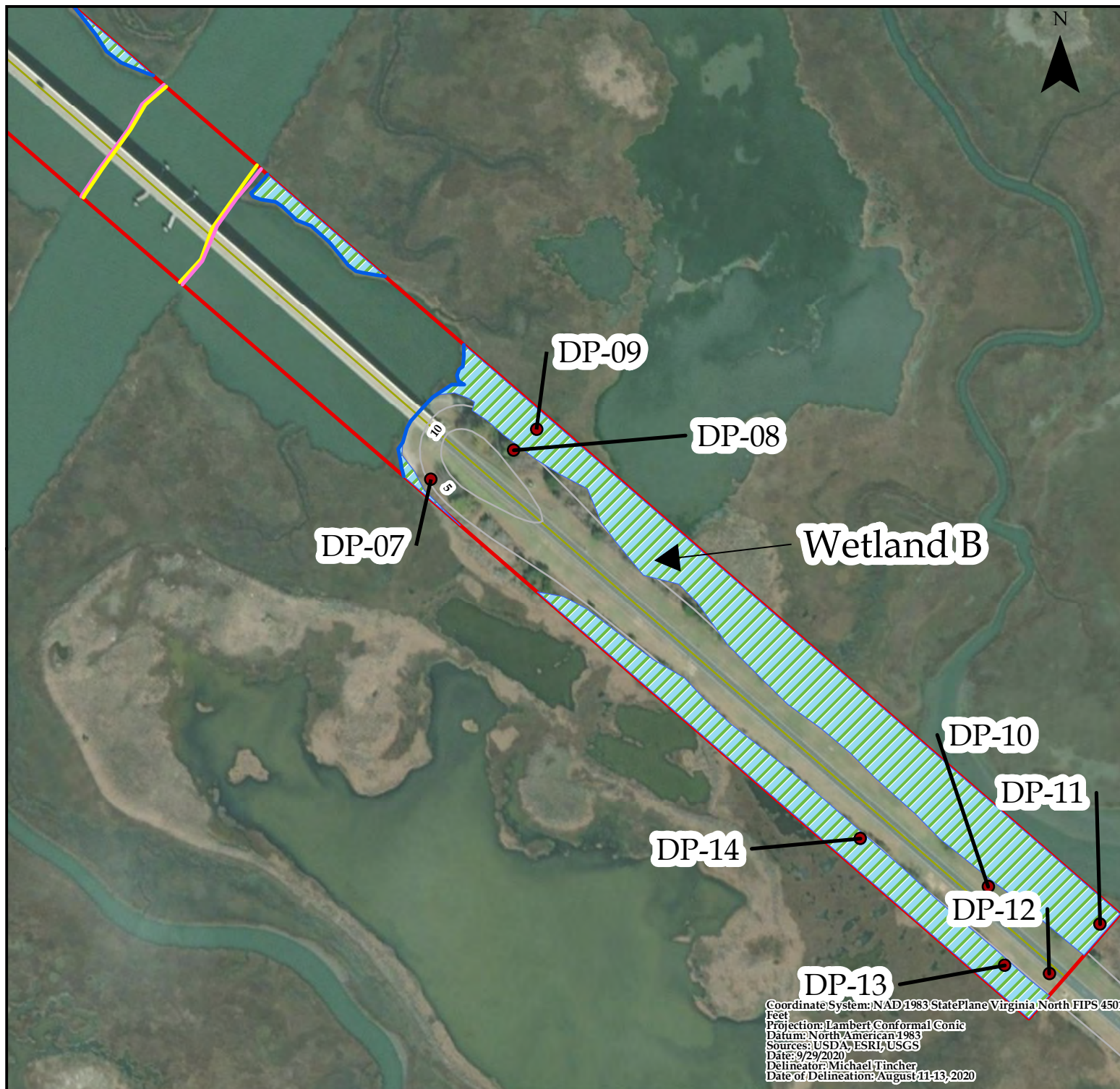
Prepared by :

Copperhead Environmental Consulting, Inc.
 471 Main Street
 P.O. Box 73
 Paint Lick, Kentucky 40461

Drawn by: MRT Date: 9/29/2020

Checked by: RWE Revision: 00





COPPERHEAD
ENVIRONMENTAL CONSULTING

Prepared for:

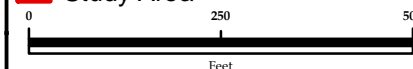
**Federal Highway
Administration**

FIGURE 5-3:

Wetland and Stream Delineation Map
NASA 1(9) - Wallops Island
Causeway Bridge
Accomack County, VA

Legend

- Data Points
- 5ft Contour
- Mean High Water
- Mean Low Water
- Mean Tide Line
- ▨ E2EM1N Wetland
- ▭ Study Area



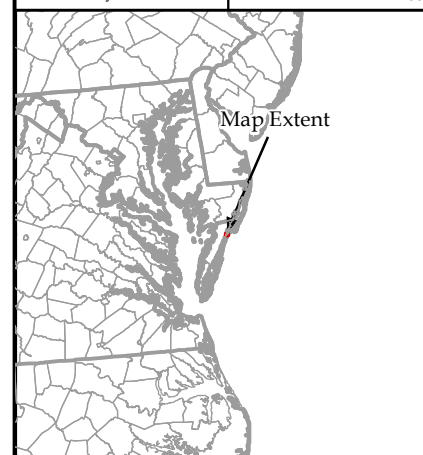
Scale: 1 in = 250 ft

Prepared by :

Copperhead Environmental Consulting, Inc.
471 Main Street
P.O. Box 73
Paint Lick, Kentucky 40461

Drawn by: MRT Date: 9/29/2020

Checked by: RWE Revision: 00



**FEDERAL CONSISTENCY DETERMINATION FOR THE
WALLOPS FLIGHT FACILITY CAUSEWAY BRIDGE REPLACEMENT PROJECT**

**NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
GODDARD SPACE FLIGHT CENTER
WALLOPS FLIGHT FACILITY
WALLOPS ISLAND, VA 23337**

The National Aeronautics and Space Administration (NASA), in coordination with the Federal Highway Administration (FHWA) as a Participating Agency, has prepared a Draft Tiered Environmental Assessment (Draft EA) to analyze potential impacts to the environment resulting from the proposed replacement of the Wallops Island Causeway Bridge over Cat Creek (the Project). The Draft EA is tiered from the May 2019 *NASA Wallops Flight Facility Site-wide Programmatic Environmental Impact Statement* (NASA 2019), in which NASA evaluated the environmental consequences of constructing and operating new facilities and infrastructure at Wallops Flight Facility (WFF). Pursuant to Section 307 of the Coastal Zone Management Act (CZMA) of 1972 as amended, and federal consistency regulations at 15 Code of Federal Regulations (CFR) Part 930, Subpart C, NASA has prepared this Federal Consistency Determination (FCD) to evaluate potential effects on Virginia's coastal zone resources from the Proposed Action. Federal actions occurring at WFF that could have reasonably foreseeable effects on coastal zone resources must be consistent to the maximum extent practicable with the enforceable policies of the Virginia Coastal Zone Management Program (CZMP). The evaluation presented in this FCD summarizes information provided in the Draft EA. This FCD has been developed to fulfill obligations of NASA and FHWA, as well as the U.S. Army Corps of Engineers (USACE) and the U.S. Coast Guard (USCG) as Cooperating Agencies, under the CZMA. NASA, as the Lead Agency and project proponent, is responsible for ensuring overall compliance with the CZMA.

The Draft EA Project Area is located within the NASA Goddard Space Flight Center's WFF in Accomack County, Virginia. The Wallops Island Causeway crosses Cat Creek and connects the mainland to Wallops Island, where NASA implements testing and launch activities, Navy training, and maintains research facilities. Wallops Island is a barrier island located along Virginia's Atlantic coast. Marshland, interlaced with small creeks, covers the entire western approach to Wallops Island. Cat Creek is a tidal waterway that connects Bogue Bay and Hog Creek (**Figures 1-1, 1-2 of the Draft EA**).

The existing Causeway Bridge was constructed in 1959-1960 and is beyond the end of its anticipated service life. The Proposed Action being evaluated by the Draft EA consists of site preparation, construction and removal of temporary construction access, construction of a new bridge parallel to the existing bridge on a new alignment, demolition of the existing bridge after the new bridge opens, and ongoing maintenance and repairs over the bridge's 75-year lifespan as

described in **Section 2.3** of the Draft EA. In-water work would include pile driving for bridge construction, temporary construction access which may include construction and demolition of temporary trestles and/or the use of construction vessels, and bridge demolition. Maintenance and repair may also include in-water work depending on the extent of activities. The Proposed Action is being developed as a Design-Build project with the assumption that impacts from the final design would fall within the range of impacts evaluated in the Draft EA. If final design exceeds the thresholds evaluated in the Draft EA, a revised evaluation and determination of federal consistency would be required.

This document provides the Commonwealth of Virginia with NASA's Consistency Determination under CZMA Section 307(c)(1) and 15 CFR Part 930, Subpart C, for the Wallops Flight Facility Causeway Bridge Replacement Project. The information in this Consistency Determination is provided pursuant to 15 CFR 930.39. Consistencies with each of the enforceable policies of the CZMP are addressed below:

I. Tidal and Non-Tidal Wetlands

Consistent to the Maximum Extent Practicable? YES

A delineation of Waters of the U.S. (WOTUS), including wetlands, was performed in 2020, pursuant to the USACE Wetlands Delineation Manual (1987) and subsequent USACE guidance. The delineation was confirmed by the USACE and a Preliminary Jurisdictional Determination (NAO-2020-1762) was issued on November 2, 2020. The delineation figures are provided in **Appendix C of the Draft EA**. The delineation determined that there are 3.29 hectares (ha) (8.14 acres [ac]) of estuarine emergent wetlands and 76 meters (m) (251 linear feet) of tidal waters (Cat Creek) within the Project Area surrounding the Causeway Bridge. No wetlands or waters are found in the staging areas. Unavoidable impacts to wetlands and waters would be necessary for construction and demolition. Impacts would be minimized to the maximum extent practicable. Based on preliminary design, it is anticipated that approximately 0.45 ha (1.10 ac) of permanent and 1.34 ha (3.30 ac) of temporary impacts would be required, including impacts to estuarine emergent, estuarine intertidal, and estuarine open water habitats. The Design-Build contractor would obtain authorization pursuant to the Clean Water Act (CWA), State Water Control Law Virginia Water Protection (VWP) Permit, and state regulations at Virginia Code §28.2-1301-1320, from the USACE, Virginia Department of Environmental Quality (VDEQ), and Virginia Marine Resources Commission (VMRC) as applicable. The project would comply with all monitoring, avoidance, and mitigation requirements specified by these permits.

Periodic maintenance and repair during the 75-year lifespan of the bridge would not likely have impacts on wetlands; however, NASA would evaluate the proposed activities on a case-by-case basis and would obtain permits as needed for impacts to waters and wetlands. The Proposed Action would be consistent with this enforceable policy.

II. Subaqueous Lands

Consistent to the Maximum Extent Practicable? YES

Subaqueous bottom in Cat Creek would be impacted during proposed construction activities, including pile driving, temporary construction access, and bridge demolition. Continued operation of the Proposed Action is not anticipated to disturb subaqueous lands. The Design-Build contractor would obtain authorization from the VMRC and would adhere to all requirements of applicable permits. The Design-Build contractor would implement mitigation measures as necessary during construction to avoid and/or minimize impacts and would utilize applicable best management practices (BMPs), such as the use of sediment curtains, to minimize effects from subaqueous bottom disturbance. The Proposed Action would be consistent with this enforceable policy.

III. Dunes and Beaches

Consistent to the Maximum Extent Practicable? N/A

There are no coastal primary sand dunes or beaches within the Project Area. This enforceable policy is not applicable to the Proposed Action.

IV. Chesapeake Bay Preservation Areas

Consistent to the Maximum Extent Practicable? N/A

Per the Accomack County Zoning Ordinance Article XVI (Chesapeake Atlantic Preservation Area) the Project Area does not fall within Chesapeake/Atlantic Overlay District subject to the Chesapeake Bay Preservation Act. This enforceable policy is not applicable to the Proposed Action.

V. Marine Fisheries

Consistent to the Maximum Extent Practicable? YES

In-water work associated with the Proposed Action with the potential to impact marine fisheries, including shellfish, would include pile driving for bridge construction, temporary construction access which may include construction and demolition of temporary trestles and/or the use of construction vessels, and bridge demolition. As described in **Section 3.8** of the Draft EA, impacts to fish from construction-related stressors including underwater noise from pile driving, water quality and turbidity, habitat alteration, entanglement in in-water structures, and vessel traffic would not result in adverse effects to fish. BMPs such as utilizing a soft start for pile driving activities, use of turbidity control measures, preventing raw concrete from contacting the water, and minimizing construction vessel speed and numbers would minimize effects.

A presence/absence survey for shellfish beds (FHWA 2021) within the Project Area identified Eastern oysters (*Crassostrea virginica*) in the mudflats along the perimeter of the tidal wetlands and adhering to the concrete bridge piers and ribbed mussels (*Geukensia demissa*) in the spaces between concrete riprap at the base of the embankment. Oyster beds generally extend an average of 6 m (20 feet) waterward from the vegetated wetland limit in the intertidal mudflats. To minimize impacts, the Design-Build contractor would coordinate with VMRC to determine appropriate minimization measures. It is anticipated that oyster shells and clusters within the project footprint would be relocated to an adjacent and un-impacted reef area. There are no private oyster ground leases or oyster ground applications in Cat Creek in the Project Area, but Cat Creek is designated as a public Baylor Ground. Not all public Baylor Grounds are open to shellfish harvest per 4 Virginia Administrative Code (VAC) 20-720. Cat Creek is not a designated Open Harvest Area. While not documented, blue crab (*Callinectes sapidus*) may also be in the Project Area. Blue crabs, particularly juveniles, use structured habitats including oyster reefs as refuges and nursery areas.

According to the Virginia Coastal Geospatial and Educational Mapping System there are no areas of submerged aquatic vegetation (SAV), Fisheries Management Areas or anadromous fish use areas within the Project Area or vicinity. Fisheries Management Areas are designated by VMRC and include blue crab sanctuaries, striped bass (*Morone saxatilis*) spawning sanctuaries, hard clam harvest areas, oyster management areas, SAV sanctuaries, black drum (*Pogonias cromis*) management areas, shellfish management areas, clean cull areas, artificial fishing reefs, seed areas, and some areas with restrictions.

Periodic maintenance and repair may require in-water work and therefore, may impact marine fisheries by increasing underwater noise and turbidity. NASA would adhere to BMPs similar to those of construction and demolition. The Proposed Action would be consistent with this enforceable policy.

VI. Wildlife and Inland Fisheries

Consistent to the Maximum Extent Practicable? YES

The project would not introduce aquatic nuisance, predatory, or undesirable species. The Virginia Department of Wildlife Resource (VDWR) Fish and Wildlife Information Service (VaFWIS) database indicates confirmed presence of state protected sea turtle species (state endangered Kemp's ridley sea turtle [*Lepidochelys kempii*], state-endangered leatherback sea turtle [*Dermochelys coriacea*], state threatened loggerhead sea turtle [*Caretta caretta*]), state threatened piping plover (*Charadrius melodius*), state endangered Wilson's plover (*Charadrius wilsonia*), and state threatened gull-billed tern (*Gelochelidon nilotica*) within two miles of the Project Area. Piping plover, Wilson's plover, and gull-billed tern are beach nesting bird species, with no suitable habitat in the Project Area.

While sea turtle species may be found in the project vicinity migrating and foraging between May and November, their presence is unlikely. Leatherback and Kemps' ridley sea turtles have never been observed at WFF (NASA 2017). Given the absence of SAV/sea-grass beds in the Project Area, foraging loggerheads are unlikely. If transient individuals are in the Project Area, potential stressors to sea turtles may include underwater noise, entanglement, water quality and benthic habitat effects, interaction with construction vessels, and artificial lighting. BMPs such as utilizing a soft start for pile driving activities, use of turbidity control measures, utilizing sea turtle monitors during pile driving activities, and minimizing construction vessel speed and numbers would minimize effects.

As described in **Section 3.9** of the Draft EA, adverse impacts to sea turtles from these stressors would not be significant. Per Virginia Department of Conservation and Recreation (VDCR) comments provided September 18, 2020, the Proposed Action would not affect state-listed plant or insect species.

Periodic maintenance and repair during the 75-year lifespan of the bridge may result in disturbances to wildlife and inland fisheries during in-water work, removal of vegetation/habitat, the presence of humans and noise, or the presence of vessels. NASA would evaluate the proposed activities on a case-by-case basis and would coordinate with National Oceanic and Atmospheric Administration Fisheries and U.S. Fish and Wildlife Service as needed, and would implement BMPs as discussed above to minimize the potential for adverse effects to species. The Proposed Action would be consistent with this enforceable policy.

VII. Plant Pests and Noxious Weeds

Consistent to the Maximum Extent Practicable? YES

The Proposed Action would not sell, barter, offer for sale, move, transport, deliver, ship, or offer to ship into the Commonwealth any plant pests or noxious weeds, nor import infested or quarantined regulated articles designated by the Board of Agriculture and Consumer Services. The Design-Build contractor would implement project-specific common reed (*Phragmites australis*) management/control, as needed, to minimize the potential for the spread of invasive species. These control measures may include mowing of small infestations, restricted access and cleaning measures for tracked equipment entering areas of known *Phragmites*, and post-construction monitoring. These measures would also minimize the spread of other plant pests and noxious weeds. The Proposed Action would be consistent with this enforceable policy.

VIII. Commonwealth Lands***Consistent to the Maximum Extent Practicable? N/A***

The proposed project does not include Commonwealth lands under the jurisdiction of the VDWR or VDCR. This enforceable policy is not applicable to the Proposed Action.

IX. Point Source Air Pollution***Consistent to the Maximum Extent Practicable? YES***

Accomack County is in an attainment area for all criteria pollutants regulated by the Clean Air Act (CAA). No project activities would substantially degrade or change the area's attainment status. Per 9 VAC5-20-206, Accomack County is not located in a volatile organic compound or nitrogen oxides emission control area. The Proposed Action would adhere to all laws and regulations set forth by the federal CAA and administered by the State Air Pollution Control Board. The project would not involve open burning, the establishment of new or stationary sources of pollutant emissions, or the construction, reconstruction, relocation, or modification of regulated stationary sources. Fugitive dust would be minimized by using control methods outlined in 9 VAC 5-50-60 et seq. of the Regulations for the Control and Abatement of Air Pollution, which may include: use of water or chemicals for dust control, covering of open equipment for conveying and transporting materials, and prompt removal of spilled or tracked dirt or other materials from paved streets and removal of dried sediments resulting from soil erosion. The Proposed Action would be consistent with this enforceable policy.

X. Point Source Water Pollution***Consistent to the Maximum Extent Practicable? N/A***

The Proposed Action does not include point source discharges of process water or wastewater that would necessitate a Virginia Pollutant Discharge Elimination System (VPDES) permit. This enforceable policy is not applicable to the Proposed Action.

XI. Nonpoint Source Water Pollution***Consistent to the Maximum Extent Practicable? YES***

Non-point source pollution would be managed in adherence to applicable state stormwater and erosion and sediment control (ESC) regulations including the Virginia Erosion and Sediment Control Law. The Design-Build contractor would obtain coverage under Virginia's General Permit for Discharges of Stormwater from Construction Activities (Construction General Permit) in accordance with the Virginia Water Quality Standards (9 VAC 25-260-50) and would develop a site-specific Stormwater Pollution Prevention Plan

(SWPPP) in accordance with the Virginia Stormwater Management Program (VSMP) for construction- and demolition-related activities.

To minimize impacts, the Design-Build contractor would develop a site-specific ESC plan prior to ground-disturbing activities in compliance with the VSMP regulations and WFF's Stormwater, Erosion, and Environmental Development (SEED) Program. The contractor would implement BMPs before, during, and after construction to stabilize soils. These BMPs could include using silt fencing, soil stabilization blankets, and matting. Riprap may be used to protect abutments from scour and for slope stabilization. Bare soils would be revegetated with native, non-invasive plants immediately after construction to reduce stormwater runoff. The proposed bridge's stormwater conveyance system could be designed to carry stormwater from the bridge to stabilized outfalls, and potentially into a stormwater treatment BMP at the outlets. Permanent BMPs to capture, convey, and manage stormwater from the bridge deck and approaches would be included in the final bridge design in accordance with FHWA design specification and VSMP regulations for stormwater discharge. The Design-Build contractor would use appropriate BMPs to minimize turbidity during in water work which may include cofferdams or turbidity curtains. These actions would minimize impacts to receiving waters from non-point source pollution.

Maintenance and repair activities may cause non-point source pollution through the transport of sediments, some of which may carry contaminants. Impacts from these activities would be similar to those described above for construction and demolition. NASA would adhere to BMPs similar to those described above and obtain appropriate VSMP permits, as needed. The Proposed Action would be consistent with this enforceable policy.

XII. Shoreline Sanitation

Consistent to the Maximum Extent Practicable? N/A

No sewage systems would be installed or used for the Proposed Action. Therefore, this enforceable policy is not applicable to the Proposed Action.

Based on the information presented herein, and the more detailed analysis presented in the Draft EA, NASA finds that the WFF Causeway Bridge Replacement Project would be consistent to the maximum extent practicable with the enforceable policies of the Virginia CZMP. Pursuant to 15 CFR section 930.41, the Virginia CZMP has 60 days from the receipt of the Draft EA in which to concur with or object to this Consistency Determination, or to request an extension under 15 CFR Section 930.41(b). Virginia's concurrence will be presumed if its response is not received by NASA on the 60th day from receipt of this determination. The Commonwealth's response should be sent to:

Douglas W. Bruner
National Aeronautics and Space Administration
Goddard Space Flight Center
34200 Fulton Street
Code 250, Bldg. F-160
Wallops Island, VA 23337
(757) 824-2441
Douglas.W.Bruner@nasa.gov

References

- FHWA (Federal Highway Administration). 2021. Wallops Island Causeway Bridge Shellfish Survey, Accomack County, Virginia, July 2021.
- NASA (National Aeronautics and Space Administration). 2017. Environmental Resources Document Goddard Space Flight Center Wallops Flight Facility, August 2017.
- NASA (National Aeronautics and Space Administration). 2019. Wallops Flight Facility Site-wide Programmatic Environmental Impact Statement, Final, May 2019.

NASA Causeway Bridge Replacement Project
Environmental Assessment

Appendix E
VMRC Coordination

American with Disabilities Act (ADA) Compliance Disclaimer:

The National Aeronautics and Space Administration is committed to ensuring its electronic documents are accessible to all users. There may be some third-party images and maps within this document that are not ADA compliant at this time. Please contact Shari Miller at Shari.A.Miller@nasa.gov for further assistance.

From: Bruner, Douglas W. (WFF-2500) <douglas.w.bruner@nasa.gov>
Sent: Tuesday, February 21, 2023 12:07 PM
To: alicia.nelson@mrc.virginia.gov
Cc: Miller, Shari A. (WFF-2500) <shari.a.miller@nasa.gov>; Saecker, John R. (WFF-2280) <john.r.saecker@nasa.gov>; Kimberley, Ryan (FHWA) <ryan.kimberley@dot.gov>; Richert, Suzie <SRichert@wetlands.com>; Lindsey, Matthew R. (WFF-250.0)[Bluestone Environmental Group, Inc] <matthew.r.lindsey@nasa.gov>; Simko, Marianne F. (WFF-250.0)[Bluestone Environmental Group, Inc] <marianne.f.simko@nasa.gov>
Subject: FW: Letter to VMRC Artificial Reef Program

Dear Ms. Nelson,

The National Aeronautics and Space Administration (NASA), in cooperation with the Federal Highway Administration (FHWA), is preparing an Environmental Assessment (EA) that will evaluate potential impacts associated with replacement of the Wallops Island Causeway Bridge over Cat Creek at Goddard Space Flight Center's Wallops Flight Facility (WFF) in Accomack County, VA.

In August 2020, FHWA on behalf of NASA sent a scoping letter soliciting comments from the Virginia Marine Resources Commission (VMRC); FHWA received scoping comments from VMRC on September 22, 2020. In response to FHWA's submittal of a shellfish survey for review, VMRC provided comments dated October 15. Both sets of VMRC comments recommended that demolished bridge materials be considered for placement on artificial reefs in the area and that FHWA and NASA contact VMRC's Artificial Reef Program. As such, we respectfully request your review and comments regarding the feasibility of utilizing this demolition debris for artificial reef placement, and which materials would be applicable to the VMRC Artificial Reef Program.

Respectfully,

Douglas Bruner
Environmental Engineer
Code 250, Medical and Environmental Management Division
NASA Wallops Flight Facility
Building F-160, Rm C-166

Wallops Island, Virginia 23337

douglas.w.bruner@nasa.gov

Office (757) 824-2441

Cell: 651-276-9864

National Aeronautics and Space Administration



Goddard Space Flight Center

Wallops Flight Facility
Wallops Island, VA 23337

Reply to Attn of: 250.W

February 21, 2023

Alicia Nelson
Virginia Marine Resources Commission
Fisheries Management Division
Artificial Reef Program
380 Fenwick Boulevard
Fort Monroe, Virginia 23651-1064

Dear Ms. Nelson,

The National Aeronautics and Space Administration (NASA), in cooperation with the Federal Highway Administration (FHWA), is preparing an Environmental Assessment (EA) that will evaluate potential impacts associated with replacement of the Wallops Island Causeway Bridge over Cat Creek at Goddard Space Flight Center's Wallops Flight Facility (WFF) in Accomack County, VA. The EA is being prepared to satisfy NASA's and FHWA's obligations under the National Environmental Policy Act of 1969 (NEPA). The U.S. Army Corps of Engineers and the U.S. Coast Guard are serving as cooperating agencies on the EA.

The existing bridge, which will be demolished, was constructed in 1959 and is approaching the end of its anticipated service life. It is 1,284 feet long, 27 feet wide, and has a cast-in-place concrete deck supported by four prestressed concrete beams on concrete piers. The bridge has had repairs including shotcrete and fiber reinforced polymer. Demolition debris may include concrete rubble, concrete panels of varying size, concrete girders, concrete piers and columns, and steel rebar. Maps and photos are provided in Attachment A.

In August 2020, FHWA on behalf of NASA sent a scoping letter soliciting comments from the Virginia Marine Resources Commission (VMRC); FHWA received scoping comments from VMRC on September 22, 2020. In response to FHWA's submittal of a shellfish survey for review, VMRC provided comments dated October 15. Both sets of VMRC comments recommended that demolished bridge materials be considered for placement on artificial reefs in the area and that FHWA and NASA contact VMRC's Artificial Reef Program. Therefore, we respectfully request your review and comments regarding the feasibility of utilizing this demolition debris for artificial reef placement, and which materials would be applicable to the VMRC Artificial Reef Program.

Please do not hesitate to contact me at douglas.w.bruner@nasa.gov or (757) 824-2441 if you have questions regarding this project.

Sincerely,

**Douglas
Bruner**

Digitally signed by
Douglas Bruner
Date: 2023.02.21
05:46:18 -05'00'

Douglas W. Bruner, P.G.
Environmental Engineer

1 Enclosure

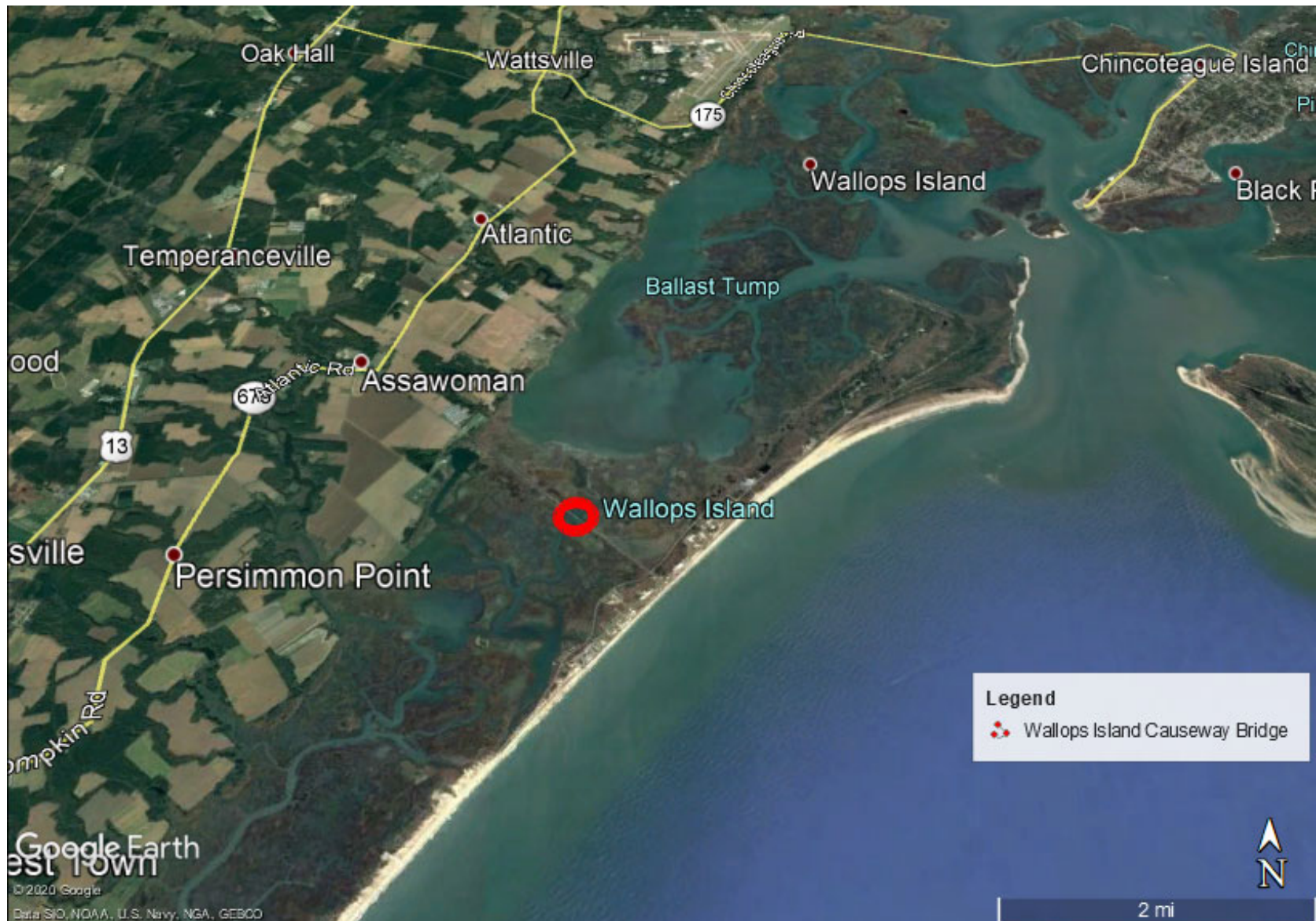
cc:

250/Ms. Shari A. Miller

780/Mr. John R. Saecker

FHWA/Mr. Ryan Kimberley

ATTACHMENT A, WALLOPS ISLAND CAUSEWAY BRIDGE MAPS AND PHOTOS



Satellite Imagery of project location and vicinity

ATTACHMENT A, WALLOPS ISLAND CAUSEWAY BRIDGE MAPS AND PHOTOS



USGS topographical map excerpt, Wallops Island, VA quad

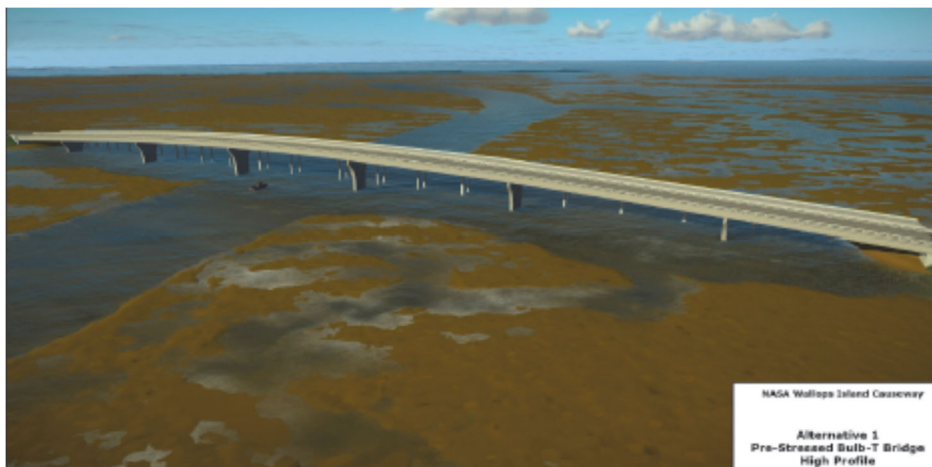
ATTACHMENT A, WALLOPS ISLAND CAUSEWAY BRIDGE MAPS AND PHOTOS



Existing bridge view looking east toward Wallops Island



View of existing bridge from the western abutment, facing southeast



Rendering of proposed bridge



COMMONWEALTH of VIRGINIA

Ann F. Jennings
Secretary of Natural and Historic
Resources

Marine Resources Commission
380 Fenwick Road
Bldg 96
Fort Monroe, VA 23651-1064

Steven G. Bowman
Commissioner

October 15, 2021

Federal Highway Administration
Attn: Ryan Kimberley
21400 Ridgetop Circle
Sterling, VA 20166

Re: Wallops Island Causeway Bridge Replacement - Shellfish
Survey

Dear Mr. Kimberley,

This will respond to the request for comments regarding the Shellfish Survey for the Wallops Island Causeway Bridge Replacement project, prepared by the Federal Highway Administration (FHWA), on behalf of the National Aeronautics and Space Administration (NASA). NASA has proposed to replace the existing Wallops Island Causeway Bridge over Cat Creek at Goddard Space Flight Center's Wallops Flight Facility in Accomack County, Virginia.

The Shellfish Survey was conducted in response to scoping comments received from the Virginia Marine Resources Commission (VMRC) and the Virginia Institute of Marine Science (VIMS) in August 2020. Specifically, the FWHA conducted a presence/absence survey (Phase I) in May 2021 and a subsequent preliminary density survey of a representative portion of the oyster bed (Phase II). Results from this survey indicate the presence of oysters and mussels within the project area. Impacts are anticipated at the eastern abutment, western abutment, and northern edges of both the east and west intertidal areas. The applicant indicates that the proposed construction would result in little to no permanent loss of oyster habitat and that the proposed piers and abutments will not be located within oyster habitat. However, the temporary bridge would intersect with oyster beds in several places.

VMRC has coordinated with VMRC staff within the Shellfish Management Division and VIMS and offers the following comments regarding the shellfish survey: VMRC recommends the shell and clusters within the project footprint be relocated to an adjacent and un-impacted reef area. It is not necessary to move them back upon project completion. VMRC continues to recommend that stringent erosion and sediment control measures should be used during any construction or maintenance on the bridge to protect shellfish in the area. Additionally, VMRC recommends that demolished bridge materials be considered for placement on artificial reefs in the area. The VMRC Artificial Reef Program can be contacted to determine which materials would be acceptable for placement on artificial reefs.

Please be advised that the VMRC pursuant to Chapter 12, 13, & 14 of Title 28.2 of the Code of Virginia administers permits required for submerged lands, tidal wetlands, and beaches and dunes. Any jurisdictional impacts will be reviewed by the VMRC during the Joint Permit Application process.

An Agency of the Natural Resources Secretariat

www.mrc.virginia.gov

Telephone (757) 247-2200 (757) 247-2292 V/TDD Information and Emergency Hotline 1-800-541-4646 V/TDD

Federal Highway Administration
October 15, 2021
Page Two

Should the proposed project change, a new review by this agency may be required relative to these jurisdictional areas.

Please contact me at 757-247-8027 or by email at ben.nettleton@mrc.virginia.gov if you have questions. Thank you for the opportunity to comment.

Sincerely,

A handwritten signature in black ink, appearing to read "Ben Nettleton". The signature is fluid and cursive, with the first name "Ben" written in a smaller, more compact script than the last name "Nettleton", which is more expansive and includes a large, sweeping flourish at the end.

Ben Nettleton

BN/tlb
HM



COMMONWEALTH of VIRGINIA

*Marine Resources Commission
380 Fenwick Road
Bldg 96
Fort Monroe, VA 23651-1064*

Matthew J. Strickler
Secretary of Natural Resources

Steven G. Bowman
Commissioner

September 22, 2020

Federal Highway Administration
Attn: Ryan Kimberley
21400 Ridgetop Circle
Sterling, VA 20166

Re: Draft Environmental Assessment
Wallops Island Causeway Bridge Replacement

Dear Mr. Kimberley:

This will respond to the request for comments regarding the Draft Environmental Assessment for the Wallops Island Causeway Bridge Replacement Project, prepared by the Federal Highway Administration (FHWA), on behalf of the National Aeronautics and Space Administration (NASA). Specifically, NASA has proposed to replace the existing Wallops Island Causeway Bridge over Cat Creek at Goddard Space Flight Center's Wallops Flight Facility in Accomack County, Virginia.

The Wallops Island Causeway Bridge crosses over public shellfish grounds that are open for harvest. VMRC recommends that a survey of shellfish resources be conducted as part of the environmental assessment. Stringent erosion and sediment control measures should also be used during any construction or maintenance on the bridge to protect shellfish in the area. Additionally, VMRC recommends that demolished bridge materials be considered for placement on artificial reefs in the area. The VMRC Artificial Reef Program can be contacted to determine which materials would be acceptable for placement on artificial reefs.

Please be advised that the VMRC pursuant to Chapter 12, 13, & 14 of Title 28.2 of the Code of Virginia administers permits required for submerged lands, tidal wetlands, and beaches and dunes. Any jurisdictional impacts will be reviewed by the VMRC during the Joint Permit Application process. Should the proposed project change, a new review by this agency may be required relative to these jurisdictional areas.

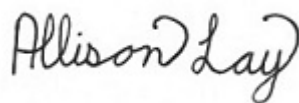
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Telephone (757) 247-2200 (757) 247-2292 V/TDD Information and Emergency Hotline 1-800-541-4646 V/TDD

Federal Highway Administration
September 22, 2020
Page Two

If you have any questions please contact me at (757) 247-2254 or by email at Allison.lay@mrc.virginia.gov. Thank you for the opportunity to comment.

Sincerely,

A handwritten signature in black ink that reads "Allison Lay". The signature is written in a cursive, flowing style.

Allison Lay
Environmental Engineer, Habitat Management

AEL
HM

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NASA Causeway Bridge Replacement Project
Environmental Assessment

Appendix F

Endangered Species Act Section 7
Information and Coordination

Section 7 ESA Coordination Package
Submitted to USFWS from FHWA
December 2022

Project NASA 1(9) Wallops Island Causeway Bridge Replacement, Accomack County, Virginia

Date: December 20 2022

CONSULTATION CODE: **2023-0012907**; USFWS Virginia Field Office Project Review Documentation

Step 1: Description of Action- The National Aeronautics and Space Administration (NASA) and the Federal Highway Administration (FHWA) propose to replace the Wallops Island Causeway Bridge over Cat Creek at Goddard Space Flight Center's Wallops Flight Facility, in Accomack County, VA. The existing bridge was constructed in 1959 and is approaching the end of its anticipated service life. It is 1,284 feet long, 27 feet wide, and has a cast-in-place concrete deck supported by four prestressed concrete beams on concrete piers. The bridge is located on the two-mile long Causeway Road connecting the mainland with Wallops Island. The proposed project would address structural deficiencies and improve safety by meeting current roadway and bridge design standards. The new bridge would be 40' wide and would be constructed parallel to the existing structure. The causeway approaches would be realigned at each end of the new bridge. The existing bridge would remain in use during construction but would be demolished when the new bridge is completed. Temporary bridges and/or barges would be needed to allow construction of the new bridge and demolition of the existing bridge. Construction of the new bridge would likely begin in 2025 and continue for two or more years.

Step 2: Action Area- The project area has been mapped in the IPaC system and is depicted on the enclosed map. The action area includes the footprints of the new bridge, realigned causeway approaches, and temporary bridges. Habitats include tidal wetlands, tidal mud flats, open water, causeway embankment, and the bridge structure.

Latitude/Longitude: 37.8522, -75.490206

Step 3a: Official Species List: An official species was downloaded from IPaC and is attached (**Consultation Code 2023-0012907, 12/20/22**). A species determination table is provided below. The list of federally regulated species subject to Section 7 consultation includes: the Northern Long-Eared Bat (NLEB, endangered), Eastern Black Rail (threatened), Piping Plover (threatened), Red Knot (threatened), Green Sea Turtle (threatened), Hawksbill Sea Turtle (endangered), Kemp's Ridley Sea Turtle (endangered), Leatherback Sea Turtle (endangered), and Loggerhead Sea Turtle (threatened).

This Project Review Documentation package includes conferencing information and determinations for three additional species: Tricolored Bat (proposed endangered), Little Brown Bat (species of special concern and state endangered) and Monarch Butterfly (candidate).

Project NASA 1(9) Wallops Island Causeway Bridge Replacement, Accomack County, Virginia

Date: December 20 2022

CONSULTATION CODE: **2023-0012907**; USFWS Virginia Field Office Project Review Documentation

Step 3b: NLEB- FHWA has discontinued use of the assisted determination key for NLEB 4(d) rule because of the endangered status of the species. The project will include limited tree trimming/removal and the removal of a bridge that could provide suitable habitat for NLEB or other bat species. A habitat assessment and presence/absence survey will be conducted during the 2023 active season including acoustic and emergence surveys. Data from these surveys, in coordination with USFWS, will inform time of work and other mitigations required to perform the bridge replacement during the proposed construction period, 2024-2027. The survey will use the “USFWS Range-wide Indiana bat and NLEB survey guidelines”. A review of the Virginia Department of Wildlife Resources (VDWR) NLEB Winter Habitat and Roost Tree on-line mapping tool did not identify any nearby sites. The area is not within mapped karst geology.

Step 3c: Critical Habitat: There are no critical habitats at this location

Step 4: Suitable Habitat- An assessment of suitable habitat is provided in the table below. The project is being coordinated with NASA, the Virginia Marine Resources Commission, the Virginia Institute of Marine Science, and the National Ocean and Atmospheric Administration (NOAA). FHWA provided determinations of Not likely to Adversely Affect (NLAA) or no effect for all marine species regulated by the NOAA Section 7 program. A copy of the NOAA Section 7 concurrence is enclosed. Consultation with the NOAA Fisheries program related to essential fish habitat is ongoing. The VDWR Fish and Wildlife Information Service (FWIS) was used to obtain NLEB winter/summer habitat maps, in addition to USFWS species profiles and information (ECOS). US Geological Survey and Virginia Department of Geology and Mineral Resource (DGMR) maps confirmed that Karst geology is not present on or near the site. The site consists of marsh and intertidal mud deposits. Data was obtained from the Virginia Division of Natural Heritage Biotics Data System and the VDWR Fish and Wildlife Information Service. The VDWR Time of Year restriction guidance document was also referenced.

Step 5: Determinations- Section 7 determinations for each species are provided in the table below.

Step 6: Project Review Package- A determination of Not likely to adversely Affect (NLAA) or No effect was reached for all species. An online Section 7 project review certification letter is attached. The project review package will be sent to the Virginia Field Office for Review.

Species Determination Table:

Species / Resource Name	Species/Habitat Presence in Action Area	Sources of Info	ESA Section 7 Determination	Project Elements that support determination
Critical Habitat	Not present	VAFO CH MAP TOOL	No effect	There are no documented critical habitats at this location
Northern Long-eared Bat <i>Myotis septentrionalis</i> (endangered)	Suitable habitat present, no current survey conducted; There are trees and shrubs with a diameter greater than 3" growing along the causeway embankment at the edge of the tidal marsh. The bridge structure may also be suitable habitat for bats	USFWS, FWIS, DGMR (not karst area), site photos, site inspections	Not Likely to Adversely Affect (NLAA);	Habitat assessments and presence/absence surveys will be conducted within the project footprint during the 2023 active season. Acoustic and emergence surveys will be conducted by approved wildlife biologists using the following guidelines and forms: https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines https://www.fws.gov/sites/default/files/documents/appendix-d-bridge-culvert-bat-assessment-form-april-2020.pdf Data from these surveys, in coordination with USFWS, will inform time of work and other mitigations required to perform the bridge replacement during the proposed construction period, 2025-2027.
Tricolored Bat <i>Perimyotis subflavus</i> (proposed endangered)	Suitable habitat present, no current survey conducted	USFWS, FWIS	NLAA	Habitat assessment and presence/absence surveys will be conducted as outlined above. Data from these surveys, in coordination with USFWS, will inform time of work and other mitigations required to perform the bridge replacement during the proposed construction period, 2025-2027.

Project NASA 1(9) Wallops Island Causeway Bridge Replacement, Accomack County, Virginia

Date: December 20 2022

CONSULTATION CODE: **2023-0012907**; USFWS Virginia Field Office Project Review Documentation

Little Brown Bat <i>Myotis lucifugus</i> (species of special concern)	Suitable habitat present, no current survey conducted	USFWS, FWIS	NLAA	Habitat assessment and presence/absence surveys will be conducted as outlined above. Data from these surveys, in coordination with USFWS, will inform time of work and other mitigations required to perform the bridge replacement during the proposed construction period, 2024-2027.
Eastern Black rail <i>(Laterallus jamaicensis ssp. jamaicensis)</i> (threatened)	Suitable habitat present, species not present	USFWS, FWIS, survey report (2022)	No effect	NASA completed three rounds of surveys from May 1 – June 6, 2022, to capture peak potential eastern black rail auditory activity during the breeding season. No visual or auditory observations of eastern black rails were recorded during surveys. The report was previously transmitted to USFWS by NASA
Piping Plover <i>(Charadrius melodus)</i> (endangered)	Suitable habitat not present	USFWS, NASA,FWIS	No Effect	Suitable habitat exists several thousand feet to the east; work will not impact nesting or foraging grounds;
Red knot <i>(Calidris canutus rufa)</i> (threatened)	Suitable habitat not present	USFWS, NASA, FWIS	No Effect	Forages on Wallops Island during migration; The work would not impact nesting grounds or impact available foraging habitat; work will occur several thousand feet from nearest beach foraging area.
Green sea turtle <i>(Chelonia mydas)</i> (threatened)	Suitable habitat present, species not present	USFWS, NOAA, NASA	No effect	NOAA data indicates species not present; The project will not impact nesting grounds which are farther to the south;
Hawksbill sea turtle <i>(Eretmochelys imbricata)</i> (endangered)	Suitable habitat present, species present	USFWS, NOAA, NASA	NLAA	No known Occurrences at Wallops Island; The project will not impact nesting grounds which are farther to the south; Construction crews will not perform work if turtles are present in the work zone. Turtle monitors will be present during pile driving, vessel movement, and other potential stressor activities. See NOAA Section 7 consultation for additional conservation measures

Project NASA 1(9) Wallops Island Causeway Bridge Replacement, Accomack County, Virginia

Date: December 20 2022

CONSULTATION CODE: **2023-0012907**; USFWS Virginia Field Office Project Review Documentation

Kemp's Ridley sea turtle (<i>Lepidochelys kempii</i>) (endangered)	Suitable habitat present, species present	USFWS, NOAA, NASA	NLAA	The limited footprint would not significantly impact available foraging habitat. Construction crews will not perform work if turtles are present in the work zone. Turtle monitors will be present during pile driving, vessel movement, and other potential stressor activities. See NOAA Section 7 consultation for additional conservation measures
Leatherback sea turtle (<i>Dermochelys coriacea</i>) (endangered)	Suitable habitat present, species present	USFWS, NOAA, NASA	NLAA	The limited footprint would not significantly impact available foraging habitat. Construction crews will not perform work if turtles are present in the work zone. Turtle monitors will be present during pile driving, vessel movement, and other potential stressor activities. See NOAA Section 7 consultation for additional conservation measures
Loggerhead sea turtle (<i>Caretta caretta</i>) (threatened)	Suitable habitat present, species present	USFWS, NOAA, NASA	NLAA	The limited footprint would not significantly impact available foraging habitat. Construction crews will not perform work if turtles are present in the work zone. Turtle monitors will be present during pile driving, vessel movement, and other potential stressor activities. See NOAA Section 7 consultation for additional conservation measures
Monarch Butterfly <i>Danaus plexippus</i> (Candidate)	No suitable habitat present	The project area does not contain areas with milkweed, meadows, etc.	No effect	N/A

ATTACHMENTS

- A) Maps and photos**
- B) Preliminary plans**
- C) Official Species list**
- D) NOAA Sec 7 consultation (signed version on file)**
- E) Online verification Letter**

Please note that Attachment A and B to the December 20, 2022 letter from NASA to USFWS, which provides maps and photos of the project, is already included in Appendix A to the NASA Causeway Bridge Replacement Project Environmental Assessment and is not included here to reduce paperwork.



United States Department of the Interior

FISH AND WILDLIFE SERVICE
Virginia Ecological Services Field Office
6669 Short Lane
Gloucester, VA 23061-4410
Phone: (804) 693-6694 Fax: (804) 693-9032



In Reply Refer To:
Project Code: 2023-0012907
Project Name: Wallops Island Causeway Bridge Replacement

December 20, 2022

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*). Any activity proposed on National Wildlife Refuge lands must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see <https://www.fws.gov/birds/policies-and-regulations.php>.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see <https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds.php>.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit <https://www.fws.gov/birds/policies-and-regulations/executive-orders/e0-13186.php>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Project Code in the header of this

letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Migratory Birds

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Virginia Ecological Services Field Office

6669 Short Lane

Gloucester, VA 23061-4410

(804) 693-6694

Project Summary

Project Code: 2023-0012907

Project Name: Wallops Island Causeway Bridge Replacement

Project Type: Bridge - Replacement

Project Description: Replace existing bridge with a new bridge. The new bridge will be located immediately north/parallel to the existing. Minor realignment of the causeway at the approaches will occur. The existing bridge will be demolished. Temporary bridges and/or barges will be used for construction and demolition.

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@37.85198815,-75.48994793729457,14z>



Counties: Accomack County, Virginia

Endangered Species Act Species

There is a total of 9 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

-
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Northern Long-eared Bat <i>Myotis septentrionalis</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Endangered

Birds

NAME	STATUS
Eastern Black Rail <i>Laterallus jamaicensis ssp. jamaicensis</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10477	Threatened
Piping Plover <i>Charadrius melodus</i> Population: [Atlantic Coast and Northern Great Plains populations] - Wherever found, except those areas where listed as endangered. There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6039	Threatened
Red Knot <i>Calidris canutus rufa</i> There is proposed critical habitat for this species. Species profile: https://ecos.fws.gov/ecp/species/1864	Threatened

Reptiles

NAME	STATUS
Green Sea Turtle <i>Chelonia mydas</i> Population: North Atlantic DPS There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6199	Threatened
Hawksbill Sea Turtle <i>Eretmochelys imbricata</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3656	Endangered
Kemp's Ridley Sea Turtle <i>Lepidochelys kempii</i> There is proposed critical habitat for this species. Species profile: https://ecos.fws.gov/ecp/species/5523	Endangered
Leatherback Sea Turtle <i>Dermochelys coriacea</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1493	Endangered
Loggerhead Sea Turtle <i>Caretta caretta</i> Population: Northwest Atlantic Ocean DPS There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1110	Threatened

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

USFWS National Wildlife Refuge Lands And Fish Hatcheries

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

Migratory Birds

Certain birds are protected under the Migratory Bird Treaty Act¹ and the Bald and Golden Eagle Protection Act².

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described [below](#).

-
1. The [Migratory Birds Treaty Act](#) of 1918.
 2. The [Bald and Golden Eagle Protection Act](#) of 1940.
 3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

The birds listed below are birds of particular concern either because they occur on the [USFWS Birds of Conservation Concern \(BCC\)](#) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ [below](#). This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the [E-bird data mapping tool](#) (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found [below](#).

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
American Oystercatcher <i>Haematopus palliatus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8935	Breeds Apr 15 to Aug 31
Bald Eagle <i>Haliaeetus leucocephalus</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Oct 15 to Aug 31

NAME	BREEDING SEASON
Black Skimmer <i>Rynchops niger</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/5234	Breeds May 20 to Sep 15
Chimney Swift <i>Chaetura pelagica</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 25
Gull-billed Tern <i>Gelochelidon nilotica</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9501	Breeds May 1 to Jul 31
King Rail <i>Rallus elegans</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8936	Breeds May 1 to Sep 5
Lesser Yellowlegs <i>Tringa flavipes</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Prairie Warbler <i>Dendroica discolor</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Jul 31
Red-headed Woodpecker <i>Melanerpes erythrocephalus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10
Ruddy Turnstone <i>Arenaria interpres morinella</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds elsewhere
Rusty Blackbird <i>Euphagus carolinus</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds elsewhere
Short-billed Dowitcher <i>Limnodromus griseus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9480	Breeds elsewhere
Willet <i>Tringa semipalmata</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 5

Probability Of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

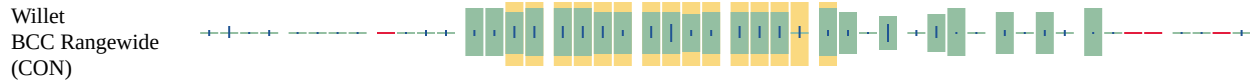
No Data (—)

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.





Additional information can be found using the following links:

- Birds of Conservation Concern <https://www.fws.gov/program/migratory-birds/species>
- Measures for avoiding and minimizing impacts to birds <https://www.fws.gov/library/collections/avoiding-and-minimizing-incident-take-migratory-birds>
- Nationwide conservation measures for birds <https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf>

Migratory Birds FAQ

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

[Nationwide Conservation Measures](#) describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. [Additional measures](#) or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [Rapid Avian Information Locator \(RAIL\) Tool](#).

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the [RAIL Tool](#) and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern](#) (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Eagle Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the [Diving Bird Study](#) and the [nanotag studies](#) or contact [Caleb Spiegel](#) or [Pam Loring](#).

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to [obtain a permit](#) to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

IPaC User Contact Information

Agency: Federal Highway Administration
Name: Ryan Kimberley
Address: 22001 Loudoun County Parkway
Address Line 2: Building E2, Suite 200
City: Ashburn
State: VA
Zip: 20147
Email: ryan.kimberley@dot.gov
Phone: 7034046240



United States Department of the Interior

FISH AND WILDLIFE SERVICE



Virginia Field Office
6669 Short Lane
Gloucester, VA 23061

Date: 12/20/2022

Self-Certification Letter

Project Name: FHWA NASA 1(9) Wallops Island Causeway Bridge Replacement, Accomack County, Virginia

Dear Applicant:

Thank you for using the U.S. Fish and Wildlife Service (Service) Virginia Ecological Services online project review process. By printing this letter in conjunction with your project review package, you are certifying that you have completed the online project review process for the project named above in accordance with all instructions provided, using the best available information to reach your conclusions. This letter, and the enclosed project review package, completes the review of your project in accordance with the Endangered Species Act of 1973 (16 U.S.C. 1531-1544, 87 Stat. 884), as amended (ESA). This letter also provides information for your project review under the National Environmental Policy Act of 1969 (P.L. 91-190, 42 U.S.C. 4321-4347, 83 Stat. 852), as amended. A copy of this letter and the project review package must be submitted to this office for this certification to be valid. This letter and the project review package will be maintained in our records.

The species conclusions table in the enclosed project review package summarizes your ESA conclusions. These conclusions resulted in:

- “no effect” determinations for proposed/listed species and/or proposed/designated critical habitat; and/or
- Action may affect the northern long-eared bat; however, any take that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR § 17.40(o) [as determined through the Information, Planning, and Consultation System (IPaC) northern long-eared bat assisted determination key]; and/or
- “may affect, not likely to adversely affect” determinations for proposed/listed species and/or proposed/designated critical habitat.

We certify that use of the online project review process in strict accordance with the instructions provided as documented in the enclosed project review package results in reaching the appropriate determinations. Therefore, we concur with the “no effect” or “may affect, not likely to adversely affect” determinations for proposed and listed species and proposed and designated critical habitat. Additional coordination with this office is not needed.

Candidate species are not legally protected pursuant to the ESA. However, the Service encourages consideration of these species by avoiding adverse impacts to them. Please contact this office for additional coordination if your project action area contains candidate species.

Should project plans change or if additional information on the distribution of proposed or listed species, proposed or designated critical habitat becomes available, this determination may be reconsidered. This certification letter is valid for 1 year.

Information about the online project review process including instructions and use, species information, and other information regarding project reviews within Virginia is available at our website http://www.fws.gov/northeast/virginiafield/endspecies/project_reviews.html. If you have any questions, please contact Troy Andersen of this office at (804) 824-2428.

Sincerely,



Cindy Schulz
Field Supervisor
Virginia Ecological Services

Enclosures - project review package

VaFWIS Initial Project Assessment Report

Compiled on 2/21/2023, 11:28:29 AM

Known or likely to occur within a **2 mile radius around point 37.8520000 -75.4899998**
in **001 Accomack County, VA**

566 Known or Likely Species ordered by Status Concern for Conservation
(displaying first 40) (40 species with Status* or Tier I** or Tier II**)

BOVA Code	Status*	Tier**	Common Name	Scientific Name	Confirmed	Database(s)
010031	FESE	Ia	Sturgeon, shortnose	Acipenser brevirostrum		BOVA
030074	FESE	Ia	Turtle, Kemp's ridley sea	Lepidochelys kempii	Yes	BOVA,SppObs
010032	FESE	Ib	Sturgeon, Atlantic	Acipenser oxyrinchus		BOVA
120006	FESE	Ib	Whale, humpback	Megaptera novaeangliae		BOVA
030075	FESE	Ic	Turtle, leatherback sea	Dermochelys coriacea	Yes	BOVA,SppObs
030073	FESE		Turtle, Hawksbill Sea	Eretmochelys imbricata		BOVA
040183	FESE		Tern, roseate	Sterna dougallii dougallii		BOVA,Habitat
030071	FTST	Ia	Turtle, loggerhead sea	Caretta caretta	Yes	BOVA,Habitat,SppObs
040144	FTST	Ia	Knot, red	Calidris canutus rufa		BOVA
040110	FTSE	Ia	Rail, eastern black	Laterallus jamaicensis jamaicensis		BOVA
050022	FTST	Ia	Bat, northern long-eared	Myotis septentrionalis		BOVA
030072	FTST	Ib	Turtle, green sea	Chelonia mydas		BOVA
040120	FTST	IIa	Plover, piping	Charadrius melodus	Yes	BOVA,Habitat,SppObs
100361	FTST	IIa	Beetle, northeastern beach tiger	Cicindela dorsalis dorsalis		BOVA
040118	SE	Ia	Plover, Wilson's	Charadrius wilsonia	Yes	BOVA,Habitat,SppObs
050020	SE	Ia	Bat, little brown	Myotis lucifugus		BOVA
050027	FPSE	Ia	Bat, tri-colored	Perimyotis subflavus		BOVA
040096	ST	Ia	Falcon, peregrine	Falco peregrinus		BOVA
040293	ST	Ia	Shrike, loggerhead	Lanius ludovicianus		BOVA
040379	ST	Ia	Sparrow, Henslow's	Centronyx henslowii		BOVA
040179	ST	Ia	Tern, gull-billed	Gelochelidon nilotica	Yes	BOVA,Habitat,SppObs
040403	ST		Falcon, Arctic peregrine	Falco peregrinus tundrius		BOVA
040292	ST		Shrike, migrant loggerhead	Lanius ludovicianus migrans		BOVA
100079	FC	IIIa	Butterfly, monarch	Danaus plexippus		BOVA
030067	CC	IIa	Terrapin, northern diamond-backed	Malaclemys terrapin terrapin	Yes	BOVA,Habitat,SppObs
030063	CC	IIIa	Turtle, spotted	Clemmys guttata		BOVA
040040		Ia	Ibis, glossy	Plegadis falcinellus		BOVA
040213		Ic	Owl, northern saw-whet	Aegolius acadicus		BOVA
040052		IIa	Duck, American black	Anas rubripes		BOVA
040033		IIa	Egret, snowy	Egretta thula		BOVA
040029		IIa	Heron, little blue	Egretta caerulea caerulea		BOVA,Habitat
040036		IIa	Night-heron, yellow-crowned	Nyctanassa violacea violacea		BOVA
040114		IIa	Oystercatcher, American	Haematopus palliatus		BOVA,Habitat
040192		IIa	Skimmer, black	Rynchops niger		BOVA,Habitat
040181		IIa	Tern, common	Sterna hirundo	Yes	BOVA,SppObs
040320		IIa	Warbler, cerulean	Setophaga cerulea		BOVA
040140		IIa	Woodcock, American	Scolopax minor		BOVA
040203		IIb	Cuckoo, black-billed	Coccyzus erythrophthalmus		BOVA
040105		IIb	Rail, king	Rallus elegans		BOVA,Habitat
050062		IIc	Squirrel, Delmarva Peninsula fox	Sciurus niger cinereus		BOVA

To view **All 566 species** [View 566](#)

*FE=Federal Endangered; FT=Federal Threatened; SE=State Endangered; ST=State Threatened; FP=Federal Proposed; FC=Federal Candidate; CC=Collection Concern

**I=VA Wildlife Action Plan - Tier I - Critical Conservation Need; II=VA Wildlife Action Plan - Tier II - Very High Conservation Need;
III=VA Wildlife Action Plan - Tier III - High Conservation Need; IV=VA Wildlife Action Plan - Tier IV - Moderate Conservation Need
Virginia Wildlife Action Plan Conservation Opportunity Ranking:
a - On the ground management strategies/actions exist and can be feasibly implemented.;

b - On the ground actions or research needs have been identified but cannot feasibly be implemented at this time.;

c - No on the ground actions or research needs have been identified or all identified conservation opportunities have been exhausted.

Bat Colonies or Hibernacula: **Not Known**

Anadromous Fish Use Streams

N/A

Colonial Water Bird Survey (2 records)

Colony_Name	N Obs	Latest Date	N Species			View Map
			Different Species	Highest TE*	Highest Tier**	
Seaside, Wallops Island, Accomack	1	Jun 20 2013	1		III	Yes
TAYLORS NARROWS	2	Jun 1 1993	1		III	Yes

Displayed 2 Colonial Water Bird Survey

Threatened and Endangered Waters

N/A

Managed Trout Streams

N/A

Bald Eagle Concentration Areas and Roosts

N/A

Bald Eagle Nests

N/A

Habitat Predicted for Aquatic WAP Tier I & II Species

N/A

Habitat Predicted for Terrestrial WAP Tier I & II Species (12 Species)

[View Map of Combined Terrestrial Habitat Predicted for 12 WAP Tier I & II Species Listed Below](#)
ordered by Status Concern for Conservation

BOVA Code	Status*	Tier**	Common Name	Scientific Name	View Map
040183	FESE		Tern, roseate	Sterna dougallii dougallii	Yes
030071	FTST	Ia	Turtle, loggerhead sea	Caretta caretta	Yes
040120	FTST	IIa	Plover, piping	Charadrius melodus	Yes
040118	SE	Ia	Plover, Wilson's	Charadrius wilsonia	Yes
040179	ST	Ia	Tern, gull-billed	Gelochelidon nilotica	Yes
030067	CC	IIa	Terrapin, northern diamond-backed	Malaclemys terrapin terrapin	Yes
040029		IIa	Heron, little blue	Egretta caerulea caerulea	Yes
040114		IIa	Oystercatcher, American	Haematopus palliatus	Yes
040192		IIa	Skimmer, black	Rynchops niger	Yes
040105		IIb	Rail, king	Rallus elegans	Yes
040381		IIIa	Sparrow, saltmarsh	Ammodramus caudacutus	Yes
040186		IIIa	Tern, least	Sternula antillarum	Yes

Public Holdings: (1 names)

Name	Agency	Level
Wallops National Wildlife Refuge	U.S. Fish and Wildlife Service	Federal

Compiled on 2/21/2023, 11:28:29 AM I1461871.0 report=IPA searchType= R dist= 3218 poi= 37.8520000 -75.4899998
PixelSize=64; Anadromous=0.020211; BECAR=0.017545; Bats=0.018009; Buffer=0.064299; County=0.062148; Impediments=0.0191; Init=0.096775; PublicLands=0.027059; SppObs=0.293176; TEWaters=0.020455; TierReaches=0.021093; TierTerrestrial=0.049255; Total=0.887696; Tracking_BOVA=0.216169; Trout=0.021966

Section 7 ESA Coordination Package
Submitted to USFWS by NASA
after Results of Bat Surveys

July 2023

National Aeronautics and Space Administration



Goddard Space Flight Center
Wallops Flight Facility
Wallops Island, VA 23337

Reply to Attn of: 250.W

July 18, 2023

Sumalee Hoskin
U.S. Fish and Wildlife Service
6669 Short Lane
Gloucester, Virginia 23061

RE: Self-Certification
Wallops Island Causeway Bridge Replacement
Project Code: 2023-0012907
Wallops Flight Facility, Accomack County, Virginia

Dear Ms. Hoskin,

The National Aeronautics and Space Administration (NASA), in coordination with the Federal Highway Administration (FHWA) as a Participating Agency, is preparing a Draft Tiered Environmental Assessment to analyze potential impacts to the environment resulting from the proposed replacement of the Wallops Island Causeway Bridge over Cat Creek in Accomack County, Virginia. The Draft EA is tiered from the May 2019 *NASA Wallops Flight Facility Site-wide Programmatic Environmental Impact Statement*, in which NASA evaluated the environmental consequences of constructing and operating new facilities and infrastructure at Wallops Flight Facility (WFF).

Project Overview

The existing Causeway Bridge was constructed in 1959-1960 and is beyond the end of its anticipated service life. The Proposed Action being evaluated by the Draft EA consists of site preparation, construction and removal of temporary construction access, construction of a new bridge parallel to the existing bridge on a new alignment, demolition of the existing bridge after the new bridge opens, and ongoing maintenance and repairs over the bridge's 75-year lifespan.

History of Communication with USFWS

- December 20, 2022: FHWA initiated coordination with USFWS via email.
- January 30, 2023: NASA submitted a draft acoustic survey plan for bats.
- April 12, 2023: NASA submitted a revised acoustic survey plan for bats.

Determination of Effects

NASA and FHWA request U.S. Fish and Wildlife Service (USFWS) concurrence with our determination of effects for federally listed species under USFWS jurisdiction pursuant to Section 7 of the Endangered Species Act (ESA) as provided in the enclosed 'ESA Determination Table'. NASA and FHWA have made a determination of 'No Effect' or 'Not

Likely to Adversely Affect' for all listed species. Based on findings of the enclosed *WFF Causeway Bridge Replacement Acoustic Bat Survey and Habitat Evaluation* (WSSI 2023) survey, endangered northern long-eared bats and proposed endangered tricolored bats are presumed to be absent from the project area.

This informal consultation will also fulfill obligations under the ESA for the U.S. Army Corps of Engineers (USACE) and the U.S. Coast Guard (USGS) as Cooperating Agencies. Informal consultation with the National Marine Fisheries Service (NMFS) regarding federally listed species under NMFS jurisdiction, including sea turtle species in the marine environment, was completed December 12, 2022.

Please do not hesitate to contact me at lori.m.levine@nasa.gov if you have questions regarding this project.

Sincerely,

Lori Levine
WFF Natural Resources Program Manager

4 Enclosures

Self-Certification Package
WFF Causeway Bridge Replacement Acoustic Bat Survey and Habitat Evaluation (WSSI 2023)
32529.01_USFWS_bat_spreadsheet_NortheastUS_2023.xlsx
Bat calls raw data (zipped folder)

cc:
250/Mr. Douglas Bruner
250/Ms. Shari A. Miller
780/Mr. John R. Saecker
FHWA/Mr. Ryan Kimberley

From: [Levine, Lori {she, her, hers} \(GSFC-2500\)](#)
To: [Argo, Emily; sumalee_hoskin@fws.gov](#)
Cc: [Bruner, Douglas W. \(WFF-2500\); Miller, Shari A. \(WFF-2500\); ryan.kimberley@dot.gov; Saecker, John R. \(WFF-2280\)](#)
Subject: RE: USFWS Sec 7: FHWA project NASA 1(9) , Wallops Island Causeway Bridge Replacement
Date: Friday, August 25, 2023 11:43:37 AM

Good morning, Sumalee and Emily,
I'm writing to follow up on our July 18 submission (see below) for the Causeway Bridge project.
Could you let me know the status of your review? I will need to update the project early next week.
Please let me know if you need any additional information.

Best,

Lori Levine (she|her|hers)

Water Quality, Oil Operations, and WFF Natural Resources Programs
LGBTQ+ ERG Co-chair
NASA's Goddard Space Flight Center
Medical & Environmental Management Division, Code 250

From: Levine, Lori {she, her, hers} (GSFC-2500)
Sent: Tuesday, July 18, 2023 2:08 PM
To: Argo, Emily <emily_argo@fws.gov>; sumalee_hoskin@fws.gov
Cc: Bruner, Douglas W. (WFF-2500) <douglas.w.bruner@nasa.gov>; Miller, Shari (WFF-2500) <shari.a.miller@nasa.gov>; ryan.kimberley@dot.gov; Saecker, John R. (WFF-2280) <john.r.saecker@nasa.gov>
Subject: USFWS Sec 7: FHWA project NASA 1(9) , Wallops Island Causeway Bridge Replacement

Good afternoon, Sumalee and Emily,
Attached for your review is the informal consultation letter and enclosures pertaining to the Wallops Island Causeway Bridge replacement project. The enclosures include the following:

1. NLAA Concurrence verification letter
2. Zipped folder:
 - a. Self-certification package
 - b. *WFF Causeway Bridge Replacement Acoustic Bat Survey and Habitat Evaluation* (WSSI 2023)
 - c. 32529.01_USFWS_bat_spreadsheet_NortheastUS_2023.xlsx
 - d. Bat calls raw data

Please contact me with any questions.

Sincerely,

Lori Levine (she|her|hers)

Water Quality, Oil Operations, and WFF Natural Resources Programs
LGBTQ+ ERG Co-chair

NASA's Goddard Space Flight Center
Medical & Environmental Management Division, Code 250

*Please call my cell at **(301) 675-5112** if you need to reach me by phone.*

General Environmental Contacts

Greenbelt: gsfc-dl-enviro@mail.nasa.gov

Wallops: wff-dl-enviro@mail.nasa.gov



United States Department of the Interior

FISH AND WILDLIFE SERVICE



Virginia Field Office
6669 Short Lane
Gloucester, VA 23061

Date: 7/17/2023

Self-Certification Letter

Project Name: Wallops Island Causeway Bridge Replacement

Dear Applicant:

Thank you for using the U.S. Fish and Wildlife Service (Service) Virginia Ecological Services online project review process. By printing this letter in conjunction with your project review package, you are certifying that you have completed the online project review process for the project named above in accordance with all instructions provided, using the best available information to reach your conclusions. This letter, and the enclosed project review package, completes the review of your project in accordance with the Endangered Species Act of 1973 (16 U.S.C. 1531-1544, 87 Stat. 884), as amended (ESA). This letter also provides information for your project review under the National Environmental Policy Act of 1969 (P.L. 91-190, 42 U.S.C. 4321-4347, 83 Stat. 852), as amended. A copy of this letter and the project review package must be submitted to this office for this certification to be valid. This letter and the project review package will be maintained in our records.

The species conclusions table in the enclosed project review package summarizes your ESA conclusions. These conclusions resulted in:

- “no effect” determinations for proposed/listed species and/or proposed/designated critical habitat; and/or
- Action may affect the northern long-eared bat; however, any take that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR § 17.40(o) [as determined through the Information, Planning, and Consultation System (IPaC) northern long-eared bat assisted determination key]; and/or
- “may affect, not likely to adversely affect” determinations for proposed/listed species and/or proposed/designated critical habitat.

We certify that use of the online project review process in strict accordance with the instructions provided as documented in the enclosed project review package results in reaching the appropriate determinations. Therefore, we concur with the “no effect” or “may affect, not likely to adversely affect” determinations for proposed and listed species and proposed and designated critical habitat. Additional coordination with this office is not needed.

Candidate species are not legally protected pursuant to the ESA. However, the Service encourages consideration of these species by avoiding adverse impacts to them. Please contact this office for additional coordination if your project action area contains candidate species.

Should project plans change or if additional information on the distribution of proposed or listed species, proposed or designated critical habitat becomes available, this determination may be reconsidered. This certification letter is valid for 1 year.

Information about the online project review process including instructions and use, species information, and other information regarding project reviews within Virginia is available at our website http://www.fws.gov/northeast/virginiafield/endspecies/project_reviews.html. If you have any questions, please contact Troy Andersen of this office at (804) 824-2428.

Sincerely,



Cindy Schulz
Field Supervisor
Virginia Ecological Services

Enclosures - project review package



United States Department of the Interior

FISH AND WILDLIFE SERVICE
Virginia Ecological Services Field Office
6669 Short Lane
Gloucester, VA 23061-4410
Phone: (804) 693-6694 Fax: (804) 693-9032



In Reply Refer To:
Project Code: 2023-0012907
Project Name: Wallops Island Causeway Bridge Replacement

June 13, 2023

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*). Any activity proposed on National Wildlife Refuge lands must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see <https://www.fws.gov/birds/policies-and-regulations.php>.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see <https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds.php>.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit <https://www.fws.gov/birds/policies-and-regulations/executive-orders/e0-13186.php>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Project Code in the header of this

letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
 - USFWS National Wildlife Refuges and Fish Hatcheries
 - Migratory Birds
-

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Virginia Ecological Services Field Office

6669 Short Lane

Gloucester, VA 23061-4410

(804) 693-6694

PROJECT SUMMARY

Project Code: 2023-0012907

Project Name: Wallops Island Causeway Bridge Replacement

Project Type: Bridge - Replacement

Project Description: Replace existing bridge with a new bridge. The new bridge will be located immediately north/parallel to the existing. Minor realignment of the causeway at the approaches will occur. The existing bridge will be demolished. Temporary bridges and/or barges will be used for construction and demolition.

Project Location:

The approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@37.85198815,-75.48994793729457,14z>



Counties: Accomack County, Virginia

ENDANGERED SPECIES ACT SPECIES

There is a total of 10 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Northern Long-eared Bat <i>Myotis septentrionalis</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Endangered
Tricolored Bat <i>Perimyotis subflavus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

BIRDS

NAME	STATUS
Eastern Black Rail <i>Laterallus jamaicensis ssp. jamaicensis</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10477	Threatened
Piping Plover <i>Charadrius melodus</i> Population: [Atlantic Coast and Northern Great Plains populations] - Wherever found, except those areas where listed as endangered. There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6039	Threatened
Red Knot <i>Calidris canutus rufa</i> There is proposed critical habitat for this species. Species profile: https://ecos.fws.gov/ecp/species/1864	Threatened

REPTILES

NAME	STATUS
Green Sea Turtle <i>Chelonia mydas</i> Population: North Atlantic DPS There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6199	Threatened
Hawksbill Sea Turtle <i>Eretmochelys imbricata</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3656	Endangered
Kemp's Ridley Sea Turtle <i>Lepidochelys kempii</i> There is proposed critical habitat for this species. Species profile: https://ecos.fws.gov/ecp/species/5523	Endangered
Leatherback Sea Turtle <i>Dermochelys coriacea</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1493	Endangered
Loggerhead Sea Turtle <i>Caretta caretta</i> Population: Northwest Atlantic Ocean DPS There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1110	Threatened

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

USFWS NATIONAL WILDLIFE REFUGE LANDS AND FISH HATCHERIES

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

MIGRATORY BIRDS

Certain birds are protected under the Migratory Bird Treaty Act¹ and the Bald and Golden Eagle Protection Act².

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described [below](#).

-
1. The [Migratory Birds Treaty Act](#) of 1918.
 2. The [Bald and Golden Eagle Protection Act](#) of 1940.
 3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

The birds listed below are birds of particular concern either because they occur on the [USFWS Birds of Conservation Concern \(BCC\)](#) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ [below](#). This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the [E-bird data mapping tool](#) (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found [below](#).

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
American Oystercatcher <i>Haematopus palliatus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8935	Breeds Apr 15 to Aug 31
Bald Eagle <i>Haliaeetus leucocephalus</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Oct 15 to Aug 31

NAME	BREEDING SEASON
Black Skimmer <i>Rynchops niger</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/5234	Breeds May 20 to Sep 15
Chimney Swift <i>Chaetura pelagica</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 25
Gull-billed Tern <i>Gelochelidon nilotica</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9501	Breeds May 1 to Jul 31
King Rail <i>Rallus elegans</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8936	Breeds May 1 to Sep 5
Lesser Yellowlegs <i>Tringa flavipes</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Prairie Warbler <i>Dendroica discolor</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Jul 31
Red-headed Woodpecker <i>Melanerpes erythrocephalus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10
Ruddy Turnstone <i>Arenaria interpres morinella</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds elsewhere
Rusty Blackbird <i>Euphagus carolinus</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds elsewhere
Short-billed Dowitcher <i>Limnodromus griseus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9480	Breeds elsewhere
Willet <i>Tringa semipalmata</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 5

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)

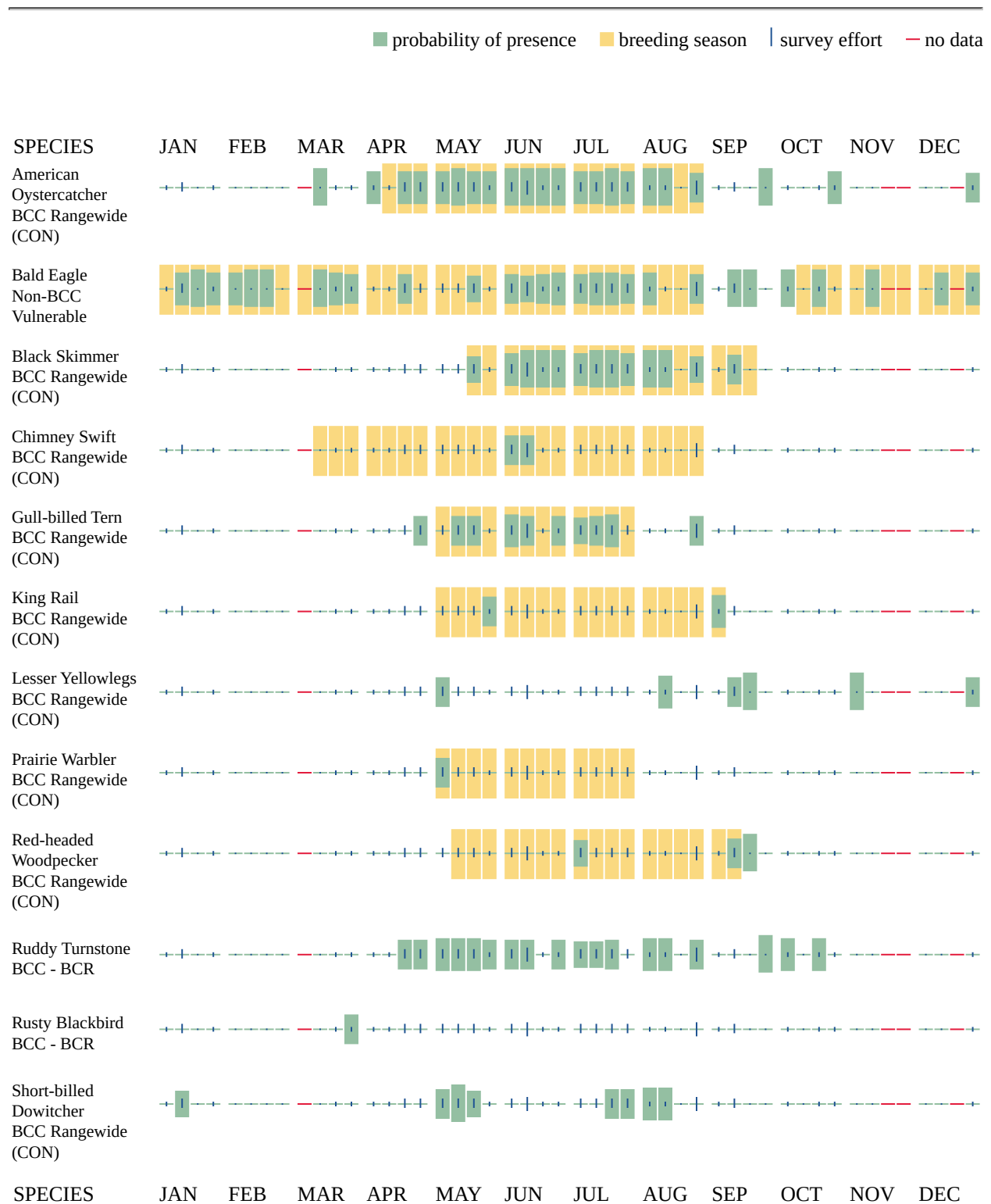
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

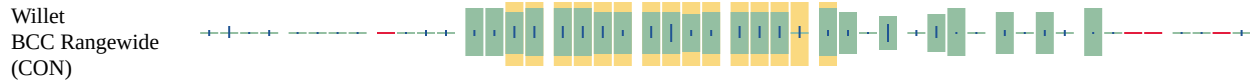
No Data (—)

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.





Additional information can be found using the following links:

- Birds of Conservation Concern <https://www.fws.gov/program/migratory-birds/species>
- Measures for avoiding and minimizing impacts to birds <https://www.fws.gov/library/collections/avoiding-and-minimizing-incident-take-migratory-birds>
- Nationwide conservation measures for birds <https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf>

MIGRATORY BIRDS FAQ

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

[Nationwide Conservation Measures](#) describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. [Additional measures](#) or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [Rapid Avian Information Locator \(RAIL\) Tool](#).

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the [RAIL Tool](#) and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern](#) (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Eagle Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the [Diving Bird Study](#) and the [nanotag studies](#) or contact [Caleb Spiegel](#) or [Pam Loring](#).

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to [obtain a permit](#) to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

IPAC USER CONTACT INFORMATION

Agency: Private Entity
Name: Suzie Richert
Address: 201 Church Street
City: Blacksburg
State: VA
Zip: 24060
Email: srichert@wetlands.com
Phone: 2763899306

LEAD AGENCY CONTACT INFORMATION

Lead Agency: National Aeronautics and Space Administration

Endangered Species Act (ESA) Section 7 Determination Table

Project Name: Wallops Island Causeway Bridge Replacement

Date: 7/17/2023

Consultation Code: 2023-0012907

Species / Resource Name	Species / Habitat Presence in Action Area	Sources of Info	ESA Section 7 Determination	Project Elements that Support Determination
Northern Long-eared Bat (<i>Myotis septentrionalis</i>) Endangered	Suitable habitat present; species not present	Amended 2018 FHWA, FRA, FTA Programmatic Biological Opinion (dated March 23, 2023) for Transportation Projects within the Range of the Indiana Bat and Northern Long-eared Bat (PBO) DKey; DWR NLEB Winter Habitat and Roost Trees Application This species is presumed absent per <i>WFF Causeway Bridge Replacement Acoustic Bat Survey and Habitat Evaluation</i> (WSSI 2023).	Not Likely to Adversely Affect (NLAA)	
Tricolored Bat (<i>Perimyotis subflavus</i>) Proposed Endangered	Suitable habitat present; species not present	DWR Little Brown Bat and Tri-colored Bat Winter Habitat and Roosts Application. This species is presumed absent per <i>WFF Causeway Bridge Replacement Acoustic Bat Survey and Habitat Evaluation</i> (WSSI 2023).	NLAA	

Species / Resource Name	Species / Habitat Presence in Action Area	Sources of Info	ESA Section 7 Determination	Project Elements that Support Determination
Eastern Black Rail (<i>Laterallus jamaicensis ssp jamaicensis</i>) Threatened	Suitable habitat present; species not present	This species uses salt and brackish marshes with dense cover and upland areas of such marshes. NASA completed three rounds of acoustic surveys during the 2022 breeding season. No visual or auditory observation of eastern black rails were recorded. This species is presumed absent per <i>Eastern Black Rail (Laterallus jamaicensis jamaicensis) Acoustic Surveys for the National Aeronautics and Space Administration Goddard Space Flight Center's Wallops Flight Facility</i> (Stein et al. 2022)	NLAA	
Piping Plover (<i>Charadrius melodus</i>) Threatened	No suitable habitat present	This species uses coastal beach and tidal flat habitats and is a transient and summer resident of the upper Virginia barrier islands and regularly nests and forages on Wallops Island beaches. No suitable habitat is found in the ESA action area.	No Effect	No work proposed on beaches or tidal flats.
Red Knot (<i>Calidris canutus rufa</i>) Threatened	No suitable habitat present	This species uses large areas of exposed intertidal sediments. No suitable habitat is found in the ESA action area.	No Effect	No work proposed on beaches or tidal flats
Green Sea Turtle (<i>Chelonia mydas</i>) Threatened	No suitable habitat present	No nesting habitat is found in the ESA Action Area.	No Effect	No work proposed on beaches
Hawksbill Sea Turtle (<i>Eretmochelys imbricata</i>) Endangered	No suitable habitat present	No nesting habitat is found in the ESA Action Area.	No Effect	No work proposed on beaches

Species / Resource Name	Species / Habitat Presence in Action Area	Sources of Info	ESA Section 7 Determination	Project Elements that Support Determination
Kemp's Ridley Sea Turtle (<i>Lepidochelys kempii</i>) Endangered	No suitable habitat present	No nesting habitat is found in the ESA Action Area.	No Effect	No work proposed on beaches
Leatherback Sea Turtle (<i>Dermochelys coriacea</i>) Endangered	No suitable habitat present	No nesting habitat is found in the ESA Action Area.	No Effect	No work proposed on beaches
Loggerhead Sea Turtle (<i>Caretta caretta</i>) Endangered	No suitable habitat present	No nesting habitat is found in the ESA Action Area.	No Effect	No work proposed on beaches
Monarch Butterfly (<i>Danaus plexippus</i>) Candidate	No suitable habitat present	The monarch butterfly is a long-distance migratory species that occupies a variety of habitats but is primarily dependent on milkweed species (<i>Asclepias spp.</i>) and other flowering plants often found in open herbaceous meadows.	No Effect	No unmaintained meadow habitat will be impacted.
Critical Habitat not present		VAFO CH Map Tool		

Stein, J., N. Bartok, and J. Ritzert. 2022. Eastern Black Rail (*Laterallus jamaicensis jamaicensis*) Acoustic Surveys for the National Aeronautics and Space Administration Goddard Space Flight Center's Wallops Flight Facility, Accomack County, Virginia, Draft Report: May 1- June 6, 2022.

WSSI (Wetland Studies and Solutions, Inc.). 2023. *WFF Causeway Bridge Replacement Acoustic Bat Survey and Habitat Evaluation*, July 12, 2023.



United States Department of the Interior

FISH AND WILDLIFE SERVICE
Virginia Ecological Services Field Office
6669 Short Lane
Gloucester, VA 23061-4410
Phone: (804) 693-6694 Fax: (804) 693-9032



In Reply Refer To:
Project code: 2023-0012907
Project Name: Wallops Island Causeway Bridge Replacement

July 17, 2023

Subject: Consistency letter for the 'Wallops Island Causeway Bridge Replacement' project under the amended February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion (dated March 23, 2023) for Transportation Projects within the Range of the Indiana Bat and Northern Long-eared Bat (NLEB).

To whom it may concern:

The U.S. Fish and Wildlife Service (Service) has received your request dated July 17, 2023 to verify that the **Wallops Island Causeway Bridge Replacement** (Proposed Action) may rely on the concurrence provided in the amended February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion (dated March 23, 2023) for Transportation Projects within the Range of the Indiana Bat and Northern Long-eared Bat (PBO) to satisfy requirements under section 7(a)(2) of the Endangered Species Act of 1973 (ESA) (87 Stat.884, as amended; 16 U.S.C. 1531 *et seq.*).

Based on the information you provided (Project Description shown below), you have determined that the Proposed Action is within the scope and adheres to the criteria of the PBO, including the adoption of applicable avoidance and minimization measures, and may affect, but is not likely to adversely affect (NLAA) the endangered Indiana bat (*Myotis sodalis*) and/or the endangered northern long-eared bat (*Myotis septentrionalis*). Consultation with the Service pursuant to section 7(a)(2) of the ESA (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*) is required.

This "may affect - not likely to adversely affect" determination becomes effective when the lead Federal action agency or designated non-federal representative requests the Service rely on the PBO to satisfy the agency's consultation requirements for this project.

Please provide this consistency letter to the lead Federal action agency or its designated non-federal representative with a request for review, and as the agency deems appropriate, submit for concurrence verification through the IPaC system. The lead Federal action agency or designated non-federal representative should log into IPaC using their agency email account and click "Search by record locator". They will need to enter the record locator **101-129127411**.

For Proposed Actions that include bridge/culvert or structure removal, replacement, and/or maintenance activities: If your initial bridge/culvert or structure assessment documented signs of bat use or occupancy, or an assessment failed to detect Indiana bats and/or NLEBs, yet are later detected prior to, or during construction, please submit the Post Assessment Discovery of Bats at Bridge/Culvert or Structure Form (User Guide Appendix E) to this Service Office within 2 working days of any potential take. In these instances, potential incidental take of Indiana bats and/or NLEBs is covered under the Incidental Take Statement in the 2018 FHWA, FRA, FTA PBO (provided that the take is reported to the Service).

If the Proposed Action is modified, or new information reveals that it may affect the Indiana bat and/or northern long-eared bat in a manner or to an extent not considered in the PBO, further review to conclude the requirements of ESA section 7(a)(2) may be required.

For Proposed Actions that include bridge/culvert or structure removal, replacement, and/or maintenance activities:

If your initial bridge/culvert or structure assessments failed to detect Indiana bats and/or NLEB use or occupancy, yet bats are later detected prior to, or during construction, please submit the Post Assessment Discovery of Bats at Bridge/Culvert or Structure Form (User Guide Appendix E) to this Service Office within 2 working days of the incident. In these instances, potential incidental take of Indiana bats and/or NLEBs may be exempted provided that the take is reported to the Service. If the Proposed Action may affect any other federally-listed or proposed species and/or designated critical habitat, additional consultation between the lead Federal action agency and this Service Office is required. If the proposed action has the potential to take bald or golden eagles, additional coordination with the Service under the Bald and Golden Eagle Protection Act may also be required. In either of these circumstances, please advise the lead Federal action agency accordingly.

The following species may occur in your project area and **are not** covered by this determination:

- Eastern Black Rail *Laterallus jamaicensis ssp. jamaicensis* Threatened
 - Green Sea Turtle *Chelonia mydas* Threatened
 - Hawksbill Sea Turtle *Eretmochelys imbricata* Endangered
 - Kemp's Ridley Sea Turtle *Lepidochelys kempii* Endangered
 - Leatherback Sea Turtle *Dermochelys coriacea* Endangered
 - Loggerhead Sea Turtle *Caretta caretta* Threatened
 - Piping Plover *Charadrius melodus* Threatened
 - Red Knot *Calidris canutus rufa* Threatened
 - Tricolored Bat *Perimyotis subflavus* Proposed Endangered
-

PROJECT DESCRIPTION

The following project name and description was collected in IPaC as part of the endangered species review process.

NAME

Wallops Island Causeway Bridge Replacement

DESCRIPTION

Replace existing bridge with a new bridge. The new bridge will be located immediately north/parallel to the existing. Minor realignment of the causeway at the approaches will occur. The existing bridge will be demolished. Temporary bridges and/or barges will be used for construction and demolition.

The approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@37.8520432,-75.49002186271157,14z>



DETERMINATION KEY RESULT

Based on your answers provided, this project(s) may affect, but is not likely to adversely affect the endangered Indiana bat and/or the endangered northern long-eared bat, therefore, consultation with the U.S. Fish and Wildlife Service pursuant to Section 7(a)(2) of the Endangered Species Act of 1973 (ESA) (87 Stat. 884, as amended 16 U.S.C. 1531 *et seq.*) is required. However, also based on your answers provided, this project may rely on the concurrence provided in the amended February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion (dated March 23, 2023) for Transportation Projects within the Range of the Indiana Bat and Northern Long-eared Bat.

QUALIFICATION INTERVIEW

1. Is the project within the range of the Indiana bat^[1]?

[1] See [Indiana bat species profile](#)

Automatically answered

No

2. Is the project within the range of the northern long-eared bat^[1]?

[1] See [northern long-eared bat species profile](#)

Automatically answered

Yes

3. Which Federal Agency is the lead for the action?

A) *Federal Highway Administration (FHWA)*

4. Are *all* project activities limited to non-construction^[1] activities only? (examples of non-construction activities include: bridge/abandoned structure assessments, surveys, planning and technical studies, property inspections, and property sales)

[1] Construction refers to activities involving ground disturbance, percussive noise, and/or lighting.

No

5. Does the project include *any* activities that are **greater than** 300 feet from existing road/rail surfaces^[1]?

[1] Road surface is defined as the actively used [e.g. motorized vehicles] driving surface and shoulders [may be pavement, gravel, etc.] and rail surface is defined as the edge of the actively used rail ballast.

No

6. Does the project include *any* activities **within** 0.5 miles of a known Indiana bat and/or NLEB hibernaculum^[1]?

[1] For the purpose of this consultation, a hibernaculum is a site, most often a cave or mine, where bats hibernate during the winter (see suitable habitat), but could also include bridges and structures if bats are found to be hibernating there during the winter.

No

7. Is the project located **within** a karst area?

No

8. Is there *any* suitable^[1] summer habitat for Indiana Bat or NLEB **within** the project action area^[2]? (includes any trees suitable for maternity, roosting, foraging, or travelling habitat)

[1] See the Service's [summer survey guidance](#) for our current definitions of suitable habitat.

[2] The action area is defined as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR Section 402.02). Further clarification is provided by the [User's Guide for the Range-wide Programmatic Consultation for Indiana Bat and Northern Long-eared Bat](#).

Yes

9. Will the project remove *any* suitable summer habitat^[1] and/or remove/trim any existing trees **within** suitable summer habitat?

[1] See the Service's [summer survey guidance](#) for our current definitions of suitable habitat.

Yes

10. Will the project clear more than 20 acres of suitable habitat per 5-mile section of road/rail?

No

11. Have presence/probable absence (P/A) summer surveys^{[1][2]} been conducted^{[3][4]} **within** the suitable habitat located within your project action area?

[1] See the Service's [summer survey guidance](#) for our current definitions of suitable habitat.

[2] Presence/probable absence summer surveys conducted within the fall swarming/spring emergence home range of a documented Indiana bat hibernaculum (contact local Service Field Office for appropriate distance from hibernacula) that result in a negative finding requires additional consultation with the local Service Field Office to determine if clearing of forested habitat is appropriate and/or if seasonal clearing restrictions are needed to avoid and minimize potential adverse effects on fall swarming and spring emerging Indiana bats.

[3] For projects within the range of either the Indiana bat or NLEB in which suitable habitat is present, and no bat surveys have been conducted, the transportation agency will assume presence of the appropriate species. This assumption of presence should be based upon the presence of suitable habitat and the capability of bats to occupy it because of their mobility.

[4] Negative presence/probable absence survey results obtained using the [summer survey guidance](#) are valid for a minimum of two years from the completion of the survey unless new information (e.g., other nearby surveys) suggest otherwise.

Yes

SUBMITTED DOCUMENTS

- *Bat Survey Report_WFF Causeway Bridge 071223.pdf* <https://ipac.ecosphere.fws.gov/project/2IX6SP6H3JCN7JSP2LBGZB3UPA/projectDocuments/129125853>

12. Did the presence/probable absence (P/A) summer surveys detect Indiana bats and/or NLEB^[1]?

[1] P/A summer surveys conducted within the fall swarming/spring emergence home range of a documented Indiana bat hibernaculum (contact local Service Field Office for appropriate home range) that result in a negative finding requires additional consultation with the local Service Field Office to determine if clearing of forested habitat is appropriate and/or if seasonal clearing restrictions are needed to avoid and minimize potential adverse effects on fall swarming and spring emerging Indiana bats.

No

13. Were the P/A summer surveys conducted **within** the fall swarming/spring emergence range of a documented Indiana bat hibernaculum^[1]?

[1] Contact the local Service Field Office for appropriate distance from hibernacula.

No

14. Does the project include activities **within documented NLEB habitat**^{[1][2]}?

[1] Documented roosting or foraging habitat – for the purposes of this consultation, we are considering documented habitat as that where Indiana bats and/or NLEB have actually been captured and tracked using (1) radio telemetry to roosts; (2) radio telemetry biangulation/triangulation to estimate foraging areas; or (3) foraging areas with repeated use documented using acoustics. Documented roosting habitat is also considered as suitable summer habitat within 0.25 miles of documented roosts.)

[2] For the purposes of this key, we are considering documented corridors as that where Indiana bats and/or NLEB have actually been captured and tracked to using (1) radio telemetry; or (2) treed corridors located directly between documented roosting and foraging habitat.

No

15. Will the removal or trimming of habitat or trees occur **within** suitable but **undocumented NLEB** roosting/foraging habitat or travel corridors?

Yes

16. What time of year will the removal or trimming of habitat or trees **within** suitable but **undocumented NLEB** roosting/foraging habitat or travel corridors occur?

C) During both the active and inactive seasons

17. Will *any* tree trimming or removal occur **within** 100 feet of existing road/rail surfaces?

Yes

18. Will *any* tree trimming or removal occur **between** 100-300 feet of existing road/rail surfaces?

No

19. Are *all* trees that are being removed clearly demarcated?

No

20. Will the removal of habitat or the removal/trimming of trees involve the use of **temporary** lighting?

No

21. Will the removal of habitat or the removal/trimming of trees include installing new or replacing existing **permanent** lighting?

No

22. Does the project include wetland or stream protection activities associated with compensatory wetland mitigation?

No

23. Does the project include slash pile burning?

No

24. Does the project include *any* bridge removal, replacement, and/or maintenance activities (e.g., any bridge repair, retrofit, maintenance, and/or rehabilitation work)?

Yes

25. Is there *any* suitable habitat^[1] for Indiana bat or NLEB **within** 1,000 feet of the bridge? (includes any trees suitable for maternity, roosting, foraging, or travelling habitat)

[1] See the Service's current [summer survey guidance](#) for our current definitions of suitable habitat.

Yes

26. Has a bridge assessment^[1] been conducted **within** the last 24 months^[2] to determine if the bridge is being used by bats?

[1] See [User Guide Appendix D](#) for bridge/structure assessment guidance

[2] Assessments must be completed no more than 2 years prior to conducting any work below the deck surface on all bridges that meet the physical characteristics described in the Programmatic Consultation, regardless of whether assessments have been conducted in the past. Due to the transitory nature of bat use, a negative result in one year does not guarantee that bats will not use that bridge/structure in subsequent years.

Yes

SUBMITTED DOCUMENTS

- *Bat Survey Report_WFF Causeway Bridge 071223.pdf* <https://ipac.ecosphere.fws.gov/project/2IX6SP6H3JCN7JSP2LBGZB3UPA/projectDocuments/129125853>

27. Did the bridge assessment detect *any* signs of Indiana bats and/or NLEBs roosting in/under the bridge (bats, guano, etc.)^[1]?

[1] If bridge assessment detects signs of *any* species of bats, coordination with the local FWS office is needed to identify potential threatened or endangered bat species. Additional studies may be undertaken to try to identify which bat species may be utilizing the bridge prior to allowing *any* work to proceed.

Note: There is a small chance bridge assessments for bat occupancy do not detect bats. Should a small number of bats be observed roosting on a bridge just prior to or during construction, such that take is likely to occur or does occur in the form of harassment, injury or death, the PBO requires the action agency to report the take. Report all unanticipated take within 2 working days of the incident to the USFWS. Construction activities may continue without delay provided the take is reported to the USFWS and is limited to 5 bats per project.

No

28. Will the bridge removal, replacement, and/or maintenance activities include installing new or replacing existing **permanent** lighting?

No

29. Does the project include the removal, replacement, and/or maintenance of *any* structure other than a bridge? (e.g., rest areas, offices, sheds, outbuildings, barns, parking garages, etc.)

No

30. Will the project involve the use of **temporary** lighting *during* the active season?

No

31. Will the project install new or replace existing **permanent** lighting?

No

32. Does the project include percussives or other activities (**not including tree removal/trimming or bridge/structure work**) that will increase noise levels above existing traffic/background levels?

No

33. Are *all* project activities that are **not associated with** habitat removal, tree removal/trimming, bridge and/or structure activities, temporary or permanent lighting, or use of percussives, limited to actions that DO NOT cause any additional stressors to the bat species?

Examples: lining roadways, unlighted signage , rail road crossing signals, signal lighting, and minor road repair such as asphalt fill of potholes, etc.

Yes

34. Will the project raise the road profile **above the tree canopy**?

No

35. Are the project activities that are not associated with habitat removal, tree removal/trimming, bridge and/or structure activities, temporary or permanent lighting, or use of percussives consistent with a No Effect determination in this key?

Automatically answered

Yes, other project activities are limited to actions that DO NOT cause any additional stressors to the bat species as described in the BA/BO

36. Is the location of this project consistent with a Not Likely to Adversely Affect determination in this key?

Automatically answered

Yes, because no bats were detected during presence/probable absence surveys conducted during the summer survey season and outside of the fall swarming/spring emergence periods. Additionally, all activities were at least 0.5 miles from any hibernaculum.

37. Is the bridge removal, replacement, or maintenance activities portion of this project consistent with a No Effect determination in this key?

Automatically answered

Yes, because the bridge has been assessed using the criteria documented in the BA and no signs of bats were detected

38. **General AMM 1**

Will the project ensure *all* operators, employees, and contractors working in areas of known or presumed bat habitat are aware of *all* FHWA/FRA/FTA (Transportation Agencies) environmental commitments, including all applicable Avoidance and Minimization Measures?

Yes

PROJECT QUESTIONNAIRE

1. Have you made a No Effect determination for *all* other species indicated on the FWS IPaC generated species list?

No

2. Have you made a May Affect determination for *any* other species on the FWS IPaC generated species list?

Yes

3. How many acres^[1] of trees are proposed for removal between 0-100 feet of the existing road/rail surface?

[1] If described as number of trees, multiply by 0.09 to convert to acreage and enter that number.

0.6

4. Please describe the proposed bridge work:

The existing Causeway Bridge was constructed in 1959-1960 and is beyond the end of its anticipated service life. The Proposed Action consists of site preparation, construction and removal of temporary construction access, construction of a new bridge parallel to the existing bridge on a new alignment, demolition of the existing bridge after the new bridge opens, and ongoing maintenance and repairs over the bridge's 75-year lifespan. Temporary bridges and/or barges would be needed to allow construction of the new bridge and demolition of the existing bridge.

5. Please state the timing of all proposed bridge work:

Construction of the new bridge would likely begin in 2025 and continue for two or more years.

6. Please enter the date of the bridge assessment:

5/17/2023

AVOIDANCE AND MINIMIZATION MEASURES (AMMS)

This determination key result includes the commitment to implement the following Avoidance and Minimization Measures (AMMs):

GENERAL AMM 1

Ensure all operators, employees, and contractors working in areas of known or presumed bat habitat are aware of all FHWA/FRA/FTA (Transportation Agencies) environmental commitments, including all applicable AMMs.

DETERMINATION KEY DESCRIPTION: FHWA, FRA, FTA PROGRAMMATIC CONSULTATION FOR TRANSPORTATION PROJECTS AFFECTING NLEB OR INDIANA BAT

This key was last updated in IPaC on June 14, 2023. Keys are subject to periodic revision.

This decision key is intended for projects/activities funded or authorized by the Federal Highway Administration (FHWA), Federal Railroad Administration (FRA), and/or Federal Transit Administration (FTA), which may require consultation with the U.S. Fish and Wildlife Service (Service) under Section 7 of the Endangered Species Act (ESA) for the endangered **Indiana bat** (*Myotis sodalis*) and the endangered **northern long-eared bat** (NLEB) (*Myotis septentrionalis*).

This decision key should only be used to verify project applicability with the Service's [amended February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion \(dated March 23, 2023\) for Transportation Projects](#). The programmatic biological opinion covers limited transportation activities that may affect either bat species, and addresses situations that are both likely and not likely to adversely affect either bat species. This decision key will assist in identifying the effect of a specific project/activity and applicability of the programmatic consultation. The programmatic biological opinion is not intended to cover all types of transportation actions. Activities outside the scope of the programmatic biological opinion, or that may affect ESA-listed species other than the Indiana bat or NLEB, or any designated critical habitat, may require additional ESA Section 7 consultation.

IPAC USER CONTACT INFORMATION

Agency: Wetland Studies and Solutions, Inc.

Name: Zaneta Hough

Address: 1008 Old Virginia Beach Rd

City: Virginia Beach

State: VA

Zip: 23451

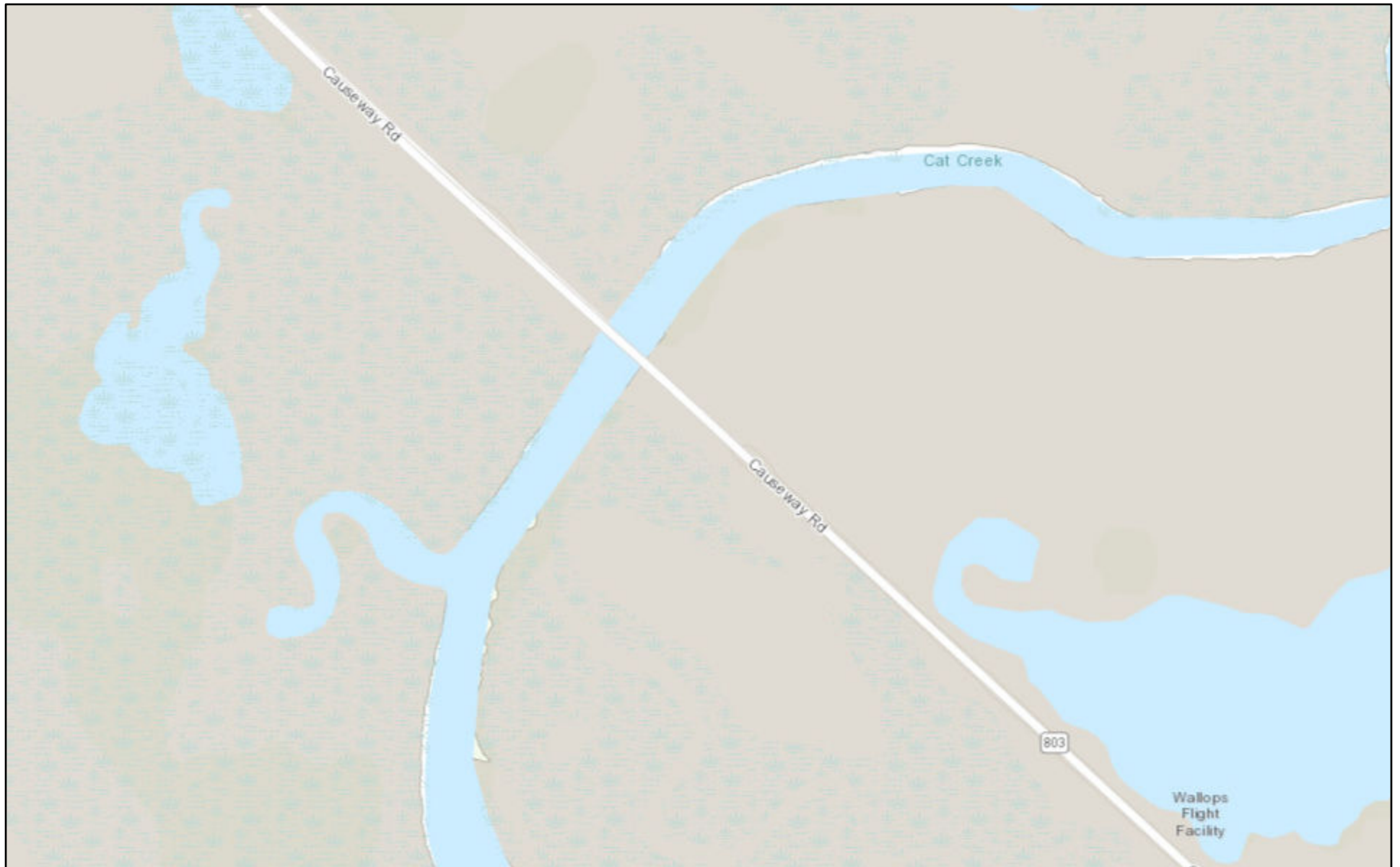
Email: zhough@wetlands.com

Phone: 7579632008

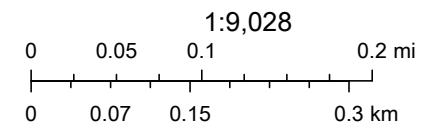
LEAD AGENCY CONTACT INFORMATION

Lead Agency: Federal Highway Administration

DWR NLEB Locations and Roost Trees



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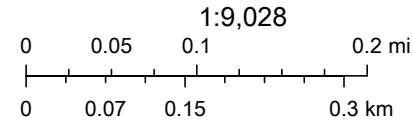


NASA Wallops Flight Facility, VITA, Esri, HERE, Garmin, INCREMENT P, Intermap, USGS, METI/NASA, EPA, USDA

Little Brown Bat & Tricolored Bat



7/17/2023, 12:31:10 PM



NASA Wallops Flight Facility, VITA, Esri, HERE, Garmin, INCREMENT P, Intermap, USGS, METI/NASA, EPA, USDA

FHWA "Not Likely to Adversely Affect"
Verification Form

Submitted to:
NOAA's National Marine Fisheries Service (NMFS),
Greater Atlantic Regional Fisheries Office,
Protected Resources Division (GARFO PRD)



Drawn Action Area & Overlapping S7 Consultation Areas

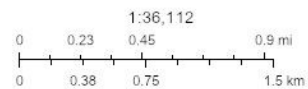
Area of Interest (AOI) Information

Area : 224.04 acres

Feb 21 2023 15:46:39 Eastern Standard Time



-  Atlantic Sturgeon
-  Sea Turtles
-  Atlantic Large Whales



NASA Wallops Flight Facility, VGIN, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc., METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, Maxar

Summary

Name	Count	Area(acres)	Length(mi)
Atlantic Sturgeon	2	43.26	N/A
Shortnose Sturgeon	0	0	N/A
Atlantic Salmon	0	0	N/A
Sea Turtles	4	86.56	N/A
Atlantic Large Whales	0	0	N/A
In or Near Critical Habitat	0	0	N/A

Atlantic Sturgeon

#	Feature ID	Species	Lifestage	Behavior	Zone
1	ANS_C50_ADU_MAF	Atlantic sturgeon	Adult	Migrating & Foraging	N/A
2	ANS_C50_SUB_MAF	Atlantic sturgeon	Subadult	Migrating & Foraging	N/A

#	From	Until	From (2)	Until (2)	Area(acres)
1	01/01	12/31	N/A	N/A	21.63
2	01/01	12/31	N/A	N/A	21.63

Sea Turtles

#	Feature ID	Species	Life Stage	Behavior	Zone
1	GRN_STS_AJV_MAF	Green sea turtle	Adults and juveniles	Migrating & Foraging	Massachusetts (S of Cape Cod) through Virginia
2	KMP_STS_AJV_MAF	Kemp's ridley sea turtle	Adults and juveniles	Migrating & Foraging	Massachusetts (S of Cape Cod) through Virginia
3	LTR_STS_AJV_MAF	Leatherback sea turtle	Adults and juveniles	Migrating & Foraging	Massachusetts (S of Cape Cod) through Virginia
4	LOG_STS_AJV_MAF	Loggerhead sea turtle	Adults and juveniles	Migrating & Foraging	Massachusetts (S of Cape Cod) through Virginia

#	From	Until	From (2)	Until (2)	Area(acres)
1	5/1	11/30	No Data	No Data	21.64
2	5/1	11/30	No Data	No Data	21.64
3	5/1	11/30	No Data	No Data	21.64
4	5/1	11/30	No Data	No Data	21.64

Appendix A. Verification Form (updated December 10, 2020)

Federal Highway Administration (FHWA) or the applicable state Department of Transportation (DOT) shall submit a signed version of this completed form, together with any project plans, maps, supporting analyses, etc., to NOAA's National Marine Fisheries Service (NMFS), Greater Atlantic Regional Fisheries Office, Protected Resources Division (GARFO PRD) at nmfs.gar.esa.section7@noaa.gov with "FHWA GARFO NLAA Program: [Project Title or Number]" in the subject line. **Note:** project design contractors and/or consultants may assist in preparing the form, but only FHWA/DOT staff shall sign off on it on the final page.

Project Activity Type (check all that apply to the entire action):

- ☒ 1. Bridge repair, demolition, or replacement project
- ☐ 2. Culvert repair or replacement project
- ☐ 3. Dock, pier, or waterway access project (includes construction, demolition, and repairs)
- ☐ 4. Slope stabilization project

Transportation Project Information

Name of Project:	Wallops Island Causeway Bridge Replacement, Accomack County, Virginia		
Reinitiation (Yes/No):	NO		
State DOT/Program:	Federal Lands Highway Division of the Federal Highway Administration and NASA		
DOT ID Code:	NASA 1(9)		
Contact Person:	Ryan Kimberley, FHWA Environmental Protection Specialist		
Phone:	703-404-6240	Email:	rdkim@yahoo.com
Project Latitude (e.g., 42.625884):	37.852000		
Project Longitude (e.g., -70.646114):	-75.490000		
Maximum Water Depth (m)	3.0		
Anticipated Project Start Date:	4/1/2024	Anticipated Project End Date:	12/31/2026
City/Town:	Assawoman, VA	Water body:	Cat Creek
Project/Action Description and Purpose:	<p>The National Aeronautics and Space Administration (NASA) and the Federal Highway Administration (FHWA) propose to replace the Wallops Island Causeway Bridge over Cat Creek at Goddard Space Flight Center's Wallops Flight Facility, in Accomack County, VA. Cat creek is a navigable tidal waterway between Wallops Island and the mainland and is a segment of the intercoastal waterway. The existing bridge was constructed in 1959 and is approaching the end of its anticipated service life. It is 1,284 feet long, 27 feet wide, and has a cast-in-place concrete deck supported by four prestressed concrete beams on concrete piers. The bridge is located on the two-mile long Causeway Road connecting the mainland with Wallops Island. The proposed project would address structural deficiencies and improve safety by meeting current roadway and bridge design standards. The new bridge would be 40' wide and would be constructed parallel to the existing structure. The causeway approaches would be realigned at each end of the new bridge. The existing bridge would remain in use during construction but would be demolished when the new bridge is completed. Temporary bridges and/or barges would be needed to allow construction of the new bridge and demolition of the existing bridge.</p>		

ESA-listed species and/or critical habitats in the action area (Check all that apply)

<input checked="" type="checkbox"/>	Atlantic sturgeon (all DPSs)	<input checked="" type="checkbox"/>	Kemp's ridley sea turtle
<input type="checkbox"/>	Atlantic sturgeon critical habitat Indicate which DPS (GOM, NYB, Chesapeake Bay DPSs): <div style="border: 1px solid black; padding: 2px;">Select DPS</div>	<input checked="" type="checkbox"/>	Loggerhead sea turtle (Northwest Atlantic DPS)
<input type="checkbox"/>	Shortnose sturgeon	<input checked="" type="checkbox"/>	Leatherback sea turtle
<input type="checkbox"/>	Atlantic salmon (GOM DPS)	<input checked="" type="checkbox"/>	North Atlantic right whale
<input type="checkbox"/>	Atlantic salmon critical habitat (GOM DPS)	<input type="checkbox"/>	North Atlantic right whale critical habitat
<input checked="" type="checkbox"/>	Green sea turtle (North Atlantic DPS)	<input checked="" type="checkbox"/>	Fin whale

* Please consult GARFO PRD's ESA Section 7 Mapper for ESA-listed species and critical habitat information for your action area at: <https://www.fisheries.noaa.gov/new-england-mid-atlantic/consultations/section-7-species-critical-habitat-information-maps-greater>.

The following stressors are applicable to the action:

- ☒ Underwater Noise
- ☒ Impingement/Entrainment and Entanglement
- ☒ Water Quality/Turbidity
- ☒ Habitat Alteration
- ☒ Vessel Traffic

Impacts Table

Habitat Alteration		
	Permanent (acres)	Temporary (acres)
Sand (saline)	0.00	0.00
Silt/Mud/Clay (saline)	3.00	3.00
Hard bottom (saline)	0.00	0.00
Submerged Aquatic Vegetation (SAV) (saline)	0.00	0.00
Sand (freshwater)	0.00	0.00
Silt/Mud/Clay (freshwater)	0.00	0.00
Hard bottom (freshwater)	0.00	0.00
Submerged Aquatic Vegetation (SAV) (freshwater)	0.00	0.00
Total amount of habitat alteration	6.00	
In-water Construction Impacts		
	Amount in meters	
Width of water body in action area (m)	375.0	
Stressor category that extends furthest distance into water body (e.g.; underwater noise, turbidity plume)	all of the stressors would occur within cat creek and the adjacent tidal mudflats and tidal wetlands	
Maximum extent of stressor into the water body (m)	375.0	

Project Design Criteria (PDC) Checklist

FHWA/DOT shall incorporate all general PDCs and all applicable PDCs in the appropriate stressor categories. For any PDCs that are not incorporated, additional justification is required for a project to be eligible for the NLAA Program. FHWA/DOT shall check the corresponding box for each PDC that is, or will be, incorporated into the project or indicate if not applicable.

GENERAL PDCs			
Yes	N/A	PDC #	PDC Description
<input checked="" type="checkbox"/>	<input type="checkbox"/>	1.	Ensure all operators, employees, and contractors are aware of all FHWA environmental commitments, including these PDC, when working in areas where ESA-listed species may be present or in critical habitat.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	2.	No portion of the proposed action will individually or cumulatively have an adverse effect on ESA-listed species or critical habitat.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	3.	<p>No portion of the proposed action that may affect the GOM DPS of Atlantic salmon will occur in the tidally influenced portion of rivers/streams where their presence is possible from <u>April 10 through November 7</u>. The range of the GOM DPS only occurs in Maine.</p> <p>Note: If the project will occur within the geographic range of the GOM DPS Atlantic salmon but their presence is not expected following the best available commercial scientific data, the work window does not need to be applied. Please attach best available information (i.e. local fisheries biologist correspondence).</p>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	4.	<p>No portion of the proposed action that may affect shortnose or Atlantic sturgeon will occur in areas identified as spawning grounds as follows:</p> <ul style="list-style-type: none"> i. Gulf of Maine: Apr 1-Aug 31 ii. Southern New England/New York Bight: Mar 15-Aug 31 iii. Chesapeake Bay: Mar 15-Jul 1 and Sep 15-Nov 1 <p>Note: If river specific information exists that provides better or more refined time of year information, those dates may be substituted with NMFS approval.</p>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	5.	<p>No portion of the proposed action that may affect shortnose or Atlantic sturgeon will occur in areas identified as overwintering grounds where dense aggregations are known to occur as follows:</p> <ul style="list-style-type: none"> i. Gulf of Maine: Oct 15-Apr 30 ii. Southern New England/New York Bight: Nov 1-Mar 15 iii. Chesapeake Bay: Nov 1-Mar 15 <p>Note: If river specific information exists that provides better or more refined time of year information, those dates may be substituted with NMFS approval.</p>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	6.	Within designated critical habitat for Atlantic sturgeon, no work will affect hard bottom substrate (e.g., rock, cobble, gravel, limestone, boulder, etc.) in low salinity waters (i.e., 0.0-0.5 parts per thousand) (PBF 1).
<input checked="" type="checkbox"/>	<input type="checkbox"/>	7.	Work will result in no or only temporary/short-term changes in water temperature, water flow, salinity, or dissolved oxygen levels.

Yes	N/A	PDC #	PDC Description
<input checked="" type="checkbox"/>	<input type="checkbox"/>	8.	If ESA-listed species are (a) likely to pass through the action area at the time of year when project activities occur; and/or (b) the project will create an obstruction to passage when in-water work is completed, then a zone of passage (~50% of water body) with appropriate habitat for ESA-listed species (e.g., depth, water velocity, etc.) must be maintained (i.e., physical or biological stressors such as turbidity and sound pressure must not create barrier to passage).
<input checked="" type="checkbox"/>	<input type="checkbox"/>	9.	The project will not adversely impact any submerged aquatic vegetation (SAV) or oyster reefs.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	10.	No blasting or use of explosives will occur.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	11.	No in-water work on large dams or tide gates (small dam and tide gate repairs may be permitted with prior review and approval from NMFS).

UNDERWATER NOISE PDCs			
Yes	N/A	PDC #	PDC Description
<input checked="" type="checkbox"/>	<input type="checkbox"/>	12.	<p>If pile driving is occurring during a time of year when ESA-listed species may be present, and the anticipated noise is above the behavioral noise threshold, a “soft start” is required to allow animals an opportunity to leave the project vicinity before sound pressure levels increase. <i>In addition to using a soft start at the beginning of the work day for pile driving, one must also be used at any time following cessation of pile driving for a period of 30 minutes or longer.</i></p> <p><u>For impact pile driving:</u> pile driving will commence with an initial set of three strikes by the hammer at 40% energy, followed by a one minute wait period, then two subsequent three-strike sets at 40% energy, with one-minute waiting periods, before initiating continuous impact driving.</p> <p><u>For vibratory pile installation:</u> pile driving will be initiated for 15 seconds at reduced energy followed by a one-minute waiting period. This sequence of 15 seconds of reduced energy driving, one-minute waiting period will be repeated two additional times, followed immediately by pile-driving at full rate and energy.</p>

Yes	N/A	PDC #	PDC Description
<input checked="" type="checkbox"/>	<input type="checkbox"/>	13.	<p>If the project includes non-timber piles*, please attach your calculation to this verification form showing that the noise is below the injury thresholds of ESA-listed species in the action area. The GARFO Acoustic Tool can be used as a source, should you not have other information: https://www.fisheries.noaa.gov/new-england-mid-atlantic/consultations/section-7-consultation-technical-guidance-greater-atlantic.</p> <p>*Effects from timber and steel sheet piles were analyzed in the NLAA programmatic consultation, so no additional information is necessary.</p>
<input type="checkbox"/>	<input type="checkbox"/>	14.	Any new pile-supported structure must involve the installation of no more than 50 piles (below MHW).

Pile material (e.g., steel pipe, concrete)	Pile diameter/width (inches)	Number of piles	Installation method (e.g., impact hammer, vibratory start and then impact hammer to depth, drilling)
Concrete (permanent)	24	40	impact
steel (temporary)	12	180	impact

IMPINGEMENT/ENTRAINMENT AND ENTANGLEMENT PDCs			
Yes	N/A	PDC #	PDC Description
<input type="checkbox"/>	<input checked="" type="checkbox"/>	15.	<p>If excavating or dredging, only mechanical buckets, hydraulic cutterheads, or low volume hopper dredges (e.g., CURRITUCK cubic yard maximum bin capacity) may be used.</p> <p>Note: We consider excavating a smaller scale form of mechanical dredging.</p>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	16.	<p>No new excavation or dredging in Atlantic sturgeon or salmon critical habitat (excavation in a prior construction footprint or maintenance dredging is permitted, but still must meet all other PDCs). New excavation or dredging outside Atlantic sturgeon or salmon critical habitat is limited to one-time events (e.g., burying a cable or utility line) prior excavation or maintenance dredging. Locating a replacement bridge within 250 feet (centerline to centerline) of an existing bridge and excavation of sediment around bridge piers are considered work in a previous construction footprint.</p> <p>Note: We consider excavating a smaller scale form of mechanical dredging.</p>

Yes	N/A	PDC #	PDC Description
<input type="checkbox"/>	<input checked="" type="checkbox"/>	17.	Temporary intakes related to construction are prohibited in sturgeon and salmon spawning, rearing, or overwintering habitat during the time of year windows identified in General PDCs 3-5. If utilized outside those areas and times of year and in an area with anticipated sturgeon and salmon presence, temporary intakes must be equipped with 2-millimeter wedge wire mesh screening and must not have greater than 0.5 feet per second intake velocities, to prevent impingement or entrainment of juvenile and early life stages of these species.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	18.	Work behind cofferdams, turbidity curtains, or other instruments that prevent access of animals to the project area is required when ESA-listed species are likely to be present (if presence is limited to rare, transient individuals, access control measures are not necessary). Once constructed, work inside a cofferdam at any time of year may be permitted with NMFS approval, provided the cofferdam is installed/removed outside the time-restricted period.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	19.	No new permanent surface water withdrawal, water intakes, or water diversions.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	20.	Turbidity control measures, including cofferdams, must be designed to not entangle or entrap ESA-listed species.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	21.	Any in-water lines, ropes, or chains must be made of materials and installed in a manner to minimize or avoid the risk of entanglement by using thick, heavy, and taut lines that do not loop or entangle. Lines can be enclosed in a rigid sleeve.

WATER QUALITY/TURBIDITY PDCs			
Yes	N/A	PDC #	PDC Description
<input type="checkbox"/>	<input checked="" type="checkbox"/>	22.	In-water offshore disposal may only occur at designated disposal sites that have already been the subject of ESA section 7 consultation with NMFS and where a valid consultation is in place.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	23.	Any temporary discharges must meet state water quality standards (e.g., no discharges of substances in concentrations that may cause acute or chronic adverse reactions, as defined by EPA water quality standards criteria).
<input checked="" type="checkbox"/>	<input type="checkbox"/>	24.	Only repair, upgrades, relocations, and improvements of existing discharge pipes or replacement in-kind are allowed; no new construction of untreated discharges.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	25.	Work behind cofferdams, turbidity curtains, or other instruments to control turbidity is required when operationally feasible and ESA-listed species are likely to be present (if presence is limited to rare, transient individuals, turbidity control methods are not necessary).


HABITAT ALTERATION PDCs			
Yes	N/A	PDC #	PDC Description
<input checked="" type="checkbox"/>	<input type="checkbox"/>	26.	Minimize all new waterward encroachment and permanent fill.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	27.	In Atlantic salmon critical habitat, stream simulation design with a minimum span of 1.2 bankfull width will be used in areas with minimal tidal influence. In tidal areas, a design that allows for unimpeded flow will be used (no delay in water entering or exiting the area upstream of the crossing).
<input type="checkbox"/>	<input checked="" type="checkbox"/>	28.	In Atlantic salmon critical habitat, no culvert end extensions, invert line culvert rehabilitation, or slipline culvert rehabilitation may occur.

VESSEL TRAFFIC PDCs			
Yes	N/A	PDC #	PDC Description
<input checked="" type="checkbox"/>	<input type="checkbox"/>	29.	Maintain project (i.e., construction) vessels operating within the action area to speed limits below 10 knots and dredge vessels to speeds of 4 knots maximum, while dredging.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	30.	Maintain a 1,500-foot buffer between project (i.e., construction) vessels and ESA-listed whales and a 300-foot buffer between project vessels and sea turtles. This also applies to dredge vessels.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	31.	The number of project (construction) vessels must be limited to the greatest extent possible, as appropriate to size and scale of project.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	32.	The project must not result in the permanent net increase of commercial vessels.

Justification for NLAA Determination if not Incorporating All PDC

If the project is not in compliance with all of the general and stressor-based PDCs, but you can provide justification and/or special conditions to demonstrate why the project still meets the NLAA determination and is consistent with the aggregate effects considered in the programmatic consultation, you may still certify your project through the NLAA program using this verification form. Please identify which PDCs your project does not meet (e.g., PDC 9, PDC 15, PDC 22, etc.) and provide your rationale and justification for why the project is still eligible for the verification form. Project modifications must not result in different effects not already considered.

To demonstrate that the project is still NLAA, you must explain why the effects on ESA-listed species or critical habitat are **insignificant** (i.e., too small to be meaningfully measured or detected) or **discountable** (i.e., extremely unlikely to occur). **Please use this language in your justification.**

PDC#	Justification
14	<p>The new/replacement bridge would have 40 piles below the MHWL (less than the 50 pile threshold for new structures); however, two temporary structures (bridges or barges) would be needed to construct the new bridge and demolish the old bridge. Preliminary design suggests that each temporary bridge could have 90 piles. If barges are used, a similar number of spuds would be required.</p> <p>While the project will involve the installation of greater than 50 pilings, the project will not adversely affect ESA species. The pile diameters are within the range analyzed in the consultation for the NLAA program and effects of noise were found to be discountable. The installation of the bridge will impact subtidal zones but given the project involves replacement of an existing bridge there will be only minimal potential for reduction in the amount of available soft substrate foraging habitat. No potential spawning or cobble </p>

FHWA/DOT Verification of Determination (To be filled out by FHWA/DOT staff only)

By submitting this Verification Form, FHWA, or the state DOT as FHWA's designated non-federal representative, indicates that they determined that the proposed activity described above is not likely to adversely affect (NLAA) ESA-listed species or designated critical habitat under NMFS jurisdiction in accordance with the Program, and all effects (direct, indirect, interrelated, and interdependent) are either insignificant (so small they cannot meaningfully be measured, detected, or evaluated) or discountable (extremely unlikely to occur).

<input type="checkbox"/>	In accordance with the FHWA GARFO NLAA Program, we have determined that the action complies with all applicable PDCs and is not likely to adversely affect listed species.	
<input checked="" type="checkbox"/>	In accordance with the FHWA GARFO NLAA Program, we have determined that the action is not likely to adversely affect listed species per the justifications and/or special conditions provided above.	
FHWA/DOT Signature:		Date:
RYAN DEFOREST KIMBERLEY Digitally signed by RYAN DEFOREST KIMBERLEY Date: 2022.12.08 13:59:17 -05'00'		12/08/2022

By providing your determination and signature, you are certifying that to the best of your knowledge the information provided in this form is accurate and based upon the best available scientific information. This form must be filled out and signed by FHWA or state DOT staff, as an officially designated non-federal representative.

GARFO PRD Concurrence (To be filled out by GARFO PRD)

After receiving the Verification Form, GARFO PRD will contact FHWA/DOT with any concerns and indicate whether GARFO PRD concurs with FHWA/DOT's determination.

<input type="checkbox"/>	In accordance with the FHWA GARFO NLAA Program, GARFO PRD concurs with FHWA/DOT's determination that the action complies with all applicable PDCs and is not likely to adversely affect listed species or critical habitat.	
<input checked="" type="checkbox"/>	In accordance with the FHWA GARFO NLAA Program, GARFO PRD concurs with FHWA/DOT's determination that the action is not likely to adversely affect listed species or critical habitat per the justifications and/or special conditions provided above.	
<input type="checkbox"/>	GARFO PRD does not concur with FHWA/DOT's determination that the action complies with the applicable PDCs (with or without justifications), and recommends an individual Section 7 consultation to be completed independent from the FHWA GARFO NLAA Program.	
GARFO PRD Signature:		Date:
Brian D Hopper Digitally signed by Brian D Hopper Date: 2022.12.12 12:55:41 -05'00'		12/12/2022

Appendix F – FHWA GARFO 2018 NLAA Program Project Design Criteria



FHWA Programmatic Determination of Not Likely to Adversely Affect (GARFO 2018 NLAA Program) Project Design Criteria (PDC)

General PDC:

- Ensure all operators, employees, and contractors are aware of all environmental commitments, including these PDCs, when working in areas where Endangered Species Act (ESA)-listed species may be present.
- No portion of the proposed action shall individually or cumulatively have an adverse effect on ESA-listed species or critical habitat.
- Work would result in no or only temporary/short-term changes in water temperature, water flow, salinity, or dissolved oxygen levels.
- If ESA-listed species are (a) likely to pass through the action area at the time of year when project activities occur; and/or (b) the project would create an obstruction to passage when in-water work is completed, then a zone of passage (~50% of water body) with appropriate habitat for ESA-listed species (e.g. depth, water velocity, etc.) must be maintained (i.e., physical or biological stressors such as turbidity and sound pressure must not create barrier to passage).
- The project shall not adversely impact any SAV or oyster reefs.
- No blasting or use of explosives would occur.
- No in-water work on large dams or tide gates.

Underwater Noise PDC:

- If pile driving is occurring during a time of year when ESA-listed species may be present, and the anticipated noise is above behavioral noise threshold, a soft start is required to allow animals an opportunity to leave the project vicinity before sound pressure levels increase. In addition to using a soft start at the beginning of the work day for pile driving, one must also be used at any time following cessation of pile driving for a period of 30 minutes or longer.
 - For impact pile driving: pile driving shall commence with an initial set of three strikes by the hammer at 40% energy, followed by a one minute wait period, then two subsequent three-strike sets at 40% energy, with one minute waiting periods, before initiating impact driving.
 - For vibratory pile installation: pile driving would be initiated for 15 seconds at reduced energy followed by a one-minute waiting period. This sequence of 15 seconds of reduced energy driving, one-minute waiting period would be repeated two additional times, followed immediately by pile-driving at full rate and energy.

Appendix F – FHWA GARFO 2018 NLAA Program Project Design Criteria

- Noise must be below injury thresholds of ESA-listed species in the action area.

Impingement/Entrainment and Entanglement PDC:

- Work behind cofferdams, turbidity curtains, or other instruments that prevent access of animals to the project area is required when ESA-listed species are likely to be present (if presence is limited to rare, transient individuals, access control measures are not necessary).
- No new permanent surface water withdrawal, water intakes, or water diversions.
- Turbidity control measures, including cofferdams, must be designed to not entangle or entrap ESA-listed species.
- Any in-water lines, ropes, or chains must be made of materials and installed in a manner to minimize or avoid the risk of entanglement by using thick, heavy, and taut lines that do not loop or entangle. Lines can be enclosed in a rigid sleeve.

Water Quality/Turbidity PDC:

- Any temporary discharges must meet state water quality standards.
- Only repair, upgrades, relocations, and improvements of existing discharge pipes or replacement in-kind are allowed; no new construction of untreated discharges.
- Work behind cofferdams, turbidity curtains, or other instruments to control turbidity is required when operationally feasible and ESA-listed species are likely to be present (if presence is limited to rare, transient individuals, turbidity control methods are not necessary).

Habitat Alteration PDC:

- Minimize all new waterward encroachment and permanent fill.

Vessel Traffic PDC:

- Maintain project (i.e., construction) vessels operating within the action area to speeds below 10 knots.
- Maintain a 300-foot buffer between project (i.e., construction) vessels and sea turtles.
- The number of project (construction) vessels must be limited to the greatest extent possible, as appropriate to the size and scale of project.
- The project must not result in permanent net increase of commercial vessels.

References

NMFS and FHWA (National Marine Fisheries Service and Federal Highway Administration).
2018. FHWA/NMFS Consultation Process Guide for Transportation Actions in the NMFS
Greater Atlantic Region, April 2018.

TABLE 1:

Proxy Projects for Estimating Underwater Noise

Project Location	Water Depth (m)	Pile Size (inches)	Pile Type	Hammer Type	Attenuation rate (dB/10m)
Not Available	5	24"	Concrete	Impact	5
Not Available	5	12"	Steel H-Type	Impact	5
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0

TABLE 2:

Proxy-Based Estimates for Underwater Noise

Type of Pile	Hammer Type	Estimated Peak Noise Level (dB _{Peak})	Estimated Pressure Level (dB _{RMS})	Estimated Single Strike Sound Exposure Level (dB _{sSEL})
24" Concrete	Impact	185	170	160
12" Steel H-Type	Impact	190	175	160
	0	0	0	0
	0	0	0	0
	0	0	0	0
	0	0	0	0

TABLE 3:

Estimated Distances to Sturgeon/Salmon Injury and Behavioral Thresholds

Type of Pile	Hammer Type	Distance (m) to 206dB _{Peak} (injury)	Distance (m) to 150 dB _{sSEL} (surrogate for 187 dB _{sSEL} injury)	Distance (m) to Behavioral Disturbance Threshold (150 dB _{RMS})
24" Concrete	Impact	NA	30.0	50.0
12" Steel H-Type	Impact	NA	30.0	60.0
	0	0.0	0.0	0.0
	0	0.0	0.0	0.0
	0	0.0	0.0	0.0
	0	0.0	0.0	0.0

TABLE 4

Estimated Distances to Sea Turtle Injury and Behavioral Thresholds

Type Pile	Hammer Type	Distance (m) to Sea Turtle TTS (SEL weighted) 189 dB _{RMS}	Distance (m) to Sea Turtle TTS (Peak SPL) 226 dB _{Peak}	Distance (m) to Sea Turtle PTS (SEL weighted) 204 dB _{SEL}	Distance (m) to Sea Turtle PTS (Peak SPL) 232 dB _{Peak}	Distance (m) to Sea Turtle Behavioral Threshold 175 dB _{RMS}
24" Concrete	Impact	NA	NA	NA	NA	NA
12" Steel H-Type	Impact	NA	NA	NA	NA	10.0
	0	0.0	0.0	0.0	0.0	0.0
	0	0.0	0.0	0.0	0.0	0.0
	0	0.0	0.0	0.0	0.0	0.0
	0	0.0	0.0	0.0	0.0	0.0

TABLE 5:

Estimated Distances to Cetacean Behavioral Thresholds

Type Pile	Hammer Type	Distance (m) to 160 dB _{RMS} (behavior for impulsive noise)	Distance (m) to 120 dB _{RMS} (behavior for non-pulse noise)
24" Concrete	Impact	30.0	NA
12" Steel H-Type	Impact	40.0	NA
	0	0.0	0.0
	0	0.0	0.0
	0	0.0	0.0
	0	0.0	0.0

NASA Causeway Bridge Replacement Project
Environmental Assessment

Appendix G

Essential Fish Habitat Information
and Coordination

EFH Mapper Report

EFH Data Notice

Essential Fish Habitat (EFH) is defined by textual descriptions contained in the fishery management plans developed by the regional fishery management councils. In most cases mapping data can not fully represent the complexity of the habitats that make up EFH. This report should be used for general interest queries only and should not be interpreted as a definitive evaluation of EFH at this location. A location-specific evaluation of EFH for any official purposes must be performed by a regional expert. Please refer to the following links for the appropriate regional resources.

[Greater Atlantic Regional Office](#)

[Atlantic Highly Migratory Species Management Division](#)

Query Results

Degrees, Minutes, Seconds: Latitude = 37° 51' 8" N, Longitude = 76° 30' 36" W















Decimal Degrees: Latitude = 37.852, Longitude = -75.490



The query location intersects with spatial data representing EFH and/or HAPCs for the following species/management units.

*** WARNING ***

Please note under "Life Stage(s) Found at Location" the category "ALL" indicates that all life stages of that species share the same map and are designated at the queried location.

EFH

Link	Data Caveats	Species/Management Unit	Lifestage(s) Found at Location	Management Council	FMP
		Atlantic Herring	Adult	New England	Amendment 3 to the Atlantic Herring FMP
		Windowpane Flounder	Adult	New England	Amendment 14 to the Northeast Multispecies FMP
		Winter Skate	Adult Juvenile	New England	Amendment 2 to the Northeast Skate Complex FMP
		Clearnose Skate	Adult Juvenile	New England	Amendment 2 to the Northeast Skate Complex FMP
		Bluefish	Adult Juvenile	Mid-Atlantic	Bluefish
		Atlantic Butterfish	Adult	Mid-Atlantic	Atlantic Mackerel, Squid,& Butterfish Amendment 11
		Summer Flounder	Juvenile Adult	Mid-Atlantic	Summer Flounder, Scup, Black Sea Bass

Link		Species/Management Unit	Lifestage(s) Found at Location	Management Council	FMP
		Black Sea Bass	Juvenile Adult	Mid-Atlantic	Summer Flounder, Scup, Black Sea Bass

Salmon EFH

No Pacific Salmon Essential Fish Habitat (EFH) were identified at the report location.

HAPCs

No Habitat Areas of Particular Concern (HAPC) were identified at the report location.

EFH Areas Protected from Fishing

No EFH Areas Protected from Fishing (EFHA) were identified at the report location.

Spatial data does not currently exist for all the managed species in this area. The following is a list of species or management units for which there is no spatial data.

****For links to all EFH text descriptions see the complete data inventory: [open data inventory -->](#)**

All spatial data is currently available for the Mid-Atlantic and New England councils,

Secretarial EFH,

Bigeye Sand Tiger Shark,

Bigeye Sixgill Shark,

Caribbean Sharpnose Shark,

Galapagos Shark,

Narrowtooth Shark,

Sevengill Shark,

Sixgill Shark,

Smooth Hammerhead Shark,

Smalltail Shark

Appendix B. Verification Form

Federal Highway Administration (FHWA) or the applicable state Department of Transportation (state DOT) will email a signed version of this completed form, together with any project plans, maps, supporting analyses, etc., to NOAA's National Marine Fisheries Service (NMFS), Greater Atlantic Regional Fisheries Office, Habitat Conservation Division (GARFO HCD) at NMFS.GAR.EFH.Consultation@noaa.gov, upon obtaining sufficient information. FHWA/state DOT must receive a response from GARFO HCD or wait at least 30 calendar days to proceed under the programmatic EFH consultation. FHWA will compile the information from the completed Verification Forms for the purposes of tracking and annual monitoring. FHWA/state DOT must include the completed Verification Form as part of a permit application with any other federal agency, such as U.S. Army Corps of Engineers or U.S. Coast Guard, to confirm that EFH consultation is complete.

Project Activity Type

- ☒ Bridge repair, demolition, and replacement
- ☐ Culvert repair and replacement
- ☐ Docks, piers, and waterway access projects
- ☐ Slope stabilization

Transportation Project Information

Project Name:	Wallops Isl. Bridge	Project Number:	NASA 1(9)
Project Sponsor:	FHWA/NASA	Contact Person:	Ryan Kimberley
Email:	ryan.kimberley	Phone:	703-404-6240
Latitude (e.g., 42.625884):	37.852000		
Longitude (e.g., -70.646114):	-75.490000		
City/Town, State:	Assawoman, VA	Waterway:	Cat Creek
Project Description and Purpose:	The project will replace the existing Wallops Island Causeway Bridge. The bridge was built in 1959 and is approaching the end of its service life. The bridge is 1,284 feet long and spans Cat Creek, a navigable tidal waterway, and tidal mudflats. Realignment of the causeway embankment will occur at the new bridge approaches. The existing bridge will be demolished. Two temporary bridges may be required for access		
Anticipated Project Start Date:	4/1/24	Anticipated Project End Date:	12/31/26
Total area of impact to EFH (in acres): Include locus map with area of impact.			
Area of impacts to sensitive habitats (in square feet):	No impacts to submerged aquatic vegetation (SAV) or oyster reefs allowed.		
Natural rocky habitat (e.g., bedrock, boulders, cobble, and/or gravel):			
Salt marsh:	43,560		
Areas containing shellfish (excluding oyster reefs):	5,000		
Intertidal mudflats:	174,240		
Area of impact to diadromous fish habitat:	0		

Potential Stressors Caused by the Activity (Check all that apply based on activity type)

- ☒ Underwater Noise
- ☒ Impingement/Entrainment and Entanglement
- ☒ Water Quality/Turbidity
- ☒ Habitat Alteration
- ☒ Vessel Traffic

EFH Conservation Recommendation Checklist

FHWA/state DOT will indicate how the project addresses each of the programmatic EFH conservation recommendations, by selecting the appropriate check box and providing a brief explanation where necessary. If the project is not in compliance with a particular programmatic EFH conservation recommendation and FHWA/state DOT has still determined that the effects of a project on EFH are not substantial and the project is otherwise consistent with the FHWA programmatic EFH consultation, provide justification below under the conservation recommendations that is not included.

Underwater Noise

- ☐ Check here if the EFH conservation recommendations in this section are not applicable because the project will not create underwater noise as a stressor. Proceed to the next stressor.
- 1. Use a soft start each day of pile driving, after a break of 30 minutes or more, and if any increase in pile installation or removal intensity is required. Build up power slowly from a low energy start-up over a 20-minute period to warn fish to leave the vicinity. This buildup shall occur in uniform stages to provide a constant increase in output.
 - ☐ Not met:
 - ☐ Not applicable, provide reasoning:
 - ☐ Project is unable to accommodate, provide justification:
 - ☒ Met:
 - ☐ Shown on project plans
 - ☒ Included in description, other terms and conditions
- 2. Noise-generating work conducted in diadromous streams within the spring diadromous fish TOY restriction listed in Appendix D must be isolated behind sealed, dewatered cofferdams, to avoid impeding fish migration.
 - ☒ Not met:
 - ☒ Not applicable, provide reasoning: no diadromous fish identified on NOAA EFH mapper
 - ☐ Project is unable to accommodate, provide justification:
 - ☐ Met:
 - ☐ Shown on project plans
 - ☐ Included in description, other terms and conditions

Impingement/Entrainment and Entanglement

☐ Check here if the EFH conservation recommendations in this section are not applicable because the project will not lead to impingement/entrainment and entanglement as a stressor. Proceed to the next stressor.

3. Turbidity control measures must be properly secured and monitored to ensure aquatic species are not entangled or trapped in the project area.

☐ Not met:

☐ Not applicable, provide reasoning:

☐ Project is unable to accommodate, provide justification:

☒ Met:

☐ Shown on project plans

☒ Included in description, other terms and conditions

4. Temporary intakes related to construction must be equipped with mesh size screening and approach velocity appropriate for the species and life stage anticipated. Per the NMFS Anadromous Salmonid Passage Facility Design manual, screen openings must not exceed 3/32 inch and screen approach velocity must be less than .25 feet per second (ft/sec).

- In New York, New Jersey, Delaware, Maryland, and Pennsylvania, 2 millimeter (mm) wedge wire screens must be used with a maximum intake velocity of 0.5 feet per second (ft/sec).
- In Virginia, a 1 mm wedge wire with a maximum intake velocity of 0.25 ft/sec).

☐ Not met:

☐ Not applicable, provide reasoning:

☐ Project is unable to accommodate, provide justification:

☒ Met:

☐ Shown on project plans

☒ Included in description, other terms and conditions

5. No new permanent surface water withdrawal, water intakes, or water diversions.

☐ Not met:

☐ Not applicable, provide reasoning:

☐ Project is unable to accommodate, provide justification:

☒ Met:

☒ Shown on project plans

☒ Included in description, other terms and conditions

Water Quality/Turbidity

☐ Check here if the EFH conservation recommendations in this section are not applicable because the project will not negatively affect water quality or create turbidity. Proceed to the next stressor.

6. Install soil erosion, sediment, and turbidity controls and maintain them in effective operating condition during construction. Remove controls upon completion of work, after all exposed soil and other fills, as well as any work waterward of ordinary high water or the high tide line, are permanently stabilized.

☐ Not met:

☐ Not applicable, provide reasoning:

☐ Project is unable to accommodate, provide justification:

☒ Met:

☒ Shown on project plans

☒ Included in description, other terms and conditions

7. Install and remove any in-water soil erosion, sediment, and turbidity controls outside the TOY restrictions in Appendix D.

☒ Not met:

☒ Not applicable, provide reasoning: No diadromous od SAV in project area

☐ Project is unable to accommodate, provide justification:

☐ Met:

☐ Shown on project plans

☐ Included in description, other terms and conditions

8. Work that produces greater than minimal turbidity or sedimentation in diadromous streams or EFH must not be done during the TOY restriction(s) in Appendix D.

☒ Not met:

☒ Not applicable, provide reasoning: No diadromous fish or streams

☐ Project is unable to accommodate, provide justification:

☐ Met:

☐ Shown on project plans

☐ Included in description, other terms and conditions

9. Prevent construction debris and sediment from entering aquatic areas and remove all construction debris and excess/deteriorated materials and dispose of in an upland area.

☐ Not met:

☐ Not applicable, provide reasoning:

☐ Project is unable to accommodate, provide justification:

☒ Met:

☐ Shown on project plans

☒ Included in description, other terms and conditions

10. Dredged and/or excavated materials, including any fine-grained materials removed from inside culverts, shall either be moved to an upland location and stabilized to prevent reentry into the waterway or disposed of at a previously approved disposal site.

☐ Not met:

☐ Not applicable, provide reasoning:

☐ Project is unable to accommodate, provide justification:

☒ Met:

☐ Shown on project plans

☒ Included in description, other terms and conditions

11. Completely remove and do not reuse existing creosote piles that are affected by project activities and do not install new creosote piles.

☒ Not met:

☒ Not applicable, provide reasoning: no known wooden piles exist in the project area

☐ Project is unable to accommodate, provide justification:

☐ Met:

☐ Shown on project plans

☐ Included in description, other terms and conditions

12. Coat any chemically or pressure treated piles (CCA, ACQ, etc.) with an impact-resistant, biologically inert substance. Coat the piles at the point of manufacture, not on site.

☒ Not met:

☒ Not applicable, provide reasoning: no wooden piles are proposed

☐ Project is unable to accommodate, provide justification:

☐ Met:

☐ Shown on project plans

☐ Included in description, other terms and conditions

13. Derelict, degraded, or abandoned piles, except for those inside of existing work footprints for piers, must be completely removed or cut and driven three feet below the surface.

☒ Not met:

☒ Not applicable, provide reasoning: no wooden piers are known to exist

☐ Project is unable to accommodate, provide justification:

☐ Met:

☐ Shown on project plans

☐ Included in description, other terms and conditions

14. Ensure that raw concrete does not contact the water; wet pours of concrete must be confined within sealed forms until the concrete is set or pre-cast members installed.

☐ Not met:

- ☐ Not applicable, provide reasoning:
- ☐ Project is unable to accommodate, provide justification:

☒ Met:

- ☐ Shown on project plans
- ☒ Included in description, other terms and conditions

Habitat Alteration

- ☐ Check here if the EFH conservation recommendations in this section are not applicable because the project will not cause habitat alteration. Proceed to the next stressor.

15. Remove temporary and/or obsolete structures and fills in their entirety. Use geotextile barriers prior to placement of temporary fill material to ensure complete removal.

☐ Not met:

- ☐ Not applicable, provide reasoning:
- ☐ Project is unable to accommodate, provide justification:

☒ Met:

- ☐ Shown on project plans
- ☒ Included in description, other terms and conditions

16. Install a riprap bedding layer (such as a gravel filter blanket or geotextile) prior to riprap placement to prevent underlying soils from washing through the riprap during high water.

☐ Not met:

- ☐ Not applicable, provide reasoning:
- ☐ Project is unable to accommodate, provide justification:

☒ Met:

- ☒ Shown on project plans
- ☒ Included in description, other terms and conditions

17. Return areas impacted by temporary activities, fills, or structures to pre-construction or better condition, including elevations and substrate, and replant with native species.

☐ Not met:

- ☐ Not applicable, provide reasoning:
- ☐ Project is unable to accommodate, provide justification:

☒ Met:

- ☒ Shown on project plans
- ☒ Included in description, other terms and conditions

18. Temporary monitoring devices shall be removed and the substrate restored to preconstruction elevations no later than 24 months from initial installation, or upon completion of data acquisition.

- ☐ Not met:
- ☐ Not applicable, provide reasoning:
 - ☐ Project is unable to accommodate, provide justification:

- ☒ Met:
- ☐ Shown on project plans
 - ☒ Included in description, other terms and conditions

19. Pipelines and cables that cross a waterway must not rest on the substrate. They may be attached to an overwater structure or be buried to allow an area to return to preexisting conditions.

- ☐ Not met:
- ☐ Not applicable, provide reasoning:
 - ☐ Project is unable to accommodate, provide justification:

- ☒ Met:
- ☒ Shown on project plans
 - ☒ Included in description, other terms and conditions

20. Any fill, including planting media and placement of any seed shellfish, spatted-shell, or cultch must be free of all non-native or invasive species and/or contaminants. An invasive species control plan must be part of the project if the transportation agency cannot guarantee this.

- ☐ Not met:
- ☐ Not applicable, provide reasoning:
 - ☐ Project is unable to accommodate, provide justification:

- ☒ Met:
- ☐ Shown on project plans
 - ☒ Included in description, other terms and conditions

21. Prevent dislodging of coir logs, mats, or native oyster shell.

- ☒ Not met:
- ☐ Not applicable, provide reasoning:
 - ☒ Project is unable to accommodate, provide justification:

- ☐ Met:
- low concentrations of oyster shells will be relocated in coordination with VMRC

- ☐ Shown on project plans
- ☐ Included in description, other terms and conditions

22. Incorporate measures to increase the ambient light transmission under overwater structures.

- ☒ Not met:
- ☒ Not applicable, provide reasoning: Roadway width has been minimized to the extent practicable but the bridge deck is opaque

☐ Project is unable to accommodate, provide justification:

☐ Met:

☐ Shown on project plans

☐ Included in description, other terms and conditions

23. The lowermost part of floating docks must be ≥ 18 inches above the substrate at all times, to avoid grounding and propeller scour and to provide adequate circulation and flushing.

☒ Not met:

☒ Not applicable, provide reasoning: no floating docks are proposed

☐ Project is unable to accommodate, provide justification:

☐ Met:

☐ Shown on project plans

☐ Included in description, other terms and conditions

24. Conduct and submit pre-dredge benthic biological surveys to determine benthic communities present and conduct post-dredge surveys to ensure targeted depths have been reached and to determine benthic recovery.

☒ Not met:

☒ Not applicable, provide reasoning: No dredging is proposed;

☐ Project is unable to accommodate, provide justification:

☐ Met:

☐ Shown on project plans

☐ Included in description, other terms and conditions

25. Grain size of any sediment used as part of habitat restoration must be the same size or larger than the native material at the site.

☐ Not met:

☐ Not applicable, provide reasoning:

☐ Project is unable to accommodate, provide justification:

☒ Met:

☐ Shown on project plans

☒ Included in description, other terms and conditions

26. If rock relocation is necessary, move them to an area of equivalent depth and substrate.

☒ Not met:

☒ Not applicable, provide reasoning: no rock relocation proposed.

☐ Project is unable to accommodate, provide justification:

☐ Met:

☐ Shown on project plans

☐ Included in description, other terms and conditions

27. Incorporate natural habitats (e.g., living shorelines) and soft approaches (e.g., vegetative plantings and large woody debris) into the stabilization design in addition to or instead of hardened structures. See NOAA's Guidance for Considering the Use of Living Shorelines for more information.

☐ Not met:

☐ Not applicable, provide reasoning:

☐ Project is unable to accommodate, provide justification:

☒ Met:

☒ Shown on project plans

☒ Included in description, other terms and conditions

Sensitive Habitats (SAS, natural rocky habitats, intertidal areas, and areas containing shellfish)

28. Locate all temporary structures, construction, access, and dewatering activities outside of sensitive habitats.

☒ Not met:

☐ Not applicable, provide reasoning:

☒ Project is unable to accommodate, provide justification:

☐ Met:

the bridge construction and demolition require impacts parallel to the bridges in sensitive area



☐ Shown on project plans

☐ Included in description, other terms and conditions

29. Prior to construction, identify and mark in the field any SAV at the project site. An SAV survey is required for activities adjacent to mapped or known SAV if a survey has not been conducted in three years.

☒ Not met:

☒ Not applicable, provide reasoning: mapped SAV is not found on the site

☐ Project is unable to accommodate, provide justification:

☐ Met:

☐ Shown on project plans

☐ Included in description, other terms and conditions

30. Provide compensatory mitigation for all permanent and temporary impacts to sensitive habitats. This could include a contribution to an existing in-lieu fee program. When impacts are unavoidable:

- conduct a biological survey to map the coverage of the sensitive habitats;
- develop a compensatory mitigation plan for biological resource losses, including success criteria, monitoring plan, and long-term maintenance plan;

- submit the results of the biological survey and the mitigation plan to GARFO HCD for review; and
- undertake compensatory mitigation prior to or concurrent with any impacts to sensitive habitat.

☐ Not met:

- ☐ Not applicable, provide reasoning:
- ☐ Project is unable to accommodate, provide justification:

☒ Met:

- ☒ Shown on project plans
- ☒ Included in description, other terms and conditions

31. Where construction requires heavy equipment operation in or across wetlands or mudflats, the equipment shall have low ground pressure (typically ≤ 3 pounds per square inch); be placed on construction timber mats that are adequate to support the equipment; or be operated on dry or frozen wetlands such that shear pressure does not cause subsidence of the wetlands immediately beneath equipment and upheaval of adjacent wetlands. Construction mats must not be dragged into position.

☐ Not met:

- ☐ Not applicable, provide reasoning:
- ☐ Project is unable to accommodate, provide justification:

☒ Met:

- ☒ Shown on project plans
- ☒ Included in description, other terms and conditions

32. Habitat restoration or mitigation projects must not result in a permanent conversion or loss of sensitive habitats.

☐ Not met:

- ☐ Not applicable, provide reasoning:
- ☐ Project is unable to accommodate, provide justification:

☒ Met:

- ☒ Shown on project plans
- ☒ Included in description, other terms and conditions

33. No dredging shall occur within:

- intertidal areas;
- 100 feet of SAV; or
- 25 feet of SAS, natural rocky habitats, or areas containing shellfish.

☒ Not met:

- ☒ Not applicable, provide reasoning: dredging not proposed
- ☐ Project is unable to accommodate, provide justification:

☐ Met:

- ☐ Shown on project plans
- ☐ Included in description, other terms and conditions

34. The height of docks and piers must be at least four feet above salt marsh substrate and must be greater than or equal to the width of the deck, to minimize shading impacts. The height must be measured from the marsh substrate to the bottom of the longitudinal support beam.

☒ Not met:

- ☒ Not applicable, provide reasoning: no docks or piers
- ☐ Project is unable to accommodate, provide justification:

☐ Met:

- ☐ Shown on project plans
- ☐ Included in description, other terms and conditions

35. Outlets must not discharge directly into sensitive habitats.

☐ Not met:

- ☐ Not applicable, provide reasoning:
- ☐ Project is unable to accommodate, provide justification:

☒ Met:

- ☒ Shown on project plans
- ☒ Included in description, other terms and conditions

Fish Passage/Migration Habitat

36. Design replacement crossings to provide diadromous and resident fish and aquatic organism passage. Structures must:

- provide sufficient water depth and maintain suitable water velocities during migration periods; and
- maintain or replicate natural stream channel and flow conditions.

☐ Not met:

- ☐ Not applicable, provide reasoning:
- ☐ Project is unable to accommodate, provide justification:

☒ Met:

- ☒ Shown on project plans
- ☒ Included in description, other terms and conditions

37. Incorporate climate change projections into the project design. Use the Intergovernmental Panel on Climate Change (IPCC) Representative Concentration Pathways (RCP) 8.5/high greenhouse gas emission scenario and RCP 4.5/intermediate greenhouse gas emission scenario (IPCC 2014) and the global mean and regional sea level rise projections for

intermediate-high and extreme scenarios referenced in Sweet *et al.* (2017) in design calculations for replacement structures.

☐ Not met:

☐ Not applicable, provide reasoning:

☐ Project is unable to accommodate, provide justification:

☒ Met:

☐ Shown on project plans

☒ Included in description, other terms and conditions

38. Replaced or upgraded crossings must be “in kind” or go up in order of preference set out in NMFS’ Anadromous Salmonid Passage Facility Design:

- Road abandonment and reclamation or road realignment to avoid crossing the stream.
- Bridge or stream simulation spanning the stream flood plain, providing long-term dynamic channel stability, retention of existing spawning areas, maintenance of benthic invertebrate production, and minimized risk of failure. If a stream crossing is proposed in a segment of stream channel that includes a salmonid spawning area, only full-span stream simulation designs are acceptable.
- Embedded pipe culvert, bottomless arch designs or non-floodplain spanning stream simulation.
- Hydraulic design method, associated with more traditional culvert design approaches- limited to low stream gradients (0 to 1%) or for retrofits.
- Culvert designed with an external fishway (including roughened channels) for steeper slopes.
- Baffled culvert or internal weirs- to be used only for when other alternatives are infeasible.

☒ Not met:

☒ Not applicable, provide reasoning: replacement bridge; not AOP or anadromous area

☐ Project is unable to accommodate, provide justification:

☐ Met:

☐ Shown on project plans

☐ Included in description, other terms and conditions

39. For activities that require soil erosion, sediment, and turbidity controls

- in non-tidal streams containing diadromous fish:
 - i. They must not encroach >25% of the stream width measured from ordinary high water during the diadromous TOY restriction; and
 - ii. They must maintain safe, timely, and effective downstream fish passage throughout the project.
- in tidal waters:
 - i. They must not encroach >50% of a tidal stream’s width as measured from mean high water.

- ☐ Not met:
 - ☐ Not applicable, provide reasoning:
 - ☐ Project is unable to accommodate, provide justification:
- ☒ Met:
 - ☒ Shown on project plans
 - ☒ Included in description, other terms and conditions

Vessel Traffic

- ☐ Check here if the EFH conservation recommendations in this section are not applicable because the project will not use vessels.

40. Project vessels shall be operated in adequate water depths to avoid propeller scour and grounding at all tides. Shallow draft vessels will be used in shallow areas to maximize the navigational clearance between the vessel and the bottom substrate. Spuds may be used to elevate the vessel.

- ☐ Not met:
 - ☐ Not applicable, provide reasoning:
 - ☐ Project is unable to accommodate, provide justification:
- ☒ Met:
 - ☐ Shown on project plans
 - ☒ Included in description, other terms and conditions

41. Project vessels shall not be moored in or use spuds in SAV or be located in such a way that the vessel could shade SAV.

- ☒ Not met:
 - ☒ Not applicable, provide reasoning: SAV not present
 - ☐ Project is unable to accommodate, provide justification:
- ☐ Met:
 - ☐ Shown on project plans
 - ☐ Included in description, other terms and conditions

NEW CLAUSE

Other Justification for Use of the Programmatic EFH Consultation

If the project is outside of the covered activities in the programmatic EFH consultation (i.e., is one of the actions described in the Excluded Activities list noted below) and FHWA/state DOT believes the effects are not any more significant and that the project should be eligible for programmatic EFH consultation, provide additional justification in the space below. FHWA/state DOT must provide appropriate rationale and GARFO HCD must review and approve it. The automatic concurrence period does not apply for transportation activities in this section that fall outside of the programmatic EFH consultation as described.

- ☐ The project is not listed as an excluded activity.

● The project is listed as an excluded activity.

Indicate the activity number from the list below (1 through 21): 1,10,20

Provide additional justification on why the activity should be eligible:

Activities that Require Individual Consultation

Project will replace existing bridge; impacts will be minimized; wetland mitigation and environmental permitting



1. Any work (including anchoring) that results in impacts to:
 - existing or historically mapped submerged aquatic vegetation (SAV) beds or areas within 100 feet of existing or historically mapped SAV beds;
 - $\geq 1,000$ square feet of salt marsh, areas containing shellfish, and intertidal areas;
 - ≥ 100 square feet of natural rocky habitat (e.g., bedrock, boulders, cobble, and/or gravel);
2. Stream channelization.
3. Any temporary structures, construction access, and dewatering activities proposed to be in place for \geq two years.
4. Slip-lining or invert lining existing culverts.
5. Any permanent structures longer than 150 linear feet over salt marsh.
6. Construction of new or expansion of existing boating facilities¹⁷ or ferry terminals.
7. Independent pedestrian trails or bridges located directly adjacent to an existing crossing.
8. New or improvement dredging.
9. Any nearshore disposal or beach nourishment activities.
10. New fill/stabilization placed below mean low water in excess of 200 linear feet (lf).
11. Replacement or maintenance of:
 - sloped stabilization structures > 200 lf and waterward of the existing toe, or
 - vertical structures > 18 inches waterward of the existing face and > 200 lf.
12. In-water utility lines ≥ 100 lf installed by trench excavation, or 200 lf installed by jetplow, fluidization or other direct burial methods.
13. Thin layer deposition as a part of wetland restoration.
14. Placement of any seed shellfish, spatulated-shell, or cultch in SAS.
15. Any exploratory trenching or other similar survey activities.
16. Airgun seismic activities.
17. Any new permanent surface water withdrawal, water intakes, or water diversions.
18. Any blasting or use of explosives that affects EFH or diadromous species habitats.
19. Construction of new bridges or culverts, where no crossing existed previously.
20. Any new or replacement causeways (raised roadways across waters or wetlands).
21. Any in-water work on dams, tide gates, or breakwaters.

FHWA's Determination of Effects to Essential Fish Habitat and Signature

After reviewing the programmatic EFH conservation recommendations in Appendix A, FHWA/state DOT will select the appropriate determination:

- ☐ The activity is in compliance with all programmatic EFH conservation recommendations in the FHWA programmatic EFH consultation and adverse effects to EFH will not be substantial.
- ☒ The activity is not in compliance with all of the programmatic EFH conservation recommendations in the FHWA programmatic EFH consultation, however, the justification below demonstrates that the adverse effects to EFH are not substantial. This does not apply to EFH conservation recommendations that are not applicable to the project.

Use the electronic fillable fields to include the name and signature of the FHWA/state DOT preparing this Verification Form, along with the date.

FHWA/Eastern Federal Lands

Ryan Kimberley

FHWA/state DOT Name

Signature

12/13/22

Date

**RYAN DEFOREST
KIMBERLEY**

Digitally signed by RYAN
DEFOREST KIMBERLEY
Date: 2022.12.13 09:57:30
-05'00'

By providing your determination and signature, you are certifying that to the best of your knowledge the information provided in this form is accurate and based upon the best available scientific information. This form must be filled out and signed by FHWA or state DOT staff, as an officially designated non-federal representative. Do not lock the form when saving, as HCD will be unable to sign and finalize. Email this Verification Form as a fillable PDF to NMFS.GAR.EFH.Consultation@noaa.gov.

GARFO HCD Determination and Signature (To be filled out by NMFS)

After receiving the Verification Form, GARFO HCD will contact FHWA/state DOT with any concerns. HCD will email the completed form back to the FHWA/state DOT for record keeping.

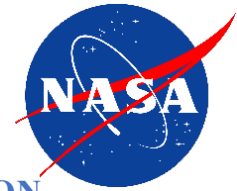
- ☐ GARFO HCD concurs with FHWA's determination that the proposed project is consistent with the programmatic EFH consultation (without the need for justification).
- ☐ GARFO HCD concurs with FHWA's determination that the proposed project is consistent with the programmatic EFH consultation, with justification described above.
- ☐ GARFO HCD does not concur with FHWA's determination that the project is consistent with the programmatic EFH consultation. FHWA/state DOT must conduct additional coordination with GARFO HCD and a separate individual EFH consultation may be required.

GARFO HCD Name

Signature

Date

Appendix G.1 – EFH Species Information



ESSENTIAL FISH HABITAT (EFH) SPECIES INFORMATION

Habitat

Tidal Wetlands

Tidal wetlands provide food, refuge and nursery habitat for federally managed species and support forage fish and invertebrates that form the base of the food chain for commercially and recreationally valuable fish. Tidal wetlands also provide shoreline erosion protection, flood attenuation and water quality protection by filtering runoff (NMFS and FHWA 2018).

Intertidal Mudflats

Mudflats serve as EFH for multiple managed species during spawning, juvenile, and/or adult life history stages. They can serve as nursery and forage areas and support benthic communities that provide prey (NMFS and FHWA 2018).

Shellfish Areas

Shellfish areas provide habitat for many fish species, improve water quality through water column filtration, and serve to stabilize sediment, as well as being an important food source for managed species (NMFS and FHWA 2018). Shellfish are particularly susceptible to elevated levels of suspended sediments which can interfere with spawning success, feeding, and growth (Wilber and Clarke 2001).

Shallow Water Habitat

Shallow water coastal, marine, and estuarine habitats are important for multiple managed fish species for spawning, juvenile, and/or adult life history stages. Because of their shallow depths, seasonally warm water temperatures, and proximity to nutrients derived from runoff, these habitats are highly productive (NMFS and FHWA 2018).

EFH SPECIES DESCRIPTIONS

Atlantic butterfish (*Peprilus triacanthus*)

Butterfish are a pelagic fish species that form loose schools, often near the surface, and migrate seasonally in response to water temperature. They winter near the edge of the continental shelf in the Middle Atlantic Bight and migrate inshore in the spring into southern New England and Gulf of Maine waters. During summer, butterfish occur over the entire Mid-Atlantic shelf from sheltered bays and estuaries out to about 200 m (656 ft) in depth. Schools are often seen on shallow flats and sheltered bays and estuaries. Spawning in the Middle Atlantic Bight occurs from May through October. In late fall, butterfish move southward and offshore in response to falling water temperatures. Atlantic butterfish are frequently found over sand, mud, and mixed substrates (Cross et al. 1999).

EFH for adult Atlantic butterfish is pelagic (water column) habitat in inshore estuaries and embayments from Massachusetts Bay to Pamlico Sound, North Carolina, inshore waters of the Gulf of Maine and the South Atlantic Bight, on Georges Bank, on the inner continental shelf south of Delaware Bay, and on the outer continental shelf from southern New England to South Carolina.

Appendix G.1 – EFH Species Information

EFH for adult Atlantic butterfish is generally found over bottom depths between 10 m (33 ft) and 250 m (820 ft) where water salinities are above 5 parts per thousand (ppt) (MAFMC 2011).

Atlantic herring (*Clupea harengus*)

Atlantic herring are a pelagic, schooling, species that undergo complex north-south migrations for feeding, spawning, and overwintering. This species overwinters in the Mid-Atlantic region, primarily in offshore waters and may be found in Mid-Atlantic near shore waters in the spring (Stevenson and Scott 2005); therefore, this species is most likely to be in the Project Area vicinity in spring. EFH for adult Atlantic herring is sub-tidal pelagic habitat with maximum depths of 300 m (984 ft). They generally avoid low salinities (NEFMC and NMFS 2017).

Black sea bass (*Centropristis striata*)

Black sea bass are a temperate, coastal fish species whose habitat is usually defined by structures such as reefs and shellfish beds. Juveniles become demersal (close to the sea floor) and utilize estuaries when water temperatures warm during summer months to take advantage of seasonally abundant fish and invertebrate prey. Juveniles use estuarine shallow, hard bottom habitat with structure, which may include shellfish beds, sponge beds, sea grass beds, and cobble, as nurseries. Juveniles are not as common on open un-vegetated bottoms (Drohan et al. 2007). Within estuaries, older juveniles use estuarine channels and habitats < 10 m (33 ft) deep but young of the year may use shallower shoal (submerged ridge) habitats (approximately 1 m [3 ft]). Primary summer habitat for adults is located on the nearshore continental shelf and they may use complex habitats in the lower reaches of large estuaries which are relatively shallow (approximately 5 m [16 ft]) (Drohan et al. 2007). Unlike juveniles, adults tend to enter only larger estuaries and are most abundant along the coast. Eggs and larvae are largely absent in estuaries (Drohan et al. 2007).

Inshore juvenile black sea bass EFH includes estuaries where black sea bass are common, abundant, or highly abundant per the Estuarine Living Marine Resources (ELMR) database, including Chincoteague Bay (Nelson and Monaco 2000). Juveniles are found in the estuaries in the summer and spring, generally in salinities greater than 18 ppt and coastal areas, but winter offshore. Juvenile black sea bass are usually found in association with rough bottom, shellfish and eelgrass beds, man-made structures in sandy shelly areas; offshore clam beds and shell patches may also be used during wintering (MAFMC and ASFMC 2002). Inshore adult EFH includes estuaries where black sea bass are common, abundant, or highly abundant per the ELMR database, including Chincoteague Bay (Nelson and Monaco 2000). Adults are generally found in estuaries from May to October. Wintering adults (November through April) are generally offshore. Structured habitats (natural and man-made), sand and shell are typically the preferred substrate (MAFMC and ASFMC 2002).

Bluefish (*Pomatomus saltatrix*)

Bluefish are a pelagic, schooling fish species common to temperate waters. In the Mid-Atlantic, both juveniles and adults are observed in large estuaries and bays, as well as in the offshore portions of the continental shelf. Bluefish migrate seasonally to warm waters. Migrations in the spring are directed north towards warming coastal waters, while fall-winter migrations are directed

Appendix G.1 – EFH Species Information

towards waters south of Cape Hatteras, North Carolina. Eggs and larvae occur only in oceanic waters (Fahay et al. 1999).

Juvenile and adult bluefish EFH includes all major estuaries between Penobscot Bay, Maine and St. Johns River, Florida. Generally, juvenile bluefish occur in Mid-Atlantic estuaries from May to October, and adult bluefish occur in Mid-Atlantic estuaries from April to October generally in salinities over 25 ppt (MAFMC and ASMFC 1998).

Clearnose skate (*Raja eglanteria*)

The clearnose skate occurs along the eastern United States coast from Nova Scotia to Florida. North of Cape Hatteras, clearnose skate move inshore and northward along the continental shelf during the spring and early summer, and offshore and southward during fall and early winter (Packer et al. 2003a). They have been found in Chincoteague Bay from May to November. The clearnose skate is found on soft bottoms along the continental shelf but may also occur on rocky or gravelly bottoms (Packer et al. 2003a). Juvenile and adult EFH includes sub-tidal benthic habitats in coastal and inner continental shelf waters including high salinity (>25 ppt) zones of Chincoteague Bay, from shoreline to 30 m (98 ft) (juvenile) or 40 m (131 ft) (adult), primarily on mud and sand, but also on gravelly and rocky bottom (NEFMC and NMFS 2017).

Summer flounder (*Paralichthys dentatus*)

The center of summer flounder abundance is found within the Middle Atlantic Bight from Cape Cod, Massachusetts to Cape Hatteras, North Carolina. Summer flounder exhibit strong seasonal inshore-offshore movements. Adult and juvenile summer flounder normally inhabit shallow coastal and estuarine waters during the warmer months of the year and remain offshore during the fall and winter. In Virginia, adult summer flounder use the Eastern Shore seaside lagoons and inlets as summer feeding areas. These fish usually concentrate in shallow warm water at the upper reaches of the channels and larger tidal creeks in April, then move toward the inlets as spring and summer progress (Packer et al. 1999). Juvenile summer flounder use estuarine marsh creeks as nursery habitats, as well as seagrass beds, mud flats and open bay areas. In Virginia, the most important nursery areas for summer flounder include the lagoon systems behind the barrier islands on the seaside of the Eastern Shore. Young-of-the-year enter these nursery areas in early spring and remain there until fall when water temperatures drop. Summer flounder are specifically noted for utilizing artificial reef habitats, including concrete infrastructure projects (Packer et al. 1999).

EFH includes estuaries where black sea bass are common, abundant, or highly abundant per the ELMR database, including Chincoteague Bay (Nelson and Monaco 2000).

Windowpane flounder (*Scophthalmus aquosus*)

Windowpane flounder are a demersal species and are generally found in shallow waters with sand to sand/silt or mud substrates. They are most abundant from 1-2 m (3-6 ft) to 56 m (184 ft). While they inhabit nearshore waters, their occurrence in estuaries is not well documented. Adults may migrate to nearshore or estuarine habitats in the southern Middle Atlantic Bight during spring through fall (Chang et al. 1999). Windowpane are sensitive to hypoxic conditions and rarely found where dissolved oxygen concentrations are less than 3 mg/l. Juvenile and adult EFH includes

Appendix G.1 – EFH Species Information

intertidal and sub-tidal benthic habitats in estuarine, coastal marine, and continental shelf waters including high salinity (>25 ppt) zones of Chincoteague Bay, from the intertidal zone to 60 m (197 ft) (juvenile) or 70 m (230 ft) (adult) primarily on mud and sand substrate (NEFMC and NMFS 2017).

Winter skate (*Leucoraja ocellata*)

While more common in northern waters, winter skate distribution extends south to northern North Carolina. Juveniles and adults may be found in the region in winter and in the spring concentrated nearshore (Packer et al 2003b). Juvenile EFH includes sub-tidal benthic habitats, coastal waters, and continental shelf waters including high salinity (>25 ppt) zones of Chincoteague Bay, from shoreline to 90 m (295 ft) (juvenile) or 80 m (262 ft) (adult) primarily on sand and gravel substrate, although they are also found on mud (NEFMC and NMFS 2017).

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- Packer, D.B., C.A. Zetlin, and J.J. Vitaliano. 2003a. Essential Fish Habitat Source Document: Clearnose Skate, *Raja eglanteria*, Life History and Habitat Characteristics. NOAA Technical Memorandum NMFS-NE-174, March 2003

Appendix G.1 – EFH Species Information

Packer, D.B., C.A. Zetlin, and J.J. Vitaliano. 2003b. Essential Fish Habitat Source Document: Winter Skate, *Leucoraja ocellata*, Life History and Habitat Characteristics. NOAA Technical Memorandum NMFS-NE-179, March 2003.

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Appendix G.2 – EFH Conservation Recommendations



FHWA Programmatic Essential Fish Habitat Consultation for Select Transportation Actions in the NMFS Greater Atlantic Region EFH Conservation Recommendations

Underwater Noise EFH Conservation Recommendations:

- The project shall use a soft start each day of pile driving, after a break of 30 minutes or more, and if any increase in pile installation or removal intensity is required. The project shall build up power slowly from a low energy start-up over a 20-minute period to warn fish to leave the vicinity. This buildup shall occur in uniform stages to provide a constant increase in output.

Impingement/Entrainment and Entanglement EFH Conservation Recommendations:

- Turbidity control measures shall be properly secured and monitored to ensure aquatic species are not entangled or trapped in the Project Area.
- If required, temporary intakes related to construction shall be equipped with mesh size screening and approach velocity appropriate for the species and life stage anticipated.
- There shall be no new permanent surface water withdrawals, water intakes, or water diversions.

Water Quality/Turbidity EFH Conservation Recommendations:

- The project shall install soil erosion, sediment, and turbidity controls and maintain them in effective operating condition during construction. The project shall remove controls upon completion of work, after all exposed soil and other fills, as well as any work waterward of ordinary high water or the high tide line, are permanently stabilized.
- The project shall prevent construction debris and sediment from entering aquatic areas and remove all construction debris and excess/deteriorated materials and dispose of in an upland area.
- Dredged and/or excavated materials shall be either moved to an upland location and stabilized to prevent reentry into the waterway or disposed of at a previously approved disposal site.
- The project shall ensure that raw concrete does not contact the water; wet pours of concrete shall be confined within sealed forms until the concrete is set or pre-cast members installed.

Habitat Alteration EFH Conservation Recommendations:

- The project shall remove temporary and/or obsolete structures and fills in their entirety. The project shall use geotextile barriers prior to placement of temporary fill material to ensure complete removal.

Appendix G.2 – EFH Conservation Recommendations

- If required, the project shall install a riprap bedding layer (such as gravel filter blanket or geotextile) prior to riprap placement to prevent underlying soils from washing through the riprap during high water.
- The project shall return areas impacted by temporary activities, fills, or structures to pre-construction or better condition, including elevations and substrate, and replant with native species.
- If required, temporary monitoring devices shall be removed and the substrate restored to preconstruction elevations no later than 24 months from initial installation, or upon completion of data acquisition.
- Pipelines and cables that cross a waterway shall not rest on the substrate. They may be attached to an overwater structure or be buried to allow an area to return to preexisting conditions.
- Any fill, including planting media and placement of any seed shellfish, spatted-shell, or cultch must be free of all non-native or invasive species and/or contaminants. An invasive species control plan must be part of the project if this cannot be guaranteed.
- Grain size of any sediment used as part of habitat restoration shall be the same size or larger than the native material at the site.
- The project shall incorporate natural habitats (e.g., living shorelines) and soft approaches (e.g., vegetative plantings and large woody debris) into stabilization design in addition to or instead of hardened structures.

Sensitive Habitats (Special Aquatic Sites¹, natural rocky habitats, intertidal areas, and areas containing shellfish) EFH Conservation Recommendations:

- The project shall provide compensatory mitigation for all permanent and temporary impacts to sensitive habitats. This could include a contribution to an existing in-lieu fee program. When impacts are unavoidable:
 - Conduct a biological survey to map the coverage of the sensitive habitats;
 - Develop a compensatory mitigation plan for biological resource losses, including success criteria, monitoring plan, and long-term maintenance plan;
 - Submit the results of the biological survey and the mitigation plan to the Greater Atlantic Regional Fisheries Office (GARFO) Habitat Conservation Division (HCD) for review; and

¹ Special Aquatic Sites are areas that are afforded additional protection under Section 404 of the Clean Water Act (CWA). They are defined at 40 CFR 230.3 and listed in 40 CFR 230 Subpart E and include fish and wildlife sanctuaries and refuges, wetlands, mudflats, SAV beds, and riffle and pool complexes.

Appendix G.2 – EFH Conservation Recommendations

- Undertake compensatory mitigation prior to or concurrent with any impacts to sensitive habitat.
- Where construction requires heavy equipment operation in or across wetlands or mudflats, the equipment shall have low ground pressure (typically ≤ 3 pounds per square inch); be placed on construction timber mats that are adequate to support the equipment; or be operated on dry or frozen wetlands such that shear pressure does not cause subsidence of the wetlands immediately beneath equipment and upheaval of adjacent wetlands. Construction mats shall not be dragged into position.
- Habitat restoration or mitigation shall not result in a permanent conversion or loss of sensitive habitats.
- If required, outlets shall not discharge directly into sensitive habitats.

Fish Passage/Migration Habitat EFH Conservation Recommendations:

- All replacement crossings shall provide sufficient water depth and maintain suitable water velocities during migration periods and maintain or replicate natural stream channel and flow conditions.
- The project shall incorporate climate change projections into the project design.²
- Soil erosion, sediment, and turbidity controls shall not encroach > 50% of a tidal stream's width as measured from mean high water.

Vessel Traffic EFH Conservation Recommendations:

- Project vessels shall be operated in adequate water depths to avoid propeller scour and grounding at all tides. Shallow draft vessels shall be used in shallow areas to maximize the navigational clearance between the vessel and the bottom substrate. Spuds may be used to elevate the vessel.

² Intergovernmental Panel on Climate Change (IPCC) Representative Concentration Pathways (RCP) 8.5/high greenhouse gas emission scenario and RCP 4.5/intermediate greenhouse gas emission scenario (IPCC 2014) and the global mean and regional sea level rise projections for intermediate-high and extreme scenarios referenced in Sweet et al. (2017) (revised Sweet et al. 2022) in design calculations for replacement structures.

References

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NASA Causeway Bridge Replacement Project
Environmental Assessment

Appendix H

Cultural Resources Coordination

2020 and 2021 Tribal Section 106 Consultation



U.S. Department
of Transportation
**Federal Highway
Administration**

Eastern Federal Lands
Highway Division

21400 Ridgetop Circle
Sterling, VA 20166-6511

SENT BY ELECTRONIC MAIL

In Reply Refer To: HFPP-15

Caitlin Rogers
Catawba Indian Nation
Tribal Historic Preservation Office
1536 Tom Steven Road
Rock Hill, SC 29730

Subject: Environmental Assessment Scoping and Section 106 Initiation for the Wallops
Island Causeway Bridge Replacement, Accomack County, VA

Dear Ms. Rogers:

The National Aeronautics and Space Administration (NASA), in cooperation with the Federal Highway Administration (FHWA), is initiating an Environmental Assessment (EA) that will evaluate potential impacts associated with replacement of the Wallops Island Causeway Bridge over Cat Creek at Goddard Space Flight Center's Wallops Flight Facility (WFF), in Accomack County, VA. The EA is being prepared to satisfy both NASA's and FHWA's obligations under the National Environmental Policy Act of 1969 (NEPA) and will also serve as a means for ensuring compliance with a variety of other Federal statutes, including the National Historic Preservation Act (NHPA). The EA is being tiered from the July 2019 Wallops Site-wide Programmatic Environmental Impact Statement (Site-wide PEIS). The Site-wide PEIS, which is available at https://code200-external.gsfc.nasa.gov/250-wff/site-wide_eis, analyzed the potential environmental impacts associated with various institutional support activities including the causeway bridge replacement.

The existing bridge was constructed in 1959-1960 and is approaching the end of its anticipated service life. It is located on a two-mile long causeway road connecting the mainland with Wallops Island. A 1,000-foot section of the causeway road at each bridge approach would be realigned to allow construction of the new bridge parallel to the existing bridge. The existing bridge would remain in use during construction of the new bridge. A concept-level plan for the new bridge, temporary construction bridge, and causeway realignment has been prepared by FHWA (see Attachment A). The bridge was determined to be ineligible for listing in the National Register of Historic Places (NRHP).

WFF contains numerous archaeological sites; however, no prior archaeological surveys have been performed that overlap the project area. Three known archaeological sites on Wallops Island consist of a Revolutionary War-era earthwork, a Coast Guard trash scatter, and a historic shell midden. An archaeological site sensitivity assessment was completed and a sensitivity

model was created for the entire facility (*Cultural Resources Assessment of Wallops Flight Facility*). Portions of Wallops Island fit the modeled criteria for moderate to high sensitivity for both prehistoric and historic archaeological sites. The assessment concluded that tidal marsh areas, including hummocks, knolls, and potentially buried landforms, are high sensitivity for the presence of prehistoric archaeological sites and moderate to high sensitivity for Maritime historic archaeological sites.

A Section 106 Programmatic Agreement between NASA, DHR, and the Advisory Council on Historic Preservation (ACHP) regarding management of the facility was executed in 2014. The Catawba Indian Nation (CIN) participated as a consulting party. The agreement provides concurrence for the sensitivity model, listings of known sites, NRHP eligibility statuses, and other guidelines for management and consultation. The proposed bridge replacement is not excluded from DHR review per Stipulations II or III of the agreement; therefore, the project would proceed using the standard review process per Stipulation IV.

To formally initiate consultation for this undertaking, in compliance with NHPA Section 106 (54 U.S.C. § 306108 and its implementing regulations, 36 CFR § 800), NASA/FHWA is submitting a draft Area of Potential Effects (APE) for the project (Attachment B). The draft APE will provide a preliminary basis for assessing potential historic properties that could be affected by the proposed undertaking. In order to allow flexibility for design, accommodate access/staging, and to facilitate the avoidance/minimization of impacts, the APE is slightly larger than the footprint depicted in the concept-level plans. The APE includes all areas within 150 feet of the existing roadway centerline on the north side of the road, and within 100 feet of the existing roadway centerline on the south side of the road. The APE is 4,300 linear feet (Station 15+00 to Station 58 +00 in relation to the attached plans). This includes 1,500 feet on each side of the bridge, plus the 1,300-foot bridge itself. The total APE, including terrestrial uplands, tidal marsh, and estuarine deepwater, is approximately 24.7 acres.

An archaeological investigation within the APE, including terrestrial and underwater survey, will be conducted this year. As stipulated in the archaeological site sensitivity report, the survey will include a geomorphology assessment to determine whether deeply buried cultural strata could exist within the APE. The work will include an identification survey (Phase I Survey) within the APE. If any archaeological sites are identified, a Phase II evaluation survey will be conducted to determine whether the site is potentially eligible for listing in the NRHP. The survey will include the entire APE; however, disturbed, steeply sloped, causeway embankment, underground utility corridor(s) and paved areas will not be subjected to shovel testing. Portions of the tidal marsh that are not determined to possess archaeological potential during the geomorphology assessment will not require additional testing. The Phase 1 underwater survey will utilize remote sensing technologies including a magnetometer, side-scan sonar, and sub-bottom profiler. Underwater sites would be evaluated by a diving team. The survey report and associated recommendations will be submitted to your office for review.

We look forward to continuing the Section 106 consultation process and welcome any comments you may have. Additionally, we are requesting your input regarding Traditional Cultural Properties or other areas of significance within the APE. Please direct any communications related to this project to Mr. Ryan Kimberley, FHWA Environmental Protection Specialist, by email ryan.kimberley@dot.gov, or by phone, 540-622-3069. If you have any questions about the Environmental Assessment or the Section 106 process, feel free to contact us at your

convenience. Please acknowledge your receipt of this letter, along with any comments to be included with the EA scoping period, within thirty days.

Sincerely yours,

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Kevin S. Rose
Environmental Compliance Specialist

Enclosures

CC:

Ms. Shari Miller, Environmental Planning Lead, NASA, Wallops Island, VA

Mr. Randall Stanley, Historic Preservation Officer, NASA, Wallops Island, VA



U.S. Department
of Transportation
**Federal Highway
Administration**

Eastern Federal Lands
Highway Division

21400 Ridgetop Circle
Sterling, VA 20166-6511

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In Reply Refer To: HFPP-15

Stephen Adkins, Chief
Chickahominy Indian Tribe
8200 Lott Cary Road
Providence Forge, VA 23140

Subject: Environmental Assessment Scoping and Section 106 Initiation for the Wallops
Island Causeway Bridge Replacement, Accomack County, VA

Dear Mr. Adkins:

The National Aeronautics and Space Administration (NASA), in cooperation with the Federal Highway Administration (FHWA), is initiating an Environmental Assessment (EA) that will evaluate potential impacts associated with replacement of the Wallops Island Causeway Bridge over Cat Creek at Goddard Space Flight Center's Wallops Flight Facility (WFF), in Accomack County, VA. The EA is being prepared to satisfy both NASA's and FHWA's obligations under the National Environmental Policy Act of 1969 (NEPA) and will also serve as a means for ensuring compliance with a variety of other Federal statutes, including the National Historic Preservation Act (NHPA). The EA is being tiered from the July 2019 Wallops Site-wide Programmatic Environmental Impact Statement (Site-wide PEIS). The Site-wide PEIS, which is available at https://code200-external.gsfc.nasa.gov/250-wff/site-wide_eis, analyzed the potential environmental impacts associated with various institutional support activities including the causeway bridge replacement.

The existing bridge was constructed in 1959-1960 and is approaching the end of its anticipated service life. It is located on a two-mile long causeway road connecting the mainland with Wallops Island. A 1,000-foot section of the causeway road at each bridge approach would be realigned to allow construction of the new bridge parallel to the existing bridge. The existing bridge would remain in use during construction of the new bridge. A concept-level plan for the new bridge, temporary construction bridge, and causeway realignment has been prepared by FHWA (see Attachment A). The bridge was determined to be ineligible for listing in the National Register of Historic Places (NRHP).

WFF contains numerous archaeological sites; however, no prior archaeological surveys have been performed that overlap the project area. Three known archaeological sites on Wallops Island consist of a Revolutionary War-era earthwork, a Coast Guard trash scatter, and a historic shell midden. An archaeological site sensitivity assessment was completed and a sensitivity model was created for the entire facility (*Cultural Resources Assessment of Wallops Flight Facility*). Portions of Wallops Island fit the modeled criteria for moderate to high sensitivity for

both prehistoric and historic archaeological sites. The assessment concluded that tidal marsh areas, including hummocks, knolls, and potentially buried landforms, are high sensitivity for the presence of prehistoric archaeological sites and moderate to high sensitivity for Maritime historic archaeological sites.

To formally initiate consultation for this undertaking, in compliance with NHPA Section 106 (54 U.S.C. § 306108 and its implementing regulations, 36 CFR § 800), NASA/FHWA is submitting a draft Area of Potential Effects (APE) for the project (Attachment B). The draft APE will provide a preliminary basis for assessing potential historic properties that could be affected by the proposed undertaking. In order to allow flexibility for design, accommodate access/staging, and to facilitate the avoidance/minimization of impacts, the APE is slightly larger than the footprint depicted in the concept-level plans. The APE includes all areas within 150 feet of the existing roadway centerline on the north side of the road, and within 100 feet of the existing roadway centerline on the south side of the road. The APE is 4,300 linear feet (Station 15+00 to Station 58 +00 in relation to the attached plans). This includes 1,500 feet on each side of the bridge, plus the 1,300-foot bridge itself. The total APE, including terrestrial uplands, tidal marsh, and estuarine deepwater, is approximately 24.7 acres.

An archaeological investigation within the APE, including terrestrial and underwater survey, will be conducted this year. As stipulated in the archaeological site sensitivity report, the survey will include a geomorphology assessment to determine whether deeply buried cultural strata could exist within the APE. The work will include an identification survey (Phase I Survey) within the APE. If any archaeological sites are identified, a Phase II evaluation survey will be conducted to determine whether the site is potentially eligible for listing in the NRHP. The survey will include the entire APE; however, disturbed, steeply sloped, causeway embankment, underground utility corridor(s) and paved areas will not be subjected to shovel testing. Portions of the tidal marsh that are not determined to possess archaeological potential during the geomorphology assessment will not require additional testing. The Phase 1 underwater survey will utilize remote sensing technologies including a magnetometer, side-scan sonar, and sub-bottom profiler. Underwater sites would be evaluated by a diving team. The survey report and associated recommendations will be submitted to your office for review.

We look forward to continuing the Section 106 consultation process and welcome any comments you may have. Additionally, we are requesting your input regarding Traditional Cultural Properties or other areas of significance within the APE. Please direct any communications related to this project to Mr. Ryan Kimberley, FHWA Environmental Protection Specialist, by email ryan.kimberley@dot.gov, or by phone, 540-622-3069. If you have any questions about the Environmental Assessment or the Section 106 process, feel free to contact us at your convenience. Please acknowledge your receipt of this letter, along with any comments to be included with the EA scoping period, within thirty days.

Sincerely yours,

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Kevin S. Rose
Environmental Compliance Specialist

Enclosures

CC:

Ms. Shari Miller, Environmental Planning Lead, NASA, Wallops Island, VA

Mr. Randall Stanley, Historic Preservation Officer, NASA, Wallops Island, VA



SENT BY ELECTRONIC MAIL

In Reply Refer To: HFPP-15

Lee Lockamy, Chief
Nansemond Indian Nation
1001 Pembroke Lane
Suffolk, VA 23434

Subject: Environmental Assessment Scoping and Section 106 Initiation for the Wallops
Island Causeway Bridge Replacement, Accomack County, VA

Dear Mr. Lockamy:

The National Aeronautics and Space Administration (NASA), in cooperation with the Federal Highway Administration (FHWA), is initiating an Environmental Assessment (EA) that will evaluate potential impacts associated with replacement of the Wallops Island Causeway Bridge over Cat Creek at Goddard Space Flight Center's Wallops Flight Facility (WFF), in Accomack County, VA. The EA is being prepared to satisfy both NASA's and FHWA's obligations under the National Environmental Policy Act of 1969 (NEPA) and will also serve as a means for ensuring compliance with a variety of other Federal statutes, including the National Historic Preservation Act (NHPA). The EA is being tiered from the July 2019 Wallops Site-wide Programmatic Environmental Impact Statement (Site-wide PEIS). The Site-wide PEIS, which is available at https://code200-external.gsfc.nasa.gov/250-wff/site-wide_eis, analyzed the potential environmental impacts associated with various institutional support activities including the causeway bridge replacement.

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Sincerely yours,

KEVIN S ROSE

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Kevin S. Rose
Environmental Compliance Specialist

Enclosures

CC:

Ms. Shari Miller, Environmental Planning Lead, NASA, Wallops Island, VA

Mr. Randall Stanley, Historic Preservation Officer, NASA, Wallops Island, VA



U.S. Department
of Transportation
**Federal Highway
Administration**

Eastern Federal Lands
Highway Division

21400 Ridgetop Circle
Sterling, VA 20166-6511

SENT BY ELECTRONIC MAIL

In Reply Refer To: HFPP-15

Dr. Robert Gray, Chief
Pamunkey Indian Tribe
1054 Pocahontas Trail
King William, VA 23086

Subject: Environmental Assessment Scoping and Section 106 Initiation for the Wallops
Island Causeway Bridge Replacement, Accomack County, VA

Dear Dr. Gray:

The National Aeronautics and Space Administration (NASA), in cooperation with the Federal Highway Administration (FHWA), is initiating an Environmental Assessment (EA) that will evaluate potential impacts associated with replacement of the Wallops Island Causeway Bridge over Cat Creek at Goddard Space Flight Center's Wallops Flight Facility (WFF), in Accomack County, VA. The EA is being prepared to satisfy both NASA's and FHWA's obligations under the National Environmental Policy Act of 1969 (NEPA) and will also serve as a means for ensuring compliance with a variety of other Federal statutes, including the National Historic Preservation Act (NHPA). The EA is being tiered from the July 2019 Wallops Site-wide Programmatic Environmental Impact Statement (Site-wide PEIS). The Site-wide PEIS, which is available at https://code200-external.gsfc.nasa.gov/250-wff/site-wide_eis, analyzed the potential environmental impacts associated with various institutional support activities including the causeway bridge replacement.

The existing bridge was constructed in 1959-1960 and is approaching the end of its anticipated service life. It is located on a two-mile long causeway road connecting the mainland with Wallops Island. A 1,000-foot section of the causeway road at each bridge approach would be realigned to allow construction of the new bridge parallel to the existing bridge. The existing bridge would remain in use during construction of the new bridge. A concept-level plan for the new bridge, temporary construction bridge, and causeway realignment has been prepared by FHWA (see Attachment A). The bridge was determined to be ineligible for listing in the National Register of Historic Places (NRHP).

WFF contains numerous archaeological sites; however, no prior archaeological surveys have been performed that overlap the project area. Three known archaeological sites on Wallops Island consist of a Revolutionary War-era earthwork, a Coast Guard trash scatter, and a historic shell midden. An archaeological site sensitivity assessment was completed and a sensitivity model was created for the entire facility (*Cultural Resources Assessment of Wallops Flight Facility*). Portions of Wallops Island fit the modeled criteria for moderate to high sensitivity for

both prehistoric and historic archaeological sites. The assessment concluded that tidal marsh areas, including hummocks, knolls, and potentially buried landforms, are high sensitivity for the presence of prehistoric archaeological sites and moderate to high sensitivity for Maritime historic archaeological sites.

To formally initiate consultation for this undertaking, in compliance with NHPA Section 106 (54 U.S.C. § 306108 and its implementing regulations, 36 CFR § 800), NASA/FHWA is submitting a draft Area of Potential Effects (APE) for the project (Attachment B). The draft APE will provide a preliminary basis for assessing potential historic properties that could be affected by the proposed undertaking. In order to allow flexibility for design, accommodate access/staging, and to facilitate the avoidance/minimization of impacts, the APE is slightly larger than the footprint depicted in the concept-level plans. The APE includes all areas within 150 feet of the existing roadway centerline on the north side of the road, and within 100 feet of the existing roadway centerline on the south side of the road. The APE is 4,300 linear feet (Station 15+00 to Station 58 +00 in relation to the attached plans). This includes 1,500 feet on each side of the bridge, plus the 1,300-foot bridge itself. The total APE, including terrestrial uplands, tidal marsh, and estuarine deepwater, is approximately 24.7 acres.

An archaeological investigation within the APE, including terrestrial and underwater survey, will be conducted this year. As stipulated in the archaeological site sensitivity report, the survey will include a geomorphology assessment to determine whether deeply buried cultural strata could exist within the APE. The work will include an identification survey (Phase I Survey) within the APE. If any archaeological sites are identified, a Phase II evaluation survey will be conducted to determine whether the site is potentially eligible for listing in the NRHP. The survey will include the entire APE; however, disturbed, steeply sloped, causeway embankment, underground utility corridor(s) and paved areas will not be subjected to shovel testing. Portions of the tidal marsh that are not determined to possess archaeological potential during the geomorphology assessment will not require additional testing. The Phase 1 underwater survey will utilize remote sensing technologies including a magnetometer, side-scan sonar, and sub-bottom profiler. Underwater sites would be evaluated by a diving team. The survey report and associated recommendations will be submitted to your office for review.

We look forward to continuing the Section 106 consultation process and welcome any comments you may have. Additionally, we are requesting your input regarding Traditional Cultural Properties or other areas of significance within the APE. Please direct any communications related to this project to Mr. Ryan Kimberley, FHWA Environmental Protection Specialist, by email ryan.kimberley@dot.gov, or by phone, 540-622-3069. If you have any questions about the Environmental Assessment or the Section 106 process, feel free to contact us at your convenience. Please acknowledge your receipt of this letter, along with any comments to be included with the EA scoping period, within thirty days.

Sincerely yours,

KEVIN S ROSE Digitally signed by KEVIN S ROSE
Date: 2020.08.21 15:27:57 -04'00'

Kevin S. Rose
Environmental Compliance Specialist



PAMUNKEY INDIAN TRIBE

Terry Clouthier
Cultural Resource
Director

TRIBAL GOVERNMENT
Tribal Office

1054 Pocahontas Trail
King William, VA 23086

(804) 843-2109
FAX (866) 422-3387

THPO File Number: 2020-757

Date: 09/23/2020

Ryan Kimberley
Environmental Protection Specialist
Federal Highway Administration
Eastern Federal Lands Highway Division
21400 Ridgetop Circle
Sterling, VA 20166

RE: Wallops Island Causeway Bridge Replacement, Accomack County, VA, EA Scoping Notification and Section 106 Initiation

Dear Mr. Kimberley,

Thank you for contacting the Pamunkey Indian Tribe regarding the proposed undertaking to replace the Wallops Island Causeway Bridge over Cat Creek at Goddard Space Flight Center's Wallops Flight Facility (WFF), in Accomack County, VA. My office offers the following comments regarding the proposed undertaking.

My office would like to be a consulting party for this proposed undertaking.

My office concurs with the plans for archaeological survey as outlined in your letter to the Tribe.

We look forward to reviewing the results of the survey and the draft environmental assessment once they are completed and submitted for review.

Please provide all correspondence electronically to the email below.

Thank you for considering our cultural heritage in your decision-making process.

If you have any questions feel free to email me at terry.clouthier@pamunkey.org.

Sincerely,

Terry Clouthier

Digitally signed by Terry
Clouthier
Date: 2020.09.23 12:03:49 -04'00'

Enclosures

CC:

Ms. Shari Miller, Environmental Planning Lead, NASA, Wallops Island, VA

Mr. Randall Stanley, Historic Preservation Officer, NASA, Wallops Island, VA



U.S. Department
of Transportation
**Federal Highway
Administration**

Eastern Federal Lands
Highway Division

21400 Ridgetop Circle
Sterling, VA 20166-6511

SENT BY ELECTRONIC MAIL

Terry Clouthier
Pamunkey Indian Tribe
1054 Pocahontas Trail
King William, VA 23086

Subject: Wallops Island Causeway Bridge Replacement, Accomack County, VA
Section 106 Determination- No Historic Properties Affected
THPO File Number 2020-757

Dear Mr. Clouthier:

The National Aeronautics and Space Administration (NASA), in cooperation with the Federal Highway Administration (FHWA), proposes to replace the Wallops Island Causeway Bridge over Cat Creek at Goddard Space Flight Center's Wallops Flight Facility (WFF), in Accomack County, VA. On August 24, 2020, FHWA and NASA submitted electronic correspondence to the Pamunkey Indian Tribe formally initiating consultation in accordance with Section 106 of the National Historic Preservation Act. The correspondence included draft engineering plans, the Area of Potential Effect (APE), and an archaeological survey proposal. The letter contained a request for input regarding Traditional Cultural Properties or other areas of significance within the APE.

On September 23, 2020, FHWA received a response from your office indicating that you would like to participate as a consulting party for the proposed undertaking. Your letter concurred with the FHWA archaeological survey strategy and confirmed an interest in reviewing the survey results and environmental assessment. In late 2020, Cultural Resource Analysts, Inc. (CRA) conducted a Phase I Archaeological Survey for the project area including geoarchaeological, terrestrial, and underwater surveys. The archaeological fieldwork did not result in the identification of any sites, and no additional fieldwork was recommended. A copy of the draft archaeological report was submitted on January 11, 2021. No comments were received in response to the correspondence.

FHWA and NASA also provided the project information and archaeological report to the Virginia Department of Historic Resources (DHR) and six other Tribal Historic Preservation Officers (THPO) in January 2021. DHR responded on February 9, 2021, stating that "...no further archaeological work is necessary for the proposed project. No historic properties will be affected by the project" (DHR File 2020-4275). No substantive changes were made to the draft archaeological report based on comments received from DHR or any THPOs. A copy of the final report is available upon request.

Based on the results of identification and evaluation of the project area, FHWA and NASA have determined that no historic properties would be affected by the undertaking, as defined in 36 CFR Part 800.4(d)(1). We respectfully request your concurrence or comments related to this determination within 30 days. Please direct any communications related to this project to Mr. Ryan Kimberley, FHWA Environmental Protection Specialist, by email ryan.kimberley@dot.gov.

Sincerely yours,

KEVIN S ROSE  Digitally signed by KEVIN S ROSE
Date: 2023.01.30 17:42:38 -05'00'

Kevin S. Rose
Environmental Compliance Specialist



U.S. Department
of Transportation
**Federal Highway
Administration**

Eastern Federal Lands
Highway Division

21400 Ridgetop Circle
Sterling, VA 20166-6511

SENT BY ELECTRONIC MAIL

In Reply Refer To: HFPP-15

Norris Howard, Sr.
Paramount Chief
Pocomoke Indian Nation
3355 Allen Road
Eden, MD 21822

Subject: Environmental Assessment Scoping and Section 106 Initiation for the Wallops Island Causeway Bridge Replacement, Accomack County, VA

Dear Mr. Howard:

The National Aeronautics and Space Administration (NASA), in cooperation with the Federal Highway Administration (FHWA), is initiating an Environmental Assessment (EA) that will evaluate potential impacts associated with replacement of the Wallops Island Causeway Bridge over Cat Creek at Goddard Space Flight Center's Wallops Flight Facility (WFF), in Accomack County, VA. The EA is being prepared to satisfy both NASA's and FHWA's obligations under the National Environmental Policy Act of 1969 (NEPA) and will also serve as a means for ensuring compliance with a variety of other Federal statutes, including the National Historic Preservation Act (NHPA). The EA is being tiered from the July 2019 Wallops Site-wide Programmatic Environmental Impact Statement (Site-wide PEIS). The Site-wide PEIS, which is available at https://code200-external.gsfc.nasa.gov/250-wff/site-wide_eis, analyzed the potential environmental impacts associated with various institutional support activities including the causeway bridge replacement.

The existing bridge was constructed in 1959-1960 and is approaching the end of its anticipated service life. It is located on a two-mile long causeway road connecting the mainland with Wallops Island. A 1,000-foot section of the causeway road at each bridge approach would be realigned to allow construction of the new bridge parallel to the existing bridge. The existing bridge would remain in use during construction of the new bridge. A concept-level plan for the new bridge, temporary construction bridge, and causeway realignment has been prepared by FHWA (see Attachment A). The bridge was determined to be ineligible for listing in the National Register of Historic Places (NRHP).

WFF contains numerous archaeological sites; however, no prior archaeological surveys have been performed that overlap the project area. Three known archaeological sites on Wallops Island consist of a Revolutionary War-era earthwork, a Coast Guard trash scatter, and a historic shell midden. An archaeological site sensitivity assessment was completed and a sensitivity

model was created for the entire facility (*Cultural Resources Assessment of Wallops Flight Facility*). Portions of Wallops Island fit the modeled criteria for moderate to high sensitivity for both prehistoric and historic archaeological sites. The assessment concluded that tidal marsh areas, including hummocks, knolls, and potentially buried landforms, are high sensitivity for the presence of prehistoric archaeological sites and moderate to high sensitivity for Maritime historic archaeological sites.

A Section 106 Programmatic Agreement between NASA, DHR, and the Advisory Council on Historic Preservation (ACHP) regarding management of the facility was executed in 2014. The Pocomoke Indian Nation participated as a consulting party. The agreement provides concurrence for the sensitivity model, listings of known sites, NRHP eligibility statuses, and other guidelines for management and consultation. The proposed bridge replacement is not excluded from further review per Stipulations II or III of the agreement; therefore, the project would proceed using the standard review process per Stipulation IV.

NASA/FHWA is submitting a draft Area of Potential Effects (APE) for the project (Attachment B). The draft APE will provide a preliminary basis for assessing potential historic properties that could be affected by the proposed undertaking. In order to allow flexibility for design, accommodate access/staging, and to facilitate the avoidance/minimization of impacts, the APE is slightly larger than the footprint depicted in the concept-level plans. The APE includes all areas within 150 feet of the existing roadway centerline on the north side of the road, and within 100 feet of the existing roadway centerline on the south side of the road. The APE is 4,300 linear feet (Station 15+00 to Station 58 +00 in relation to the attached plans). This includes 1,500 feet on each side of the bridge, plus the 1,300-foot bridge itself. The total APE, including terrestrial uplands, tidal marsh, and estuarine deepwater, is approximately 24.7 acres.

An archaeological investigation within the APE, including terrestrial and underwater survey, will be conducted this year. As stipulated in the archaeological site sensitivity report, the survey will include a geomorphology assessment to determine whether deeply buried cultural strata could exist within the APE. The work will include an identification survey (Phase I Survey) within the APE. If any archaeological sites are identified, a Phase II evaluation survey will be conducted to determine whether the site is potentially eligible for listing in the NRHP. The survey will include the entire APE; however, disturbed, steeply sloped, causeway embankment, underground utility corridor(s) and paved areas will not be subjected to shovel testing. Portions of the tidal marsh that are not determined to possess archaeological potential during the geomorphology assessment will not require additional testing. The Phase 1 underwater survey will utilize remote sensing technologies including a magnetometer, side-scan sonar, and sub-bottom profiler. Underwater sites would be evaluated by a diving team. The survey report and associated recommendations will be submitted to your office for review.

We look forward to continuing the consultation process and welcome any comments you may have. Additionally, we are requesting your input regarding Traditional Cultural Properties or other areas of significance within the APE. Please direct any communications related to this project to Mr. Ryan Kimberley, FHWA Environmental Protection Specialist, by email ryan.kimberley@dot.gov, or by phone, 540-622-3069. If you have any questions about the Environmental Assessment or the Section 106 process, feel free to contact us at your convenience. Please acknowledge your receipt of this letter, along with any comments to be included with the EA scoping period, within thirty days.

Sincerely yours,

KEVIN S ROSE Digitally signed by KEVIN S ROSE
Date: 2020.08.21 15:27:57 -04'00'

Kevin S. Rose
Environmental Compliance Specialist

Enclosures

CC:

Ms. Shari Miller, Environmental Planning Lead, NASA, Wallops Island, VA
Mr. Randall Stanley, Historic Preservation Officer, NASA, Wallops Island, VA



SENT BY ELECTRONIC MAIL

In Reply Refer To: HFPP-15

Anne Richardson, Chief
Rappahannock Tribe
5036 Indian Neck Road
Indian Neck, VA 23148

Subject: Environmental Assessment Scoping and Section 106 Initiation for the Wallops
Island Causeway Bridge Replacement, Accomack County, VA

Dear Ms. Richardson:

The National Aeronautics and Space Administration (NASA), in cooperation with the Federal Highway Administration (FHWA), is initiating an Environmental Assessment (EA) that will evaluate potential impacts associated with replacement of the Wallops Island Causeway Bridge over Cat Creek at Goddard Space Flight Center's Wallops Flight Facility (WFF), in Accomack County, VA. The EA is being prepared to satisfy both NASA's and FHWA's obligations under the National Environmental Policy Act of 1969 (NEPA) and will also serve as a means for ensuring compliance with a variety of other Federal statutes, including the National Historic Preservation Act (NHPA). The EA is being tiered from the July 2019 Wallops Site-wide Programmatic Environmental Impact Statement (Site-wide PEIS). The Site-wide PEIS, which is available at https://code200-external.gsfc.nasa.gov/250-wff/site-wide_eis, analyzed the potential environmental impacts associated with various institutional support activities including the causeway bridge replacement.

The existing bridge was constructed in 1959-1960 and is approaching the end of its anticipated service life. It is located on a two-mile long causeway road connecting the mainland with Wallops Island. A 1,000-foot section of the causeway road at each bridge approach would be realigned to allow construction of the new bridge parallel to the existing bridge. The existing bridge would remain in use during construction of the new bridge. A concept-level plan for the new bridge, temporary construction bridge, and causeway realignment has been prepared by FHWA (see Attachment A). The bridge was determined to be ineligible for listing in the National Register of Historic Places (NRHP).

WFF contains numerous archaeological sites; however, no prior archaeological surveys have been performed that overlap the project area. Three known archaeological sites on Wallops Island consist of a Revolutionary War-era earthwork, a Coast Guard trash scatter, and a historic shell midden. An archaeological site sensitivity assessment was completed and a sensitivity model was created for the entire facility (*Cultural Resources Assessment of Wallops Flight Facility*). Portions of Wallops Island fit the modeled criteria for moderate to high sensitivity for

both prehistoric and historic archaeological sites. The assessment concluded that tidal marsh areas, including hummocks, knolls, and potentially buried landforms, are high sensitivity for the presence of prehistoric archaeological sites and moderate to high sensitivity for Maritime historic archaeological sites.

To formally initiate consultation for this undertaking, in compliance with NHPA Section 106 (54 U.S.C. § 306108 and its implementing regulations, 36 CFR § 800), NASA/FHWA is submitting a draft Area of Potential Effects (APE) for the project (Attachment B). The draft APE will provide a preliminary basis for assessing potential historic properties that could be affected by the proposed undertaking. In order to allow flexibility for design, accommodate access/staging, and to facilitate the avoidance/minimization of impacts, the APE is slightly larger than the footprint depicted in the concept-level plans. The APE includes all areas within 150 feet of the existing roadway centerline on the north side of the road, and within 100 feet of the existing roadway centerline on the south side of the road. The APE is 4,300 linear feet (Station 15+00 to Station 58 +00 in relation to the attached plans). This includes 1,500 feet on each side of the bridge, plus the 1,300-foot bridge itself. The total APE, including terrestrial uplands, tidal marsh, and estuarine deepwater, is approximately 24.7 acres.

An archaeological investigation within the APE, including terrestrial and underwater survey, will be conducted this year. As stipulated in the archaeological site sensitivity report, the survey will include a geomorphology assessment to determine whether deeply buried cultural strata could exist within the APE. The work will include an identification survey (Phase I Survey) within the APE. If any archaeological sites are identified, a Phase II evaluation survey will be conducted to determine whether the site is potentially eligible for listing in the NRHP. The survey will include the entire APE; however, disturbed, steeply sloped, causeway embankment, underground utility corridor(s) and paved areas will not be subjected to shovel testing. Portions of the tidal marsh that are not determined to possess archaeological potential during the geomorphology assessment will not require additional testing. The Phase 1 underwater survey will utilize remote sensing technologies including a magnetometer, side-scan sonar, and sub-bottom profiler. Underwater sites would be evaluated by a diving team. The survey report and associated recommendations will be submitted to your office for review.

We look forward to continuing the Section 106 consultation process and welcome any comments you may have. Additionally, we are requesting your input regarding Traditional Cultural Properties or other areas of significance within the APE. Please direct any communications related to this project to Mr. Ryan Kimberley, FHWA Environmental Protection Specialist, by email ryan.kimberley@dot.gov, or by phone, 540-622-3069. If you have any questions about the Environmental Assessment or the Section 106 process, feel free to contact us at your convenience. Please acknowledge your receipt of this letter, along with any comments to be included with the EA scoping period, within thirty days.

Sincerely yours,

KEVIN S ROSE Digitally signed by KEVIN S ROSE
Date: 2020.08.21 15:29:02 -04'00'

Kevin S. Rose
Environmental Compliance Specialist

Enclosures

CC:

Ms. Shari Miller, Environmental Planning Lead, NASA, Wallops Island, VA

Mr. Randall Stanley, Historic Preservation Officer, NASA, Wallops Island, VA



U.S. Department
of Transportation
**Federal Highway
Administration**

Eastern Federal Lands
Highway Division

21400 Ridgetop Circle
Sterling, VA 20166-6511

SENT BY ELECTRONIC MAIL

Gerald Steward
Chickahominy Indians Eastern Division
2895 Mount Pleasant Rd.
Providence Forge, VA 23140

Subject: Section 106 Initiation and Draft Archaeological Report for the Wallops Island Causeway
Bridge Replacement, Accomack County, VA

Dear Mr. Steward:

The National Aeronautics and Space Administration (NASA), in cooperation with the Federal Highway Administration (FHWA), proposes to replace the Wallops Island Causeway Bridge over Cat Creek at Goddard Space Flight Center's Wallops Flight Facility (WFF), in Accomack County, VA. The existing bridge was constructed in 1959-1960 and is approaching the end of its anticipated service life. It is located on a two-mile long causeway road connecting the mainland with Wallops Island. A concept-level plan for the new bridge, temporary construction bridge, and causeway realignment has been prepared by FHWA (see Attachment A).

To formally initiate consultation for this undertaking, in compliance with NHPA Section 106 (54 U.S.C. § 306108 and its implementing regulations, 36 CFR § 800), NASA/FHWA is submitting a draft Area of Potential Effects (APE) for the project (Attachment B). The draft APE will provide a preliminary basis for assessing potential historic properties that could be affected by the proposed undertaking. An archaeological investigation within the APE, including terrestrial and underwater survey, has been completed. The draft survey report is attached for your review (see attachment C). No archaeological sites were identified, and no additional fieldwork is recommended.

We look forward to continuing the Section 106 consultation process and welcome any comments you may have. Additionally, we are requesting your input regarding Traditional Cultural Properties or other areas of significance within the APE. Please direct any communications related to this project to Mr. Ryan Kimberley, FHWA Environmental Protection Specialist, by email ryan.kimberley@dot.gov, or by phone, 540-622-3069. Please acknowledge your receipt of this letter, along with any comments related to the APE or draft archaeological report, within thirty days.

Sincerely yours,

Kevin
S. Rose

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by Kevin S. Rose
Date: 2021.01.12
14:24:04 -05'00'

Kevin S. Rose
Environmental Compliance Specialist

CC:

Ms. Shari Miller, Environmental Planning Lead, NASA
Mr. Randall Stanley, Historic Preservation Officer, NASA
Ms. Jessica Phillips, Environmental Officer, Chickahominy Indians Eastern Division

2021 and 2022
VDHR
Cultural Resources
Coordination



U.S. Department
of Transportation
**Federal Highway
Administration**

Eastern Federal Lands
Highway Division

21400 Ridgetop Circle
Sterling, VA 20166-6511

SENT BY ELECTRONIC MAIL

In Reply Refer To: HFPP-15

Laura Lavernia
Virginia Department of Historic Resources
2801 Kensington Avenue
Richmond, VA 23221

Subject: Environmental Assessment Scoping and Section 106 Initiation for the Wallops Island Causeway Bridge Replacement, Accomack County, VA
(DHR Site ID # 001-0027-0152)

Dear Ms. Lavernia:

The National Aeronautics and Space Administration (NASA), in cooperation with the Federal Highway Administration (FHWA), is initiating an Environmental Assessment (EA) that will evaluate potential impacts associated with replacement of the Wallops Island Causeway Bridge over Cat Creek at Goddard Space Flight Center's Wallops Flight Facility (WFF), in Accomack County, VA. The EA is being prepared to satisfy both NASA's and FHWA's obligations under the National Environmental Policy Act of 1969 (NEPA) and will also serve as a means for ensuring compliance with a variety of other Federal statutes, including the National Historic Preservation Act (NHPA). The EA is being tiered from the July 2019 Wallops Site-wide Programmatic Environmental Impact Statement (Site-wide PEIS). The Site-wide PEIS, which is available at https://code200-external.gsfc.nasa.gov/250-wff/site-wide_eis, analyzed the potential environmental impacts associated with various institutional support activities including the causeway bridge replacement.

The existing bridge was constructed in 1959-1960 and is approaching the end of its anticipated service life. It is located on a two-mile long causeway road connecting the mainland with Wallops Island. A 1,000-foot section of the causeway road at each bridge approach would be realigned to allow construction of the new bridge parallel to the existing bridge. The existing bridge would remain in use during construction of the new bridge. A concept-level plan for the new bridge, temporary construction bridge, and causeway realignment has been prepared by FHWA (see Attachment A). The bridge and causeway were included in the *Historic Resources Eligibility Survey, Wallops Flight Facility, Accomack County Virginia (2011)* and were documented as Virginia Department of Historic Resources (DHR) ID# 001-0027-0152. They were recommended by NASA as not eligible for listing in the National Register of Historic Places (NRHP). DHR concurred with the report and associated recommendations (DHR File No. 2010-2274).

WFF contains numerous archaeological sites; however, no prior archaeological surveys have been performed that overlap the project area. Three known archaeological sites on Wallops Island consist of a Revolutionary War-era earthwork, a Coast Guard trash scatter, and a historic shell midden. An archaeological site sensitivity assessment was completed and a sensitivity model was created for the entire facility (*Cultural Resources Assessment of Wallops Flight Facility*, 2003, DHR File No. 2003-0571). Portions of Wallops Island fit the modeled criteria for moderate to high sensitivity for both prehistoric and historic archaeological sites. The assessment concluded that tidal marsh areas, including hummocks, knolls, and potentially buried landforms, are high sensitivity for the presence of prehistoric archaeological sites and moderate to high sensitivity for Maritime historic archaeological sites.

A Section 106 Programmatic Agreement between NASA, DHR, and the Advisory Council on Historic Preservation (ACHP) regarding management of the facility was executed in 2014. The agreement provides concurrence for the sensitivity model, listings of known sites, NRHP eligibility statuses, and other guidelines for management and consultation. The proposed bridge replacement is not excluded from DHR review per Stipulations II or III of the agreement; therefore, the project would proceed using the standard review process per Stipulation IV.

To formally initiate consultation for this undertaking, in compliance with NHPA Section 106 (54 U.S.C. § 306108 and its implementing regulations, 36 CFR § 800), NASA/FHWA is submitting a draft Area of Potential Effects (APE) for the project (Attachment B). The draft APE will provide a preliminary basis for assessing potential historic properties that could be affected by the proposed undertaking. In order to allow flexibility for design, accommodate access/staging, and to facilitate the avoidance/minimization of impacts, the APE is slightly larger than the footprint depicted in the concept-level plans. The APE includes all areas within 150 feet of the existing roadway centerline on the north side of the road, and within 100 feet of the existing roadway centerline on the south side of the road. The APE is 4,300 linear feet (Station 15+00 to Station 58 +00 in relation to the attached plans). This includes 1,500 feet on each side of the bridge, plus the 1,300-foot bridge itself. The total APE, including terrestrial uplands, tidal marsh, and estuarine deepwater, is approximately 24.7 acres.

An archaeological investigation within the APE, including terrestrial and underwater survey, will be conducted this year. As stipulated in the archaeological site sensitivity report, the survey will include a geomorphology assessment to determine whether deeply buried cultural strata could exist within the APE. The work will include an identification survey (Phase I Survey) within the APE. If any archaeological sites are identified, a Phase II evaluation survey will be conducted to determine whether the site is potentially eligible for listing in the NRHP. The survey will include the entire APE; however, disturbed, steeply sloped, causeway embankment, underground utility corridor(s) and paved areas will not be subjected to shovel testing. Portions of the tidal marsh that are not determined to possess archaeological potential during the geomorphology assessment will not require additional testing. The Phase 1 underwater survey will utilize remote sensing technologies including a magnetometer, side-scan sonar, and sub-bottom profiler. Underwater sites would be evaluated by a diving team. The survey report and associated recommendations will be submitted to DHR for review.

Additionally, we have initiated consultation with five Tribal Historic Preservation Offices (THPOs) and invited them to participate in the Section 106 process as consulting parties. We have requested input regarding Traditional Cultural Properties or other areas of significance

within the APEs. The following THPOS/tribes have been contacted: Catawba Indian Nation; Chickahominy Indian Tribe; Nansemond Indian Tribal Association; Pamunkey Indian Tribe, and Rappahannock Tribe. Based on previous consultations, several other tribes have informed NASA that they do not need to be consulted on projects at WFF, or that they wish to be contacted only upon discovery of Native American sites.

We look forward to continuing the Section 106 consultation process and welcome any comments you may have. Please direct any communications related to these projects to Mr. Ryan Kimberley, FHWA Environmental Protection Specialist, by email ryan.kimberley@dot.gov, or by phone (540-622-3069). If you have any questions about the Environmental Assessment or the Section 106 process, feel free to contact us at your convenience. Please acknowledge your receipt of this letter, along with any comments to be included with the EA scoping period, within thirty days.

Sincerely yours,

Kevin S. Rose
Environmental Compliance Specialist

Enclosures

CC:

Ms. Shari Miller, Environmental Planning Lead, NASA, Wallops Island, VA
Mr. Randall Stanley, Historic Preservation Officer, NASA, Wallops Island, VA

Wallops Island Causeway Bridge

Area of Potential Effect

Legend

 NASA ape





COMMONWEALTH of VIRGINIA

Department of Historic Resources

2801 Kensington Avenue, Richmond, Virginia 23221

Matt Strickler
Secretary of Natural Resources

Julie V. Langan
Director

Tel: (804) 367-2323
Fax: (804) 367-2391
www.dhr.virginia.gov

MEMORANDUM

DATE: 21 September 2020 **DHR File #** 2020-4275

TO: Mr. Ryan Kimberley
FHWA

FROM:  Marc E. Holma, Architectural Historian (804) 482-6090
Review and Compliance Division

PROJECT: Wallops Island Causeway Bridge Replacement
Accomack County, Virginia

☐ This project will have an effect on historic resources. Based on the information provided, the effect will not be adverse.

☐ This project will have an adverse effect on historic properties. Further consultation with DHR is needed under Section 106 of the NHPA.

☐ Additional information is needed before we will be able to determine the effect of the project on historic resources. **Please see below.**

☐ No further identification efforts are warranted. No historic properties will be affected by the project. Should unidentified historic properties be discovered during implementation of the project, please notify DHR.

☐ We have previously reviewed this project. Attached is a copy of our correspondence.

☒ **X** Other (Please see comments below)

COMMENTS: The DHR concurs with the recommendation to conduct an archaeological survey of the project APE. Per DHR's Survey Guidelines, DHR recommends discussing with DHR staff in advance of field work the research design for underwater Phase I surveys as well as research designs that utilize probability models to exclude low probability areas from survey. It is useful for DHR to review a research design/archaeological assessment for the proposed survey prior to implementation to ensure that it will meet DHR's Guidelines.

Administrative Services
10 Courthouse Ave.
Petersburg, VA 23803
Tel: (804) 862-6408
Fax: (804) 862-6196

Eastern Region Office
2801 Kensington Avenue
Richmond, VA 23221
Tel: (804) 367-2323
Fax: (804) 367-2391

Western Region Office
962 Kime Lane
Salem, VA 24153
Tel: (540) 387-5443
Fax: (540) 387-5446

Northern Region Office
5357 Main Street
PO Box 519
Stephens City, VA 22655
Tel: (540) 868-7029
Fax: (540) 868-7033

From: [Kimberley, Ryan \(FHWA\)](#)
To: [Holma, Marc](#)
Cc: [Miller, Shari A. \(WFF-2500\)](#); [Stanley, Randall M. \(WFF-2280\)](#)
Subject: [EXTERNAL] Wallops Island Causeway Bridge Replacement, draft archeological report (2020-4275)
Date: Tuesday, January 12, 2021 1:59:18 PM

Hello Marc,

The National Aeronautics and Space Administration (NASA) and the Federal Highway Administration (FHWA) have conducted an archaeological survey within the Area of Potential Effect (APE) for the Wallops Island Causeway Bridge over Cat Creek at Goddard Space Flight Center's Wallops Flight Facility (WFF), in Accomack County, VA. The research design/scope of work was reviewed previously by DHR staff. The draft archeological report can be downloaded at the following URL:

<https://sftp.fhwa.dot.gov/?ShareToken=7422B8913A2C0A3D29FA3CBCA8AD1E43809F26BD>

The survey did not identify any archaeological sites. If you would like to receive a hard-copy of the report, or have other submittal requirements, let me know as soon as possible and I will expedite the delivery to your office. Please submit any comments that you may have about the report by February 11, 2021. The draft report does not contain the DHR file number (2020-4275) but we will add that on the final version.

Sincerely,

Ryan Kimberley
Environmental Protection Specialist
Federal Highway Administration
Eastern Federal Lands Highway Division
22001 Loudon County Parkway
Building E2, Suite 200
Ashburn, VA 20147
703-404-6240

From: Holma, Marc [mailto:marc.holma@dhr.virginia.gov]
Sent: Monday, October 19, 2020 11:08 AM
To: Kimberley, Ryan (FHWA) <ryan.kimberley@dot.gov>
Subject: Wallops Island Causeway Bridge Replacement archaeological research design (2020-4275)



Ryan.

The archaeological research/scope of work prepared by CRA appears to be consistent with DHR survey Guidelines. The DHR has no further comment at this time and looks forward to reviewing the

results of the surveys when completed.

Sincerely,
Marc

--

Marc Holma
Architectural Historian
Division of Review and Compliance
(804) 482-6090
marc.holma@dhr.virginia.gov



COMMONWEALTH of VIRGINIA

Department of Historic Resources

2801 Kensington Avenue, Richmond, Virginia 23221

Matt Strickler
Secretary of Natural Resources

Julie V. Langan
Director

Tel: (804) 367-2323
Fax: (804) 367-2391
www.dhr.virginia.gov

MEMORANDUM

DATE: 9 February 2021 **DHR File #** 2020-4275

TO: Mr. Ryan Kimberley
FHWA

FROM: Marc E. Holma, Architectural Historian (804) 482-6090
Review and Compliance Division

PROJECT: Wallops Island Causeway Bridge Replacement
Accomack County, Virginia

___ This project will have an effect on historic resources. Based on the information provided, the effect will not be adverse.

___ This project will have an adverse effect on historic properties. Further consultation with DHR is needed under Section 106 of the NHPA.

___ Additional information is needed before we will be able to determine the effect of the project on historic resources. **Please see below.**

X No further identification efforts are warranted. No historic properties will be affected by the project. Should unidentified historic properties be discovered during implementation of the project, please notify DHR.

___ We have previously reviewed this project. Attached is a copy of our correspondence.

___ Other (Please see comments below)

COMMENTS: No archaeological sites were identified in the Phase I survey. DHR requests that the title page of the report be revised to accurately describe this report as a Phase I Archaeological Survey not a "Phase I/II Archaeological Survey" and to include the DHR file number. Based on the information provided, DHR concurs with the consultant's recommendation that no further archaeological work is necessary for the proposed project.

Administrative Services
10 Courthouse Ave.
Petersburg, VA 23803
Tel: (804) 862-6408
Fax: (804) 862-6196

Eastern Region Office
2801 Kensington Avenue
Richmond, VA 23221
Tel: (804) 367-2323
Fax: (804) 367-2391

Western Region Office
962 Kime Lane
Salem, VA 24153
Tel: (540) 387-5443
Fax: (540) 387-5446

Northern Region Office
5357 Main Street
PO Box 519
Stephens City, VA 22655
Tel: (540) 868-7029
Fax: (540) 868-7033

2023 Tribal Section 106 Consultation



U.S. Department
of Transportation
**Federal Highway
Administration**

Eastern Federal Lands
Highway Division

21400 Ridgetop Circle
Sterling, VA 20166-6511

Caitlin Rogers
Catawba Indian Nation
Tribal Historic Preservation Office
1536 Tom Steven Road
Rock Hill, SC 29730

Subject: Wallops Island Causeway Bridge Replacement, Accomack County, VA
Section 106 Determination- No Historic Properties Affected

Dear Ms. Rogers:

The National Aeronautics and Space Administration (NASA), in cooperation with the Federal Highway Administration (FHWA), proposes to replace the Wallops Island Causeway Bridge over Cat Creek at Goddard Space Flight Center's Wallops Flight Facility (WFF), in Accomack County, VA. In late 2020, Cultural Resource Analysts, Inc. (CRA) conducted a Phase I Archaeological Survey for the Area of Potential Effect (APE) including geoarchaeological, terrestrial, and underwater surveys. The archaeological fieldwork did not result in the identification of any sites, and no additional fieldwork was recommended. A copy of the report is enclosed. The report includes several maps of the APE.

FHWA and NASA provided project information and the archaeological report to the Virginia Department of Historic Resources (DHR) in January 2021. DHR responded on February 9, 2021, stating that "...no further archaeological work is necessary for the proposed project. No historic properties will be affected by the project" (DHR File 2020-4275).

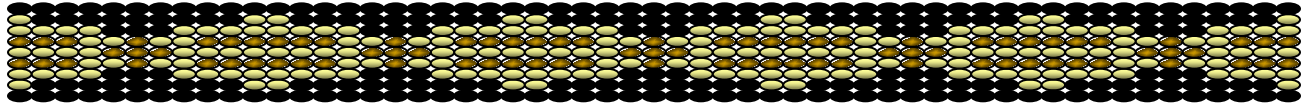
Based on the results of identification and evaluation of the project area, FHWA and NASA have determined that no historic properties would be affected by the undertaking, as defined in 36 CFR Part 800.4(d)(1). We respectfully request your concurrence or comments related to this determination within 30 days. Please direct any communications related to this project to Mr. Ryan Kimberley, FHWA Environmental Protection Specialist, by email ryan.kimberley@dot.gov.

Sincerely yours,

Kevin S. Rose
Environmental Compliance Specialist

Catawba Indian Nation
Tribal Historic Preservation Office
1536 Tom Steven Road
Rock Hill, South Carolina 29730

Office 803-328-2427



March 1, 2023

Attention: Ryan Kimberley
Federal Highway Administration
21400 Ridgetop Circle
Sterling, VA 20166-6511

Re. THPO #	TCNS #	Project Description
2023-133-1		Wallops Island Causeway Bridge Replacement, Accomack Co., VA

Dear Mr. Kimberley,

The Catawba have no immediate concerns with regard to traditional cultural properties, sacred sites or Native American archaeological sites within the boundaries of the proposed project areas. **However, the Catawba are to be notified if Native American artifacts and / or human remains are located during the ground disturbance phase of this project.**

If you have questions please contact Caitlin Rogers at 803-328-2427 ext. 226, or e-mail Caitlin.Rogers@catawba.com.

Sincerely,

Wenonah G. Haire
Tribal Historic Preservation Officer



U.S. Department
of Transportation
**Federal Highway
Administration**

Eastern Federal Lands
Highway Division

21400 Ridgetop Circle
Sterling, VA 20166-6511

SENT BY ELECTRONIC MAIL

In Reply Refer To: HFPP-15

Norris Howard, Sr.
Paramount Chief
Pocomoke Indian Nation
3355 Allen Road
Eden, MD 21822

Subject: Wallops Island Causeway Bridge Replacement, Accomack County, VA
Section 106 Determination- No Historic Properties Affected

Dear Mr. Howard:

The National Aeronautics and Space Administration (NASA), in cooperation with the Federal Highway Administration (FHWA), proposes to replace the Wallops Island Causeway Bridge over Cat Creek at Goddard Space Flight Center's Wallops Flight Facility (WFF), in Accomack County, VA. A National Historic Preservation Act, Section 106 Programmatic Agreement between NASA, the Virginia Department of Historic Resources (DHR), and the Advisory Council on Historic Preservation (ACHP) regarding management of WFF was executed in 2014. The Pocomoke Indian Nation participated as a consulting party. The subject project is proceeding under the standard review process, including consultation with your office as outlined in Stipulation IV of the agreement.

On August 24, 2020, FHWA and NASA submitted electronic correspondence to the Pocomoke Indian Nation formally initiating consultation. The correspondence included draft engineering plans, the Area of Potential Effect (APE), and an archaeological survey proposal. The letter contained a request for input regarding Traditional Cultural Properties or other areas of significance within the APE. No comments or additional information were received by FHWA in response to the correspondence.

In late 2020, Cultural Resource Analysts, Inc. (CRA) conducted a Phase I Archaeological Survey for the project area including geoarchaeological, terrestrial, and underwater surveys. The archaeological fieldwork did not result in the identification of any sites, and no additional fieldwork was recommended. A copy of the draft archaeological report was submitted to the Pocomoke Indian Nation on January 11, 2021. No comments were received in response to the correspondence. FHWA and NASA also provided the project information and archaeological DHR in January 2021. DHR responded on February 9, 2021, stating that "...no further archaeological work is necessary for the proposed project. No historic properties will be affected by the project" (DHR File 2020-4275). No substantive changes were made to the draft

archaeological report based on comments received from DHR or any Tribal Historic Preservation Officers. A copy of the final report is available upon request.

Based on the results of identification and evaluation of the project area, FHWA and NASA have determined that no historic properties would be affected by the undertaking, as defined in 36 CFR Part 800.4(d)(1). We respectfully request your concurrence or comments related to this determination within 30 days. Please direct any communications related to this project to Mr. Ryan Kimberley, FHWA Environmental Protection Specialist, by email ryan.kimberley@dot.gov.

Sincerely yours,

KEVIN S ROSE Digitally signed by KEVIN S ROSE
Date: 2023.01.30 17:46:27 -05'00'

Kevin S. Rose
Environmental Compliance Specialist



U.S. Department
of Transportation
**Federal Highway
Administration**

Eastern Federal Lands
Highway Division

21400 Ridgetop Circle
Sterling, VA 20166-6511

SENT BY ELECTRONIC MAIL

In Reply Refer To: HFPP-15

Keith Anderson, Chief
Nansemond Indian Nation
1001 Pembroke Lane
Suffolk, VA 23434

Subject: Wallops Island Causeway Bridge Replacement, Accomack County, VA
Section 106 Determination- No historic properties affected

Dear Mr. Anderson:

The National Aeronautics and Space Administration (NASA), in cooperation with the Federal Highway Administration (FHWA), proposes to replace the Wallops Island Causeway Bridge over Cat Creek at Goddard Space Flight Center's Wallops Flight Facility (WFF), in Accomack County, VA. On August 24, 2020, FHWA and NASA submitted electronic correspondence to the Nansemond Indian Nation formally initiating consultation in accordance with Section 106 of the National Historic Preservation Act. The correspondence included draft engineering plans, the Area of Potential Effect (APE), and an archaeological survey proposal. The letter contained a request for input regarding Traditional Cultural Properties or other areas of significance within the APE. No comments or additional information were received by FHWA in response to the correspondence.

In late 2020, Cultural Resource Analysts, Inc. (CRA) conducted a Phase I Archaeological Survey for the project area including geoarchaeological, terrestrial, and underwater surveys. The archaeological fieldwork did not result in the identification of any sites, and no additional fieldwork was recommended. A copy of the draft archaeological report was submitted to the Nansemond Indian Nation on January 11, 2021. No comments were received in response to the correspondence. FHWA and NASA also provided the project information and archaeological report to the Virginia Department of Historic Resources (DHR) in January 2021. DHR responded on February 9, 2021, stating that "...no further archaeological work is necessary for the proposed project. No historic properties will be affected by the project" (DHR File 2020-4275). No substantive changes were made to the draft archaeological report based on comments received from DHR or any Tribal Historic Preservation Officers. A copy of the final report is available upon request.

Based on the results of identification and evaluation of the project area, FHWA and NASA have determined that no historic properties would be affected by the undertaking, as defined in 36

CFR Part 800.4(d)(1). We respectfully request your concurrence or comments related to this determination within 30 days. Please direct any communications related to this project to Mr.

Sincerely yours,

RYAN DEFOREST
KIMBERLEY

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DEFOREST KIMBERLEY
Date: 2023.02.02 15:37:46 -05'00'

Ryan D. Kimberley
Senior Technical Specialist, Environment



U.S. Department
of Transportation
**Federal Highway
Administration**

Eastern Federal Lands
Highway Division

21400 Ridgetop Circle
Sterling, VA 20166-6511

Anne Richardson, Chief
Rappahannock Tribe
5036 Indian Neck Road
Indian Neck, VA 23148

Subject: Wallops Island Causeway Bridge Replacement, Accomack County, VA
Section 106 Determination- No Historic Properties Affected

Dear Ms. Richardson:

The National Aeronautics and Space Administration (NASA), in cooperation with the Federal Highway Administration (FHWA), proposes to replace the Wallops Island Causeway Bridge over Cat Creek at Goddard Space Flight Center's Wallops Flight Facility (WFF), in Accomack County, VA. On August 24, 2020, FHWA and NASA submitted electronic correspondence to the Rappahannock Tribe formally initiating consultation in accordance with Section 106 of the National Historic Preservation Act. The correspondence included draft engineering plans, the Area of Potential Effect (APE), and an archaeological survey proposal. The letter contained a request for input regarding Traditional Cultural Properties or other areas of significance within the APE. No comments or additional information were received by FHWA in response to the correspondence.

In late 2020, Cultural Resource Analysts, Inc. (CRA) conducted a Phase I Archaeological Survey for the project area including geoarchaeological, terrestrial, and underwater surveys. The archaeological fieldwork did not result in the identification of any sites, and no additional fieldwork was recommended. A copy of the draft archaeological report was submitted to the Rappahannock Tribe on January 11, 2021. No comments were received in response to the correspondence. FHWA and NASA also provided the project information and archaeological report to the Virginia Department of Historic Resources (DHR) in January 2021. DHR responded on February 9, 2021, stating that "...no further archaeological work is necessary for the proposed project. No historic properties will be affected by the project" (DHR File 2020-4275). No substantive changes were made to the draft archaeological report based on comments received from DHR or any Tribal Historic Preservation Officers. A copy of the final report is enclosed.

On November 21, 2021, the Rappahannock Tribe provided updated guidance regarding Section 106 consultation. In response to the guidance, this correspondence is being submitted in both a hard copy and electronic format. Based on the results of identification and evaluation of the project area, FHWA and NASA have determined that no historic properties would be affected by the undertaking, as defined in 36 CFR Part 800.4(d)(1). We respectfully request your concurrence or comments related to this determination within 30 days. Please direct any

communications related to this project to Mr. Ryan Kimberley, FHWA Environmental Protection Specialist, by email ryan.kimberley@dot.gov.

Sincerely yours,



For

Kevin S. Rose

Environmental Compliance Specialist



U.S. Department
of Transportation
**Federal Highway
Administration**

Eastern Federal Lands
Highway Division

21400 Ridgetop Circle
Sterling, VA 20166-6511

SENT BY ELECTRONIC MAIL

Stephen Adkins, Chief
Chickahominy Indian Tribe
8200 Lott Cary Road
Providence Forge, VA 23140

Subject: Wallops Island Causeway Bridge Replacement, Accomack County, VA
Section 106 Determination- No Historic Properties Affected

Dear Mr. Adkins:

The National Aeronautics and Space Administration (NASA), in cooperation with the Federal Highway Administration (FHWA), proposes to replace the Wallops Island Causeway Bridge over Cat Creek at Goddard Space Flight Center's Wallops Flight Facility (WFF), in Accomack County, VA. On August 24, 2020, FHWA and NASA submitted electronic correspondence to the Chickahominy Indian Tribe formally initiating consultation in accordance with Section 106 of the National Historic Preservation Act. The correspondence included draft engineering plans, the Area of Potential Effect (APE), and an archaeological survey proposal. The letter contained a request for input regarding Traditional Cultural Properties or other areas of significance within the APE. No comments or additional information were received by FHWA from the Chickahominy Indian Tribe in response to the correspondence.

In late 2020, Cultural Resource Analysts, Inc. (CRA) conducted a Phase I Archaeological Survey for the project area including geoarchaeological, terrestrial, and underwater surveys. The archaeological fieldwork did not result in the identification of any sites, and no additional fieldwork was recommended. A copy of the draft archaeological report was submitted to the Chickahominy Indian Tribe on January 12, 2021. No comments were received in response to the correspondence. FHWA and NASA also provided the project information and archaeological report to the Virginia Department of Historic Resources (DHR) in January 2021. DHR responded on February 9, 2021, stating that "...no further archaeological work is necessary for the proposed project. No historic properties will be affected by the project" (DHR File 2020-4275). No substantive changes were made to the draft archaeological report based on comments received from DHR or any Tribal Historic Preservation Officers. A copy of the final report is available upon request.

Based on the results of identification and evaluation of the project area, FHWA and NASA have determined that no historic properties would be affected by the undertaking, as defined in 36 CFR Part 800.4(d)(1). We respectfully request your concurrence or comments related to this determination within 30 days. Please direct any communications related to this project to Mr.

Ryan Kimberley, FHWA Environmental Protection Specialist, by email
ryan.kimberley@dot.gov.

Sincerely yours,

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Date: 2023.01.30 17:46:27 -05'00'

Kevin S. Rose
Environmental Compliance Specialist



U.S. Department
of Transportation
**Federal Highway
Administration**

Eastern Federal Lands
Highway Division

21400 Ridgetop Circle
Sterling, VA 20166-6511

SENT BY ELECTRONIC MAIL

Gerald Steward, Chief
Chickahominy Indians Eastern Division
2895 Mount Pleasant Rd.
Providence Forge, VA 23140

Subject: Wallops Island Causeway Bridge Replacement, Accomack County, VA
Section 106 Determination- No Historic Properties Affected

Dear Mr. Steward:

The National Aeronautics and Space Administration (NASA), in cooperation with the Federal Highway Administration (FHWA), proposes to replace the Wallops Island Causeway Bridge over Cat Creek at Goddard Space Flight Center's Wallops Flight Facility (WFF), in Accomack County, VA. On January 12, 2021, FHWA and NASA submitted electronic correspondence to the Chickahominy Indians Eastern Division formally initiating consultation in accordance with Section 106 of the National Historic Preservation Act. The correspondence included the Area of Potential Effect (APE) and a draft archaeological survey report of the project area. The archaeological fieldwork did not result in the identification of any sites, and no additional fieldwork was recommended. The letter contained a request for review of the report and input regarding Traditional Cultural Properties or other areas of significance within the APE. No comments or additional information were received by FHWA in response to the correspondence.

FHWA and NASA provided the project information and archaeological report to the Virginia Department of Historic Resources (DHR) in January 2021. DHR responded on February 9, 2021, stating that "...no further archaeological work is necessary for the proposed project. No historic properties will be affected by the project" (DHR File 2020-4275). No substantive changes were made to the draft archaeological report based on comments received from DHR or any Tribal Historic Preservation Officers. A copy of the final report is available upon request.

Based on the results of identification and evaluation of the project area, FHWA and NASA have determined that no historic properties would be affected by the undertaking, as defined in 36 CFR Part 800.4(d)(1). We respectfully request your concurrence or comments related to this determination within 30 days. Please direct any communications related to this project to Mr. Ryan Kimberley, FHWA Environmental Protection Specialist, by email ryan.kimberley@dot.gov.

Sincerely yours,

KEVIN S ROSE Digitally signed by KEVIN S ROSE
Date: 2023.01.30 17:47:40 -05'00'

Kevin S. Rose
Environmental Compliance Specialist