PROGRAMMATIC BIOLOGICAL ASSESSMENT FOR THE EFFECTS OF TRANSPORTATION ACTIONS ON THE BOG TURTLE WITHIN THE COMMONWEALTH OF PENNSYLVANIA

U.S. Department of Transportation
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FEDERAL HIGHWAY ADMINISTRATION
AND
PENNSYLVANIA DEPARTMENT OF TRANSPORTATION

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DECEMBER 2, 2024

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FHWA National BA
Biological Assessment

Project Name: Programmatic Biological Assessment for the Effects of Transportation Actions on the Bog Turtle Within the Commonwealth of Pennsylvania

Date: December 2, 2024

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Executive Summary

This programmatic biological assessment (BA), prepared by the Federal Highway Administration (FHWA) in conjunction with the Pennsylvania Department of Transportation (PennDOT), addresses proposed transportation actions in compliance with the Endangered Species Act (ESA) of 1973. Section 7(a)(1) of the ESA requires Federal agencies to use their authorities to further the conservation of listed species. Section 7(a)(2) requires Federal agencies to consult with the Services to ensure that they are not undertaking, funding, permitting, or authorizing actions likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat.

This BA encompasses the renewal of effect analyses previously completed by the United States Fish and Wildlife Service (USFWS) in the Programmatic Biological Opinion (PBO) dated April 10, 2019. This BA represents the re-initiation of formal consultation necessitated by the 5-year term of the existing PBO (expiration date April 10, 2024). The assessment encompasses many of the transportation activities funded or authorized by the FHWA within the extant Pennsylvania range of the federally threatened bog turtle *(Glyptemys muhlenbergii)*. The action agencies, FHWA and PennDOT (acting as the designated non-federal representative for Section 7 consultation for FHWA), annually undertake numerous transportation activities within the extant range of the species to maintain a safe and operational transportation system. It is the intent of the action agencies to implement a programmatic consultation for the species that streamlines the evaluation/authorization process and results in the conservation and ultimate recovery of the species. This programmatic biological assessment provides a framework for conducting efficient, expedited ESA Section 7 consultations through consistency and standardization of project reviews.

The transportation activities included within this consultation range in scope and complexity from routine maintenance activities to the construction of new roadways on new alignments within the extant range of the action area[1]. Comprehensive descriptions of the transportation activities, avoidance and minimization measures (AMMs), compensatory mitigation measures, and conservation recommendations for this consultation are presented in Chapter 4.

[1] Adams, Berks, Bucks, Carbon (Aquashicola Creek watershed), Chester, Cumberland, Dauphin (Spring Creek/ Conewago Creek watersheds), Delaware, Franklin (Antietam Creek watershed), Lancaster, Lebanon, Lehigh, Monroe, Montgomery, Northampton, Schuylkill (Swatara Creek watershed), and York Counties, Pennsylvania

Since the listing of the species in 1997, the action agencies had traditionally consulted on a project-by-project basis to ensure compliance with the ESA and Pennsylvania Fish and Boat Code. The overwhelming majority of these transportation activities have resulted in no effect to the species, or reduced levels of effect that are insignificant and/or discountable through the technical advisement of the USFWS Pennsylvania Field Office and implementation of AMMs.

While the vast majority of transportation actions can be reduced to insignificant and/or discountable effects through the implementation of AMMs, a few actions may result in incidental take. A program level effect analysis for the range of the transportation actions included in this programmatic biological assessment results in an effect determination of May Affect, Likely to Adversely Affect. Formal consultation resulting in the issuance of state and federal programmatic biological opinions and incidental take statements is intended.

This document also serves to provide the necessary information for the Pennsylvania Fish and Boat Commission (PFBC) to consider the effects of these proposed actions on the bog turtle as a state endangered species per the Pennsylvania Fish and Boat Code (058 Pa Code §75.4). Actions resulting in the take, catch, kill, or possession of species individuals would result in the need for the Commission to issue a Special Permit authorizing such actions. The contents of this document encompass the Commission's Biological Assessment process for the issuance of a Chapter 75.4 Biological Opinion/Special Permit on the comprehensive transportation actions. It is assumed that the USFWS will coordinate with the PFBC concerning actions potentially resulting in the take of the species under this Programmatic Consultation process.

Chapter 1 — Project Overview

1.1 Federal Nexus

This programmatic biological assessment (BA), prepared by the lead federal action agency, the Federal Highway Administration (FHWA) in conjunction with the Pennsylvania Department of Transportation (PennDOT), addresses proposed transportation actions in compliance with Section 7(c) of the Endangered Species Act (ESA) of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.). Section 7(a)(1) of the ESA requires Federal agencies to use their authorities to further the conservation of listed species. Section 7(a)(2) of the ESA requires that, through consultation with the United States Fish and Wildlife Service (USFWS), federal actions not jeopardize the continued existence of any threatened, endangered, or proposed species, or result in the destruction or adverse modification of designated critical habitat. The FHWA and PennDOT will evaluate all necessary measures to avoid adverse effects to the bog turtle during the fulfillment of transportation actions and ensure that their actions do not jeopardize the continued existence of this threatened species.

This BA encompasses the renewal of effect analyses previously completed by the United States Fish and Wildlife Service (USFWS) in the Programmatic Biological Opinion (PBO) dated April 10, 2019. This BA represents the re-initiation of formal consultation necessitated by the 5-year term of the existing PBO (expiration date April 10, 2024).

FHWA provides stewardship over the construction, maintenance, and preservation of the Nation's highways, bridges, and tunnels. FHWA also conducts research and provides technical assistance to federal, state, tribal, and local agencies to improve safety, mobility, and livability, and to encourage innovation. FHWA strives to advance environmental stewardship and streamlining for FHWA-funded and approved projects through the application of National Environmental Policy Act (NEPA) and related environmental laws and regulations.

This programmatic BA covers many of the activities funded or authorized by the FHWA within the extant Pennsylvania range of the federally threatened bog turtle (*Glyptemys muhlenbergii*). The FHWA supports state and local governments in the design, construction, and maintenance of the nation's highway system. For transportation agency projects that involve federal permits, such as United States Army Corps of Engineers (USACE) permits under the Clean Water Act, the FHWA will generally be the lead federal

agency for the purposes of consultation with the USFWS under Section 7 of the ESA. The FHWA, and potentially the USACE, may use this consultation for included activities or consult on a case-by-case basis, or use any other applicable programmatic consultation for their actions.

PennDOT receives funding from the FHWA in support of design, construction, and maintenance activities within the state through the Federal Aid Highway Program. PennDOT has been delegated by the FHWA as a non-federal representative for the purposes of conducting Section 7 ESA interagency consultation.

This programmatic BA also serves to provide the necessary information for the Pennsylvania Fish and Boat Commission (PFBC) to consider the effects of these proposed actions on the bog turtle as a state endangered species per the Pennsylvania Fish and Boat Code (058 Pa Code §75.4). Actions resulting in the take, catch, kill, or possession of species individuals would result in the need for the Commission to issue a Special Permit authorizing such actions. The contents of this document encompass the Commission's Biological Assessment process for the issuance of a Chapter 75.4 Biological Opinion/Special Permit on the comprehensive transportation actions.

1.2 Project Description

1.2.1 Programmatic Consultation Process

This BA addresses the northern population of the bog turtle, a small semi-aquatic turtle, presently protected under the ESA as a federally threatened species, and Pennsylvania Fish and Boat Code as a state endangered species. The species typically inhabits a unique intermediate-stage succession wetland habitat supported by a persistent source of groundwater springs and seeps which induce the development of thick, organic, mucky soil conditions. Forested habitat areas and headwater riparian corridors may be used as dispersal conduits to other wetlands with suitable components for species support. The species has become acclimated to disturbed wetland complexes with semi-closed forest canopies. Bog turtles are neither randomly nor abundantly distributed throughout their range. They are habitat specialists that require very specific environmental conditions to ensure their survival. Designated critical habitat for the species has not been promulgated under the ESA within Pennsylvania. The extant range of the species within Pennsylvania is a 17-county area illustrated on Figure 1 (see map, page 9). The *USFWS Bog Turtle Northern Population Recovery Plan* (USFWS 2001) divides this extant range into two distinct recovery units: the Susquehanna River/Potomac River Recovery Unit; and the Delaware River Recovery

Unit. The USFWS completed a 5-year status review in 2022 re-confirming the species as federally threatened under the ESA.

Numerous transportation actions occur annually within the extant range of the species to maintain a safe and operational roadway system. These transportation actions typically include roadway shoulder improvement, repaving, culvert extension/replacement, bridge replacement, bridge rehabilitation, bridge maintenance and repair, roadway drainage improvement, roadway widening, construction of new roadway on new alignment, sidewalk and multipurpose path improvements, and multimodal improvements including rail and airports.

The FHWA, PennDOT, and USFWS have jointly developed this programmatic ESA Section 7 consultation for transportation actions that may affect the species. The intent of these agencies is to implement a consultation process for the species that streamlines the evaluation/authorization process as well as results in the conservation and ultimate recovery of the species. This consultation process would ultimately address the potential for ESA Section 9 liability associated with the incidental take of the species by these transportation actions. This BA contains analyses of transportation actions on the species and identifies activities that are likely to result in no effect to the species, may affect but are not likely to adversely affect the species, or are likely to adversely affect the species.

This consultation provides a framework for conducting efficient ESA Section 7 consultations through consistency and standardization of project reviews. It also helps to expedite the review and permitting process for proposed activities. This consultation applies to those actions that the USFWS has determined to meet the effect determinations, project conditions, and conservation measures described in this document. This consultation is intended to cover the majority of transportation actions. However, some actions upon the review of the USFWS may exceed the scope of this consultation and require individual or additional Section 7 consultation.

The purposes of this consultation are:

1) to identify and evaluate potential effects to the bog turtle resulting from FHWA/PennDOT transportation improvement and maintenance activities;

(2) to establish an expeditious and predictable consultation process for activities that may affect the species;

(3) to identify AMMs that, when implemented, reduce the effect on the species while fulfilling the statutory obligations of PennDOT, FHWA, and USACE under the ESA, Federal Clean Water Act, NEPA, and Pennsylvania Fish and Boat Code; and

(4) to address ESA Section 9 liability associated with the incidental take of the species when it is likely to occur.

The effects of these transportation actions would be regarded as primary factors influencing the status of the species within the action area of this consultation. The localized effects of these actions on species subpopulations throughout the action area would be addressed through commitments to avoid and offset the effects. This programmatic consultation is not anticipated to cumulatively jeopardize the continued existence of the species.

1.2.2 Federal Highway Administration and Pennsylvania Department of Transportation Program Missions

The FHWA provides stewardship over the construction, maintenance, and preservation of the Nation's highways, bridges, and tunnels. The FHWA provides financial and technical assistance to state and local governments.

Nationally, Pennsylvania ranks as the fifth largest state-maintained road system and third largest bridge system. PennDOT is directly responsible for nearly 40,000 miles of highway and approximately 25,000 bridges. PennDOT's mission is to provide a sustainable transportation system and quality services that are embraced by local communities and add value to its customers.

The extant range of the species in Pennsylvania lies within regions of the state experiencing heavy traffic from the rapidly developing Baltimore-Washington and Philadelphia-New York metropolitan corridors. Potential conflicts with the bog turtle and its supporting habitat during transportation activities are inevitable given the extensive roadway network within this region of the state.

On an annual basis, the number of existing road miles undergoing maintenance or improvements involving potential effects on the species will largely be influenced by available funding. Maintenance and improvement projects are expected to occur on only a fraction of the total infrastructure network annually.

PennDOT annually receives over a billion dollars from the FHWA in support of design, construction, and maintenance activities within the state. Components of this funding are applied to PennDOT transportation actions throughout the 17-county extant range of the bog turtle. Transportation actions throughout this range are overseen and executed by PennDOT's Engineering Districts 5-0, 6-0, and 8-0 regional management network.

TABLE 1-1 Summary of State-Maintained Road Miles and Bridge Structures Within Engineering Districts Encompassed by Extant Range

PENNDOT ENGINEERING DISTRICT	TOTAL STATE-MAINTAINED ROAD MILES	TOTAL STATE-MAINTAINED BRIDGE STRUCTURES
5 – 0	3,344	2,128
6 – 0	3,562	2,767
8 – 0	5,230	3,404

1.3 Project Area and Setting

Bog turtles occur in 17 counties throughout the state of Pennsylvania as illustrated on Figure 1. Geographically, the extant range of the species extends from the Ridge and Valley physiographic province eastward to the Piedmont and New England provinces. The Ridge and Valley province is characterized by long, narrow mountain ridges and broad to narrow drainage valleys. The Piedmont and New England provinces are characterized by rolling, broad-rounded to flat-topped hills and interspersed shallow valleys. The extant range encompasses three major river drainage basins: the Potomac, Susquehanna, and Delaware.

The Susquehanna and Potomac drainage basins are generally characterized by active agricultural land use including both grazing and crop farming. The agricultural influence is both historical and current, although agricultural abandonment and conversion are resulting in habitat change through succession, land development sprawl, and invasive species expansion. These drainage basins are primarily unglaciated. Threats to the species within these basins typically include conversion of wetlands to farm ponds, non-point source pollution, lack of buffers around wetlands, and hydrological impacts from conversion and land development activities.

The Delaware drainage basin is also characterized by active agricultural land uses, however, its location at the center of the Northeast megalopolis results in high densities of transportation corridors and major urban areas. The drainage basin supports both glaciated and unglaciated habitats. Threats to the species

within the basin are dominated by urban sprawl, habitat fragmentation, and the maintenance of sustaining groundwater quantity and quality conditions.

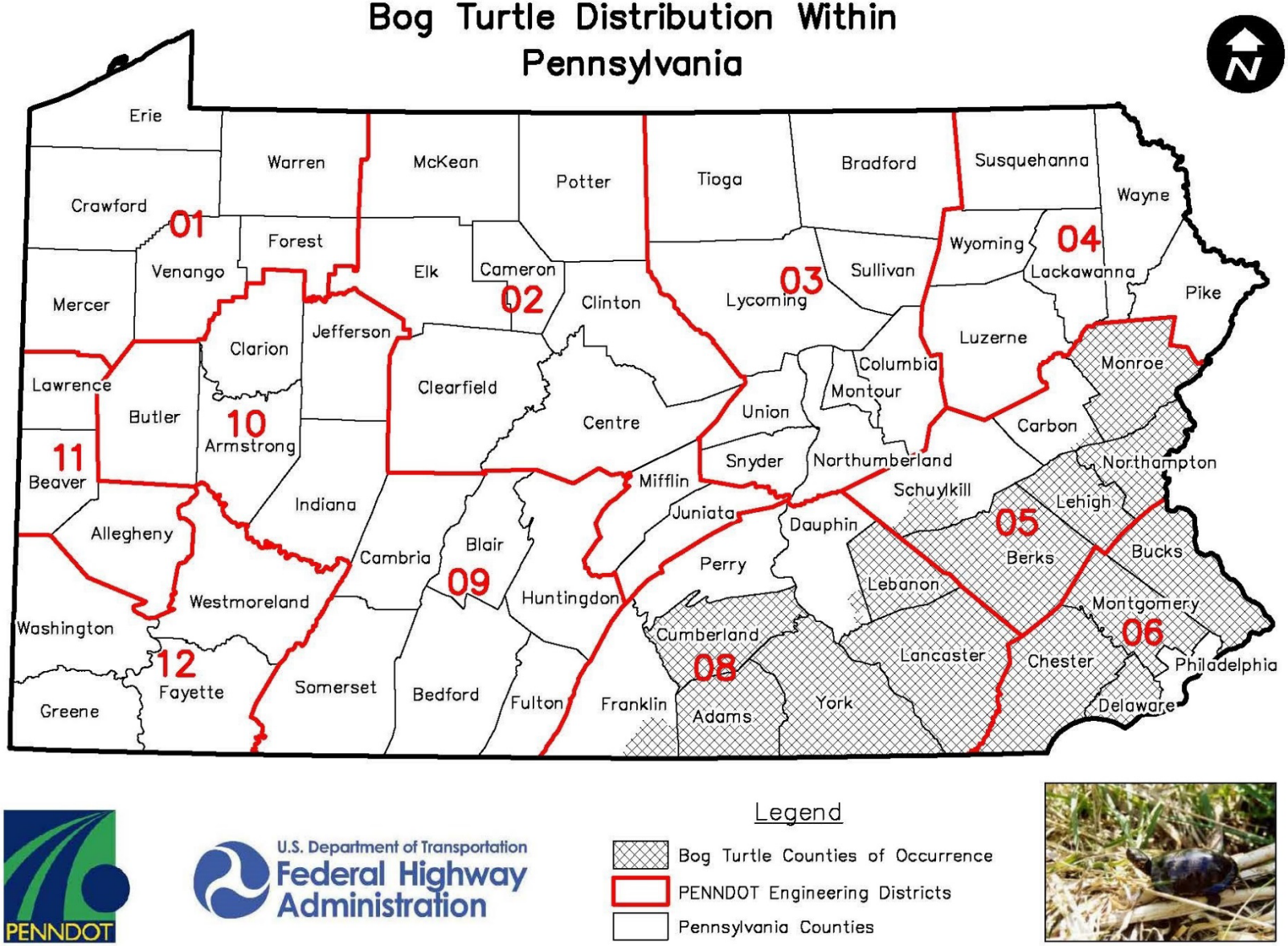
1.4 Consultation History

The history of consultation activities:

January 23, 2003	USFWS provided a review of roadway maintenance activities which may affect the bog turtle if conducted in, or near, occupied habitat (Appendix A). This consultation resulted in the concurrence that many routine maintenance activities (listed in Table 7-1) which are conducted within the existing roadway corridor would not affect the species. However, activities which could ultimately affect wetland hydrology, migration corridors, and wetland habitat quality/ characteristics either directly or indirectly were determined to potentially affect the species.
June 6, 2017	FHWA/PennDOT conducts a conference call with the USFWS to discuss the preliminary concept of a formal programmatic consultation process for transportation actions and the bog turtle within Pennsylvania (for meeting notes see Appendix B).
October 13, 2017	PennDOT provides the USFWS with a document entitled *Draft Programmatic Biological Assessment for the Effects of Transportation Action on the Bog turtle within the Commonwealth of Pennsylvania* for review.
November 2, 2017	The USFWS provides comments on the draft Biological Assessment
March 14, 2018	The USFWS receives the request from the FHWA for formal consultation on the programmatic consultation process for transportation actions and the bog turtle within Pennsylvania.
April 17, 2018	In response to questions and comments received from the USFWS, PennDOT provides the USFWS with a Biological Assessment Addendum.
November 21, 2018	The USFWS issues the Programmatic Biological Opinion of the Effects of Transportation Action on the Bog Turtle within the Commonwealth of Pennsylvania and its effects on the federally listed threatened bog turtle in accordance with Section 7 of the Endangered Species Act.
April 10, 2019	The USFWS issues the programmatic Biological Opinion on the Effects of Transportation Actions on the Bog Turtle within the Commonwealth of Pennsylvania and its effects on the federally listed threatened bog turtle in accordance with Section 7 of the Endangered Species Act (Appendix C).

July 26, 2019	PennDOT and the USFWS initiate discussions about a User guide for the Bog Turtle Programmatic Biological Opinion.
October 2, 2019	PennDOT provides the USFWS with a final draft of the User's Guide for the Pennsylvania Transportation Action Programmatic Consultation for Bog turtle, Version 2.1, October 2019.
October 11, 2019	The USFWS accepts Version 2.1 of the User's guide as accurately reflecting PennDOT's March 14, 2018, Biological Assessment and USFWS responding updated April 10, 2019.
February 22, 2024	FHWA/PennDOT conducts a conference call with the USFWS to discuss the renewal of the formal programmatic consultation process for transportation actions and the bog turtle within Pennsylvania (for meeting notes see Appendix D).
July 12, 2024	Representatives from the USFWS, PennDOT, the Pennsylvania Fish and Boat Commission, and external consultants conduct a meeting to discuss revisions to the Biological Opinion and concerns and questions about those revisions (for meeting notes see Appendix D).
July 22, 2024	The USFWS provides PennDOT with comments and concerns on PennDOT's July 8, 2024, draft updated Biological Assessment.

Figure 1.


Bog Turtle Distribution Within Pennsylvania
N
Erie
Warren
McKean
Potter
Tioga
Bradford
Susquehanna
Wayne
Crawford
01
Forest
Venango
Elk
Cameron
02
Clinton
03
Lycoming
Sullivan
Wyoming
04
Lackawanna
Pike
Mercer
Jefferson
Clarion
Clearfield
Luzerne
Columbia
Montour
Monroe
Lawrence
Butler
10
Armstrong
Centre
Union
Carbon
11
Beaver
Snyder
Northumberland
Northampton
Mifflin
Schuylkill
Indiana
Juniata
Lehigh
Allegheny
Dauphin
05
Berks
Bucks
Cambria
Blair
09
Perry
Lebanon
Montgomery
Westmoreland
Huntingdon
Washington
Cumberland
06
12
Fayette
Somerset
Bedford
Fulton
08
Lancaster
Chester
Philadelphia
Greene
Franklin
Adams
York
Delaware
PENNDOT
U.S. Department of Transportation
Federal Highway Administration
Legend
Bog Turtle Counties of Occurrence
PENNDOT Engineering Districts
Pennsylvania Counties

Chapter 2 — Federally Proposed and Listed Species and Designated Critical Habitat

Bog turtles usually occur in small, discrete populations, generally occupying open-canopy, herbaceous sedge meadows and fens bordered by wooded areas. These wetlands are a mosaic of micro-habitats that include dry pockets, saturated areas, and areas that are periodically flooded. Bog turtles depend on this diversity of micro-habitats for foraging, nesting, basking, hibernating, and sheltering. Unfragmented riparian systems that are sufficiently dynamic to allow the natural creation of open habitat are needed to compensate for ecological succession. Beaver, deer, and cattle may be instrumental in maintaining the open-canopy wetlands essential for this species' survival. Bog turtles inhabit open, unpolluted emergent and scrub/shrub wetlands such as shallow spring-fed fens, sphagnum bogs, swamps, marshy meadows, and wet pastures. These habitats are characterized by soft, muddy bottoms, interspersed wet and dry pockets, vegetation dominated by low grasses and sedges, and a low volume of standing or slow-moving water which often forms a network of shallow pools and rivulets. Bog turtles prefer areas with ample sunlight, high evaporation rates, high humidity in the near-ground microclimate, and perennial saturation of portions of the ground.

A majority of the wetlands occupied by the species are located in agricultural areas and subject to grazing by livestock. Due to the lack of pristine habitat resulting from anthropogenic disturbance and plant succession processes throughout its range, the species can become accustomed to disturbed, low-quality wetland complexes which continue to maintain a persistent groundwater regime.

Bog turtles rely upon different portions of the wetland and surrounding habitats at different times of year to fulfill various needs. The species becomes particularly active during spring emergence (late-March through mid-April), mating (mid-April through mid-June), and nesting (late May to early July). Eggs are often laid in elevated areas, such as the tops of tussocks and pedestal vegetation with open exposure to sunlight. Bog turtles are generally sedentary during the heat of summer (aestivation), and then become more active in the pre-brumation period (September through early-October) in preparation for, and movement to their hibernaculum. Bog turtles are generally sedentary during the winter brumation period (mid-October through late-March), moving at most a few meters (Smith 2016). They will overwinter in typical fen/wetland habitat (under root mats of woody vegetation, submerged rock crevices, under tussocks and sphagnum bog mats), as well as streambanks in habitats which lack or are deficient in typical hibernaculum microhabitat (Smith 2016).

Average home range estimates for the species acquired from various research efforts have ranged from 0.05 to 0.13 acre (NatureServe 2017). Bog turtles are known to use streams as travel corridors and avenues for dispersal into new, unoccupied wetlands (Klemens 1989, Somers et al. 2007, Smith 2016). Movement of bog turtles between wetlands usually occurs along interconnecting watercourses, but turtles have also been observed traveling overland through cornfields and pine plantations, across roadways, and through other terrestrial habitats (Carter et al. 2000, Pittman and Dorcas 2009). Evidence of attempted dispersal of this species between wetlands includes numerous records of bog turtles found dead on the road (USFWS 2001).

Wetland habitats that support the species are dynamic and typically exhibit unique hydrogeologic characteristics. These unique characteristics are dependent upon the surrounding "wetland drainage area" to provide and support these specialized habitat conditions. Additionally, the surrounding drainage area also supports the movement of bog turtles between wetlands along interconnecting corridors and upland habitats. The USFWS has characterized these unique components as Habitat Conservation Zones (USFWS 2001). Table 2-1 provides an outline and description of these Habitat Conservation Zones.

TABLE 2-1 Description of Bog Turtle Habitat Conservation Zones

HABITAT CONSERVATION ZONE	DESCRIPTION
Habitat Conservation Zone 1	This zone includes the core wetland supporting habitat and visible spring seeps occupied by bog turtles.
Habitat Conservation Zone 2	The boundary of this zone extends at least 300 feet from the edge of Zone 1 and includes upland areas adjacent to Zone 1. This zone acts as a filter and buffer, preventing or minimizing the effects of land use activities on bog turtles and their habitat. This zone is also likely to include at least a portion of the groundwater recharge/supply area for the wetland as well as potential travel corridors.
Habitat Conservation Zone 3	This zone includes upland, wetland, and riparian areas extending either to the geomorphic edge of the drainage area, or at least one-half mile beyond the boundary of Zone 2. This zone is also likely to include at least a portion of the groundwater recharge/supply area for the wetland as well as potential travel corridors.

Research suggests that larger migration movements beyond the typical home range, especially between supporting wetland habitats, is most frequently undertaken by adult and sub-adult individuals in search of supporting conditions, suitable breeding partners, or escape from environmental stressors (Chase et al., 1989; Klemens 1993; Ernst et al. 1994; Carter et al., 2000; Somers et al., 2007; Smith 2016).

Bog turtle researchers have observed the interaction of the species with roadway crossing/drainage structures throughout the United States. Using radio telemetry equipment, researchers in Maryland tracked the movement of two individuals out of a supporting emergent habitat, across a rural roadway, and into a roadside drainage swale with supporting habitat conditions. This pair of turtles utilized the roadside drainage swale extensively for a two-year period. Researchers in New Jersey have documented the efficacy of roadway culverts to provide travel corridors between supporting wetland habitats on both sides of Route 565 in Sussex County. A small (12-inch) cement culvert structure has been observed to promote the exchange of species individuals between the fragmented wetland complex. Researchers in Virginia captured five individuals in a 12-inch culvert between a pasture wetland and supporting wetland habitat on the opposite side of the roadway. Researchers in Pennsylvania used radio telemetry to track an individual to a second-order watercourse that was being used as a travel corridor within a potential species metapopulation. This individual was observed traveling through a 24-inch roadway culvert.

Additional information regarding species life history and biology, threats, and recovery actions can be found in the following sources:

- *USFWS Bog Turtle Northern Population Final Recovery Plan (2001);*
- *Pennsylvania Fish and Boat Commission Species Action Plan: Bog Turtle (Glyptemys muhlenbergii) June 2011*;
- *Effects of the Texas Eastern Transmission, LP (Lines 12 and 19 Anomaly Repair – Kulps Project) Pipeline Maintenance on the Bog Turtle, Berks County, Pennsylvania. ESA Section 7 - Biological Opinion. February 26, 2010. Pennsylvania Field Office.; and*
- *Effects of the Williams Transcontinental Gas Pipe Line Company, LLC 2014 Department of Transportation (DOT) Pipe Replacement Main Line "A" (Milepost 1704.52 to Milepost 1705.13) on the Bog Turtle, Chester County, Pennsylvania. ESA Section 7 - Biological Opinion. July 2, 2015. Pennsylvania Field Office.*
- *United States Fish and Wildlife Service. 2019. Effects of Transportation Actions on the Bog Turtle within the Commonwealth of Pennsylvania. ESA Section 7 – Programmatic Biological Opinion. April 10, 2019. Pennsylvania Field Office.*
- *USFWS Bog Turtle 5-Year Status Review: Summary and Evaluation (2022)*

Chapter 3 — Environmental Baseline

Regulations implementing the ESA define the environmental baseline as the past and present impacts of all federal, state, or private actions and other human activities in the action area. Also, included in the environmental baseline are the anticipated impacts of all proposed federal projects in the action area that have undergone Section 7 consultation, and the impacts of state and private actions that are contemporaneous with the consultation in progress.

The environmental baseline characterizes the status of the species within the action area as well as factors affecting the species within the action area. The action area is defined by Section 7 of the ESA as all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action.

Bog turtles are found in 17 of the 19 counties from which the species was believed to have historically occurred in Pennsylvania. Because a disjunct population of the species was extirpated from the northwestern counties of Pennsylvania, bog turtles are presently known to occur only in 17 counties of the Commonwealth. Species researchers have determined that approximately 186 sites supporting an estimated population of 5,000 individuals remain in Pennsylvania within the northern population segment of the species (personal communication Kathy Gipe PFBC/Mid-Atlantic Center for Herpetology and Conservation 2017; USFWS 2022).

The greatest threats to the species are the loss, degradation, and fragmentation of its habitat from wetland alteration, development, pollution, invasive species, and natural vegetative succession. The species is also threatened by collection for the illegal wildlife trade as well as mortality attributed to disease/ pathogen outbreaks including ranavirus, herpesvirus, and mycoplasma (USFWS 2001). These threats to the species are present throughout the action area.

Forman et al. (2000) concluded that roadways have four ecological effects on animal populations: habitat loss, reduced habitat quality, roadway induced mortality, and reduced connectivity. These four ecological effects are sequential from the establishment of the road structure and overlap each other as the species and habitat adjust to the presence of the road.

Rapid development in proximity to many remaining bog turtle populations poses a significant threat to the species. Expanding development causes disruption, fragmentation and isolation of bog turtle habitats, leaving the turtles more vulnerable to damage from human and natural activities. The range of the species has been subjected to residential, commercial, and industrial development from the Philadelphia, New York City, and Baltimore-Washington, D.C., metropolitan areas.

Existing transportation corridors such as roadways expose wildlife species to various unavoidable direct, indirect, and cumulative effects. Roadway corridors within the action area are conducive to heavy traffic volumes, accelerated speeds of vehicular traffic, and alteration of hydrology conditions through drainage activities. Trombulak and Frissell (2000) suggested that the presence of roadways potentially affect wetland species in several manners including: increased mortality from road construction; increased mortality from collisions with vehicles; modification of animal behavior; alteration of the supporting physical habitat environment; alteration of the supporting chemical environment; spread of invasive and exotic species; and increased human access and alteration.

These perturbations also include noise, vibrations, and isolation attributed to highway usage. The magnitude of harassing stimuli attributed to the proposed action may be minimized/mitigated due to the acclimation of the species at this location to existing, ongoing perturbations by the transportation corridor and surrounding suburban development. For example, the behavioral response to the perturbations of a bridge replacement project may be less severe because the turtles are presumably habituated to the existing highway usage. Potential effects from construction-induced noise and vibration are typically anticipated to be temporary and not expected to result in substantial or long-term effects. However, noise and vibration effects could be potentially more impactful during a sensitive seasonal period such as winter brumation if the species becomes aroused and harassed in the hibernaculum.

Road densities within the region may play a critical role in determining the presence of remaining species populations and metapopulations in the action area. A metapopulation is a collection of species subpopulations that exist within a landscape matrix and are separated by areas of different or unsuitable habitat. In order for these populations to persist, an exchange of individuals must occur within the metapopulation. This exchange occurs by using travel corridors as links between the discrete subpopulations. The historic construction of culvert and bridge crossings along wetland and watercourse habitats may have altered supporting species habitat conditions and created barriers fragmenting communities of the species. In addition to providing impervious surfaces that disrupt flow, roadway corridors placed between or across wetlands may result in the ponding and degradation of the habitat.

The fragmenting of habitat between existing populations of bog turtles results in a reduction of genetic blending that is necessary to maintain healthy populations.

If local conditions are unsuitable, then turtles could migrate to nearby areas in the watershed. Natural succession, which occurred at a slower rate than human-induced succession, would, over time, cause populations to move in search of new areas. However, development (including road construction), draining and filling of wetlands, pollution, and some land use practices cause historic habitats to shrink, become isolated from one another, or be eliminated altogether. These modern changes occur at rates faster than the rates at which turtles can respond to alterations.

Fragmentation of habitat also results in the amount of edge microhabitat to increase in proportion to the interior microhabitat. Increased amounts of edge are preferred by many animals that prey on bog turtle eggs, young, and adults. The spread of suburban land use into bog turtle habitat also tends to elevate the populations of predators. Predators such as foxes and raccoons adapt well to the broken habitat and areas close to houses, which protect them from pursuit by hunters and trappers.

The increase in land development occurring in the region has disrupted and will continue to disrupt supporting hydrology conditions. More impervious surfaces, as the result of development, increase the magnitude and duration of flooding during storm events. In some areas, the increased need for impervious surfaces, such as roadways, parking lots, and roof tops, has not only increased flow to downstream systems but may carry pollutants such as surfactants, petroleum products, and sediments, thereby affecting not only the quantity but the quality of the resource as well. Sediment and debris accumulations at bridges and culverts may limit use of streams as dispersal corridors for the species.

Transportation corridors and land disturbance continue to provide opportunities for the introduction or spread of invasive native and exotic plants. These invasive species have been documented to accelerate degradation of supporting habitat conditions for bog turtles (USFWS 2001).

Dorman et al. (1988) documented a direct correlation between traffic volumes and the quantity of highway pollutants such as dissolved solids, heavy metals, engine oil and gasoline byproducts, antifreeze, and deicing agents in the stormwater runoff. Despite reductions realized because of the implementation of effective stormwater management best management practices, these highway pollutants are present in the baseline condition of Pennsylvania's roadways.

In addition, municipal and private transportation actions within the action area are likely affecting existing populations to varying degrees and are likely to continue into the reasonably foreseeable future. These actions include: 1) loss, degradation, and fragmentation of habitat; 2) degradation of water quality conditions; 3) loss of wetland habitat due to authorized and unauthorized activities; and 4) incidental killing, injury, and harassment of species individuals along existing transportation corridors. Numerous existing municipal and private transportation crossings as well as additional encroachments into wetland and watercourse habitats are also present throughout the action area. Existing municipal and private transportation corridors also undergo necessary maintenance activities and improvements similar to the referenced FHWA/PennDOT actions encompassed by this programmatic consultation.

Chapter 4 — Project Details

The following subsections describe the typical transportation actions that are encompassed by this programmatic consultation. Much of this information has been derived from the *Federal Highway Administration, Federal Railroad Administration, and Federal Transit Administration Programmatic Biological Assessment for Transportation Projects in the Range of the Indiana Bat and Northern Long-Eared Bat (November 28, 2016).*

4.1 New Roadway Construction

New roadways are typically required for improved mobility as well as necessary safety improvements for the public. Unique components of new highway construction include stormwater treatment facility construction, paving, painting, illumination, and signing. New roadway construction that is designed to increase mobility can occur in both urban areas and rural areas. Depending on the location of the proposed action, undeveloped or undisturbed land cover may be affected and require extensive property acquisition outside of the existing transportation rights-of-way. New highway interchange construction could occur in areas that are highly developed or within areas that are becoming increasingly developed. New roadway construction can also result from the necessary realignment or rerouting of any existing corridor due to safety and mobility improvements. New highway construction may also include elements of bridge and culvert construction and/or extensions.

4.2 Roadway Widening/Road Shoulder Improvements

Widening of existing transportation corridors, including existing bridges, may become necessary to accommodate increased volume capacity as well as address necessary safety improvements for the public. Roadway widening activities may also require new stormwater treatment facility construction, paving, painting, illumination, and signing. Widening activities typically occur within the existing rights-of-way or require minimal property acquisition outside of the existing transportation corridor. Shoulder improvements, shaping, cutting, and stabilization of side slopes may be necessary to widen the existing roadway corridor for safety improvements. Widening may also be necessary to support the installation of safety features such as guide rail. Roadway widenings may also include elements of bridge and culvert construction and/or extensions.

4.3 Culvert Installation

Culverts include small concrete pipes, plastic pipes, and concrete boxes that may or may not qualify as bridges dependent on their span length. Conventional culverts include, but are not limited to, concrete, corrugated metal, timber, and PVC piping. Culvert installation may occur independently or as part of a larger roadway improvement project. Proper culvert sizing is determined by consulting hydraulics manuals and fish passage guidance. Culvert lengths can range dramatically from very short distances to several hundred feet dependent upon site specific circumstances and requirements. Culvert replacement projects can range in duration from several days to multiple years dependent on site specific circumstances and requirements. Typical culvert replacements involve removing vegetation at the outlet and inlet area, removing existing pavement and roadbed to extract the existing culvert, placing the new culvert, backfilling and replacing the pavement, installing scour protection and armoring, headwalls, and re-vegetating if necessary, and if flow is present, dewatering the work area and establishing a flow bypass prior to initiating work. In-water construction typically occurs during low-flow months or during dry periods. Culvert installation projects may require the use of a temporary transportation detour route. New advances in technology are allowing for culverts to be lined with supportive materials as an alternative to full replacement.

4.4 Bridge Replacement and Construction

Bridge replacement and construction may be a component of a larger roadway or rail construction project or a stand-alone project. There are multiple types of bridges including but not limited to concrete slab, concrete arch, concrete box girder, concrete T-beam, steel beam, pre-tensioned concrete beam, post-tensioned concrete beam, steel truss and timber trestle. Bridges can span wetlands, streams, and other water bodies as well as roadway and other transportation infrastructure. Some bridges span the stream systems they are crossing, while others have piers in the channel. The number of piers in the channel varies by bridge. Most new bridges are designed to span as much of the waterway as possible, and to provide the least amount of constriction that is practicable on the system. Many bridge piers are now drilled shafts, eliminating shallow footings that are susceptible to scouring.

The duration of bridge replacement activities are site and size specific and can range from several months to multiple years to complete. Installation of new bridges may require construction of a detour bridge or temporary transportation detour route. Occasionally, half of the new bridge is constructed adjacent to the old bridge and acts as the detour bridge while the original is removed and replaced. Occasionally, only

the superstructure of bridges is replaced. Most bridge replacements use the same alignment or are constructed near the old alignment. Temporary bridges may be built as construction platforms. Often, in-water work is generally timed to minimize impacts to sensitive aquatic species. Some sedimentation of the waterway may occur during pile driving and removal. Bridge removal can also result in sediment and small concrete chunks entering the water.

Major bridge replacement construction activities often include:

- clearing and grading for road widening;
- clearing and grubbing of existing streamside vegetation;
- construction of stormwater facilities;
- excavation for new bridge abutments;
- construction of bridge columns/piers/abutments;
- concrete pouring;
- pile installation and removal;
- bridge demolition;
- riprap armoring and scour protection placement; and
- paving with asphalt or concrete.

Piles are installed using several different methods. Pile driving involves the use of an impact pile driving hammer, which is a large piston-like device that is usually attached to a crane. The power source for impact hammers may be mechanical, "air steam," diesel, or hydraulic. In most impact drivers, a vertical support holds the pile in place while a heavy weight or ram moves up and down, striking an anvil which transmits the blow of the ram to the pile. In hydraulic hammers, the ram is lifted by fluid, and gravity alone acts on the down stroke. A diesel hammer, or internal combustion hammer, carries its own power source, and can be open-end or closed-end. An open-end diesel hammer falls just under the action of gravity. A closed-end diesel hammer (double acting) compresses air on its upward stroke and can therefore run faster than open-end hammers. Impact hammers can drive at a rate of approximately 40 strikes per minute.

Vibratory hammers can also be used to both install and remove piling. A vibratory hammer is a large, mechanical device, mostly constructed of steel (weighing 5 to 16 tons) that is suspended from a crane by a cable. A vibratory pile driving hammer has a set of jaws that clamp onto the top of the pile. The pile is held steady while the hammer vibrates the pile to the desired depth. Because vibratory hammers are not impact tools, noise levels are not as high as with impact pile drivers. However, piles that are installed with a vibratory hammer must often be "proofed." Proofing involves striking the pile with an impact

hammer to determine the load bearing capacity of the pile and may involve multiple impacts. If this is the case, noise will be elevated to that associated with impact pile driving. To remove piles, the hammer is engaged and slowly lifted with the aid of a crane, extracting the piling from the sediment.

Temporary access and dewatering measures are often necessary for the fulfillment of bridge replacement and construction activities. Partial-width, or full-width causeways provide a means for equipment to traverse into larger watercourse habitats for gaining accessibility to piers and superstructure elements. Causeways are typically composed of compacted rock and geotextile materials and may include embedded pipes which allow for the passage of stream or river flow through the structure. Cofferdams are often installed to create an isolated work area which can be dewatered for bridge and culvert installations or improvements. Cofferdams may consist of large casings (hollow cylinders) or structures created out of sheet piles. The majority of these cofferdam installations are completed with vibratory hammers. The exception to the use of vibratory hammers is when the substrate consists of very hard material, such as bedrock. In such cases, impact pile driving may be necessary. In some cases, other construction methods are used, such as stacked Jersey barriers with an impermeable liner, sandbag/ impermeable liner barriers, etc. These are accomplished typically by using a crane or excavator (Jersey barrier) or placed by hand (sandbags).

Bridges can be removed using several methods, including (1) dismantled over water from adjacent bridge deck or approach; (2) dismantled over the water and lowered onto a barge and barged out to a dismantling site; (3) dismantled over water and sections removed by crane; and (4) falsework (temporary structures) can be built under and around the bridge, and the bridge dismantled by sections. Bridge removal methods are selected based on a number of factors, including the structure of the bridge, the size of the bridge and river, the location within the system, the topography, and the amount of access to the bridge and the banks. Since many older bridges have bridge piers in the system, these also need to be removed. Concrete piers can be removed by demolition using a hoe ram (as long as pieces do not enter the water), or removed by a vibratory hammer; they can be cut off two feet below the ground level, or a temporary cofferdam can be constructed and the material can be hydraulically removed. The bridge demolition method will be determined by site and project-specific conditions.

Isolation of the work area and stream is often required on bridge replacement projects and may require the use of cofferdams, sandbag berms, temporary culverts or flumes depending on site conditions. Bridge replacement projects often require column construction within stream channels which typically involves the isolation of the column location through the use of a large diameter steel sleeve that is driven into the

stream substrate. All work, including excavation for the footing, placement of forms, and pouring of the concrete, would then be completed within the sleeve at each column location. This technique helps minimize construction impacts by isolating the work from the stream.

Bridge replacements may require more than one construction season, due to multiple factors such as project complexity or if the in-water work may be limited to certain periods to minimize impacts to sensitive aquatic species. Often, work on the out-of-water portions or behind cofferdams will occur year-round.

4.5 Bridge Maintenance and Rehabilitation Activities

Bridge repair, retrofit, rehabilitation, and maintenance activities are implemented to prolong the use and function of bridges, ensure motorist safety, and protect the environment. Whether a bridge is repaired, rehabilitated, or replaced depends on the age and condition of the bridge and damage that may occur to a bridge (e.g., from a storm event, earthquake, or vehicle or boat collision). The length of stream and/or wetland potentially affected by bridge repair and maintenance depends upon the scale of the bridge project and the required actions.

Joint replacement and bridge deck replacement are temperature-dependent activities, limited to the warmer months. Bridge scour repair work tends to occur during low-water times of year, and bridge painting typically occur late spring through fall when temperatures are high enough to allow the paint to dry properly. Occasionally heaters or warming devices are used to allow painting during the winter or cooler temperature periods. Bridge maintenance projects can be long-term, lasting more than one construction season.

Scour Repair Projects

Scour at bridge piers can become a major safety issue for some bridges. Repair of scoured bridge piers can include construction of temporary cofferdams around affected piers to isolate work areas; concrete or gabion repair to footing, columns or abutments; placement of riprap at scour locations; placement of concrete mattresses along bridge piers; or installation of concrete armor tetrapods (four-legged, interlocking concrete structures). Concrete mattresses consist of flat, continuous blocks of cured concrete (closed cell) or contain voids in which stream gravel can be placed (open cell). The concrete blocks are linked together with steel or synthetic cable. To install a concrete mattress, the streambed must be

excavated at the leading and trailing edges to avoid undermining the device. The mattress is placed on geotextile or filter fabric with an excavator, and earth anchors are often used to secure it.

A-JACKS are also used for direct bridge scour repair, especially where there is a low bridge with a limited hydraulic opening and when hauling rock is cost prohibitive. The A-JACKS system is composed of cured concrete pieces resembling "jacks" that are assembled into a continuous, interlocking, yet flexible matrix. This matrix provides protection against high-velocity flow. The use of A-JACKS is an alternative to riprap placement and may avoid the need for streambed excavation. A-JACKS are typically secured together with steel cable. Placement typically requires an excavator which is operated from the streambank whenever possible. Concrete armor tetrapods are similar in function but differ in shape.

Temporary access measures may be necessary for the fulfillment of scour repair activities. Partial-width, or full-width causeways provide a means for equipment to traverse into larger watercourse habitats for gaining accessibility to piers and superstructure elements. Causeways provide a working platform for machinery. Working platforms are usually constructed of light, loose riprap matched to the material necessary for the repair. The platform material is then repositioned as the machinery backs away from the work site. Installation methods vary on a site-specific basis. In navigable waters, access from a barge may be required. Whenever possible, equipment, such as excavators, will operate from streambanks, bridges, or temporary work platforms to avoid in-channel operation. If in-channel equipment operation is necessary, aquatic spider excavators are often used, especially if access to the site is difficult, as they are small, relatively light, and have rubber tires to minimize substrate disturbance. Aquatic spiders are typically used in small streams, because the size of rock they can pick up is limited. Sometimes materials can be placed directly on the streambed with little to no excavation; in other instances, excavation is necessary to key in materials. Often, stream flow and anticipated erosion will determine specific aspects of design such as anchoring.

Deck Repair and Replacement Projects

Bridge deck repair and replacement is another activity that occurs regularly. Removal may involve traditional mechanical methods such as jackhammers, concrete saws, and cold-milling (grinding), or hydrodemolition (hydro-milling). Hydrodemolition uses a high-pressure water jet stream (up to 20,000 PSI) to remove unsound concrete. Concrete debris is contained and then removed with vacuum equipment. Deck repair can involve either partial-depth or full-depth patching. Partial-depth replacement repairs surficial damage to the travel surface by cleaning and filling voids with suitable material

(concrete, asphalt, etc.). In general, when full-depth patching occurs, a temporary form is held against the underside of the deck and material fills the void from above. Longer bridges have finger joints that must be repaired and replaced as needed.

Maintenance Projects

Bridge maintenance activities may include washing, painting, debris removal from bridge piers, guardrail repairs, lighting and signage repairs, and structural rehabilitation. Such activities generally include work such as repairing damage or deterioration in various bridge components; cleaning out drains; repairing expansion joints; cleaning and repairing structural steel; sealing concrete surfaces; concrete patching; and sanding and painting. Bridge painting involves washing the bridge with highly pressurized water, abrasive sand blasting to remove all corrosion, and then applying a minimum of a number of coats of paint. Paint must be applied when temperatures are above 40°F, and it is not raining. Steel bridges also require rivet replacement and crack stabilization. These activities are often added to a bridge painting contract. Debris removal can be accomplished in a variety of ways depending on the type and quantity of debris, and the size and configuration of the bridge. Hand removal is possible in some instances, although the use of mechanical aids, such as chainsaws, winches, and heavy equipment, are often necessary. Structural rehabilitation may include replacement or repair of degraded steel superstructure, repair to bridge approaches, or repair or replacement of bridge rail. Work is typically conducted in a stepwise fashion, moving from one section of the structure to the next, rather than on the entire structure at once.

Commonly used equipment for bridge repair and maintenance includes backhoes, bulldozers, excavators, barges, dump trucks, front-end loaders, scaffolding, drapes, generators, cranes, impact and vibratory pile drivers, drilling rigs, concrete saws, traffic control devices, compressors, and other heavy equipment. The equipment operates most frequently from the bridge deck, a work barge in navigable waters, or temporary false work hung beneath the bridge deck, although in rare instances equipment may be required to operate from the bank to remove debris or repair bridge abutments and supports.

4.6 Drainage System Repair and Maintenance

Drainage system repair and maintenance activities include all work necessary to maintain roadside ditches and channels, cross culverts and pipes, catch basins and inlets, and detention/retention basins. Drainage features function to keep the highway free from excess water that could create an unsafe condition. Thus, drainage facilities are improved periodically to permit free flow and to avoid erosion and damage to roads

and other infrastructure. The extent of the area to be affected by drainage system repair and maintenance activities depends upon the size of the drainage channel or ditch and the specific actions required.

Drainage system repair and maintenance work may occur throughout the year depending on the weather and the specific project; however, most work is scheduled to occur during the summer, during low-water flow or dry conditions. Work may occur at any time of day or night, seven days a week. Most activities are completed within a few hours in any given location. However, some projects may take from one to five working days to complete. Roadside ditches are impacted by the accumulation of sediments, debris, vehicles that leave the roadway, and slides. Regular maintenance is required to remove built up sediments, debris or blockages, re-slope the sides, and maintain capacity. Material that is removed is recycled when possible or placed at suitable disposal sites.

Stormwater inlet and pipe structures convey water from one side of the highway to the other. These can become blocked by debris, sediment, vegetation, beaver-deposited materials, or slide materials. Occasionally, scour within the system can result in blocking of the culvert with rock or gravel. Blocked culverts can result in flooding over the roadway, or in severe cases, the culvert and the roadway can blow out. Regular removal of debris, sediment, and vegetation can help eliminate the problem. Obstructions must be removed regularly. Sometimes temporary diversions, such as sandbag berms, are installed to allow for culvert cleaning in a dewatered environment.

Catch basins and inlets are part of the highway storm drain system. Sediment accumulates within these structures, necessitating regular cleaning. Material is removed by manual clearing methods or by using a vacuum truck. Solids are tested and disposed of at an approved disposal facility. Solids may be recycled as fill material when suitable. Otherwise, they will be disposed of at an approved disposal facility. Liquids may be decanted at an approved decant facility. Regular cleaning improves water quality and minimizes sediments that enter the natural stream systems. Retention/detention facilities are used to contain runoff and remove sediments. Over time, sediments build up and must be removed to maintain capacity and filtration. Backhoes or other equipment remove the sediment buildup, normally during dry conditions.

Other typical activities include excavation of debris and sediment from ditches and detention/retention basins, minor grading and reshaping along ditches and at storm drain outfalls and inlets, and repair of damaged culverts. Removal of newly constructed beaver dams is often necessary when the dams impact the effectiveness of storm drainage facilities.

The equipment generally operates from the road prism[2], although in rare instances equipment may be required to operate outside of the developed road prism.

4.7 Pavement Preservation

Pavement preservation consists of patching, repairing, and replacing roadway surfaces and pavement. These include three types of pavement: (1) asphalt, (2) chip seal, and (3) concrete. If the existing pavement is in good condition, it may be covered over with a new layer of asphalt. Repair of badly deteriorated pavement could require grinding of existing pavement or replacement of the road foundation material prior to repaving. This typically involves grinding off and replacing the existing asphalt pavement.

Most paving occurs during May through October. Activities may occur seven days a week, taking place either during the daylight hours, night hours, or both, depending on traffic volumes. Project duration depends on the size of the area being paved and could take from 1 to 120 working days to complete. Pavement preservation through chip sealing (alternately termed bituminous surface treatment or BST) involves the application of hot liquid asphalt and a layer of crushed rock on an existing asphalt surface. The application of BST is a temperature- and weather-sensitive activity. These projects may include a rock crushing operation to produce the necessary aggregate.

Hot mix asphalt (HMA) paving is also a temperature- and weather-sensitive activity. Typically, the existing pavement is ground down (cold-milling) and replaced, or simply overlaid with new asphalt. Cold milling creates dry pavement grounds that are hauled to a dumpsite, spread along the road shoulders, or recycled into new pavement. Profile grinding is another optional method of removing the pavement surface. All asphalt paving projects involve the use of an asphalt plant area where asphalt is mixed with crushed rock to produce the new HMA as well as occasionally crushing of rock for the pavement materials.

Preservation of existing Portland Cement Concrete Pavement (PCCP) is typically accomplished by removal and replacement of the existing PCCP, the placement of additional dowel bars into the existing pavement, or grinding of the existing surface. The removal results in concrete rubble that is typically hauled to a dumpsite. This is often accompanied by profile grinding as is the placement of additional

[2] The road prism is the area of ground containing the road surface, cut slope and fill slope.

dowel bars. Profile-grinding employs a series of diamond saws cooled by water that cut away the pavement and results in the creation of pavement slurry that requires disposal at a dumpsite. Since paving may result in a slightly higher road surface, manholes, inlets, and guardrail, etc. may need to be raised or replaced. Guiderail replacement involves the removal of existing guiderail, installation of taller posts, and reinstallation.

Culverts may also require extension, repair, or installation as part of pavement preservation projects. Repair or replacement of worn or damaged culverts prevents damage to the roadbed from water saturating the roadbed fill material. Culverts require maintenance when at least 25 percent of their capacity is restricted by debris, sediment, or vegetation.

Installation of roadside signs, guideposts, and raised pavement markers; guardrail improvements, fence installation and repair; and paint striping may also be included in a paving project. For most projects, installation of road signs, guideposts, and fencing involves minor amounts of excavation and vegetation removal. However, installation of very large signs, including concrete footings and steel supports, and guardrail structures can potentially disturb substantial areas. Trenching may also be required to run utilities from existing sources to lighted signs. Paint striping may be completed with oil-based or latex-based paints, self-adhesive strips, or inset durable lane strips. Painting must be conducted in dry weather.

4.8 Slide Abatement

Slide abatement projects may become necessary to address unsafe conditions within the transportation corridor. Slide abatements could include landslides, rockfalls, debris flow, slope erosion, or settlement. Slide abatement typically involves removing slide debris from the roadway, stabilizing the slide areas, and repairing roads damaged by slides. The natural occurrence of landslides and other erosive slope processes is dependent on the geologic conditions, vegetation growth, antecedent groundwater conditions, and significant climatic or geologic events in a specific area. Original construction methods or other human factors may also influence landslide occurrence. Most landslides occur during the winter or during periods of heavy rainfall. The area affected by activities under slide abatement varies depending upon the scale of the material that is present on the roadway and that must be removed. The area affected will generally include the managed road prism/right-of-way but could include surface waters or wetlands in some instances.

Immediate clean-up of slides that directly impact highways is imperative, and may occur at any time of year, any time of day or night. Work may take from a few days to more than 120 working days depending on the magnitude of the slide. Construction of temporary access fills and roads may be required to provide a working platform or access for machinery. Working platforms are usually constructed of light, loose riprap matched to the material necessary for the repair. The platform material is then repositioned as the machinery backs from the work site.

The underlying cause of a slide is determined before permanent stabilization occurs. Permanent slide stabilization is often sought immediately following an event. For existing unstable slope problems, particularly those involving wet ground conditions, repairs are normally programmed for summer months when conditions are drier.

Berms are constructed of earthen materials near the toe of the landslide to provide a counterweight to the forces driving failure. A variety of retaining wall types are used to provide landslide support. These walls may consist of large re-enforced masses, referred to as gravity walls, or they may consist of reinforcing anchors secured to a rigid wall face (i.e., soil nail wall, soldier pile, tie-back wall, etc.). Ground improvement seeks to improve the shear resistance of the failing material by replacing or injecting high-strength materials into the ground (i.e., stone columns, pressure grouting, etc.). Landslides involving near-surface failure zones may also effectively incorporate vegetation to improve shallow stability and reduce surface erosion. Subsurface drilling, sampling and testing of the earthen materials are usually necessary to develop these designs.

Many of the treatments used for landslides are also applied to settlement, if the settlement results in horizontal movement. If there is no horizontal movement associated with settlement, the response is typically limited to pavement patching and repairs.

Rockfall and rockfall hazard mitigation involves stabilization, containment, avoidance, or some combination of these approaches. Stabilization measures include removing unstable material, reinforcing it with rock anchors and possibly shotcrete, and/or improving subsurface drainage by installing drains. Shotcrete is wet or dry mix concrete applied through a pneumatic hose. Wet mix concrete is pre-mixed with water, and dry mix incorporates water with the concrete at the point of discharge.

Blasting may be required when expanding the transportation footprint or as part of the stabilization efforts to remove unstable material. The scale of blasting operations can vary from breaking up a boulder or

trimming an unstable overhang, to large-scale removal operations that involve thousands of cubic yards of material. The size and spacing of charges are largely dependent on the work objectives and the geologic structure of the rock. There are two general types of blasting: production and controlled. Production blasting uses large explosive charges, widely spaced, that are designed to fragment a large amount of burden (the rock that lies between the existing slope face and the blasthole). Controlled blasting uses more tightly spaced and smaller explosive charges to remove smaller amounts of burden. This technique can remove material along the final face of the slope, or it can be used prior to production blasting to create an artificial fracture along the final cut slope.

To set explosives, holes are drilled into the rock. Drilling may be done with hand equipment by workers suspended on ropes to crane-supported drill platforms. In some cases, drill access may require establishing small access roads to position a track-mounted drill rig. Soil and unconsolidated rock on top of the blasting surface is removed prior to blasting. Blasting mats may be required to contain flying rock, especially when blasting occurs adjacent to sensitive areas such as aquatic systems. Containment can also include installing anchored wire mesh.

Temporary earthen or rock berms that function as heightened ditches or proprietary rockfall protection fences located close to the blasting area are also commonly used to contain rolling debris or minimize movement of blasted material. These structures are typically placed at the toe of landslides and are located to avoid impacts to stream or wetlands and are designed to keep debris out of sensitive areas. Rock berms can also be permanent structures. Berms or fences are typically within the road prism; therefore, impacts to vegetation are minimal.

Debris flows are typically just removed from the roadway and the work could include ditch cleaning, catchment enlarging, and placement of concrete barriers. If debris flows occur consistently at a specific location, rockfall barriers such as anchored wire mesh, may be used. Slope erosion will at times create overhanging rock and undercut “danger” trees. This material may be removed with a long-boom excavator. Typically, slide cleanup involves removing the debris from the roadway and patching the pavement if damage has occurred. Sometimes, the road foundation or guardrail may be partially damaged and may need to be replaced.

Slide debris is often stockpiled or disposed of at existing gravel pits, quarry sites or waste areas. Sometimes, existing privately owned sites are available and interested in receiving the debris. Suitable slide material may be used as fill for other maintenance or construction activities.

If slope failures enter creeks, the material is left in the creek if removing it would create greater harm. Permanent repairs to unstable slopes are mostly conducted outside (above) water bodies. However, sometimes the slope must be rebuilt and retaining walls or riprap may be used within the Ordinary High Water Mark (OHWM), and woody material may be incorporated, if appropriate. Culvert repair or cleaning may also be necessary for slide abatement.

4.9 Streambank Stabilization and Flood Damage Repair

Streambank stabilization and flood damage repair involves the direct protection of embankments at bridges, culverts, and roadway sections from erosive forces of flowing water. High-water flows during floods, spring runoff, or high tides can cause erosion of the bank to the point that the adjoining highway road prism is undermined. Other flood or high tide damage can include clogged culverts and deposition of debris along transportation corridors. Weather, flooding, or changes in the river or stream morphology often precipitate these activities. The erosion repair area will vary depending upon the size of the stream and the extent of the streambank or channel that is located adjacent to a road, bridge, or culvert.

Emergency work associated with a formal emergency declaration can occur throughout the year as soon as possible after or during the storm event. Work may last from one day to several months depending on the size of the repair and amount of work that is required. Construction of temporary access fills and roads may be required to provide a working platform or access for machinery. Working platforms are usually constructed of light, loose riprap matched to the material necessary for the repair. The platform material is then repositioned as the machinery backs from the work site.

Immediate repairs normally involve protection or reconstruction of the highway road prism including repaving, and associated infrastructure such as culverts and utilities. Flood debris removed from roads requires disposal at designated disposal sites. Clogged culverts often require cleaning or may need to be upgraded to a larger size to prevent further flow restrictions. Emergency repairs typically involve the placement of riprap by an excavator, or end-dumping of riprap when conditions are unsafe for an excavator. In cases where the emergency is not immediate, but imminent, and some planning time is available, natural channel design methods may be used to protect streambanks.

Streambank stabilization techniques include placing riprap, gabion baskets, or natural channel design features to protect and restore eroded banks. Riprap armoring is constructed of angular rock placed on the

streambank. Riprap placement varies and may extend to the top of the bank or extend up the mean annual peak flow line but can be placed up to one foot above the 100-year flood level. Woody and herbaceous plantings are used above this level. Riprap is not suitable for banks with grades steeper than 2:1. Bank grading may be required prior to stabilizing the bank. If necessary, a rock or earthen berm may be constructed to catch rocks dumped (end-dumped) from trucks before they enter the stream. A riprap bedding layer (gravel filter blanket or geotextile) is installed to prevent underlying soils from washing through the riprap during high water.

Installation methods vary on a site-specific basis. Whenever possible, equipment, such as excavators, will operate from streambanks, bridges, or temporary work platforms to avoid in-channel operation. Sometimes, materials can be placed directly on the streambed with little to no excavation; in other instances, excavation is necessary to key in materials. Often stream flow and anticipated erosion will determine specific aspects of design such as anchoring. Anchoring may be required for structures that include large woody debris. Several techniques exist including wood or steel piling, earth anchors, or rock overburden.

4.10 Sinkhole Repair

Sinkholes are depressions or holes in the ground or road surface caused by surface layer collapse. They can be formed gradually or suddenly by either natural erosive processes or human-related causes such as abandoned mine collapse or water withdrawals. Sinkholes are frequently associated with karst landscapes and could result in damage to transportation infrastructure. Sinkhole repair involves stabilizing the area through excavating or flushing (with water) loose material and creating either a permeable or impermeable plug with fill placement, then restoring the roadway embankment and pavement surface.

Sinkhole repair methods within a natural infiltration zone focus on allowing infiltration to continue. This consists of using clean, graded native limestone as fill material in layers of decreasing size, separated by Class-4 geotextile to prevent the migration of layers and more evenly distribute water flow. Within the roadway right-of-way, these layers would be carefully compacted prior to road reconstruction. Concrete can be selectively applied, more commonly in non-infiltration areas. Larger rock is placed first and then coarse aggregate is applied to fill the voids between the rocks. Concrete is then layered on top to form an impermeable plug. If present, native clay material is placed on top of the concrete or geotextile. Native soil materials are then placed on top of the plug and the roadway is restored.

4.11 Transportation Alternatives Set-Aside Program[3]

Transportation alternatives include set-aside funds for projects and activities that encompass a variety of smaller-scale transportation actions such as pedestrian and bicycle facilities, recreational trails, safe routes to school projects, community improvements such as historic preservation and vegetation management, and environmental mitigation related to stormwater and habitat connectivity. Although some of these activities may include the expansion of roadway surfaces, such expansion is typically small in scope compared to major road improvements (new travel lanes, passing lanes, etc.).

4.12 Compensatory Mitigation Activities

Compensatory mitigation activities are routinely completed for transportation activities which result in unavoidable permanent impacts to aquatic resources protected under the jurisdiction of the Federal Clean Water Act and/or Pennsylvania Dam Safety and Waterway Management Act. These compensatory actions are required as a condition of the respective Federal Clean Water Act Section 404 and/or Pennsylvania Dam Safety and Waterway Management Act Chapter 105 authorizations issued for the impacting transportation activity. Compensatory mitigation activities could include the creation of new wetland habitat within existing upland habitat, enhancement of existing wetland habitats for functional lift, preservation in perpetuity of existing wetland habitats, restoration of existing impaired stream habitat, and enhancement of existing stream habitat for functional lift. Advanced compensatory wetland mitigation banks have also been constructed to offset future transportation activities resulting in permanent impacts to aquatic resources.

4.13 Other Related Activities

Additional activities may be necessary in some instances to support transportation improvements. These activities could include geo-technical investigations, use of herbicides, and necessary public utility relocations.

Subsurface sampling and testing to determine soil characteristics is often an important step in the engineering design process. Such sampling and testing may be associated with all programs/categories described. Subsurface sampling is accomplished by drilling test holes up to 300 feet deep or digging soil

[3] Otherwise known in the past as "enhancements", redefined as alternatives in the FAST Act. See: https://www.fhwa.dot.gov/environment/transportation_alternatives/

pits up to 8 feet deep. A slide repair project, for instance, may require two to three test holes to check for stability. A drill rig can be mounted on a variety of transportation vehicles including trucks, tractors, skids, and barges. The drill is typically 5 to 10 inches in diameter. The drill shaft is lubricated using a mixture of bentonite (a natural, inert clay material) and water. The fluid is filtered and recycled back through the drilling operation.

When drilling is done off the roadway, impacts are minimized as much as possible through the selection of an appropriately sized and mounted drill rig, and limited vegetation removal. Normally, herbaceous and woody vegetation is cut back as necessary for drill access and not grubbed, and trees are rarely removed. Subsurface sampling for hazardous materials may also be necessary for each program/category. It is very similar to subsurface sampling for geotechnical purposes. Durations will vary for these activities depending on the number of bore holes and substrate composition. Typically, one to several bore holes can be drilled in a day and most sampling is accomplished within a week.

Herbicide application to control invasive plant species is sometimes used in but not limited to areas within the project limits designated by PennDOT such as planting areas, erosion control seeding areas, bark mulch areas, roadside bark mulch rings, preservation areas, mitigation areas, and along the established roadside. Herbicides are generally applied to green or growing tissue and prior to seed production but may be applied during fall regrowth periods. Herbicides used for invasive plant species control at environmental mitigation sites are often used in conjunction with mechanical and biological control. These control methods are also used near plantings to reduce competition from surrounding vegetation. The herbicide is typically applied directly to plant roots and foliage by wicking, spraying from a backpack sprayer, injecting, or by applying to cut stumps. Aerial (aircraft) application is not included in the proposed action. While herbicide is not applied directly to soil or water, it can be applied to plants in wetland mitigation sites or riparian areas. Application of herbicides is to be completed in accordance with the National Pollution Discharge Elimination System (NPDES) aquatic noxious and nuisance weed permits and in accordance with the U.S. Environmental Protection Agency (EPA) product label requirements. Appropriate buffers are applied between application sites and surface waters to avoid drift or overspray. Aquatic application may be used in wetland mitigation sites. Herbicide application timing depends on the species being targeted, with most treatment occurring in the spring, early summer, and fall.

Utilities such as public water, natural gas, sanitary sewer, electricity, and communications are often co-located within transportation corridor rights-of-way. Relocations of these services, either temporarily

and/or permanently, may be required for transportation improvements to be implemented. The amount of land disturbance associated with these activities is typically limited in nature due to the minimal amount of utility right-of-way corridor. Utility relocation activities could include underground boring techniques, directional drilling techniques, relocation of pole structures for above ground services, or removal and reinstallation on bridge crossing structures.

4.14 General Maintenance

General roadway repair, rehabilitation, and maintenance activities are implemented to prolong the use and function of highway corridors, ensure motorist safety, and protect the environment.

During informal consultation in 2002, FHWA/PennDOT requested that the USFWS Pennsylvania Field Office conduct a review of roadway maintenance activities which may affect the species if conducted in, or near, occupied habitat or habitat assumed to be occupied. This consultation resulted in the concurrence that many routine maintenance activities which are conducted within the existing roadway corridor would not affect the species. However, activities which could ultimately affect wetland hydrology, migration corridors, and wetland habitat quality/characteristics either directly or indirectly were determined to potentially affect the species.

Since the conclusion of the 2003 informal consultation, protocols for some maintenance activities have been updated and some new activities were added. These general maintenance activities are described in PennDOT Publications 113 (Highway Foreman Manual) and 55 (Bridge Maintenance Manual). Each activity is given a code and is referred to as an "assembly." Assemblies are organized under common headings such as "Drainage, Cleaning, Repair or Replacement"; "Vegetation Management"; or "Bridge Maintenance and Repair" and instruct PennDOT maintenance foremen on how to perform and estimate man-hours for each specific code. These assemblies are only used by PennDOT maintenance personnel. General maintenance activities may also be performed by contractors working on behalf of the Department. These contractual maintenance activities often correspond to the referenced maintenance assemblies.

The following assemblies were included as part of the project description in the previous biological assessment to address maintenance assemblies added by the Department during the 2003 – 2019 time period.

- 618-7421-01 Wash/Clean Various – Tunnels
- 618-7422-01 Traffic Services – Various – Tunnels
- 618-7423-01 Light System Service – Various – Tunnels
- 618-7424-01 Electro-Mech. Equipment Maintenance – Tunnels
- 618-7429-01 Other – Tunnel Activities
- 711-7124-03 Surface Treatment – Slurry Seal
- 711-7124-04 Surface Treatment – Liquid Bituminous
- 711-7124-09 Surface Treatment – Pre-Hauling
- 711-7131-03 Leveling Course Binder Finish Paver Mechanized
- 711-7324-04 Drainage – Replacement/Installation Pipes Extension Only
- 711-7324-05 Drainage – Pipe Trenches Trench Restoration Manual
- 711-7422-0X Tunnel Maintenance and Repair Activities
- 711-7423-02 Repair Tunnel Lighting Systems
- 711-7424-0X Electrical Systems Maintenance
- 711-7426-0X Tunnel Structural Members Maintenance
- 711-7427-0X Tunnel Mechanical Infrastructure Systems
- 711-7428-0X Tunnel Fire/Life Safety Systems
- 711-9003-01 Under Utilized Rented Equipment
- 711-9812-01 In-Service Training
- 712-7523-01 Anti-Icing
- 712-7524-01 Salt Brine Manufacture
- 713-7611-01 Traffic Line Painting – Mechanized Yellow
- 713-7618-01 Pavement Marking Small Paint – Waterborne Site
- 713-7618-02 Pavement Marking Small Paint – Durable
- 713-7631-04 Guiderail Upgrade Remove Cable/Add W Beam
- 713-7631-05 Guiderail Resetting
- 713-7633-01 High Tension Cable Median Barrier
- 713-7682-01 Deer Removal
- 713-7683-01 Traffic Services-Homeland Security
- 714-7712-01 Herbicide Application – Non-Selective
- 714-7715-01 Brushing Selective Thinning
- 714-7715-02 Brushing Tree Trimming
- 714-7716-0 Revitalization – Mechanized (formerly Seed and Soil Supplement)
- 714-7732-01 Maintenance of All Other Roadside Rests and Table Sites
- 714-7735-01 Roadside Litter Pickup and Debris Removal
- 714-7735-02 Tire Casing Removal
- 714-9813-01 Roadside Litter Pick-Up Great PA Clean Up
- 714-9848-01 Roadside Litter Pick-Up Litter Brigade
- 714-9849-01 Roadside Litter Pick-Up Adopt-A-Highway
- 719-9829-01 Maintenance Administration
- 719-9851-01 Hazardous Waste Control
- 621-2541-01 through 621-2549-01 FHWA Disaster Recovery Tasks (Federal Aid Routes)
- 663-2541-01 through 663-2549-01 FEMA Disaster Recovery Tasks (Non-Federal Routes)

The Department has added new or updated assemblies as part of the project description and action for this programmatic consultation renewal. The new or updated maintenance assemblies encompassing the 2019 through 2024 time period include the following.

- 711-7116-01 Emergency Truck Escape Ramps
- 711-7121-05 Manual Patching Mechanized Cutting
- 711-7122-05 Plant Mix Patching – Partial Depth (Milling Machine and Widener) Mechanized
- 711-7129-01 Hot Pour Mastic
- 711-7135-03 Surface Treatment – Plant Mix Single Lane
- 711-7138-01 Recycled Asphalt Pavement, Paver Finisher – Placement Only <3”
- 711-7138-02 Recycled Asphalt Pavement Paver Finisher – Placement Only >3”
- 711-7138-03 Recycled Asphalt Pavement – Widening Recycled Materials
- 711-7138-04 Recycled Asphalt Pavement – Base Repair Mechanized
- 711-7138-05 Recycling Bituminous Mobile Mixer Paver
- 711-7138-08 Recycled Asphalt Pavement Central Mix Plant (Pug Mill) Production Only
- 711-7138-11 Recycled Asphalt Pavement Cold-in Place Recycling
- 711-7139-01 FB Paving Paver Finisher – Placement Only Leveling >2”
- 711-7139-02 FB Paving Paver Finisher – Placement Only Uniform Overlay >2”
- 711-7139-05 FB Paving Mobile Mixer Paver
- 711-7139-08 FB Paving Central Mix Plant (Pug Mill) Production Only
- 711-7221-02 Patching Plant Mix Paver or Widener Mechanized
- 711-7228-01 Crack Sealing – Bituminous Surface Manual
- 711-7228-02 Crack Sealing – Concrete Surface Manual
- 711-7321-02 Repair/Adjust Inlets and or Endwalls – Manual
- 711-7432-03 thru 711-7432-06 Painting Superstructure – Spot Inorganic Zinc/ Aluminum Mastic
- 711-7433-03 Repair/Replace Joints – Strip Seals
- 711-7449-01 and 711-7449-02 Concrete Deck Overlay – Epoxy/PPC Overlay
- 711-7457-01 and 711-7457-02 Brushing, Tree Removal, Manual and Mechanized
- 711-7800-01 SCM Visual Screening
- 711-7800-02 SCM Condition Assessment
- 711-7801-01 SCM Earthwork
- 711-7801-02 SCM Material Removal
- 711-7801-03 SCM Storm Sewer Cleaning
- 711-7801-04 SCM Fencing and Signs
- 711-7801-05 SCM Structure upkeep and Repairs
- 711-7801-06 SCM Earth Stabilization
- 711-7801-07 SCM Vegetation Management
- 711-7801-08 SCM Manufactured Treatment Devices
- 711-7801-10 SCM Replacement
- 711-7801-11 SCM Other

4.15 Bog Turtle Impact Avoidance, Minimization, and Compensatory Measures

The FHWA and PennDOT routinely implement standard measures as part of the environmental compliance process [e.g., USACE and Pennsylvania Department of Environmental Protection (PA DEP) wetland/watercourse permitting], and many of these measures reduce potential effects on the bog turtle. These include:

- wetland and watercourse habitat avoidance/minimization/compensation;
- clearly delineating project limits of disturbance; and
- compliance with state water quality standards through erosion and sediment pollution control plans, stormwater management plans, and spill pollution control plans.

In addition, for actions to be covered by this programmatic consultation, specific Avoidance and Minimization Measures (AMMs) related to the species will be implemented where applicable (see Table 4-1). AMMs included in the analysis, if executed under appropriate circumstances, are expected to reduce potential impacts of the stressors. In some cases, impacts will be reduced to levels that are insignificant (the magnitude or size of the impact should never reach the scale where take occurs) or discountable (the probability is extremely unlikely for take to occur) and, therefore, not likely to adversely affect the species. In other cases, some level of take of the species will be unavoidable even with application of avoidance and minimization AMMs, but will be offset through the implementation of a compensatory mitigation AMM.

Pursuant to the ESA, the USFWS published a revised mitigation policy (81 FR 83440 83492) on November 21, 2016, and a compensatory mitigation policy (81 FR 95316 95349) on December 27, 2016. The Service's mitigation planning goal is to improve (i.e., a net gain) or, at minimum, to maintain (i.e., no net loss) the current status of affected resources, as allowed by applicable statutory authority and consistent with the responsibilities of action proponents under such authority.

The USFWS published a revised mitigation policy and ESA compensatory mitigation policy on 5/15/2023 (88 FR 31000). The overall goal of the updated policies has been articulated as "no net loss of resources and their values, services, and functions resulting from proposed actions."

To facilitate its compensatory mitigation policy, the USFWS has provided technical oversight and approval for species conservation banks supporting credits that may be used by project proponents to

offset habitat losses or take of the species. Compensatory species mitigation could also potentially be achieved via the construction and management of a FHWA/PennDOT advanced compensation conservation bank, vegetation management activities at an occupied species site, restoration of supporting hydrology conditions to an altered occupied species site, species passage improvements at an occupied species site associated with documented vehicular conflicts, the provision of nest protection/predator control measures at an occupied species site, the provision of in lieu fee monetary funds dedicated to habitat management activities at an occupied species site, purchasing and preserving an occupied species site, re-evaluating roadside mowing practices in proximity to an occupied species site, or acquiring and operating an FHWA/PennDOT-sponsored conservation "bundling" site or conservation easement.

Compensatory requirements and ratios would reflect the nature of the impacting activity as well as the quality of the habitat being affected in accordance with the most current USFWS credit metrics at the time of the action. The USFWS has assembled a framework for application of the compensatory metrics and methodology in the *Draft Pennsylvania Bog Turtle Crediting Methodology Revised May 2020.*

This programmatic consultation approach can be broadly summarized as: 1) conducting actions during the appropriate seasonal time period to avoid adverse effects, or 2) implementing appropriate measures for the exclusion of the species from disturbance areas during their active seasonal time period, or 3) providing for compensation of anticipated, unavoidable, limited adverse effects. The following descriptions characterize the programmatic categories of transportation actions assembled for this consultation.

- Programmatic Category 1 encompasses actions where temporary effects to potential hibernacula microhabitat are anticipated to occur. Hibernacula microhabitat is defined by the persistent presence of groundwater discharge and depth of mucky soil substrate characteristics that support the ability of the species to brumate (i.e., a hibernation-like state that cold-blooded animals utilize during very cold weather) through their winter dormancy period. Activities occurring within this microhabitat during the species inactive season, November 1 to March 31, could result in a high potential for adverse effects due to their inability to escape from disturbance activities and potential for exposure to freezing conditions on the ground surface. Temporary impacts could include the placement of erosion and sedimentation control features, flow diversion measures, and species exclusionary barriers. These transportation actions would be conducted in a manner that avoids any permanent effect on the hydrologic sources supporting the wetland.

  Hibernacula are critical to the species being able to brumate through their winter dormancy period. Therefore, AMMs associated with this programmatic category focus on conducting these transportation actions only during the active season for the species, April 1 – October 31. This seasonal time period would afford a higher likelihood for the species to escape disturbance activities during non-freezing surface conditions. Since these actions would occur during the active season, additional avoidance and minimization measures would be necessary to

remove any turtles that may be present within the limits of disturbance of the action as well as physically isolate the disturbance activities from other potentially migrating turtles. ~~Compensatory mitigation measures could be implemented in lieu of some avoidance and minimization measures with the concurrence of the USFWS.~~

- Programmatic Category 2 encompasses actions where permanent effects to potential hibernacula microhabitat are anticipated to occur. Permanent impacts would result from the loss of this microhabitat through the placement of permanent fill materials or removal through excavation. These transportation actions would be conducted in a manner that avoids any permanent effect on the hydrologic sources supporting the wetland.

  Hibernacula are critical to the species being able to brumate through their winter dormancy period. Therefore, AMMs associated with this programmatic category focus on conducting these transportation actions only during the active season for the species, April 1 – October 31. This seasonal time period would afford a higher likelihood for the species to escape disturbance activities during non-freezing surface conditions. Since these actions would occur during the active season, additional avoidance and minimization measures would be necessary to salvage and relocate any turtles that may be present within the limits of disturbance of the action as well as physically isolate the disturbance activities from other potentially migrating turtles. ~~Compensatory mitigation measures could be implemented in lieu of some avoidance and minimization measures with the concurrence of the USFWS.~~ Due to the permanent loss of species supporting habitat, compensatory mitigation would be required to offset these impacts.

- Programmatic Category 3 encompasses actions where temporary effects to potential foraging microhabitat are anticipated to occur. Foraging microhabitat is defined by the lack of persistent groundwater discharge conditions and depth of mucky soil substrate. The species would be expected to potentially utilize foraging microhabitat only during the species active season, April 1 to October 31, for breeding, feeding, sheltering, and migration purposes.

  Temporary impacts could include the placement of temporary crossing matting, erosion and sedimentation control features, flow diversion measures, and species exclusionary barriers. These transportation actions would be conducted in a manner that avoids any permanent effect on the hydrologic sources supporting the wetland. The species would be expected to potentially utilize foraging microhabitat only during the species active season, April 1 – October 31, for breeding, feeding, sheltering, and migration purposes. Therefore, AMMs associated with this programmatic category focus on conducting these transportation actions during the inactive season for the species, November 1 – March 31. This seasonal time period would afford a higher likelihood for the species to escape disturbance activities since they would be expected to be in an inactive condition in hibernaculum microhabitat.

- Programmatic Category 4 encompasses actions where temporary effects to potential foraging microhabitat are anticipated to occur and these transportation actions would be completed during the species active season April 1 – October 31. Under these circumstances, AMMs associated with relocating any turtles that may be present within the disturbance area and physically isolating the disturbance activities from other potentially migrating turtles would be applied. ~~Compensatory mitigation measures could be implemented in lieu of some avoidance and minimization measures, such as the seasonal restriction, with the concurrence of the USFWS.~~

- Programmatic Category 5 encompasses actions where permanent effects to potential foraging microhabitat are anticipated to occur. Permanent impacts would result from the loss of this microhabitat through the placement of permanent fill materials or removal through excavation.

These transportation actions would be conducted in a manner that avoids any permanent effect on the hydrologic sources supporting the wetland. The species would be expected to potentially utilize foraging microhabitat only during the species active season, April 1 – October 31, for breeding, feeding, sheltering, and migration purposes.

AMMs associated with this programmatic category focus on conducting these transportation actions during the inactive season for the species, November 1 – March 31. This seasonal time period would afford a higher likelihood for the species to escape disturbance activities since they would be expected to be in an inactive condition in hibernaculum microhabitat. Due to the permanent loss of species supporting habitat, compensatory mitigation would be required to offset these impacts.

- Programmatic Category 6 encompasses actions where permanent effects to potential foraging microhabitat are anticipated to occur and these transportation actions would be completed during the species active season. Under these circumstances, AMMs associated with relocating any turtles that may be present within the disturbance area and physically isolating the disturbance activities from other potentially migrating turtles would be applied. ~~Compensatory mitigation measures could be implemented in lieu of some avoidance and minimization measures, such as the seasonal restriction, with the concurrence of the USFWS.~~ Due to the permanent loss of species supporting habitat, compensatory mitigation would be required to offset these impacts.

- Programmatic Category 7 encompasses actions which will occur during the seasonal period of April 1 – October 31 and include dedicated species exclusionary measures. These actions are typically associated with activities occurring within stream corridors, or upland habitats in the vicinity of occupied/assumed supporting wetland habitat for the species. These transportation actions would be conducted in a manner that avoids any permanent effect on the hydrologic sources supporting the wetland. Since these actions would be committed to occur during the species active season, AMMs would be necessary to effectively survey and relocate any turtles that may be present within the limits of disturbance of the action as well as physically isolate the disturbance activities from other potentially migrating turtles. ~~Compensatory mitigation measures could be implemented in lieu of some avoidance and minimization measures with the concurrence of the USFWS.~~

- Programmatic Category 8 encompasses actions which will occur within stream corridors or upland habitats in the vicinity of occupied/assumed supporting wetland habitat for the species during the seasonal period of November 1 – March 31. These transportation actions would be conducted in a manner that avoids any permanent effect on the hydrologic sources supporting the wetland. Commitment to this seasonal time period would afford a higher likelihood for the species to escape disturbance activities since they would be expected to be in an inactive condition in hibernaculum microhabitat and not utilizing stream corridor or upland habitat.

- Programmatic Category 9 encompasses actions which result in permanent effects to the hydrologic source(s) of occupied/assumed supporting wetland habitat. Activities which permanently alter supporting hydrologic sources during the species inactive season, November 1 – March 31, could result in a high potential for adverse effects due to their inability to escape from disturbance activities, and potential exposure to freezing conditions on the ground surface. Therefore, AMMs associated with this programmatic category focus on conducting these transportation actions only during the active season for the species, April 1 – October 31. This seasonal time period would afford a higher likelihood for the species to escape disturbance activities during non-freezing surface conditions and acclimate to the translocation habitat. Since these actions would occur during the active season, additional avoidance and minimization

measures would be necessary to salvage and relocate any turtles that may be present within the entire affected wetland habitat as well as physically isolate the disturbance activities from other potentially migrating turtles. Due to the permanent loss of species supporting habitat, compensatory mitigation would be required to offset these impacts.

Avoidance and minimization measures will be applied to transportation actions encompassed by this programmatic consultation unless one of the following conclusions has been reached for the transportation action:

- Wetlands are absent from the project area (including a 300-foot buffer around the limit of disturbance/limit of indirect effect), or
- A Phase I Habitat Assessment (habitat assessment) of the project area (including a 300-foot buffer around the limit of disturbance/limit of indirect effect) has determined the absence of species supporting habitat conditions, or
- A Phase II/Phase III Presence- Inferred Absence Survey (species survey) conducted by a qualified species surveyor has determined that the species is not likely to be present within the project area and the USFWS has concurred with these findings, or
- The transportation action has been determined by the FHWA or PennDOT to completely avoid all potential effects on the species.

Table 4-1 identifies the standard programmatic avoidance and minimization measures and provides a description of their implementation.

TABLE 4-1 Standard Programmatic Avoidance and Minimization Measures

AVOIDANCE AND MINIMIZATION MEASURE	DESCRIPTION
AMM 1	Ensure that all operators, employees, and contractors working in areas of known, or assumed occupied bog turtle habitat are aware of all PennDOT environmental commitments, including all applicable AMMs, PA DEP permit conditions, and USACE permit conditions. Sensitivity training and briefing materials should be provided to all applicable personnel prior to the initiation of the action. Sensitive resource signage will be placed at the site of the action to notify personnel of the potential presence of the species.
AMM 2	All work associated with the action shall be conducted in accordance with the Erosion and Sediment Pollution Control Plan approved by the County Conservation District or PA DEP. Erosion and sediment control best management practices will be implemented before, during, and after all land disturbance to prevent the potential for asphyxiation and smothering of species individuals as well as accidental sedimentation and filling of adjacent wetland habitats that may potentially support the species. All best management practices will be properly installed and maintained in accordance with the County Conservation District and PA DEP. The project site will be monitored daily to ensure the erosion and sedimentation control practices are implemented and properly maintained, and to identify any project related impacts due to sediment accumulation.

AVOIDANCE AND MINIMIZATION MEASURE	DESCRIPTION
AMM 3	All rock scour protection areas associated with an action will be completed in such a manner that precludes large voids for potential impingement and entrapment of species individuals. Any voids in the rock scour protection will be choked with smaller rock and mineral material in order to avoid the creation of potential traps for the species. All rock scour protection areas must be installed and depressed below the appropriate stream water elevation as conditioned by PA DEP authorization. Where appropriate consider the utilization of natural channel stabilization techniques as an alternative to rip-rap scour protection/energy dissipation and bank armoring activities.
AMM 4	All storage and dispensing of vehicular fuels and fluids will occur at least 300 feet from any aquatic habitats present. A hazardous material construction spill avoidance/remediation plan (Spill Prevention Control and Countermeasure Plan – SPCC Plan) will be developed and implemented during the fulfillment of the transportation action. The project site will be monitored daily to ensure spill avoidance/remediation practices are implemented.
AMM 5	Project storage and staging areas will be located only in upland areas away from wetland/watercourse habitat areas. This shall include all areas required for stockpiles, equipment storage, and parking.
AMM 6	All public utilities potentially associated with the action due to the necessary relocation of their services will be notified of the potential presence of the species and their need to consult with the USFWS/PFBC on their respective relocation activities.
AMM 7	High visibility orange construction fencing shall be used to delineate avoidance areas during the action. The fencing will act as a visual warning to prevent construction equipment and personnel from entering and disturbing sensitive areas outside of the project limit of disturbance.
AMM 8	In order to avoid the introduction and spread of invasive species into supporting habitats, minimize the duration of exposed soils, utilize erosion control blankets made of a bio-degradable material on disturbed areas immediately after project completion to minimize sedimentation, and promptly re-vegetate areas of temporary disturbance with native wetland or upland seed mixes dependent on the location of the disturbance. Thoroughly wash construction equipment and vehicles offsite, especially the undercarriage and wheels, before use within 300 feet of supporting habitat. Thoroughly wash temporary crossing measures such as composite matting or timber matting before use within 300 feet of supporting habitat.
AMM 9	Specific coordination and construction operating procedures approved by the USFWS/PFBC shall be implemented in the event that a bog turtle is encountered during preconstruction exclusion surveys, on-site monitoring, or within the vicinity of the limit of disturbance (LOD) during the course of the action (i.e., construction). These specific procedures include the following: A. If a turtle is encountered then all construction activities within 300 feet of the capture will cease immediately. The District Environmental Manager and qualified surveyor will be contacted immediately to inform them of the encounter. B. If the turtle appears dead or immobile, then the turtle will be left where it was initially observed. If the turtle appears to be mobile, then efforts will be made to temporarily contain the turtle until the qualified bog turtle surveyor can take possession of it. Temporary containment will consist of placing the turtle in a thoroughly clean bucket that has a depth of more than 18 inches. Pieces of native vegetation and 0.5 - 1 inch of water should be placed in the bucket with the turtle to keep the animal cool and hydrated. The bucket should be placed in a quiet, well-shaded area. The turtle should be handled as little as possible, and temporary containment must not exceed 6 hours. C. The qualified bog turtle surveyor will take possession of the turtle and identify the species as well as document the capture location and condition of the turtle. The qualified surveyor will conduct a thorough search of the area within and in the vicinity of the limit of disturbance of the action to determine if any other turtles may be in the construction area. The qualified surveyor will also inspect the exclusion barrier fencing and direct any repairs as needed. If there are breaches in the exclusion barrier and/or the turtle is identified as a bog turtle, then construction will remain ceased until coordination with the USFWS and PFBC is completed. Construction will remain ceased until all breaches in the exclusion barrier are repaired.

AVOIDANCE AND MINIMIZATION MEASURE	DESCRIPTION
AMM 9 (continued)	D. If the qualified bog turtle surveyor identifies the turtle species as a bog turtle, then the surveyor will immediately notify endangered species biologists at both the USFWS and PFBC. The elapsed time for contacting both agencies should be as soon as possible, but must not exceed 24 hours. Following the arrival of the qualified bog turtle surveyor at the project site, the turtle must be handled by the biologist according to the recommendations of the USFWS and PFBC. The qualified surveyor will consult with the USFWS and PFBC concerning the safe handling and necessary relocation of the turtle outside of the project disturbance area. Construction will resume only after the completion of this consultation. E. If the qualified bog turtle surveyor identifies the turtle as a species other than the bog turtle, and the turtle appears healthy, then the qualified surveyor will release the turtle unharmed no further than 300 feet from the site of discovery to a safe location outside of the limit of disturbance. Construction may continue once the turtle is relocated F. If any turtle found appears injured or dead, the qualified bog turtle surveyor will coordinate with the USFWS and PFBC concerning the safe handling of an injured turtle and the taking of possession of the specimen whether injured or dead by one of these agencies. Construction will resume only at the completion of this coordination. G. In order to offset the adverse effects of the take, compensatory mitigation credits will be calculated in accordance with USFWS credit metrics and acquired from a USFWS approved conservation bank.
AMM 10	In order to avoid the killing, harm, or harassment of brumating species individuals within hibernacula microhabitat during the species inactive period, the action will be completed during the active season for the species between April 1 and October 31.
AMM 11	In order to avoid the killing, harm, or harassment of species individuals during the species active period, the action will be completed during the inactive season for the species between November 1 and March 31.
AMM 12	In order to avoid the killing, harm, or harassment of species individuals during the species active period, a preconstruction exclusion survey to remove any bog turtle individuals within the LOD will be conducted by a USFWS/PFBC recognized-qualified bog turtle surveyor immediately prior to the commencement of the action. Exclusion surveys may also be necessary for the assembly/disassembly of temporary streamflow diversion measures; the placement of rock scour protection materials; and the internal confines of an existing bridge or culvert crossing structure. Survey efforts within stream habitats may include the use of viewing buckets and snorkeling equipment to adequately search underwater habitats associated with existing culvert and bridge crossings. Survey efforts within existing culvert pipes may include the usage of cutting tools to dissect the culvert pipe for viewing, or the complete removal of the intact pipe for viewing of the pipe's internal area. Any captured individuals would be relocated outside of the project disturbance area into suitable aquatic habitat. The USFWS/PFBC recognized-qualified bog turtle surveyor will oversee and supervise any necessary vegetation cutting or clearing (4 to 6 inches height) for the effective survey of the excluded area. All exclusionary surveys will be conducted according to the most current Phase 2/Phase 3 survey protocol(s) provided by the USFWS and PFBC.
AMM 13	In order to avoid the killing, harm, or harassment of species individuals during the species active period, an exclusionary barrier (silt fence, super silt fence, adequate silt sock structures, sand bag wall, sheeting, Jersey barrier) will be erected immediately following the species exclusionary survey and prior to the commencement of the activity to isolate the disturbance area associated with the action, Sand bag walls, sheeting, Jersey barrier, etc. may be necessary within watercourse channel environments to isolate in-stream disturbance areas. No other construction/ maintenance activities may commence until the exclusionary barrier has been installed. Silt fence exclusionary barrier is to be installed a minimum of 6-inches into the underlying habitat where possible and appropriate. The installation/removal of the exclusionary barrier must be completed by hand through wetland habitats. The installation/removal of the exclusionary barrier through upland habitats may be completed with the assistance of equipment. The exclusionary barrier shall be installed and removed under the supervision of a USFWS/PFBC recognized-qualified bog turtle surveyor. While in use, the exclusionary barrier shall be inspected daily to ensure its competency and function. The daily inspection may be completed by the on-site environmental monitor/inspector or project foreman. Straw bales, sand bags, or temporary fencing may be used as temporary barriers at ingress/egress locations to provide access to equipment/personnel through the exclusionary barrier. Should the exclusionary barrier become compromised or ineffective during its use, particularly during longer duration projects, then all construction/ maintenance activities will cease until an exclusionary survey of the action area has been completed by a USFWS/ PFBC recognized-qualified bog turtle surveyor and the compromise/ineffectiveness has been remediated. The remediation may require the complete replacement of the exclusionary barrier if necessary. The exclusionary barrier, including all components of silt sock structures, is to be removed immediately following the completion of the project. The USFWS/PFBC recognized-qualified bog turtle surveyor will ensure that potential pitfalls are not created by trenching associated with the installation and/or removal of the exclusionary barrier.

AVOIDANCE AND MINIMIZATION MEASURE	DESCRIPTION
AMM 14	All temporary streamflow diversion measures must be implemented in a manner that will not result in the possible collection and entrainment of species individuals into pumping equipment.
AMM 15	In order to avoid the killing, harm, or harassment of species individuals during the species active period, a USFWS/ PFBC recognized-qualified bog turtle surveyor shall conduct inspections of wetland spoil materials from excavation areas within core supporting habitat components, if present, to ensure that species individuals are recovered and relocated. The need for wetland spoil inspection shall be determined by the USFWS/PFBC recognized-qualified bog turtle surveyor and PennDOT/FHWA.
AMM 16	In order to avoid the killing, harm, or harassment of species individuals during the species active period, a USFWS/ PFBC recognized-qualified bog turtle surveyor may provide continuous monitoring, if warranted, by project activities during the performance of the action. The need for continuous monitoring shall be determined by the USFWS/PFBC recognized-qualified bog turtle surveyor and PennDOT/FHWA.
AMM 17	A USFWS/PFBC recognized-qualified bog turtle surveyor will be retained throughout the duration of the transportation action to monitor the effectiveness of the implemented avoidance and minimization measures. The surveyor will also provide recommendations to PennDOT and the FHWA concerning the implementation of the necessary measures.
AMM 18	To reduce the amount of take associated with the permanent loss of habitat, a salvage survey effort will be undertaken in conjunction with the USFWS/PFBC to relocate any individuals within the impact area prior to disturbance. Any recovered individuals will be relocated a maximum of 300 feet from the impact area within the same drainage basin.
AMM 19	In order to offset the adverse effects for the permanent loss of supporting habitat and/or incidental take, compensatory species mitigation will be provided. The determination of the amount of compensation to be provided, and the means of achievement will be addressed with the USFWS on an individual project basis. Potential strategies for compensatory species mitigation could include, but are not limited to, the purchase of credits from a USFWS approved conservation bank, construction of a PennDOT advanced compensation conservation bank, vegetation management activities at an occupied species site, restoration of supporting hydrology conditions to an altered occupied species site, species passage improvements at an occupied species site associated with documented vehicular conflicts, the provision of nest protection/predator control measures at an occupied species site, and the provision of in lieu fee monetary funds dedicated to habitat management activities at an occupied species site, purchasing and preserving an occupied species site, re-evaluating roadside mowing practices in proximity to an occupied species site, or acquiring and operating an FHWA/PennDOT-sponsored conservation "bundling" site or conservation easement.

The implementation of AMMs 1 - 9 is required for all actions with the use of this programmatic consultation. The application of AMMs acknowledges the presence of potential species supporting habitat and confirmed or assumed species presence within the action area of the transportation activity. Table 4-2 provides a summary of the Programmatic Category Actions and the necessary AMMs for application with those particular actions.

TABLE 4-2 Programmatic Category Actions and Application of AMMs Summary

PROGRAMMATIC CATEGORY	DESCRIPTION	AMMS 1-9	AMM 10	AMM 11	AMM 12	AMM 13	AMM 14	AMM 15	AMM 16	AMM 17	AMM 18	AMM 19 REQUIRED FOR MITIGATION
PC1 Temporary Hibernacula Habitat Effects	Actions where temporary effects to potential hibernacula are anticipated to occur without any hydrologic modification.	X	X		X	X	X	X	X	X		
PC2 Permanent Hibernacula Habitat Effects	Actions where permanent effects to potential hibernacula microhabitat are anticipated to occur without any hydrologic modification.	X	X		X	X	X	X	X	X	X	X
PC3 Temporary Foraging Habitat Effects – Inactive Season Work	Actions where temporary effect to potential foraging habitat are anticipated to occur during the *inactive* species season without any hydrologic modification.	X		X								
PC4 Temporary Foraging Habitat Effects – Active Season Work	Actions where temporary effect to potential foraging habitat are anticipated to occur during the *active* species season without any hydrologic modification.	X			X	X	X	X	X	X	X	
PC5 Permanent Foraging Habitat Effects – Inactive Season Work	Actions where permanent effects to potential foraging habitat are anticipated to occur during the *inactive* season without any hydrologic modification.	X		X								X
PC6 Permanent Foraging Habitat Effects – Active Season Work	Actions where permanent effects to potential foraging habitat are anticipated to occur during the *active* season without any hydrologic modification.	X			X	X	X	X	X	X	X	X
PC7 Upland/Stream Corridor Habitat Effects – Active Season Work	Actions which will occur within stream corridors or upland habitats in the vicinity of occupied/assumed supporting wetland habitat during the seasonal period of April 1 – October 31 with exclusionary measures. No permanent hydrologic impacts to aquatic habitats are anticipated to occur.	X			X	X	X	X	X	X		
PC8 Upland/Stream Corridor Habitat Effects – Inactive Season Work	Actions which will occur within stream corridors or upland habitats in the vicinity of occupied/assumed supporting wetland habitat during the seasonal period of November 1 – March 31. No permanent hydrologic impacts to aquatic habitats are anticipated to occur.	X		X								
PC9 Permanent Hydrologic Effects	Actions where the hydrology of supporting habitat will be permanently altered by the action, resulting in take due to modified hydrology.	X	X		X	X	X	X	X	X	X	X

4.16 Monitoring/Reporting for Actions Covered Under the Programmatic Consultation

FHWA/PennDOT must provide the USFWS Pennsylvania Field Office with the initial documentation for every action submitted for inclusion within this programmatic consultation that may affect bog turtles[4]. This initiation will include the use of a project submittal form to provide project-specific information ensuring consistency with the use of this programmatic consultation. The completed form is to be submitted to the USFWS Pennsylvania Field Office prior to the commencement of the transportation action. By submitting this form, the FHWA/PennDOT ensures that the proposed transportation action adheres to the criteria and conditions of the programmatic consultation. In the future, a USFWS Information for Planning and Conservation (IPaC) system assisted determination key may be developed to automate this project screening process via the internet and replace the project submittal form process.

Monitoring begins with the submission of the project submittal forms. The USFWS Pennsylvania Field Office will log key information from the forms into the ECOSphere database system. The USFWS will request additional information (e.g., habitat assessments, species surveys, etc.) from FHWA/PennDOT as necessary. The USFWS will evaluate this information at least annually and make any needed minor modifications to the programmatic consultation by agreement among the FHWA and PennDOT. Examples of the kinds of modifications expected could include but are not limited to: updating the project submittal forms, updating standard operating procedures (SOPs) for reporting, and updating species survey or other pertinent species evaluation guidance.

The USFWS may also consider the site-specific circumstances and conditions of a proposed project to suggest changes in the programmatic consultation approach (e.g., revising or suggesting alternative AMMs when appropriate). New information prompting such changes may or may not require a re-initiation of the consultation. Research on the species, habitat management improvement techniques, transportation improvement techniques, or other sources, may also provide substantive, technical information that is relevant to potential program revisions and adaptive management.

FHWA/PennDOT will monitor the overall utilization of compensatory mitigation measures for this programmatic consultation. For compensatory activities electing to use a species conservation bank, the

[4] Activities located at least 300 feet away from potential supporting habitat, maintenance assemblies identified in Table 7-1 as having no effect on the species, and projects wholly contained within larger watercourses identified in Table 7-2 will not require project submittal forms

conservation bank managing organization will become responsible for the monitoring and reporting on the success of that site's specific compensatory mitigation measures.

Monitoring individual projects will catalog this programmatic process on project specific effects as well as the effectiveness of avoidance/minimization measures and conservation measures. The FHWA, PennDOT, USFWS Pennsylvania Field Office, and PFBC will meet on an annual basis, or as needed, for the following purposes:

1) Discuss annual report of covered projects,
2) Evaluate and discuss the continued effectiveness of the programmatic consultation,
3) Update procedures and project criteria, if necessary,
4) Discuss and resolve any issues related to the programmatic consultation, and
5) Discuss annual report of discretionary conservation measures.

~~There is no hard expiration date for this consultation; however, there will be a review between the agencies and USFWS after the first year of implementation to evaluate function and determine needed improvements. Standard consultation re-initiation conditions (e.g., new information on species or effects) will also apply.~~

The FHWA and PennDOT expect to adapt, as necessary, this programmatic consultation based upon new information regarding the species' ecology, conservation needs, and project effects. Adaptive management for the programmatic consultation will focus on incorporating feedback from users and new or updated information relevant to the consultation. The USFWS will evaluate information for its relevance to the programmatic consultation and its scientific validity.

At any time, the FHWA, PennDOT, or the USFWS may propose revising this programmatic consultation, if they determine that they need to make modifications to the consultation.

4.17 Bog Turtle Conservation Recommendations

The primary strategy for the recovery of the northern population of the bog turtle is to first stabilize the ongoing decline of species, and then restore its distribution through protection of extant populations (USFWS 2001).

PennDOT and FHWA will undertake conservation measures as part of its overall transportation program when appropriate and feasible. A summary of discretionary conservation measures undertaken towards species recovery will be provided at the annual programmatic update meeting. The following core principals will help guide our approach to species conservation:

1. Maintain and restore habitat connectivity.
2. Maintain or restore aquatic life passage.
3. Reduce vehicle strikes and mortality on roadways
4. Maintain or restore travel corridors

Conservation measures could include the following.

- Locations with chronic transportation maintenance issues are present throughout the infrastructure network associated with inadequate or improper roadway drainage/crossing features. Permanent remedial and corrective actions will be pursued at these chronic maintenance sites instead of short-lived measures requiring repetitive attention. The locations of chronic maintenance issues with persistent species conflicts would be developed with input from the USFWS and PFBC.

- Where feasible and safe to roadway users, permanent curbing or some other type of protective barrier shall be constructed around roadway culvert/bridge crossings of occupied species habitat to prevent incidental roadway mortality.

- Stream restoration measures that restore and facilitate the use of potential travel corridors by the species during the design and implementation of culvert and bridge improvement actions near occupied species habitat.

- Open passage corridors will be maintained through the removal or improvement of impediments that cause flooding events. This could include upgrading existing culvert crossings to clear span structures along existing travel corridors between occupied species habitats.

- Where appropriate, consider the utilization of natural channel stabilization techniques such as waddles and root wads as an alternative to rip-rap scour protection/energy dissipation and bank armoring activities.

- Conservation measures and research needs that would enhance species recovery such as herbicide use for habitat management, effects of road salt and de-icing agents on the species and supporting habitat and roadside mowing conflicts with the species.

Chapter 5 – Project Action Area

At the geographic-scale level, the action area for this programmatic consultation will include the existing PennDOT state roadway network within the 17-county extant range of the northern population of the bog turtle. The spatial extent of the action area is illustrated on Figure 1. Table 5 -1 provides a summary of the current 17-county extant range.

TABLE 5-1 Extant Range of the Bog Turtle Within Pennsylvania

PENNSYLVANIA COUNTY	EXTANT RANGE WITHIN COUNTY
Adams	Entire County
Berks	Entire County
Bucks	Entire County
Carbon	Aquashicola Creek Watershed
Chester	Entire County
Cumberland	Entire County
Dauphin	Spring Creek and Conewago Creek Watersheds
Delaware	Entire County
Franklin	Antietam Creek Watershed
Lancaster	Entire County
Lebanon	Entire County
Lehigh	Entire County
Monroe	Entire County
Montgomery	Entire County
Northampton	Entire County
Schuylkill	Swatara Creek Watershed
York	Entire County

The action area is defined by the ESA as all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action. At the site-scale level, the action area for this consultation on an action-by-action basis would encompass all potential effects including areas affected by temporary and permanent land disturbance at the site; areas affected by temporary and permanent disturbances associated with action including staging areas; utility relocations; geo-technical investigations; the extent of hydraulic modifications associated with alterations to flood events; surface runoff patterns; groundwater flow patterns; areas affected by project-induced noise, vibration, and lighting from sources not currently in operation; nonpoint source runoff and sedimentation; and introduction/spread of invasive and exotic species.

Chapter 6 — Effects Analysis

The "effects of the action" refer to the direct and indirect impacts of an action on listed species or critical habitat, together with the effects of other activities interrelated and interdependent with that action, which will be added to the environmental baseline of the action area.

No designated critical habitat for the bog turtle has been promulgated within the Commonwealth of Pennsylvania under the ESA; therefore, no destruction and/or adverse modification of designated critical habitats will occur from this programmatic consultation.

The effects of an action are typically evaluated in terms of the potential for death, injury, harm, or harassment to occur to individuals of the species as a result of the activity. Harm is defined within Section 9 of the ESA as significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering. Harassment is defined within Section 9 of the ESA as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include but are not limited to breeding, feeding, or sheltering.

Evaluating direct, indirect, interrelated, and interdependent effects from a transportation action on the species is a complicated process. It is critical that factors such as the timing, magnitude, proximity, nature, and duration of the action be recognized. A deconstruction of the particular transportation action is necessary to identify all potential stressors to species individuals at all phases of biological development. Table 6-1 summarizes the critical factors for analysis with the bog turtle.

TABLE 6-1 Critical Factor Analysis of Potential Transportation Effects on the Bog Turtle

Species Temporal Patterns	• April 1 – October 31: Species would be active within wetland, travel corridors, and adjacent upland habitats (Habitat Conservation Zones 1 and 2) • November 1 – March 31: Species would be inactive while brumating within hibernacula microhabitat of the supporting wetland (restricted to Habitat Conservation Zone 1)
Exposure Analysis of Transportation Activity	• Type of Activity: Permanent/Temporary Effects • Timing of Activity (Species Active Season vs. Inactive Season) • Duration of Activity • Proximity of Activity to Habitat Conservation Zones 1 and 2 • Magnitude of Direct/Indirect Effects • Anticipated Species Response
Habitat Conservation Zone Characteristics	• Zone 1: Wetland habitat including core characteristics and visible spring seeps potentially occupied by the species. Bog turtles rely upon different portions of the wetland at various times of the year to fulfill needs. Actions proposed within this zone may directly kill, injure, or harass bog turtles as well as result in permanent or temporary habitat destruction or degradation. • Zone 2: Zone extending at least 300 feet from the edge of Zone 1 including upland areas and watercourse corridors adjacent to Zone 1. Actions proposed in this zone may fragment/impede travel corridors, alter supporting hydrology, degrade water quality, accelerate habitat succession, and introduce invasive species. • Zone 3: Zone extending to either the geomorphic edge of the drainage basin or at least one-half mile beyond the boundary of Zone 2. Actions proposed in this zone may influence ground and surface water recharge characteristics for Zones 1 and 2.

For the purposes of this programmatic consultation, an analysis of potential transportation actions which may affect the species has been broadly categorized into six scenarios. This categorization of scenarios allows for the determination of effect to be broadly applied against applicable transportation activities including new roadways, roadway widening, bridge and culvert replacement, roadway maintenance, etc. Table 6-2 provides a summary of the transportation action scenarios.

TABLE 6-2 Summary of Transportation Action Scenarios Potentially Affecting the Species

TRANSPORTATION ACTION SCENARIO	SCENARIO DESCRIPTION
Scenario 1 - Transportation Actions which result in direct effects to species hibernaculum (wetland habitat characterized by persistent groundwater discharge and deep mucky soil conditions) (applicable to actions in Habitat Conservation Zone 1)	Transportation actions can result in the temporary or permanent direct effect to confirmed or assumed habitat characterized by persistent groundwater discharges and mucky soils conditions in excess of six inches in depth. These characteristics are generally regarded as suitable species hibernaculum. Direct effects to hibernaculum could result from the temporary or permanent placement of fill materials, erosion and sedimentation control measures, diversion measures, species exclusion measures, as well as excavation activities. Hibernaculum effects would be limited to Habitat Conservation Zone 1.
Scenario 2 - Transportation Actions which result in direct effects to species foraging habitat (wetland habitat not characterized by persistent groundwater discharge and deep mucky soil conditions) (applicable to actions in Habitat Conservation Zone 1)	Transportation actions can result in the temporary or permanent direct effect to confirmed or assumed habitat not characterized by persistent groundwater discharges and mucky soils conditions in excess of six inches in depth. These characteristics are generally regarded as species foraging habitat. Direct effects to foraging habitat could result from the temporary or permanent placement of fill materials erosion and sedimentation control measures, diversion measures, species exclusion measures, as well as excavation activities. Foraging habitat effects would be limited to Habitat Conservation Zone 1.
Scenario 3 - Transportation Actions which result in direct effects to adjacent stream corridor habitat (applicable to actions in Habitat Conservation Zone 2)	Transportation actions can result in the temporary or permanent direct effect to stream corridor habitat located within 300 feet of a confirmed or assumed habitat. This corridor has the potential to function in supporting species migration and dispersal habitat during the active season. Direct effects to stream corridor habitat could result from the temporary or permanent placement of fill materials, erosion and sedimentation control measures, diversion measures, species exclusion measures, as well as excavation activities. Stream corridor habitat effects would be limited to Habitat Conservation Zone 2.
Scenario 4 - Transportation Actions which result in direct effects to adjacent upland habitat (applicable to actions in Habitat Conservation Zones 2 or 3)	Transportation actions can result in the temporary or permanent direct effect to upland habitat located within 300 feet of a confirmed or assumed habitat. This upland habitat has the potential to function in supporting species migration and dispersal habitat during the active season as well as providing groundwater recharge area to the core habitat. Direct effects to adjacent upland habitat could result from the temporary or permanent placement of fill materials, erosion and sedimentation control measures, species exclusion measures, as well as excavation activities. Upland habitat effects could affect Habitat Conservation Zones 2 or 3.

TRANSPORTATION ACTION SCENARIO	SCENARIO DESCRIPTION
Scenario 5 - Transportation Actions which result in hydrologic effects to species supporting habitat (applicable to actions in Habitat Conservation Zones 1, 2 or 3)	Transportation actions can result in the permanent alteration of hydrologic sources supporting confirmed or assumed habitats. These alterations typically are associated with the removal or reduction of supporting groundwater discharge source(s), but could also include the diversion of a substantial amount of surface water source(s). Hydrologic effects are generally the result of excavation activities that alter the local groundwater or surface water regime. Potential hydrologic effects could result from actions within Habitat Conservation Zones 1, 2 or 3.
Scenario 6 - Transportation Actions which result in incidental effects to the species from maintenance activities conducted in or near species supporting habitat (applicable to actions in Habitat Conservation Zone 1 or 2)	Transportation actions can result in the incidental harm and harassment of the species during the execution of routine maintenance activities conducted in or near wetlands supporting the species. Roadside activities including mowing and the broadcast application of plant growth regulators and herbicides can incidentally kill, harm, harass, and expose the species to potentially deleterious substances. Incidental effects could result from actions within either Habitat Conservation Zone 1 or 2.

The implementation of many avoidance and minimization measures will result in actions that have insignificant or discountable effects on the bog turtle. Collectively, the goals of the AMMs, compensation measures, and additional conservation recommendations are to avoid, minimize, and offset the impacts of the transportation actions and promote recovery of the species. The conservation recommendations are intended to reduce threats to the species and/or serve their biological needs to provide effective conservation.

6.1 Direct Effects

Direct effects are the immediate effects of an activity on the species or its habitat. Table 6-3 summarizes potential direct effects on the species from a transportation activity.

TABLE 6-3 Potential Direct Effects from Transportation Activities on the Bog Turtle

SPECIES POPULATION COMPONENTS	DESCRIPTION OF POTENTIAL DIRECT EFFECTS TO SPECIES INDIVIDUALS FROM TRANSPORTATION ACTIVITIES
Adults/Sub-Adults Juveniles Hatchlings Eggs	Killing/harm/harassment of individuals during transportation activities from crushing, smothering, or injury. Harm/harassment of individuals due to the temporary or permanent loss/ degradation of suitable foraging, basking, escape habitat, and potentially hibernaculum habitat Harm/harassment of individuals during transportation activities due to construction-related noise; percussion; vibration; heavy equipment operation; trenching; grading; isolation created by operation of heavy construction equipment; installation, utilization, and removal of erosion and sedimentation pollution control measures; installation, utilization, and removal of temporary access measures including crossing matting and causeway structures; installation, utilization, and removal of temporary species exclusion measures; and utilization of temporary stream diversion and/or bypass dewatering measures.

6.2 Indirect Effects

Indirect effects are those effects that are caused by or will result from the action and are later in time but are still reasonably certain to occur. Table 6-4 summarizes potential indirect effects on the species from a transportation activity.

TABLE 6-4 Potential Indirect Effects from Transportation Activities on the Bog Turtle

SPECIES POPULATION COMPONENTS	DESCRIPTION OF POTENTIAL INDIRECT EFFECTS TO SPECIES INDIVIDUALS FROM TRANSPORTATION ACTIVITIES
Adults/Sub-Adults Juveniles Hatchings Eggs	Killing/harm/harassment of individuals following transportation activities due to increased risk for injury/mortality from vehicular collisions, modification of animal behavior, fragmentation of populations and habitat linkages, potential alteration of the supporting physical and chemical habitat environment through hydrologic modifications/nonpoint source runoff, and introduction/spread of invasive and exotic species.

6.3 Interrelated and Interdependent Actions and Activities

Transportation activities can also introduce the potential for interrelated and interdependent project effects. These potential secondary effects are generally more difficult to predict and are usually less quantifiable than other direct and indirect effects. Secondary impacts of transportation infrastructure improvement activities are typically recognized as necessary public utility relocations, pre-construction geo-technical investigations, off-site staging/storage areas, offsite waste and borrow areas, utilization of temporary detour routes, increased transportation infrastructure usage/maintenance, and land development activities that otherwise would not occur but for the proposed action.

6.4 Cumulative Effects

Cumulative effects include the effects of future state, tribal, local, or private actions that are reasonably certain to occur in the action area considered, excluding those involving a federal nexus that would be addressed in another consultation under the ESA. Cumulative effects are not related to or result from the action under consideration. These effects are strictly state, tribal, local, or private actions that are also expected to affect the species within the action area.

As described previously, as part of the existing environmental baseline, state, local, and private actions within the action area are likely adversely affecting existing bog turtle populations to variable degrees, and are likely to continue into the reasonably foreseeable future including 1) loss, degradation, and fragmentation of habitat; 2) degradation of water quality conditions; 3) loss of wetland habitat due to authorized and unauthorized activities; and 4) incidental killing, injury, and harassment of species individuals.

Land and infrastructure development activities within the 17-county action area are expected to continue. Since the actual location of future development activities cannot be totally defined at this time, the actual impacts may vary. The impacts attributed to land development activities in greenspace areas are likely to be focused on the conversions of agricultural lands and early successional herbaceous habitats. Any minimal wetland or watercourse impacts associated with these development activities would be authorized and mitigated in accordance with the necessary federal/state permits and proceed through the ESA Section 7 consultation process. Transportation improvement activities are not anticipated to result in substantial increases in the development activities within the action area but may ultimately affect the distribution of activities.

Chapter 7 — Effect Determinations

7.1 Effect Determinations for Listed Species

The FHWA and PennDOT annually undertake numerous transportation activities within the extant range of the species. The majority of these transportation actions can be reduced to insignificant and/or discountable effects through the implementation of effective AMMs. However, a small number of these actions may still nonetheless result in some amount, or form of incidental take. Since 1997 it is believed that the species has been encountered only twice during the application of exclusionary avoidance measures. These occurrences illustrate the extremely small probability of encountering the species during the implementation of most transportation actions encompassed within this consultation. The limited number of species encounters also relates to the minimal amount of temporary/permanent land disturbance and habitat impacts that are typically associated with transportation actions. Nonetheless, at a program level, incidental take may occur. Therefore, the action agencies proceed with the presumption that the USFWS will issue a biological opinion and incidental take statement to provide take coverage.

The FHWA and PennDOT, with the technical advisement of the USFWS, have previously consulted on various activities which are routinely executed within the roadway corridor for the continued operation of these facilities. Correspondence detailing the outcome of the previous consultation is included within Appendix A. Since the conclusion of the 2002 informal consultation, protocols for some maintenance activities have been updated, and some new activities have been added. For reference, the descriptions of these activities are provided in PennDOT Publications 113 (Highway Foreman Manual) and 55 (Bridge Maintenance Manual).

A compilation of the effect determinations for the maintenance assemblies effective July 2, 2018, are presented in Table 7-1. Maintenance assembly codes and minor modifications to descriptions may occur one or more times in a year. PennDOT will advise USFWS of updates and any changes in effect determinations annually.

TABLE 7-1 Maintenance Assemblies Effect Determinations for the Bog Turtle

CODE[1]	BRIEF DESCRIPTION	DETAILED DESCRIPTION	USFWS 2003 DETERMINATION CONCURRENCE	ACTION AGENCY DETERMINATION *(NEW ASSEMBLIES ITALICIZED[3])*
UNPAVED – ROAD				
711-7112-01	**Shaping**	Shaping operations, such as scarifying, grading and shaping, and compacting on long sections of unpaved roads to restore cross section, or eliminate corrugations and potholes. This may include a ditch or drainage channel with an excavator taking care to cut ditch/channel to original contour by removing only debris or deposited material.	**MAY AFFECT[2]**	
711-7113-01	**Restabilization**	The application of stabilization material to long sections of unpaved roads, such as adding, shaping and compacting stabilizing material. Fine material may be graded up from the ditch and blended with the added material to improve compaction.	**MAY AFFECT[2]**	
711-7114-01	**Dust Palliative - Bit./Calcium Chloride/Other Product**	The placing of bituminous or calcium chloride materials on unpaved roads to prevent dust formation including spot treatments.	**NO EFFECT**	
711-7115-01	**Patch/Base Repair**	Repairing potholes, isolated depressions, etc. on unpaved roads.	**NO EFFECT**	
711-7116-01	**Emergency Truck Escape Ramps**	Maintenance of unpaved portion of emergency truck escape ramps.		***NO EFFECT***
PAVED – ROAD				
711-7136-01	**Pavement Widening ~~BCBC~~ Mechanized**	The widening of paved roadways such as scarifying, shaping and/or removing existing material, the addition of bituminous concrete base course (BCBC) shaping and compacting. The widening shall consist of a minimum of 2 feet. If both sides of the roadway are to be widened, it shall consist of a minimum of 2 feet on each side.	**MAY AFFECT[2]**	
711-7137-01	**Pavement Widening Recycled Material – Mechanical**	The widening of paved roadways such as scarifying, shaping, and/or removing existing material, the addition of recycled material, shaping and compacting. The existing paved roadway width shall be 18 feet or less and the widening shall consist of a minimum of 2 feet. If both sides of the roadway are to be widened, it shall consist of a minimum of 2 feet on each side.	**MAY AFFECT[2]**	
711-7138-01	**Recycled Asphalt Pavement, Paver Finisher – Placement Only <3"**	Application of fresh mixed recycled asphalt material over an existing bituminous roadway to reestablish a uniform cross section.		**NO EFFECT**
711-7138-02	**Recycled Asphalt Pavement Paver Finisher – Placement Only >3"**	Application of fresh mixed recycled asphalt material over an existing bituminous roadway with a finish paver using RAP applied at a compacted depth of 3-5 inches.		**NO EFFECT**

[1] Same description of activity regardless of the first three numbers indicated – program code may also be 612, 618, 621, 663, 712, 713, or 714

[2] If conducted in or near wetlands occupied or assumed to be occupied by bog turtles

[3] New Assemblies added or modified between 2019-2024.

CODE[1]	BRIEF DESCRIPTION	DETAILED DESCRIPTION	USFWS 2003 DETERMINATION CONCURRENCE	ACTION AGENCY DETERMINATION *(NEW ASSEMBLIES ITALICIZED[3])*
711-7138-03	**Recycled Asphalt Pavement – Widening Recycled Materials**	Involves widening of the paved roadways and placing freshly mixed RAP material, shaping, and compacting. Existing roadway 18 feet or less and widening shall be a minimum of 2 feet.		**MAY EFFECT[2]**
711-7138-04	**Recycled Asphalt Pavement – Base Repair Mechanized**	Removal of distressed pavement base material and replacement using freshly mixed RAP material.		**NO EFFECT**
711-7138-05	**Recycling Bituminous Mobile Mixer Paver**	Application of recycled bituminous material on an existing bituminous roadway using a mobile mixer paver.		**NO EFFECT**
711-7138-08	**Recycled Asphalt Pavement Central Mix Plant (Pug Mill) Production Only**	Production of RAP material from stockpiled reclaimed (milled) asphalt material and virgin aggregate mixed with liquid bituminous material. (This assembly is combined with 711-7238-01)		**NO EFFECT**
711-7138-11	**Recycled Asphalt Pavement Cold-in Place Recycling**	On-grade construction and material process of a cold recycled bituminous base course with a self-propelled milling machine processing a down-cutting drum, screening, and pugmill mixer.		**NO EFFECT**
711-7139-01	**FB Paving Paver Finisher – Placement Only Leveling >2”**	Application of fresh mixed FB asphalt over an existing bituminous roadway using a finish paver to re-establish a uniform cross-section.		**NO EFFECT**
711-7139-02	**FB Paving Paver Finisher – Placement Only Uniform Overlay >2”**	Application of fresh mixed FB asphalt to a uniform depth over a prepared bituminous roadway using a finished paver to re-establish a uniform cross-section.		**NO EFFECT**
711-7139-05	**FB Paving Mobile Mixer Paver**	Mixing of virgin aggregate and liquid bituminous material to established standards for FB mixes, along with the application of the fresh mixed FB asphalt onto an existing bituminous roadway using a mobile mixer.		**NO EFFECT**
711-7139-08	**FB Paving Central Mix Plant (Pug Mill) Production Only**	Production of FB asphalt material for stockpiled virgin aggregate mixed with liquid bituminous material for application to an existing bituminous roadway using a finished paver. (This assembly is combined with 711-7239-01)		**NO EFFECT**
711-7151-01	**Minor Risk Management/ Safety**	Completion of minor risk management/safety improvement projects. This includes designated, site-specific activities such as brushing, bank cutting/shaping, radius improvement, guiderail, etc. coordinated through the District traffic unit or the district risk engineer/specialist.	**MAY AFFECT[2]**	
711-7113-01	**Dust Palliative - Bit./Calcium Chloride/Other Product**	Spot application of dust palliatives on paved roads to prevent dust formation.	**NO EFFECT**	
711-7115-01	**Patch/Base Repair**	Repairing potholes, isolated depressions, etc. on paved roads.	**NO EFFECT**	
711-7121-01	**Patching - Manual**	This activity includes all actions to manual patching operations, such as, preparing (milling is included) and sweeping the hole, tacking (hot mix only), manually placing bituminous patching material, and compaction on paved roads.	**NO EFFECT**	
711-7121-02	**Road - Paved Manual Patching Non-Standard**	Manual patching using emergency repair patching procedures such as filling and compacting.	**NO EFFECT**	

[1] Same description of activity regardless of the first three numbers indicated – program code may also be 612, 618, 621, 663, 712, 713, 714, 715, or 822

[2] If conducted in or near wetlands occupied or assumed to be occupied by bog turtles

[3] New Assemblies added or modified between 2019-2024.

CODE[1]	BRIEF DESCRIPTION	DETAILED DESCRIPTION	USFWS 2003 DETERMINATION CONCURRENCE	ACTION AGENCY DETERMINATION *(NEW ASSEMBLIES ITALICIZED[3])*
~~711-7121-03~~	~~Patching – Manual – Pipe Trenches~~	~~The manual placing of a bituminous course over a pipe.~~	~~NO EFFECT~~	
711-7121-04	Road – Paved Spray Patch Manual or Mechanized	Pothole repair spray patching operations such as removing weakened material, cleaning, application of liquid bituminous and aggregate on paved road including rigid pavement.	NO EFFECT	
711-7121-05	Manual Patching Mechanized Cutting	Manual patching/mechanized cutting repair of potholes in limited areas		*NO EFFECT*
711-7122-01	Patching – Mechanical – Tow Paver	Mechanical patching operations of limited areas (less than 500 feet continuous, 1300 linear feet per mile or 1750 square yards per lane mile), such as application of tack coat, placing hot plant mix material with paver and compaction on paved roads.	NO EFFECT	
711-7122-02	Patching – Mechanical – Mixer Paver	Mechanical patching operations of a limited area (less than 500 feet continuous, 1300 linear feet per mile, or 1750 square yards per lane mile) using a mixer paver to place a layer of liquid bituminous and aggregate blended mix on paved roads.	NO EFFECT	
711-7122-03	Patching – Mechanical – Paver Finisher	Mechanical patching operations of limited areas (less than 500 feet continuous, 1300 linear feet per mile, or 1750 square yards per lane mile); such as application of tack coat, placing hot plant mix material with a paver finisher and compaction on paved roads.	NO EFFECT	
711-7122-04	Patching – Edge – Mechanical	Mechanized edge patching to repair extensive deterioration and re-establishment of roadway width over existing base, including cleaning, placement of tack coat, placement of hot plant bituminous mix, shaping and compacting. The re-established pavement width shall be equal to the roadway width as recorded in the straight-line diagram or the width of the base material as indicated by field conditions.	NO EFFECT	
711-7122-05	Plant Mix Patching – Partial Depth (Milling Machine and Widener) Mechanized	Placement of mechanized bituminous patches over surface distresses in a limited area. Includes milling machine in high-productivity surface repair operations.		*NO EFFECT*
~~711-7123-01~~	~~Surface Treatment – Mixer Paver~~	~~The placing of a uniform, full width 1" (90-110 lbs. per square yard) fb application with a mixer paver; such as sweeping, applying mix to road surface and compaction on paved roads.~~	~~NO EFFECT~~	
~~711-7123-09~~	~~Surface Treatment – Mixer Paver – Pre-Hauling~~	~~Stockpiling (hauling) aggregate prior to mix paver operations.~~	~~NO EFFECT~~	
711-7124-01	Surface Treatment – Liquid Bituminous Seal Coat Mechanical	Liquid bituminous surface treatment operations such as sweeping, application of liquid bituminous material and placing and seating the cover aggregate on paved roads. The sweeping and cleaning of the road prior to the surface treatment, such as cleaning up aggregate, re-application of aggregate made necessary by bleeding, etc., should be charged to this code.	NO EFFECT	

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711-7124-02	**Surface Treatment – Sand Bleeding Roads**	Placing sand and/or appropriate aggregates on roads flushing/bleeding due to liquid bituminous operations including mechanized skin patching operations.	**NO EFFECT**	
711-7124-03	**Surface Treatment – Slurry Seal and Ralumac and Nova Chip**	The application of slurry seal, ralumac, or nova chip surface treatments.		**NO EFFECT**
711-7124-04	**Surface Treatment – Liquid Bituminous – Seal Coat – Double Application**	The application of liquid bituminous immediately followed by the rolling in of course aggregates repeated twice to result in a double application of each material.		**NO EFFECT**
711-7124-09	**Surface Treatment – Seal Coat Stockpiling Material**	Stockpiling (hauling) costs for surface treatment/seal coat operations where excess aggregate is stored for future use.		**NO EFFECT**
711-7126-01	**Base/Subbase Repair – Flex. Base – Light Duty**	Base/subbase repair operations, such as removal of surface and base/subbase material, placing of u-drains and bleeders, adding new material and compaction on pie crust (pancake) and light duty roads. Pie crust is defined as a roadway with less than two (2) inches total depth of bituminous surface including surface treatment build up.	**NO EFFECT**	
711-7126-02	**Base/Subbase Repair – Flex. Base – Heavy Duty**	Base/subbase repair operations, such as removal of surface and base/subbase material, placing drains and bleeders, new material, and compaction on flexible base (heavy duty) roads.	**NO EFFECT**	
711-7126-03	**Base/Subbase Repair – Rigid Base**	Base/subbase repair operations, such as removal of surface and base/subbase material, placing of drainage, new material, and compaction.	**NO EFFECT**	
711-7126-04	**Base/Subbase Repair – Widener**	High productivity base/subbase repair operations utilizing a milling machine and a mechanized widener such as removal of surface material with a milling machine, adding bituminous base/subbase material with a widener and compaction.	**NO EFFECT**	
~~**711-7127-01**~~	~~**Skin Patch – Liquid Bituminous – Manual**~~	~~Liquid bituminous skin patching operations, such as sweeping, manual application of liquid bituminous material using a heating kettle, manually spreading cover aggregate and rolling on paved roads.~~	~~**NO EFFECT**~~	
711-7127-02	**Skin Patch – Liquid Bituminous – Mechanical**	Mechanized liquid bituminous skin patching of limited areas such as sweeping, application of liquid bituminous material and placing and seating the cover aggregate on paved roads.	**NO EFFECT**	
~~**711-7127-03**~~	~~**Skin Patch – Liq. Bit. Manual – Dist. and Spray Wand**~~	~~Liquid bituminous skin patching operations, such as sweeping, application of liquid bituminous material using a distributor with spray wand, manually spreading cover aggregate and rolling on paved roads.~~	~~**NO EFFECT**~~	
711-7128-01	**Crack Sealing – Bituminous Surface Lane**	Crack sealing bituminous surfaces with pre-packaged material in a non-over-banding operation. Activity includes routing of cracks where required (working transverse and single random cracks), cleaning of cracks, applying material, and squeegeeing on rigid or flexible base roads.	**NO EFFECT**	

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711-7129-01	**Hot Pour Mastic**	Hot applied pourable asphalt material containing aggregate used to repair pavement deficiencies which exceed parameters of crack sealing. This includes heating the material, cleaning and drying of cracks or repair areas, applying material and leveling the sealant material on rigid or flexible base roads.		***NO EFFECT***
711-7131-01	**Leveling – <2" - Tow Pav./ Pav. Finish – Mechanical**	Applying a leveling course to re-establish the roadway cross section using a paver finisher or tow paver in excess of 500' continuous length.	**NO EFFECT**	
~~**711-7131-02**~~	~~**Leveling – Mixer Paver - Mechanical**~~	~~Applying a leveling course to re-establish the roadway cross section using a mixer paver to place a layer of liquid bituminous and aggregate blended mix (fb-1 or fb-2) in excess of 500' continuous length.~~	~~**NO EFFECT**~~	
711-7131-03	**Leveling Course > 2" – Binder Finish Paver Mechanized**	The application of a plant mixed leveling course, used to re-establish the roadway cross section, using a paver finisher over an existing paved road.		**NO EFFECT**
~~**711-7131-09**~~	~~**Leveling – Mixer Paver – Pre-Hauling**~~	~~Stockpiling (hauling) costs for a mixer paver leveling course prior to actually performing the work.~~	~~**NO EFFECT**~~	
711-7132-01	**Milling – Bituminous Surfaces**	Pavement milling such as removing material, loading material and clean up on paved surfaces.	**NO EFFECT**	
711-7132-02	**Spot Milling Only**	Spot pavement milling such as blow up removal, loading material and clean up on paved surfaces.	**NO EFFECT**	
711-7133-04	**Recycling – Bituminous Surfaces- Full Depth (FDR) Mechanized**	Pavement recycling such as removing material, adding asphalt, placing mat and compaction on paved surfaces.	**NO EFFECT**	
~~**711-7134-01**~~	~~**Slurry Seal and Ralumac**~~	~~The contract application of slurry seal or ralumac material.~~	~~**NO EFFECT**~~	
711-7135-01	**Surface Treatment – Plant Mix – Paver 1½**	The application of a uniform 1½" bituminous paving operation, application of a tack coat, cutting pavement notches, placing of hot mix with bituminous paver finisher and compaction on paved roads in excess of 500 feet continuous length.	**NO EFFECT**	
711-7135-02	**Surface Treatment – Plant Mix ~~ID3~~ - 1" Paving**	The application of a id-3 bituminous paving operation such as sweeping, application of tack coast, cutting pavement notches, placing of hot mix with a bituminous paver finisher and compaction on paved roads in excess of 500 feet continuous length.	**NO EFFECT**	
711-7135-03	**Surface Treatment – Plant Mix Single Lane**	Single lane application of a uniform plant mixed bituminous paving course over an existing paved road.		***NO EFFECT***
711-7141-01	**Concrete Patching – Full Depth**	The full depth patching/replacement with concrete on rigid pavements.	**NO EFFECT**	
711-7141-02	**Concrete Patching – Spalls**	The partial depth patching (spall repair) with concrete on rigid pavements.	**NO EFFECT**	
711-7147-01	**Joint Sealing Concrete Roads ~~Lane~~**	Joint sealing operations on rigid pavements only.	**NO EFFECT**	

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711-7147-02	**Joint Sealing Concrete Rds. – Pavement/Shoulders Separation ~~Lane~~**	Sealing the separated area located immediately adjacent to a concrete highway and bituminous shoulder.	**NO EFFECT**	
711-7148-01	**Stockpile Aggregate**	Account code only – no on ground activity.	**NO EFFECT**	
711-7151-01	**Minor Risk Management/ Safety**	Completion of minor risk management/safety improvement projects. This includes designated, site-specific activities such as brushing, bank cutting/shaping, radius improvement, guiderail, etc. coordinated through the District traffic unit or the district risk engineer/specialist.	**MAY AFFECT[2]**	
SHOULDERS – UNPAVED AND SIDE APPROACHES				
711-7212-01	**Grading - Mechanical**	Grading operations, such as grading, shaping, and compacting of unpaved shoulder and side approaches. This is one of our most important preventative maintenance functions. Properly sloped and maintained shoulders aid in the quick removal of surface water from the roadway into the drainage system. Incidental material may be added or removed. If the ditch line adjacent to the effective shoulder area is cut, this should be charged to 711-7312-01 ditch cleaning.	**MAY AFFECT[2]**	
711-7213-01	**Stabilization – Add Material Mechanical**	The application, shaping and compaction of stabilizing material over long portions of the shoulder. This type of operation is typically performed after a roadway has been resurfaced and the shoulder elevation needs to be adjusted to meet the new pavement grade.	**NO EFFECT**	
711-7214-01	**Dust Palliative Bituminous or Calcium Chloride**	The application of a bituminous, calcium chloride material, or other dust palliatives on the surface of a properly graded, stabilized or earth shoulder to increase stability.	**NO EFFECT**	
711-7215-01	**Cutting – Belt Loader**	The cutting of unpaved shoulders utilizing a belt loader including grading, shaping, adding material, compacting, and hauling away excess material from earth shoulders and cutting and hauling of turf from areas adjacent to paved shoulders.	**MAY AFFECT[2]**	
711-7215-02	**Cutting – Front End Loader**	The cutting of unpaved shoulders utilizing a front-end loader including grading, shaping, adding material, compacting, and hauling away excess material from earth shoulders and cutting and hauling of turf from areas adjacent to paved shoulders.	**MAY AFFECT[2]**	
711-7216-01	**Upgrading – Paving Mechanized**	The upgrading of unpaved shoulders to paved shoulders, such as scarifying, shaping and/or removing existing material, the addition of new material, shaping and compacting. This action is intended to reduce or eliminate shoulder erosion caused by high water velocities on unpaved surfaces. The grading of shoulders shall be confined to areas where shoulder erosion problems exist.	**MAY AFFECT[2]**	
711-7217-01	**Stabilization – Add Material Manual**	The application, shaping and compaction of stabilizing material over short sections of unpaved shoulders, due to washouts or pavement edge drop-offs at the inside of curves, intersections or other locations.	**NO EFFECT**	
711-7221-01	**Patching – Manual**	This activity includes all actions related to manual patching operations on unpaved shoulders.	**NO EFFECT**	

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711-7221-02	**Patching Plant Mix Paver or Widener Mechanized**	Mechanized repair of deteriorated paved shoulder area.		***NO EFFECT***
711-7222-01	**Patching – Mechanical – Plant Mix**	This activity includes all actions related to mechanized patching operations on unpaved shoulders and side approaches.	**NO EFFECT**	
~~**711-7222-02**~~	~~**Surface Treatment – Pant Mix**~~	~~This activity includes all actions related to mechanized shoulder paving on unpaved shoulders and side approaches.~~	~~**NO EFFECT**~~	
711-7224-01	**Surface treatment – Mechanical – Liquid Bituminous**	This activity includes all actions related to liquid bituminous surface treatment operations on unpaved shoulders and side approaches.	**NO EFFECT**	
711-7224-09	**Surface Treatment – Liquid Bituminous – ~~Pre-Hauling~~**	Account code only – no on ground activity.	**NO EFFECT**	
711-7225-01	**Driveway Adjustment**	This activity includes all actions related to driveway repairs required by paving and/ or shoulder operations, such as, installing pipe, reworking the grade, etc.	**NO EFFECT**	
711-7226-01	**Base/Subbase Repair – Light Duty**	This activity includes all actions related to base/subbase repair operations such as removal of surface and base/subbase material, placing of U-drains and bleeders, adding new material and compactions on light duty shoulders.	**NO EFFECT**	
711-7226-02	**Base/Subbase Repair – Heavy Duty**	This activity includes all actions related to base/subbase repair operations, such as removal of surface and base/subbase material, placing drainage, new material, and compaction on heavy duty shoulders.	**NO EFFECT**	
711-7227-01	**Skin Patching – Manual – Liquid Bituminous**	This activity includes all actions related to liquid bituminous skin patching operations on unpaved shoulders.	**NO EFFECT**	
711-7227-02	**Skin Patching – Mechanical – Liquid Bituminous**	This activity includes all actions related to mechanized liquid bituminous skin patching on unpaved shoulders.	**NO EFFECT**	
711-7227-03	**Skin Patching – Mech. – Liq. Bit. – Distr. and Spray Wand**	This activity includes all actions related to liquid bituminous skin patching operations on unpaved shoulder.	**NO EFFECT**	
711-7227-09	**Skin Patching – Pre-Hauling**	Account code only – no on ground activity.	**NO EFFECT**	
711-7228-01	**Crack Sealing – Bituminous Surface Manual**	Sealing of cracks in bituminous shoulders with pre-packed material		***NO EFFECT***
711-7228-02	**Crack Sealing – Concrete Surface Manual**	Sealing of cracks in concrete shoulder with pre-packed material.		***NO EFFECT***
711-7232-01	**Milling**	This activity includes all actions related to unpaved shoulder milling such as removing material, loading material and cleanup on unpaved surfaces.	**NO EFFECT**	
711-7233-01	**Recycling**	This activity includes all actions related to pavement recycling such as removing material, adding asphalt, placing mat and compaction on unpaved surfaces.	**NO EFFECT**	

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SHOULDERS – PAVED AND SIDE APPROACH				
711-7213-01	**Stabilization – Add Material Mechanical**	The application, shaping and compaction of stabilizing material over short sections of unpaved shoulders, due to washouts or pavement edge drop-offs at the inside of curves, intersections or other locations.	**NO EFFECT**	
711-7213-09	**Stabilization – Pre-Hauling**	Account code only – no on ground activity.	**NO EFFECT**	
711-7214-01	**Dust Palliative Bituminous or Calcium Chloride**	The application of a bituminous, calcium chloride material, or other dust palliatives on the surface of a properly graded, stabilized or earth shoulder to increase stability.	**NO EFFECT**	
711-7217-01	**Stabilization – Add Material – Manual**	The application, shaping and compaction of stabilizing material over short sections of unpaved shoulders, due to washouts or pavement edge drop-offs at the inside of curves, intersections or other locations.	**NO EFFECT**	
711-7221-01	**Patching – Manual**	This activity includes all actions related to manual patching operations on paved shoulders.	**NO EFFECT**	
711-7222-01	**Patching – Mechanical – Plant Mix**	This activity includes all actions related to mechanized patching operations on paved shoulders and side approaches.	**NO EFFECT**	
711-7222-02	**Surface Treatment – Pant Mix**	This activity includes all actions related to mechanized shoulder paving on paved shoulders and side approaches.	**NO EFFECT**	
711-7224-01	**Surface treatment – Mechanical – Liquid Bituminous**	This activity includes all actions related to liquid bituminous surface treatment operations on paved shoulders and side approaches.	**NO EFFECT**	
711-7224-09	**Surface Treatment – Liquid Bituminous – Pre-Hauling**	Account code only – no on ground activity.	**NO EFFECT**	
711-7225-01	**Driveway Adjustment**	This activity includes all actions related to driveway repairs required by paving and/ or shoulder operations, such as, installing pipe, reworking the grade, etc.	**NO EFFECT**	
711-7226-01	**Base/Subbase Repair – Light Duty**	This activity includes all actions related to base/subbase repair operations such as removal of surface and base/subbase material, placing of U-drains and bleeders, adding new material and compactions on light duty shoulders.	**NO EFFECT**	
711-7226-02	**Base/Subbase Repair – Heavy Duty**	This activity includes all actions related to base/subbase repair operations, such as removal of surface and base/subbase material, placing drainage, new material, and compaction on heavy duty shoulders.	**NO EFFECT**	
711-7227-01	**Skin Patching – Manual – Liquid Bituminous**	This activity includes all actions related to liquid bituminous skin patching operations on paved shoulders.	**NO EFFECT**	
711-7227-02	**Skin Patching – Mechanical – Liquid Bituminous**	This activity includes all actions related to mechanized liquid bituminous skin patching on paved shoulders.	**NO EFFECT**	
711-7227-03	**Skin Patching – Mech. – Liq. Bit. – Distr. and Spray Wand**	This activity includes all actions related to liquid bituminous skin patching operations on paved shoulder.	**NO EFFECT**	
711-7227-09	**Skin Patching – Pre-Hauling**	Account code only – no on ground activity.	**NO EFFECT**	

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711-7232-01	**Milling**	This activity includes all actions related to unpaved shoulder milling such as removing material, loading material and cleanup on paved surfaces.	**NO EFFECT**	
711-7233-01	**Recycling**	This activity includes all actions related to pavement recycling such as removing material, adding asphalt, placing mat and compaction on paved surfaces.	**NO EFFECT**	
DRAINAGE CLEANING, REPAIR OR REPLACEMENT				
711-7311-01	**Cleaning – Inlet/Endwall/ Basin – Manual/Mechanical**	Cleaning inlets and endwalls such as removal and disposal of material. Normally, if the activity is just cleaning inlets and endwalls all cleaning operations performed in the ditch channel within 15 feet of the pipe opening and one shovel length into the pipe will be charged to this code.	**MAY AFFECT[2]**	
711-7311-02	**Cleaning – Inlet Clogged**	Cleaning inlets and endwalls such as removal and disposal of material. Normally, if the activity is just cleaning inlets and endwalls all cleaning operations performed in the ditch channel within 15 feet of the pipe opening and one shovel length into the pipe will be charged to this code.	**MAY AFFECT[2]**	
711-7312-01	**Cleaning – Ditch/Drain Chan. Mech.**	Mechanized cleaning and reshaping of ditches and drainage channels, such as removal and disposal of material. Ditches and drainage channels should provide an obstruction free flow of surface water away from and parallel to the roadway.	**MAY AFFECT[2]**	
711-7312-02	**Cleaning – Ditch/Drain Chan. Manual**	Cleaning flow lines (swales), such as removal and disposal of material. The cleaning of flow lines on unpaved roads is also charged to this activity.	**MAY AFFECT[2]**	
711-7312-03	**Cleaning – Swales – Mech.**	Cleaning flow lines (swales), such as removal and disposal of material. The cleaning of flow lines on unpaved roads is also charged to this activity.	**MAY AFFECT[2]**	
711-7314-01	**Cleaning Pipes and Culverts**	The mechanical cleaning of pipes and culverts and the removal and disposal of material. The flushing of pipes and culverts is accomplished by using a high velocity sewer cleaner, sewer odor or cable unit. Inlet and outlet ditches must be cleaned before the pipe cleaner arrives at the work site and charged to "ditch cleaning".	**MAY AFFECT[2]**	
711-7315-01	**Install Rock Lining**	The installation of rock lining in drainage ditches.	**MAY AFFECT[2]**	
711-7321-01	**Replace Inlet and Endwall – Manual**	The repair or replacement of inlets and endwalls such as removing old material, excavating area, construction of forms, pouring of concrete or appropriate material.	**MAY AFFECT[2]**	
711-7321-02	**Repair/Adjust Inlets and or Endwalls – Manual**	The repair and or adjustments to inlets and/or endwalls. Includes actions required to make repairs/adjustments to inlets and/or endwalls.		***MAY AFFECT[2]***
711-7324-01	**Replace Pipes and Culverts under 36 inches – Mech.**	The replacement/installation of pipes and culverts less than 36 inches in diameter, such as cutting/sawing pavement, excavation of trench, installing pipe, backfilling, and compaction.	**MAY AFFECT[2]**	

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711-7324-02	**Replace Pipes and Culverts over 36 inches– Mech.**	The replacement/installation of pipes and culverts 36" and greater in diameter, such as cutting/sawing pavement, excavation of trench, installing pipe, backfilling, compacting, and installation of flared end sections or construction of field stone end walls.	**MAY AFFECT[2]**	
711-7324-03	**Replace/Install Parallel Pipe**	The replacement/installation of parallel pipes such as saw cutting shoulder, excavation of trench, installation of pipe, backfilling and compacting.	**MAY AFFECT[2]**	
711-7324-04	**Drainage – Replacement/Installation Pipes Extension Only**	This assembly is all actions related to the extension of existing pipe installation.		**MAY AFFECT[2]**
711-7324-05	**Drainage – Pipe Trenches Trench Restoration Manual**	This assembly is the placing of bituminous surface/base course after a pipe replacement.		**NO EFFECT**
711-7325-01	**Repair/Replace Structure under 8-foot Length**	The repair or replacement of a masonry, concrete, or wood structure (arch culvert, box culvert, slab or wood deck structure, masonry structure, etc.) under 8 feet in length which cannot be charged to activity 711-7324 pip or metal culver replacements.	**MAY AFFECT[2]**	
711-7326-01	**Repair Pipe and Culvert**	The repair of pipes and culverts such as installing a pipe liner, patching a pipe, replacing a small end section, etc.	**MAY AFFECT[2]**	
711-7328-01	**Install Subsurface Drain (U-Drain)**	The installation of subsurface drains (u-drain).	**MAY AFFECT[2]**	
~~**711-7324-09**~~	~~**Replace Pipes and Culverts – Pre-Hauling**~~	~~Account code only – no on-ground activity.~~	~~**NO EFFECT**~~	
ROADWAY SECTION RESTORATION				
711-7332-01	**Repair/Install Gabions/Ret. Walls**	The Installation or repair of gabions and retaining walls including the removal of material, shoring and building supports, etc.	**MAY AFFECT[2]**	
711-7333-01	**Repair Sink Holes/Slides**	All actions related to roadway restoration including the removal and disposal of debris from slides, repair of cuts and fills, dressing slopes and washouts, bench cleaning, repair of sink holes, etc.	**MAY AFFECT[2]**	
711-7331-01	**Side Dozing – Mechanical**	The removal of accumulated material from beneath guiderail such as: side dozing of vegetation and soil buildup and manually shoveling embankment if stroke of side dozer is insufficient; or manually filling of small washouts along the job course.	**NO EFFECT**	
711-7334-01	**Graffiti Removal**	The covering (painting) or removal of graffiti form any department facilities.	**NO EFFECT**	

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STORM PATROL				
711-7351-01	**Rain or Wind Patrol**	Patrolling of roadways and minor debris removal during the storm event including the evaluation of drainage and erosion control facilities for potential hazards to the motoring public. Includes cleaning minor surface debris from drains and roadway, removing fallen trees and branches from the traveled way and any other actions required as a result of the storm. Does not include any drain cleaning which requires the removal and disposal of material other than minor surface debris.	**NO EFFECT**	
BRIDGE MAINTENANCE AND REPAIR				
711-7425-01	**Repair/Replace – Bridge over Eight-Foot Length**	Work area includes the entire structure including footings, abutments, wingwalls, superstructure, and deck. Also, any incidental roadway approach work.	**MAY AFFECT[2]**	
711-7432-02	**Painting - Full**	Generally, run through full permitting process.	**MAY AFFECT[2]**	
711-7446-01	**Repair/Replace – Superstructure Member**	This activity may involve temporary piers, jacks or other supports beneath the bridge.	**MAY AFFECT[2]**	
711-7447-01	**Repair/Replace – Truss Member**	This activity may involve temporary supports beneath the bridge.	**MAY AFFECT[2]**	
711-7448-01	**Repair/Replace Backwalls**	These activities may involve extensive ground disturbance.	**MAY AFFECT[2]**	
711-7448-02	**Replace/Repair Substructure**		**MAY AFFECT[2]**	
711-7448-03	**Maintenance – Underpinning**		**MAY AFFECT[2]**	
711-7448-04	**Other Substructure**			***MAY AFFECT[2]***
711-7449-01 and 711-7449-02	**Concrete Deck Overlay – Epoxy/PPC Overlay**	Activities on concrete bridge deck.		***NO EFFECT***
711-7450-01	**Maintenance – Repointing**	Masonry repair is often done by hand but may involve removal of riprap or other protective material, cofferdams, or excavation to access bridge substructure.	**MAY AFFECT[2]**	

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711-7451-01	**Repair/Replace Slopewalls**	May require excavation and instream/in wetland activity.	**MAY AFFECT[2]**	
711-7452-01 and 711-7452-02	**Repair/Replace – Culverts**		**MAY AFFECT[2]**	
711-7453-01 and 711-7453-02	**Erosion Protection – Stream Bed/Rock/Deflector Scour Hole Backfill**		**MAY AFFECT[2]**	
711-7453-03	**Erosion Protection – Channel Cleaning ~~Culverts~~**		**MAY AFFECT[2]**	
711-7454-01	**Const./Install – Temporary Supports**		**MAY AFFECT[2]**	
711-7455-01	**Repair/Replace Slabs/Box Culvert**		**MAY AFFECT[2]**	
711-7431-01	**Cleaning/Flush Deck**	Work area includes entire deck between the backs of the abutment backwalls. Remove all salt, anti-skid, dirt, debris and other deleterious material by manually first and then by flushing. Seasonal restriction recommended over trout streams from April 10 to June 10.	**NO EFFECT**	
711-7431-02	**Cleaning/Flush – Bearing and Super Structure**		**NO EFFECT**	
711-7431-03	**Cleaning/Flush Open Grid**		**NO EFFECT**	
711-7432-01	**Painting – Spot**	Superstructure painting, usually less than 35% of structure. Scaffolding or work platform may be used, and any hand or power tolls for cleaning.	**NO EFFECT**	
711-7432-03 thru 711-7432-06	**Painting Superstructure – Spot Inorganic Zinc/ Aluminum Mastic**	Spot painting of the superstructure and substructure.		***NO EFFECT***
711-7433-01	**Seal – Joints (Liquid Only)**	Joints can be located anywhere within the entire length of the bridge between the backs of the backwalls. Poured joint material.	**NO EFFECT**	
711-7433-02	**Repair Joints**	Repair or replace existing joints.	**NO EFFECT**	
711-7433-03	**Repair/Replace Joints – Strip Seals**	Repair or replace existing joint strip seals		***NO EFFECT***
711-7434-01	**Repair/Replace Guiderail/ Median Barrier/Parapet**	Conducted on the existing bridge structure. May include limited demolition.	**NO EFFECT**	
711-7435-01	**Lubricate Bearings**	Repair or replacement of various bridge superstructure components. Conducted from the existing bridge.	**NO EFFECT**	
711-7435-02	**Repair/Replace Bearings**		**NO EFFECT**	
711-7435-03	**Repair/Replace – Pedestal/ Seat**		**NO EFFECT**	
711-7442-01	**Repair/Replace – Approach Slab**		**NO EFFECT**	
711-7443-01	**Repair/Replace Deck**		**NO EFFECT**	

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711-7443-02	**Repair/Replace Sidewalk/ Curb**		**NO EFFECT**	
711-7444-01	**Repair/Replace Deck Drainage**		**NO EFFECT**	
711-7457-01 and 711-7457-02	**Brushing, Tree Removal, Manual and Mechanized**	Vegetation maintenance in close proximity to bridge structure		***NO EFFECT***
711-7459-01	**Other Bridge Activities**	Restricted to maintenance activities that are non-structural.	**NO EFFECT**	
TUNNEL MAINTENANCE AND REPAIR				
711-7421-01	**Washing Cleaning Various**	Mechanical washing of the highway tunnel interior.	**NO EFFECT**	
711-7422-01	**Traffic Services – Traffic Incident Management**	Tunnel traffic incident management activities assuming staging and other support activities are not conducted in or near wetlands.	**NO EFFECT**	
711-7422-02	**Repair Tunnel Roadway Wearing Surface**	All actions related to Bituminous Asphalt or Concrete patching including preparing (milling/cutting) and cleaning the hole, tacking, manually placing hot or cold bituminous patching, including concrete material and compaction on bituminous paved tunnel roads.		**NO EFFECT**
711-7422-03	**Repair/Replace Tunnel Barrier**	All actions related to the repair and replacement of tunnel barriers.		**NO EFFECT**
711-7422-04	**Tunnel Lane Signal**	All actions related to the repair, replacement, servicing, and maintenance of all tunnel lane signals and tunnel lane signal systems including, but not limited to, replacement of lamps, testing, troubleshooting and repairs, cleaning, etc.		**NO EFFECT**
711-7422-05	**Tunnel Signs**	All actions related to the repair or replacement of tunnel signs.		**NO EFFECT**
711-7422-06	**Over Height Truck Warning System**	All actions related to the repair or replacement of tunnel Over Height Truck Warning Systems and appurtenances.		**NO EFFECT**
711-7423-01	**Lighting Systems – General Maintenance and Inspection**	All actions related to performing non-complex, minor repairs or inspections of tunnel lighting systems and lighting infrastructure.	**NO EFFECT**	
711-7423-02	**Repair Tunnel Lighting Systems**	All actions related to performing moderately complex, and complex repairs to or replacement of tunnel lighting systems.		**NO EFFECT**
711-7424-01	**Electrical Systems – General Maintenance/Inspection (SWO)**	All actions related to performing non-complex, minor repairs or inspections of tunnel electrical infrastructure and systems.	**NO EFFECT**	
711-7424-02	**Electrical Systems – Switch Gear**	All actions related to performing moderately complex and complex repairs to or replacement of tunnel electrical switch gears.		**NO EFFECT**
711-7424-03	**Electrical Systems – Motor Control Center**	All actions related to performing moderately complex and complex repairs to or replacement of tunnel motor control centers.		**NO EFFECT**

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711-7424-04	**Electrical Systems – Repair or Replace Transformer**	All actions related to performing moderately complex and complex repairs to or replacement of tunnel transformers.		**NO EFFECT**
711-7424-05	**Electrical Systems – Repair or Replace Transfer Switch**	All actions related to performing moderately complex and complex repairs to or replacement of tunnel electrical transfer switches.		**NO EFFECT**
711-7424-06	**Electrical Systems – Panel Board**	All actions related to performing moderately complex and complex repairs to or replacement of tunnel electrical panelboards.		**NO EFFECT**
711-7424-07	**Electrical Systems – Universal Power Supply**	All actions related to performing moderately complex and complex repairs to or replacement of tunnel universal power supply systems (UPS).		**NO EFFECT**
711-7426-01	**Structural – General Maintenance/Inspection**	All actions related to performing non-complex, minor repairs or inspections of tunnel structural members and systems.		**NO EFFECT**
711-7426-02	**Structural – Tunnel Liner**	All actions related to repairing or replacing tunnel liner systems.		**NO EFFECT**
711-7426-03	**Structural – Tunnel Roof/ Ceiling Girders**	All actions related to performing moderately complex and complex repairs to or replacement of tunnel roof material, systems or ceiling girders.		**NO EFFECT**
711-7426-04	**Structural – Tunnel Cross Passageway**	All actions related to performing moderately complex and complex repairs to or replacement of tunnel cross passageways.		**NO EFFECT**
711-7426-05	**Structural – Tunnel Interior Walls**	All actions related to performing moderately complex and complex repairs to or replacement of interior tunnel walls.		**NO EFFECT**
711-7426-06	**Structural – Tunnel Portals**	All actions related to performing moderately complex and complex repairs to or replacement or tunnel portals.		**NO EFFECT**
711-7426-07	**Structural – Invert Concrete Slab on Grade**	All actions related to performing moderately complex and complex repairs to or replacement of concrete tunnel invert slabs.		**NO EFFECT**
711-7426-08	**Structural – Tunnel Invert Girders**	All actions related to performing moderately complex and complex repairs to or replacement of tunnel invert girders.		**NO EFFECT**
711-7426-09	**Structural – Tunnel Joints**	All actions related to performing moderately complex and complex repairs to or replacement of tunnel liner joint systems.		**NO EFFECT**
711-7426-10	**Structural – Tunnel Structure Members**	All actions related to performing minor, miscellaneous tunnel structural or general maintenance repairs.		**NO EFFECT**
711-7427-01	**Mechanical Systems – General Maintenance/ Inspection**	All actions related to performing non-complex, minor repairs or inspections of tunnel mechanical infrastructure systems.		**NO EFFECT**
711-7427-02	**Mechanical Systems – Ventilation Systems and Fans**	All actions related to performing moderately complex and complex repairs to or replacement of tunnel ventilation systems and fans.		**NO EFFECT**
711-7427-03	**Mechanical Systems – Drainage and Pumping Systems**	All actions related to performing moderately complex and complex repairs to or replacement of tunnel potable and ground water drainage systems including mechanical pumps.		**NO EFFECT**

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711-7427-04	**Mechanical Systems – Emergency Generator Systems**	All actions related to performing moderately complex and complex repairs to or replacement of tunnel emergency generator systems.		**NO EFFECT**
711-7428-01	**Fire/Life Safety Systems – General Maintenance/ Inspection**	All actions related to performing non-complex, minor repairs or inspections of tunnel fire, life safety, and security infrastructure and systems.		**NO EFFECT**
711-7428-02	**Fire/Life Safety Systems – Carbon Monoxide Monitoring System**	All actions related to performing moderately complex and complex repairs to or replacement of tunnel carbon monoxide monitoring systems including mechanical exhaust duct work and electrical wiring.		**NO EFFECT**
711-7428-03	**Fire/Life Safety Systems – Tunnel Fire Protection System**	All actions related to performing moderately complex and complex repairs to or replacement of tunnel fire protection systems.		**NO EFFECT**
711-7428-04	**Fire/Life Safety Systems – Emergency Communication System**	All actions related to performing moderately complex and complex repairs to or replacement of tunnel emergency communication systems.		**NO EFFECT**
711-7428-05	**Fire/Life Safety Systems – Operations and Security Systems**	All actions related to performing moderately complex and complex repairs to or replacement of tunnel operations and security systems.		**NO EFFECT**
711-7428-06	**Fire/Life Safety Systems – Fire Protective Coatings**	All actions related to performing moderately complex and complex repairs to or replacement of tunnel protective fire coating systems and appurtenances.		**NO EFFECT**
711-7428-07	**Fire/Life Safety Systems – Concrete Protective Coating Systems**	All actions related to performing moderately complex and complex repairs and removal of existing protective coatings or replacement of tunnel protective concrete coating systems.		**NO EFFECT**
711-7429-01	**Other – Tunnel Activities**	Miscellaneous and incidental tunnel maintenance activities such as minor non-complex incidental repairs to tunnel systems assuming staging and other support activities are not conducted in or near wetlands.	**NO EFFECT**	
Stormwater	**Control Measures**			
711-7800-01	**SCM Visual Screening**	Non-invasive stormwater control measure visual inspection		***NO EFFECT***
711-7800-02	**SCM Condition Assessment**	In-depth stormwater control measure inspection with minimally invasive techniques		***NO EFFECT***
711-7801-01	**SCM Earthwork**	Earth disturbance to repair or rebuild a stormwater control measure and its appurtenances. This does not cover routine maintenance activities.		***NO EFFECT***
711-7801-02	**SCM Material Removal**	Removal and disposal of trash, debris, and sediment that collects in and around the stormwater control measures. This is for minor sediment accumulation, downed trees, and contaminants (oil sheens, hazardous waste, and chemical containers.		***NO EFFECT***
711-7801-03	**SCM Storm Sewer Cleaning**	Cleaning of storm sewer system elements (catch basins/inlets and pipes) that are tributary to a stormwater control measure using mechanized means.		***NO EFFECT***

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711-7801-04	**SCM Fencing and Signs**	Maintaining fencing and signs for stormwater control measures. This includes erection, repair, replacement or removal of fencing, gates, locks, posts, chain-link mesh, signage, and guiderail at entrances.		***NO EFFECT***
711-7801-05	**SCM Structure upkeep and Repairs**	General upkeep of structural and mechanical components of the stormwater control measures.		***NO EFFECT***
711-7801-06	**SCM Earth Stabilization**	Corrective maintenance activities for the installation or application of ground cover.		***NO EFFECT***
711-7801-07	**SCM Vegetation Laboragement**	Preventative and corrective control of vegetative growth in and around the stormwater control measure.		***NO EFFECT***
711-7801-08	**SCM Manufactured Treatment Devices**	Maintenance activities associated with proprietary manufactured treatment devices.		***NO EFFECT***
711-7801-10	**SCM Replacement**	Major restoration work to restore stormwater control measure function, including replacement of all or part of the stormwater control measure.		***NO EFFECT***
711-7801-11	**SCM Other**	Maintenance activities that do not fit into the other stormwater assemblies.		***NO EFFECT***
SPECIAL CHARGES				
~~**711-7491-01**~~	~~**Hauling Non-Disabled Equip. – Lowboy Operation Only**~~	~~The hauling of non-disabled equipment using a lowboy.~~	~~**NO EFFECT**~~	
711-9003-01	**Under-Utilized Rented Equipment**	Accounting coding for tracking hours not used on rental equipment.		**NO EFFECT**
711-9812-01	**In-Service Training**	Accounting coding for tracking on-the-job training for non-core equipment training/ certification.		**NO EFFECT**
SNOW SEASON PREPARATION, SNOW REMOVAL, AND ICE CONTROL				
712-7521-01	**Plowing, Applying Material/ Chemicals - Mechanized**	The removal of snow and ice from roadways, ramps, intersections and gore areas including plowing, snow blowing, cutting ice, and applying material/chemicals.	**NO EFFECT**	
712-7522-01	**Snow and Ice Control - Other**	Snow season work that is not included in activity 712-7521-01 such as installing snow fence; mixing winter materials; transferring/receiving material; cleanup of storage facilities; towing, dry runs, stand by, removing, installing or verifying the spreader; shoveling snow at the stock site; tire chains; other snow preparatory work; etc.	**NO EFFECT**	
712-7523-01	**Anti-Icing Operations**	This assembly includes all actions related to applying anti-icing chemicals to pavement surface prior to the storm to prevent bond forming. This assembly should not be used to charge for pre-wetting of solid material.		**NO EFFECT**
712-7523-02	**De-Icing Operation**	Pertains to actions related to applying liquid De-Icing chemicals.		***MAY AFFECT[2]***
712-7524-01	**Salt Brine Manufacture/ Distribution**	This assembly includes all actions related to the manufacturing and distribution of salt brine.		**NO EFFECT**

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PAVEMENT MARKING				
713-7611-01	**Traffic Line Painting – Mechanized Yellow**	This assembly includes all actions related to the painting or repainting of yellow traffic lines using line striping machines.		**NO EFFECT**
713-7612-01	**Traffic Line Painting – Mechanized**	The painting or repainting of traffic lines using line striping machines.	**NO EFFECT**	
713-7613-01	**Pavement Marking – Hand Operated Machine**	Marking the pavement using hand operated machines and/or hand-held rollers, such as painting gore areas, certain types of ramps, and other areas not readily accessible to the department's large paint trucks.	**NO EFFECT**	
713-7614-01	**Raised Pavement Markers**	The repair/replacement of reflectorized pavement markers such as removing and replacing damaged reflectors. (Could be raised, flush, or recessed.)	**NO EFFECT**	
713-7615-01	**Pavement marking paint line eradication**	The removal of traffic markings.	**NO EFFECT**	
713-7616-01	**Pavement marking thermoplastics installation**	All actions to installation of thermos-plastic markings.	**NO EFFECT**	
713-7617-01	**Repair Paint Machines – Crew Only**	The repair of paint machines by the paint crew only.	**NO EFFECT**	
713-7618-01	**Pavement Marking Small Paint – Waterborne Site**	This assembly includes all actions related to the Small Paint Program – WATERBORNE		**NO EFFECT**
713-7618-02	**Pavement Marking Small Paint – Durable**	This assembly includes all actions related to the Small Paint Program – DURABLE.		**NO EFFECT**
713-7619-01	**Other Pavement Marking activities**	Any miscellaneous pavement marking activity which cannot be properly charged to the previous marking codes. Examples include transferring materials between counties, traffic line layouts, winterization of the large paint machines, etc.	**NO EFFECT**	
SIGN ACTIVITIES				
713-7621-01	**Construction Detour and Other Temporary Signs**	Includes all actions related to the erection, maintenance and removal of construction, detour and other temporary signs, such as erecting supports, mounting signs and when necessary removing damaged materials. Also includes the costs of flasher lights attached to barricades and signs and the placement and repair of all barricades.	**NO EFFECT**	
713-7622-01	**Delineations, Hazard**		**NO EFFECT**	
713-7623-01	**Sign Reviews**		**NO EFFECT**	
713-7624-01	**Regulatory, Warning and Guide Signs Under 16 Sq. Feet**		**NO EFFECT**	
713-7624-02	**Regulatory, Warning and Guide Signs Over 16 Sq. Feet**		**NO EFFECT**	
713-7625-01	**SR and Segment Markers**		**NO EFFECT**	
713-7629-01	**Other – Sign Activities**		**NO EFFECT**	

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713-7629-02	**Outdoor Advertising Devices – Nuisance Objects**	All actions related to the removal of nuisance objects (small temporary signs) that are encroachments into the ROW.		***NO EFFECT***
GUIDERAIL, MEDIAN BARRIER, AND IMPACT INTENUATION DEVICE ACTIVITIES				
713-7631-01	**Repair/Removal – Low-tension Cable Barrier (Old Style – Non-Tensioned)**	All actions related to the repair or removal of damaged or worn guide-rail cable, posts, cable fittings, etc.	**NO EFFECT**	
713-7631-02	**Guide-Rail Repair/Replace – W-Beam; Mechanized**	This assembly is all actions related to the repair and/or replacement of damaged or worn W-Beam panels, posts, fittings, etc. This includes extension or installation of any W-Beam guide rail for less than 500 continuous feet.	**NO EFFECT**	
713-7631-03	**Guiderail Repair/Replace Manual**	This assembly is all manual actions related to the repair/replacement of all types of guiderail. Refer to Assemblies 713-7631-01 and 02.	**NO EFFECT**	
713-7631-04	**Guider Rail Upgrade Remove Cable/Replace with W-Beam; Mechanized**	This assembly is all actions related to removing cable guiderail and replacing it with W-Beam Guiderail.		**NO EFFECT**
713-7631-05	**Guiderail Resetting W-Beam Guide Rail; Mechanized**	This assembly is all actions related to removing and resetting existing guiderail and posts. Resetting guiderail consists of relocation existing posts and reattaching existing panels. Do not reuse timber posts. This includes resetting W-Beam guiderail for less than 500 continuous feet.		**NO EFFECT**
713-7632-01	**Guiderail Removal**	This assembly is all actions related to the permanent removal of unnecessary guiderail when guiderail is not being replaced.	**NO EFFECT**	
713-7632-02	**Guiderail Removal – Dept. Force/Contract install**	This assembly is all actions related to the removal of guiderail by Department Forces where the guide-rail is to be installed by contract.	**NO EFFECT**	
713-7633-01	**High-Tension Cable Median Barrier**	This assembly is all actions related to repair of damaged High-Tension Cable Median Barrier including but not limited to cable adjustment, loading and transporting of new High-Tension Cable Median Barrier for storage, mechanized straightening of rails with post straightener, all repair/replacement of end treatments associated with bridges, repair/replacement of impact attenuation devices, etc.		**NO EFFECT**
713-7639-01	**Median Barrier/Guiderail Impact Attenuation Devices; Other**	This assembly is all actions related to miscellaneous median barrier, guiderail and impact attenuation devices including but not limited to painting, cable adjustment, loading and transporting of new guiderail for storage, mechanized straightening of rails with post straightener, all repair/replacement of end treatments associated with bridges, repair/replacement of impact attenuation devices, etc.	**NO EFFECT**	
LIGHTING				
713-7671-01	**Traffic Services – Lighting Highway, Bridge and Sign Lighting Systems**	All actions relative to the servicing and maintenance of permanent highway, bridge sign, and navigation systems by department employees and outside contractors.	**NO EFFECT**	

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INCIDENTAL SERVICES				
713-7681-01	**Sweeping; Manual/ Mechanized**	This assembly is all actions relative to sweeping and proper disposal of materials.	**NO EFFECT**	
713-7682-01	**Deer Removal**	This assembly is all actions relative to the removal of deer carcasses. All other animal removal will be charged to assembly 713-7689-01 "Traffic – Incidental Services – Other".		**NO EFFECT**
713-7683-01	**Traffic Services-Homeland Security**	This assembly is all actions relative to any miscellaneous incidental services related to preparing, responding and demolishing to Federal or State authorities in response to Homeland Security events. This includes the setup, maintenance and demobilization of traffic control devices, manning traffic control points, security inspections of PennDOT facilities, and other activities performed at the request of officials. Homeland Security Events include Presidential visits, Gubernatorial events, International Dignitary events, or special security events.		**NO EFFECT**
713-7689-01	**Other – Incidental Service Activities**	This assembly is all actions relative to any miscellaneous incidental service activities such as dead animal removals, right-of-way fence maintenance, and other incidental highway services.	**NO EFFECT**	
VEGETATION MANAGEMENT				
714-7711-01	**Mowing**	Manual roadside mowing activities such as mowing with power driven type mower(s), string trimmers or other hand tools. This activity is normally performed at intersections where small traffic islands exist, or at other similar areas where larger power mowers cannot operate efficiently. This activity should not be necessary under guiderail, around delineations and signs as the non-selective herbicide program under cost function 7712-01 is designed to accomplish this vegetation control.	**NO EFFECT** **REVISED 2017** **MAY AFFECT[2]**	
714-7711-02	**Mowing – Tractor Type; Mechanized**	Mechanized roadside mowing activities including mow-line establishment, mowing, supervision or inspection, removing litter and mowing obstructions. This activity is performed in the medians, interchanges and along the roadway to control the height of grown of grass and for the purpose of preventing the growth and spread of prohibited weeds and other undesirable plant growth.	**NO EFFECT** **REVISED 2017** **MAY AFFECT[2]**	
714-7711-03	**Plant Growth Reg. (PGRs) Herbicide Application**	The application of plant growth regulators for the purpose of inhabiting seed head formation, reducing mechanical cutting frequencies, and for the control of broadleaf weeds. This activity is recommended primarily for turf areas requiring frequent cutting and traffic islands or other plots that require manual mowing. The applications must be made by a certified pesticide applicator, a trained application technician or any other person provided by a certified pesticide applicator is present at the work site and within communication distance.	**NO EFFECT** **REVISED 2017** **MAY AFFECT[2]**	

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714-7711-04	**Conservation Mowing Type C Mechanized**	Mechanized roadside mowing activities including mow-line establishment, mowing, supervision or inspection, removing litter and mowing obstructions. This activity is performed in the interchanges and along the roadway beyond the clear zone to control the growth of woody vegetation and for the purpose of preventing the growth and spread of prohibited weeds and other undesirable plant growth, and for the purpose of maintaining early succession (meadow) pollinator habitats.		***MAY AFFECT[2]***
714-7712-01	**Herbicide Application – Non-Selective**	The application of non-selective herbicides. This includes the application under guiderails and around delineators, sign posts, and similar areas where bare soil is desirable and erosion will be no problem. There are two types of non-selective herbicides: residual (through the roots) and foliar (through the leaves). The application must be made by a certified pesticide applicator, a trained application technician, or any other person provided a certified pesticide applicator is at the work site and within communication distance.		**MAY AFFECT[2]**
714-7713-01	**Herb Application – Broadcast Foliage**	All actions related to the application of selective herbicides for the control of undesirable weeds and woody plant growth in lawn and roadside areas. Herbicides for this activity are selective in their effects on various plants when used in accordance with label directions. Various herbicides are used in the performance of this assembly. Weed and brush control applications produce the best results when applied to the foliage of plants. The application must be made by a certified pesticide applicator, a trained application technician, or any other person provided a certified pesticide applicator is at the work site and within communication distance.	**MAY AFFECT[2]**	
714-7714-01	**Herbicide Application Broadcast Chemical Trimming (Fosamine)**	This assembly is the application of selective herbicides for the control of undesirable woody growth or any part thereof. This includes utilizing Fosamine (Krenite) for foliage applications made with power sprayers. The application must be made by a certified pesticide applicator, a trained application technician, or any other person provided a certified pesticide applicator is at the work site and within communication distance.	**MAY AFFECT[2]**	
714-7715-01	**Brushing, Selective Thinning, Tree Removal, and Tree Trimming - Manual**	This assembly is the removal and/or trimming of brush, trees, and woody vegetation including all actions related to tree trimming, brushing, selective thinning, and tree removal using the appropriate power and hand tools and the removal of stumps where required. Unless grubbing or stump removal are planned, apply a basal bark herbicide mixture to the cut surface of all live stumps, including the root collar and exposed roots.		***MAY AFFECT[2]***

[1] Same description of activity regardless of the first three numbers indicated – program code may also be 612, 618, 621, 663, 712, 713, 714, 715, or 822

[2] If conducted in or near wetlands occupied or assumed to be occupied by bog turtles

[3] New Assemblies added or modified between 2019-2024.

CODE[1]	BRIEF DESCRIPTION	DETAILED DESCRIPTION	USFWS 2003 DETERMINATION CONCURRENCE	ACTION AGENCY DETERMINATION *(NEW ASSEMBLIES ITALICIZED[3])*
714-7715-02	**Brushing, Tree Trimming, and Tree Removal; Mechanized**	This assembly is the mechanical removal and/or trimming of brush, trees, and woody vegetation including all methods and procedures described under 714-7715-01 with the use of hydraulic tools, boom arm mowers, or trimmer lift equipment.		***MAY AFFECT[2]***
714-7715-03	**Herbicide Basal Bark and Cut Stump**	This is the application of Basal Bark and cut stump treatments. This includes all herbicide applications related to the elimination of unwanted woody plants, stump re-sprouts, and root sprouting through basal bark and cut stump treatment methods. Although the basal bark method may be applied at any time of the year, for highway purposes it is also most applicable to the dormant season. The application must be made by a certified pesticide applicator, a trained application technician, or any other person provided a certified pesticide applicator is at the work site and within communication distance.	**NO EFFECT**	
714-7716-01	**Revitalization – Seeding and Soil Supplement; Mechanized**	This assembly is the revitalization of roadside locations, including the furnishing and placing of seed, soil supplements and mulch to roadside locations stabilizing roadway embankments and compliance with current erosion and sedimentation control mandates.	**NO EFFECT**	
714-7717-01	**Wildflowers (formerly Wildflower Planting)**	This assembly is the furnishing and placing of seeds of various plants which have growth and flowering characteristics desirable for highway roadsides, the maintenance of wildflower sites, and the propagation and enhancement of naturally occurring "wildflowers." This will provide an acceptable roadside cover while maintaining a reduced mowing schedule and will provide the necessary erosion and sediment control properties.	**NO EFFECT**	
714-7717-02	**Pollinator Meadows**	Site preparation and establishment including any related tree/shrub removal and herbicide application, furnishing and placing of annual and perennial pollinator seed.		***MAY AFFECT[2]***
PUBLIC SERVICE FACILITIES				
714-7731-01	**Maintenance of Interstate Roadside Rests with All-Weather Buildings**	The maintenance of roadside rests with all-weather buildings such as mowing; fertilizing; watering; raking; mulching; and herbicide weed control on the grounds as well as repairing, replacing, repainting, cleaning, and periodic equipment servicing of building and equipment. The maintenance of signs, litter containers, and snow and ice control are also included as well as picking up litter, litter disposal, and cleaning rest rooms.	**NO EFFECT**	

[1] Same description of activity regardless of the first three numbers indicated – program code may also be 612, 618, 621, 663, 712, 713, 714, 715, or 822

[2] If conducted in or near wetlands occupied or assumed to be occupied by bog turtles

[3] New Assemblies added or modified between 2019-2024.

CODE[1]	BRIEF DESCRIPTION	DETAILED DESCRIPTION	USFWS 2003 DETERMINATION CONCURRENCE	ACTION AGENCY DETERMINATION *(NEW ASSEMBLIES ITALICIZED[3])*
714-7732-01	**Maintenance of Roadside Rest, Table Sites, Overlooks, Scenic Feature, and Park-and-Ride Lots**	This assembly includes all actions related to the maintenance of all other roadside rests, roadside table sites, and overlooks not covered under activity 714-7731-01 This includes roadside table sites, overlooks, and park-and-ride lots. Growing; fertilizing; watering; raking; mulching; herbicide weed control on the grounds in addition to repairing, replacing, and cleaning of the temporary facilities placing as well as maintenance of roadside tables, signs, litter containers, junkyard screenings (both vegetative and structural), and snow and ice control are included in this assembly. Also included is litter pickup and disposal and sanitary service purchase contracts.		**NO EFFECT**
714-7735-01	**Roadside Litter Pickup and Debris Removal Routine**	This assembly includes all actions related to Department Force litter pickup and debris removal (within established highway right-of-way limits). This includes litter and debris pickup and removal generated by the motoring public and normal weather and wind conditions. Contract disposal costs are also included in this activity. Pickup of debris, etc., resulting from ice storms or high wind conditions should be charged to Assembly 711-7351. This does not include three special litter pickup and debris removal programs: Great PA Cleanup (714-9813-01, Litter Brigade (714-9848-01) and Adopt-A-Highway (714-9849-01).		**NO EFFECT**
714-7735-02	**Roadside Tire Remnant Removal – Debris Removal**	This assembly includes all actions related to tire remnant removal on interstate and interstate look-alike highways.		**NO EFFECT**
714-9813-01	**Special Roadside Litter Pick Up and Debris Removal Great PA Cleanup**	This assembly is the annual Great PA Clean-up (GPC) campaign. This includes all actions related to the annual Great PA Clean-up campaign scheduled from March 1 to May 31. This is primarily an educational/public participation activity focusing on refuse bag retrieval and disposal.		**NO EFFECT**
714-9848-01	**Special Roadside Litter Pick Up and Debris Removal Litter Brigade**	This assembly is the Adult and Juvenile Litter Brigades. This includes all actions related to refuse bag retrieval and disposal.		**NO EFFECT**
714-9849-01	**Special Roadside Litter Pick Up and Debris Removal Adopt-A-Highway**	This assembly is the Adopt-A-Highway (AAH) program. This includes all actions related to the program focusing on refuse bag retrieval and disposal. This includes the collection of the refuse bags from volunteers as well as the Inmate Community Work Program.		**NO EFFECT**
719-9829-01	**Maintenance Administration**	Accounting coding assembly for employee salaries, wages, leave, subsistence, and other expenses of those employees in the County, Maintenance Districts, and Central Offices whose primary duties are related to administration and who, for payroll purposes, are regularly assigned to Program 719.		**NO EFFECT**
719-9851-01	**Hazardous Waste Inventory Control**	This assembly includes all actions related to the removal of hazardous waste material generated by all programs, except Program 813 (fuel and petroleum related), by contract to professional waste disposal contractors. This is for disposal of batteries, light bulbs, spray cans, and similar items.		**NO EFFECT**

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[2] If conducted in or near wetlands occupied or assumed to be occupied by bog turtles

[3] New Assemblies added or modified between 2019-2024.

CODE[1]	BRIEF DESCRIPTION	DETAILED DESCRIPTION	USFWS 2003 DETERMINATION CONCURRENCE	ACTION AGENCY DETERMINATION *(NEW ASSEMBLIES ITALICIZED[3])*
EMERGENCY DISASTER RESTORATION DEPARTMENT FORCES				
621-2541-01	**FHWA Disaster Recovery (Federal Aid Routes) Debris Clearance**	All disaster activities for FHWA reimbursement involving tree, dirt, stone, and other debris removal.		**MAY AFFECT[2]**
621-2542-01	**FHWA Disaster Recovery (Federal Aid Routes) Protective Measures**	All disaster activities for FHWA reimbursement involving installation of road closed and detour routing signs, temporary lane restrictions, temporary traffic signals, cones, barricades, etc.		**NO EFFECT**
621-2543-01	**FHWA Disaster Recovery (Federal Aid Routes) Emergency Road Repairs**	All disaster activities for FHWA reimbursement involving any repair of the roadway surface (i.e., paving, base repair).		**NO EFFECT**
621-2544-01	**FHWA Disaster Recovery (Federal Aid Routes) Emergency Bridge Repairs**	All disaster activities for FHWA reimbursement involving any repair of bridges (i.e., abutments, piers, deck and support structure, underwater and above water inspection, material removal, and related bridge repairs).		**MAY AFFECT[2]**
621-2545-01	**FHWA Disaster Recovery (Federal Aid Routes) Emergency Shoulder Repairs**	All disaster activities for FHWA reimbursement involving reshaping, ditching, reestablishment, and rock lining of swales or ditch lining and related shoulder work.		**MAY AFFECT[2]**
621-2546-01	**FHWA Disaster Recovery (Federal Aid Routes) Emergency Pipe Installation**	All disaster activities for FHWA reimbursement involving any repair, installation, or replacement of drainage system pipes.		**MAY AFFECT[2]**
621-2549-01	**FHWA Disaster Recovery (Federal Aid Routes) Other Costs**	All other disaster activities for FHWA reimbursement which are in response to the disaster damage.		**MAY AFFECT[2]**
663-2541-01	**FEMA Disaster Recovery (Non-Federal Routes) Debris Clearance**	All disaster activities for FEMA reimbursement involving tree, dirt, stone, and other debris removal.		**MAY AFFECT[2]**
663-2542-01	**FEMA Disaster Recovery (Non-Federal Routes) Protective Measures**	All disaster activities for FEMA reimbursement involving installation of road closed and detour routing signs, temporary lane restrictions, temporary traffic signals, cones, barricades, etc.		**NO EFFECT**
663-2543-01	**FEMA Disaster Recovery (Non-Federal Routes) Emergency Road Repairs**	All disaster activities for FEMA reimbursement involving any repair of the roadway surface (i.e., paving, base repair).		**NO EFFECT**
663-2544-01	**FEMA Disaster Recovery (Non-Federal Routes) Emergency Bridge Repairs**	All disaster activities for FEMA reimbursement involving any repair of bridges (i.e., abutments, piers, deck and support structure, underwater and above water inspection, material removal, and related bridge repairs).		**MAY AFFECT[2]**

[1] Same description of activity regardless of the first three numbers indicated – program code may also be 612, 618, 621, 663, 712, 713, 714, 715, or 822

[2] If conducted in or near wetlands occupied or assumed to be occupied by bog turtles

[3] New Assemblies added or modified between 2019-2024.

CODE[1]	BRIEF DESCRIPTION	DETAILED DESCRIPTION	USFWS 2003 DETERMINATION CONCURRENCE	ACTION AGENCY DETERMINATION *(NEW ASSEMBLIES ITALICIZED[3])*
663-2545-01	**FEMA Disaster Recovery (Non-Federal Routes) Emergency Shoulder Repairs**	All disaster activities for FEMA reimbursement involving reshaping, ditching, reestablishment, and rock lining of swales or ditch lining and related shoulder work.		**MAY AFFECT[2]**
663-2546-01	**FEMA Disaster Recovery (Non-Federal Routes) Emergency Pipe Installation**	All disaster activities for FEMA reimbursement involving any repair, installation, or replacement of drainage system pipes.		**MAY AFFECT[2]**
663-2549-01	**FEMA Disaster Recovery (Non-Federal Routes) Other Costs**	All other disaster activities for FEMA reimbursement which are in response to the disaster damage.		**MAY AFFECT[2]**

[1] Same description of activity regardless of the first three numbers indicated – program code may also be 612, 618, 621, 663, 712, 713, 714, 715, or 822

[2] If conducted in or near wetlands occupied or assumed to be occupied by bog turtles

[3] New Assemblies added or modified between 2019-2024.

7.1.1 No Effect Determinations for the Bog Turtle

The FHWA and PennDOT with the technical advisement of the USFWS have previously consulted on various activities which are routinely executed within the roadway corridor for the continued operation of these facilities. FHWA and PennDOT have concluded that many of these routine maintenance activities result in no effect to the species. Transportation maintenance activities which have been determined to have no effect on the bog turtle are identified in Table 7-1.

Transportation actions within the main channels (within the ordinary high water mark) of watercourses greater than 30 feet in width with persistent cobble/boulder substrate within the action area are regarded by the action agencies as having no effect on the species. These types of habitats lack typical species supporting habitat characteristics, and due to their size and hydraulic characteristics are not regarded as being a typical migration conduit for the species. These watercourses include, but may not be limited to, those listed in the following table.

TABLE 7-2 Large Watercourse Habitats Within the Extant Range

PENNSYLVANIA COUNTY	WATERCOURSE
Cumberland	Conodoguinet Creek
Adams and York	Conewago Creek
York	Codorus Creek
York	Muddy Creek
York	Yellow Breeches Creek
Dauphin, Schuylkill, and Lebanon	Swatara Creek
Lebanon	Quittapahila Creek
Lebanon and Lancaster	Conewago Creek
Lancaster	Conestoga River
Lancaster	Octoraro Creek
Chester	Brandywine Creek
Berks	Tulpehocken Creek
Montgomery	Perkiomen Creek
Bucks	Neshaminy Creek
Northampton	Bushkill Creek
Monroe	Big Bushkill Creek
Monroe, Northampton, Bucks, and Delaware	Delaware River
Lehigh and Northampton	Lehigh River
Dauphin, York, and Lancaster	Susquehanna River
Berks, Chester, Montgomery	Schuylkill River

Finally, the FHWA and PennDOT have concluded that transportation actions occurring outside of the extant range of the species or occurring beyond 300 feet of potential species supporting habitat will result in no effect to the species.

7.1.2 May Affect, Not Likely to Adversely Affect Determinations for the Bog Turtle

If the proposed transportation action is located within 300 feet of potential supporting habitat for the species, then the FHWA/PennDOT may pursue the performance of species survey efforts in accordance with the most current USFWS/PFBC protocol. Survey efforts which conclude in the probable absence of the species will result in a determination that the action is not likely to adversely affect the species.

For situations where a presence/inferred absence species survey has not been conducted, then the FHWA/ PennDOT will assume the presence of the species for the purposes of this programmatic consultation. Actions which occur within proximity to confirmed or assumed supporting habitat will require the implementation of avoidance and minimization measures to reduce impacts and, when necessary, the implementation of compensatory measures to offset potential take. The implementation of the specified AMMs will effectively reduce the effect on the species to insignificant and/or discountable levels. Actions with beneficial effects may also result under this programmatic consultation.

For activities determined to not likely adversely affect the bog turtle, this is a one-time consultation with no additional tiered or site-specific consultation among the FHWA, PennDOT, and USFWS. Instead, a brief summary of the activity will be provided to the USFWS Pennsylvania Field Office via the submission of the standard Project Submittal Form. Under the terms of this programmatic consultation, FHWA/PennDOT will file the project submittal form to the USFWS Pennsylvania Field Office prior to the commencement of the action. FHWA/PennDOT will ensure that all submitted projects are within the scope of and adhere to the criteria of this programmatic consultation. Upon receipt, the USFWS Pennsylvania Field Office may check that the action conforms to the consultation parameters and may request additional information to verify conformity. The USFWS Pennsylvania Field Office will have a specified time period of 20 calendar days to notify FHWA/PennDOT if they determine a particular action does not adhere to the parameters of this programmatic consultation, and/or do not concur with the effect determination. If FHWA/PennDOT is not contacted by the USFWS about project non-conformance, then it is assumed they may proceed under the programmatic consultation. This verification period is not intended as another level of review, as the presumption is that the vast majority of submitted projects fall correctly within the programmatic consultation. Rather, it is an opportunity for USFWS Pennsylvania

Field Office to apply adaptive management to these projects, if needed, as they may identify a small subset of projects as potentially having unanticipated impacts.

7.1.3 May Affect, Likely to Adversely Affect Determinations for the Bog Turtle

Since the listing of the species in 1997, the need for formal ESA Section 7 consultation associated with a likely to adversely affect transportation action has been limited to only one large transportation project on a new alignment. Numerous other transportation activities during this period have been reduced to levels of effect that are insignificant and/or discountable through the technical advisement of the USFWS Pennsylvania Field Office and implementation of avoidance and exclusionary measures.

Two instances of incidental take attributed to routine transportation maintenance activities have occurred since 1997. While the vast majority of transportation actions have been reduced to insignificant and/or discountable effects through the implementation of effective AMMs, there are actions that may still potentially result in some amount, or form of incidental take. Actions which occur within proximity to confirmed or assumed supporting habitat may, in some circumstances, even with the implementation of AMMs, result in some level of take to the species under this programmatic consultation. It is believed that the species has been minimally encountered during the application of exclusionary avoidance measures since 1997. These occurrences illustrate the extremely small probability of encountering the species as well as the minimal amount of temporary/permanent land disturbance and habitat impacts that are typically associated with these transportation actions. However, the exclusionary methodologies intended to prevent bog turtles from entering the disturbance area could be compromised by both natural (tree falls, intense storms, flooding, etc.) and construction related causes. While no bog turtles have been captured within the disturbance area after preconstruction exclusion survey efforts, or exclusion barrier compromise, the potential remains for such a scenario.

Individuals of the species can be inherently difficult to detect during exclusionary survey efforts since adults, juveniles, and hatchlings are small in size and cryptically colored. The species is likely to be below the ground surface inhabiting mucky wetland substrate materials. Exclusionary survey efforts can also be challenging in stream corridor habitats as well as the enclosed confined internal components of existing culvert and bridge crossing structures. Bog turtles also likely exhibit predator-evasive behaviors making them difficult to locate, such as burying themselves in the substrate during construction activities. Without the use of baseline radiotelemetry information prior to, during, and following a disturbance action, identification of harassment effects would also be difficult to assess.

Actions which may result in incidental take are most likely to be associated with activities that entail one acre or greater of earth disturbance; activities extending over a duration of greater than one construction season (six months); activities with substantial potential for direct/indirect effects to wetland hydrology characteristics; percussive and vibratory activities during the species brumation period; and horizontal directional drilling (HDD) activities during the species brumation period.

Similar to the process outlined for actions that May Affect, Not Likely to Adversely Affect the bog turtle, FHWA/PennDOT will provide the standard project submittal form for submission to the USFWS Pennsylvania Field Office which:

- describes the proposed action (e.g., type of action, location, involved federal agencies);
- verifies that the project is within the scope of the programmatic consultation;
- provides a quantification of temporary and permanent impacts (e.g., square feet or acres of wetland, linear feet of watercourse channel); and
- verifies that the action meets the requirement of implementing all applicable AMMs that will avoid, minimize, and/or compensate for the impacts of the action.

This package will include a request for specific project review by the USFWS Pennsylvania Field Office. The USFWS Pennsylvania Field Office will provide a response within 20 calendar days either confirming that the consultation request is covered under this programmatic consultation and accompanied by a complete initiation package; or determining that the specific action must be addressed through an individual formal consultation process.

The FHWA and PennDOT may determine that a proposed activity requires additional site-specific review to determine if they conform to this consultation. Such projects will require the FHWA and PennDOT to coordinate with the USFWS Pennsylvania Field Office in order to make a final determination pursuant to Section 7(a)(2). If the action is determined to require individual formal consultation, or consultation for other listed species or designated critical habitats, then normal consultation procedures and timelines (90 days for formal consultation + 45 days issuance of biological opinion) would apply, unless there are other established consultation timelines for those species (e.g., other programmatic consultations). Any template response letters developed for the bog turtle by the USFWS can be included as an attachment to that project-specific biological opinion for the other species.

7.2 Effect Determinations for Proposed Species

No effects on proposed species are anticipated to result from the implementation of the proposed actions within this programmatic consultation.

7.3 Effect Determinations for Critical Habitat

No effects on designated critical habitat will result from the implementation of the proposed actions within this programmatic consultation.

7.4 Effect Determination – Summary

The following matrix summarizes the effects of transportation actions encompassed by this programmatic consultation.

TRANSPORTATION ACTION	EFFECT DETERMINATION
Transportation maintenance actions which have been determined to result in No Effect on the bog turtle as identified in Table 7-1	No Effect
Transportation actions which are not located within 300 feet of potential species supporting habitat	No Effect
Transportation actions within the main channels (within the ordinary high water mark) of watercourses greater than 30 feet in width with persistent cobble/boulder substrate	No Effect
Transportation actions which have been determined by the FHWA/ PennDOT to completely avoid all potential effects on the species	May Affect – Not Likely to Adversely Affect
Transportation actions for which the species has been determined to be absent from the action area through the performance of Phase II/Phase III species surveys	May Affect – Not Likely to Adversely Affect
Transportation maintenance actions which have been determined by FHWA/PennDOT to May Affect if conducted in or near wetlands occupied or assumed to be occupied by bog turtles with USFWS concurrence (see Table 7-1)	May Affect – Not Likely to Adversely Affect (assumes application of AMMs 1-9 and AMM 19)
Programmatic Category 1 Actions Transportation actions where temporary effects to potential hibernacula microhabitat are anticipated to occur without any hydrologic modification	May Affect – Not Likely to Adversely Affect with AMMs
Programmatic Category 2 Actions Transportation actions where permanent effects to potential hibernacula microhabitat are anticipated to occur without any hydrologic modification	May Affect – Likely to Adversely Affect with AMMs

TRANSPORTATION ACTION	EFFECT DETERMINATION
Programmatic Category 3 Actions Transportation actions where temporary effects to potential foraging microhabitat are anticipated to occur during the inactive species season without any hydrologic modification	May Affect – Not Likely to Adversely Affect with AMMs
Programmatic Category 4 Actions Transportation actions where temporary effects to potential foraging microhabitat are anticipated to occur during the active species season without any hydrologic modification	May Affect – Not Likely to Adversely Affect with AMMs
Programmatic Category 5 Actions Transportation actions where permanent effects to potential foraging microhabitat are anticipated to occur during the inactive species season without any hydrologic modification	May Affect – Likely to Adversely Affect with AMMs
Programmatic Category 6 Actions Transportation actions where permanent effects to potential foraging microhabitat are anticipated to occur during the active species season without any hydrologic modification	May Affect – Likely to Adversely Affect with AMMs
Programmatic Category 7 Actions Transportation actions which will occur within stream corridors or upland habitats in the vicinity of occupied/assumed supporting wetland habitat during the active species season with exclusionary measures. No permanent hydrologic impacts to aquatic habitats are anticipated to occur.	May Affect – Not Likely to Adversely Affect with AMMs
Programmatic Category 8 Actions Transportation actions which will occur within stream corridors or upland habitats in the vicinity of occupied/assumed supporting wetland habitat during the inactive species season. No permanent hydrologic impacts to aquatic habitats are anticipated to occur.	May Affect – Not Likely to Adversely Affect with AMMs
Programmatic Category 9 Actions Transportation actions which result in permanent hydrologic effects to species supporting habitat	May Affect – Likely to Adversely Affect with AMMs

7.5 Candidate Species

No effects on candidate species are anticipated to result from the implementation of the proposed actions within this programmatic consultation.

Chapter 8 — References

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Chapter 9 — Appendices

APPENDIX A

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Pennsylvania Field Office
315 South Allen Street, Suite 322
State College, PelU1sylvania 16801-4850

January 23, 2003

Dean A. Schreiber
Pennsylvania Department ofTranspottation
400 North Street, 7th Floor
Hanisburg, PA 17120-0094

Dear Mr. Schreiber:

This responds to your letter of September 12, 2002, which requests Fish and Wildlife Service review ofroadway maintenance activities in Pennsylvania counties within the range of the bog turtle (*Clemmys muhlenbergii),* a species ili:at is federally listed as threatened. The following comm.ents_are provided pursuant to the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.)* to ensure the protection of endangered and threatened-species.

Your letter included a list of maintenance activities that a joint agency working group identified as activities which may affect the bog turtle if conducted in, or near, habitat occupied by that species. You further requested our concurrence that all othe:r maintenance activities in Program 700, as listed in PennDOT's Moris Highway Foreman and Payroll Manual, will not affect this species. A November 16, 2002, telephone call from Ms. Kathleen McKenna of your staff clarified that the request covers only those maintenance activities in Programs 711 , 712, 713, and 714, rather than all Program 700 activities.

''No Effect" Determinations

Listed in Table 1 (enclosed) are mainte_nance activities that we concur will not affect the bog turtle, even if the species occurs near the proposed activity. This includes most (but not all) of the activities that the joint agency working group identified as having no effect on bog turtles. A few of the activities determined by the working gr-oup to be "no effect" have been determined by the Service to have the potential for adverse effects to the bog turtle; therefore, we cannot concur with your determinations for those particular project types (see *"May Effect" Determinations,* below).

"No effect" is the appropriate conclusion when a proposed a-ction will not affect a listed species or designated critical habitat. The activities described as "no effect"occur on the exi-sting roadway surface and developed shoulders; therefore, we do not antidpate that any associated indirect effects to wetlands are likely. If off-r-oad access or-staging areas are necessary, these should not extend into wetlands.

Review Procedures for "May Affect" Project Types

Checking the Pennsylvania Natural Diversity Inventory (PNDI) to determine if a proposed maintenance project conflicts with any known bog turtle occurrences will assist Penn.DOT in determining potential effects to known sites. When potential conflicts with federally listed species are identified by PNDI, project information should be sent to the Service for review. If no conflicts are identified in a PNDI search, but the project is in the range of the bog turtle; and wetlands might be directly or indirectly affected, project area wetlands should be assessed for their potential to support this species (see below--Phase 1 survey). If no wetlands \"'(ill be directly or indirectly affected by·the project, further review by this office is not necessary (e.g., PennDOT does not need to seek a concurrence letter from the Service regarding "no wetland" deteiminations).

Wetland as·sessments should follow what is described under *"Bog Turtle Habitat Survey"* (Phase 1 survey) of the enclosed *Guidelines for Bog Turtle Surveys.* If potential bog turtle habitat is identified, and adverse effects to these wetlands cannot be avoided, a more detailed and thorough survey will be necessary, as described under *"Bog Turtle Survey"* (Phase 2 survey) of the *Guidelines.* The Phase 2 survey should be conducted by a qualified biologist with bog turtle field survey experience (see enclosed list of qualified surveyors). Phase 1 and Phase 2 survey results should be submitted to us for review and concurrence. If project activities might adversely affect bog turtles, additional consultation with the Service will be required, pursuant to the Endangered Species Act.

Emergency Projects

A number of mainten◆nce activities are, or can be, emergency in nature, including major slides and major structural damage, and require expedited consultation (50 CFR §402.05). Ap. emergency is a situation involving an act of God, disasters, casualties, national defense or security emergencies, etc., and includes·response actions that must be taken to prevent imminent loss of human life or property. Predictable events usually do not qualify as emergencies under ESA regulations, unless the!e is a significant unexpected human health risk.

When an emergency project is proposed, if possible we should be contacted for advice on how.to minimize adverse effects to bog turtles if the species is known to be present; however, the remediation should not be delayed if human life is at risk. An emergency consultation may be necessary-to evaluate the effect of the emergency action on the species. However, after-the-fact consultation will not relieve Peru:illOT of liability under section 9 of the Act should "take◆• of listed species occur while implementing an action that is *not* in response to an emergency situation.

Please contact Robert Anderson ofmy staff at 814-234-4090 if you have any questions or require further assistance regarding this matter.

Sincerely,

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David Densmore
Supervi or

Enclosures

Table 2. Summary of Pennsylvania Department of Transportation (PennDOT) roadway maintenance activities in Program 711, 712, 713, and 714 that may affect the bog turtle (*Clemmys muhlenbergii)* if conducted in or near wetlands occupied by that species.

Moris Code	BriefDescription
Roads - Unpaved	
711-7112-01	Shaping
711-7113-01	Restabilization
Roads - Paved	
711-7136-01	Pavement Widening BCBC Mechanical
711-7137-01	Pavement Widening Recycled Material Mechanical
711-7151-01	Minor Risk Management/Safety
Shoulders -Unpaved and Side Approaches	
711-7212-01	Grading Mechanical
711-7215-01	Cutting - Belt Loader
711-7215-02	Cutting - Front End Loader
711-7216-01	Upgrading - Paving Mechanized
Drainage Cleaning, Repair or Replacement	
711-7311-01	Cleaning - Inlet/Endwall/Basin - Manual/Mechanical
711-7311-02	Cleaning - Inlet - Clogged
711-7312-01	Cleaning - Ditch/Drain Chan. Mech.
711-7312-02	Cleaning - Ditch/Drain Chan. Manual
711-7312-03	Cleaning - Swales - Mech.
711-7314-01	Cleaning Pipes & Culverts
711-7315-01	Install Rock Lining
711-7321-01	Replace Inlet and Endwall Manual
711-7324-01	Replace Pipes & Culverts under 36" - Mech.
711-732 4-02	Replace Pipes & Culverts 36" Over - Mech.
711-7324-03	Replace/Install Parallel Pipe
711-7325-01	Repair/Replace Structure under 8' Length
711 7326-01	Repair Pipe & Culvert
711-7328-01	Install Subsurface Drain (U-Drain)
Roadway Section Restoration	
711-7332-01	Repair/Install Gabions/Ret. Walls
711-7333-01	Repair Sink Holes/Slides - No Storms
Major Damage and/or Disaster Restoration	
711-7341-01	Maj or Slides
711-7342-01	Maj or Structure Damag e

Table 2. (Cont.) Summary of Pennsylvania Department of Transportation (PennDOT) to::i.dway maintenance activities in ·Program 711, 712, 713, and 714 that may affect the bog turtle (*Clemmys muhlenbergii)* if conducted in or near wetlands occupied by that species.

Moris Code	Brief Description
Bridge Maintenance & Repair	
711-7425-01	Repair/Replace - Bridge over 8' Length
711 ;7432-02	Painting Full
711-7446-01	Repair/Replace - Super•Structure Member
711-7447-01	Repair/Replace - Truss Member
711-7448-01	Repair/Replace Backwalls
711-7448-02	Replace/Repair Substructure
711-7448-03	Maintenance Underpinning
711-7450-01	Maintenance Repointing
711-7451-01	Repair/Replace Slopewalls
71 }.;7452-01	Repair/Replace Culverts
711-7453-01	Erosion Protection - Stream'Bed/R.ock/Defl.
711-7453-02	Erosion Protection - Scour Hole Backfill
711-7453-03	Erosion Protection Culverts
711-7454-01	Const./Install - Temporary Supports
711-7455-01	Repair/Replace Slabs/Box Culvert
Vegetation Management	
714-7713-01	Herb Application - Broadcast Foliage
714-7714-01	Broadcast Growth Regulators (Fosamine)
714-7715-01	Brosh & Select Tree Thin, Tree Trim & Removal ◆Man.
714-7715-02	Brush & Select Tree Thin, Tree Trim & Removal - Mech.

Table 2. Summary of Pennsylvania Department of Transportation (PennDOT) roadway maintenance activities in Program 711, 712, 713, and 714 that may affect the bog turtle (*Clemrnys muhlenbergU)* if conducted in or near wetlands occupied by that species.

Moris Code	Brief Description
Roads - Unpaved	
711-7112-01	Shaping
711-7113-01	Restabilization
Roads - Paved	
711-7136-01	Pavement Widening BCBC Mechanical
711-7137-01	Pavement Widening Recycled Material Mechanical
711-7151-01	Minor Risk Management/Safety
Shoulders -Unpaved and Side Approaches	
711-7212-01	Grading Mechanical
711 7215-01	Cutting - Belt Loader
711-7215-02	Cutting - Front End Loader
711-7216-01	Upgrading - Paving Mechanized
Drainage Cleaning, Repair or Replacement	
711-7311-01	Cleaning - Inlet/Endwall/Basin - Manual/Mechanical
711-7311-02	Cleaning - Inlet - Clogged
711-7312-01	Cleaning - Ditch/Drain Chan. Mech.
711-7312-02	Cleaning - Ditch/Drain Chan. Manual
711-7312-03	Cleaning - Swales - Mech.
711-7314-01	Cleaning Pipes & Culverts
711-7315-01	Install Rock Lining
711-7321-01	Replace Inlet and Endwall Manual
.711-7324-01	Replace Pipes & Culverts under 36" - Mech.
711-732.4-02	Replace Pipes & Culverts 36" Over - Mech.
711-7324-03	Replace/Install Parallel Pipe
711-7325-01	Repair/Replace Structure under 8' Length
711-7326-01	Repair Pipe & Culvert
711-7328-01	Install Subsurface Drain (U-Drain)
Roadway Section Restoration	
711-7332-01	Repair/Install Gabions/Ret. Walls
711-7333-01	Repair Sink Holes/Slides - No Storms
Major Damage and/or Disaster Restoration	
711-,7341-01	Major Slides
711-7342-01	Major Structure Damage

Table 2. (Cont.) Summary of Pennsylvania Department of Transportation (PerinDOT) roadway maintenance activities in Program 711, 712, 713, and 714 that may affect the bog turtle (*Clemmys muhlenbergii)* if conducted in or near wetlands occupied by that species.

Moris Code	Brief Description
Bridge Maintenance & Repair	
711-7425-01	Repair/Replace - Bridge over 8' Length
711-7432-02	Painting Full
711-7446:-01	Repair/Replace - Superstructure Member
711-7447-01	Repair/Replace - Truss Member
711-7448-01	Repair/Replace Backwalls
711-7448-02	Replace/Repair Substructure
711-7448-03	Maintenance Underpinning
711-7450-01	Maintenance Repointing
711-7451-01	Repair/Replace Slopewalls
711-7452-01	Repair/Replace Culverts
711-7453 01	Erosion Protection - Stream Bed/Rock/Defl.
711-7453-02	Erosion Protection - Scour Boie Backfill
711-7453-03	Erosion Protection Culverts
711-7454-01	Const./Install - Temporary Supports
711-7455-01	Repair/Replace Slabs/Box Culvert
Vegetation Management	
714-7713-01	Herb Application - Broadcast Foliage
714-7714-01	Broadcast Growth Regulators (Fosamine)
714-7715-01	Brush & Select Tree Thin, Tree Trim & Removal - Man.
714-7715-02	Brush & Select Tree Thin, Tree Trim & Removal - Mech.

Table 1. Effects determinations regarding Pennsylvania Department of Transportation (PennDOT) roadway maintenance activities (Program 71 I, 712, 713, and 714) within the range of the bog turtle ***(Clemmys muhlenbergii).***

Moris Code	Brief Description	Detailed Description[1]	PennDOT Effect Determination	USFWS Effect Determination
PROGRAM 711- GENERAL MAINTENANCE				
Roads - Unpaved				
711-7112-01	Shaping	Shaping operations, such as scarifying, grading and shaping, and compacting on long sections of unpaved toads to restore cross section, or eliminate corrugations and potholes. This may include cleaning a ditch or drainage channel with an excavator taking care to ctlt ditch/channel to original contour.by removing only debris or deposited material. *Direct* ***and ittdirect effects to wetlands. possihle if ditch cleallilte is iltvolved.***	No effect	Do not concur, *should be "may affect"*
711-7113-01	Restabilization	The application of stabilization material to long sections of unpaved roads, such as adding, shaping and compacting stabilizing material. Fine material may be graded up from the ditch and blended with the added material to improve compaction. ***Direct and indirect effects to wetlands*** *are possible if* ***ditch*** *material is graded.*	No effect	Do not concur, *should be* ***"may affect"***
711-7114-01	Dust Pallative- Bit/Calcium Chloride/Other Prod.	The placing of bituminous or calcium chloride materials on unpaved roads to prevent dust formation including spot treatments.	No effect	Concur
711-7114-02	Dust Pallative - Spot	Spot application of dust palliatives on unpaved roads to prevent dust formation.	No effect	Concur
711-7115-01	Patch/Base Repair	Repairing potholes, isolated depressions, etc. on unpaved roads.	No effect	Concur
Roads - Paved				
711-7121--01-	Patching Manual	This activity includes all actions to manual patching operations, such as, preparing(milling is included) and sweeping the hole, tacking(hot mix only), manually placing bituminous patching material, and compaction on paved roads.	No effect	Concur
711-7121-02	Patching- Manual (Ernergency)	Manual patching using emergency repair patching procedures such as filling and compacting,	No effect	Concur
7I1-7I21-03	Patching - Manual - Pipe Trenches	The manual placing of a bituminous course over a pipe repair.	No effect	Concur

Moris Code	Brief Description	Detailed Description	PennDOT Effect Determination	USFWS Effect Determination
711-7121-04	Patching - Layered - Including Patch Machine	Pothole repair spray patching operations such as removing weakened material, cleaning, application of liquid bituminous and aggregate on paved road including rigid pavement.	No effect	Concur
711-7122-01	Patching - Mechanical-Tow Paver	Mechanical patching operations of limited areas (less than 500 feet continuous, 1300 linear feet per mile or 1750 square yard per lane mile), such as application of tack coat, placing hot plant mix material with paver and compaction on paved roads.	No effect	Concur
711-7122-02	Patching - Mechanical - Mixer Paver	Mechanical patching operations of a limited area (less than 500 continuous linear feet. 1300 linear feet pet mile; or 1750 square yards per lane mile) using a mixer paver to place a layer of liquid bituminous and aggregate blended mix on paved roads.	No effect	Concur
711-7122-03	Patching - Mechanical - Paver Finisher	Mechanical patching operations of limited reas (less than 500 feet continuous length, 1300 linear feet per mile or 1750 square yards per lane mile); such as application of tack coat, placing hot plant mix material with a paver finisher and compaction on paved roads.	No effect	Concur
711-7122-04	Patching - Edge **Mechanical**	Mechanized edge patching to repair exte sive deterioration and re-establishment of roadway width over existing base, including cleaning, placement of tack coat, placement of hot plant bituminous mix, shaping and compacting. The re-established pavement width shall be equal to the roadway width as recorded in the straight-line diagram or the width of the base material as indicated by field conditions.	No effect	Concur
711-7123-0]	Surface Treatment - Mixer **Paver**	The pl cing of a uniform, full width 1" (90-110 lbs. Per square yard) fb application with a mixer paver; such as sweeping, applying mix to road surface and compaction on paved roads.	No effect	Concur
711-7123-09	Surface Treatment - Mixer Paver - Pre Hauling	Stockpiling (hauling) aggregate prior to mix paver operations.	No effect	Concur

Moris Code	Brief Description	Detailed Description[1]	PennDOT Effect Determination	USFWS Effect Determination
711-7124-01	Surface Treatment - Liquid Bituminous Mechanical	Liquid bituminous surface treatment operations such as Sweeping, application of liquid bituminous material and placing and seating the cover aggregate on paved roads. The sweeping and cleaning of the road prior to the surface treatment, as well as any incidental work after the treatment, such as cleaning up aggregate, re-application of aggregate made necessary by bleeding, etc., should be charged to this code.	No effect	Concur
711-7124-02	Surface Treatment - Sand Bleeding Roads	Placing sand and/or appropriate aggregates on roads flushing/bleeding due to liquid bituminous operations including mechanized skin patching operations.	No effect	Concur
711-7124-09	Surface Treatment - Liquid Bituminous - Pre Hauling	Stockpiling (hauling) costs for oil and chip .surface treatment or seal coating prior to actually performing the work when the location of work is not known.	No effect	Concur
7l l-7125-01	Surface Treatment - Plant Mix - Paver Finisher	The application of a unifonn, one inch, bituminous paving operation by department force or contract such as sweeping, application of tack coat, cutting pavement notches, placing pf hot mix with bituminous paver finisher and compaction on paved roads in excess of *500* feet continuous length.	No effect	Concur
711-7126-01	Base/Subbase Repair - Flex. Base - Light Duty	Base/subbase repair operations such as removal of surface and base/subbase material, placing of u-drains _and bleeders, adding new material and compaction on pie crust (pancake) and light duty. roads. Pie crust road is defined as a roadway with less than two (2) inches total deoth ofbiturninous surface including surface treatment build uo.	No effect	Concur
711-7126-02	Base/Subbase Repair - Flex. Base - Heavy Duty	Base/subbase repair operations, such as removal of surface and base/subbase material, placing drains and bleeders, new material, and . compaction on flexible base (heavy duty) roads.	No effect	Concur
711-7126-03	Base/Subbase Repair - Rigid Base	Base/subbase repair operations, such as removalof surface and base/subbase material, placing of drainage, new material, and compaction.	No effect	Concur

Moris Code	Brief Description	Detailed Description[1]	PennDOT Effect Determination	USFWS Effect Determination
711-7126-04	Base/Subbase Repair - Widener	High productivity base/subbase repair operations utilizing a milling machine and a mechanized widenersuch as removal of surface material with a milling machine, adding bituminous base/subbase material with a widener and compaction.	No effect	Concur
711-7127-01	Skin Patch - Liquid Bituminous Manual	Liquid bituminous skin patching operations, such as sweeping, manual application ofliquid bituminous material using a heating kettle, manually spreading cover aggregate arid rolling on paved roads.	No effect	Concur
711-7127-02	Skin Patch - Liquid Bituminous Mechanical	Mechanized liquid bituminous skin patching oflimited areas such as sweeping, application of liquid bjtuminous material and placing and seating the cover aggregate on paved roads.	No effect	Concur
711-7127-03	Skin Patch - Liq. Bit. Manual - Dist. & Spray Wand	Liquid bituminous skin patching operations such as sweeping, . • application of liquid bituminous material using a distributor with spray wand, manually spreading cover aggregate and rolling on paved roads.	No effect	Concur
711-7127-09	Skin Patching - Pre Hauling	Account code only - no on ground activity	No effect	Concur
711-7128-01	Crack Sealing - Bituminous Surface Lane	Crack sealing bituminous surfaces with pre-packaged material iii a non over-banding operation. Activity includes routing of cracks where required (working transverse and single random cracks), cleaning of cracks, applying material; and squeegeeing on rigid or flexible base roads.	No effect	Concur
711-7131-01	Leveling - Tow Pav./Pav; Finish Mechanical	Applying a leveling course to re-establish the roadway cross section using a paver finisher or tow paver in excess of 500' continuous length.	No effect	Concur
711-7131-02	Leveling - Mixer Paver Mechanical	Applying a leveling course tore-establish the roadway cross section. using a mixer paver to place a layer of liquid bituminous and aggregate blended mix (fb-1 or fb-2) in excess of 500' continuous length.	No effect	Concur
711-7131-09	Leveling - Mixer Paver - Pre Hauling	Stockpiling (auling) costs for a mixer paver leveling course prior to· actually performing the work.	No effect	Concur
711-7132-01	Milling - Bituminous Surfaces	Pavement milling such as removing material, loading material and clean up on paved surfaces.	No effect	Concur
711-7132-02	Spot Milling Only	Spot pavement milling such as blow up removal, loading material and clean up on paved surfaces.	No effect	Concur

Moris Code	Brief Description	Detailed Description[1]	PennDOT Effect Determination	USFWS Effect Determination
711-7133-01	Recycling - Bituminous Surfaces	Pavement recycling such as removing material, adding asphalt, placing mat and compaction on paved surfaces.	No effect	Concur
711-7134-01	Slurry Seal & Ralumac	The contract application of slurry seal or ralumac material.	No effect	Concur
711-7135-01	Surface Treatment - Plant Mix - Paver, 1 ½	The application of a uniform 1 ½" bituminous paving operation, application of tack coat, cutting pavement notches, placing of hot mix with bituminous paver finisher and compaction on paved roads in excess of 500 feet continuous length.	No effect	Concur
711-7135-02	S-urface Treatment - Plant Mix - ID3	The application of a id-3 bituminous paving operation such as sweeping, application of tack coat, cutting pavement notches, placing of hot mix with bituminous paver· finisher and COJI!paction on paved roads in excess o.f 500 feet continuous length.	No effect	Concur
711-7136-01	Pavement Widening BCBC Mechanical	The widening of paved roadways such as scarifying, shaping, and/or removing existing material, the addition of bituminous concrete base course (b.c.b.c.),.shaping and compacting. The existing paved roadway width shall be 18 feet or less and the widening shall consist of a minimum of 2 feet If both sides of the roadway are to be widened, it shall consist of a minimum of 2 feet on each side. *Direct and indirect effects to wetlands possible if widening extends iltto wetlands.*	No effect	Do not concur, *should be "may affect"*
711-7137-01	Pavement Widening Recycled Material Mechanical	The widening of paved roadways such as scarifying, shaping, and/or removing existing material, the addition of recycled material, shaping and compacting. The existing paved roadway width shall be 18 feet or less and the widening shall consist of a minimum of 2 feet. If both sides of the roadway are to be widened, it shall consist of a minimum of 2 feet on each side. *Direct and indirect effects to wetlands possible if widening* ***extends into wetlands.***	No effect	Do not concur, *should be "may affect"*
711-7141-01	Concrete Patchin!! - Full Depth	The full depth patching/replacement with concrete on rigid pavements.	No effect	Concur

Moris Code	Brief Description	Detailed Description1	PennDOT Effect **Determination**	USFWS Effect **Determination**
711-7141-02	Concrete Patching - Spalls	The partial depth patching (spaII repair) with concrete on rigid pavements.	No effect	Concur
711-7147-01	Joint Sealing Concrete Roads Lane	Joint sealing operations on rigid pavements only.	No effect	Concur
711-7147-02	Joint Sealing Concrete Rds. - Pavement/Shoulders Separation Lane	Sealing the separated arealocated immediately adjacent to a concrete highway and bituminous shoulder.	No effect	Concur
711-7148-01	Stockpile Aggregate	Account code only - no on ground activity	No effect	Concur
711-7151-01	Minor Risk Management/Safety	Completion of minor risk management/safety improvement projects coordinated through the district traffic unit or the district tort risk manager. Elements of this operation include designated, site specific activities such as brushing, bank cutting/shaping, radius improvement, installation of left turning lanes, etc., as assigned by the appropriate authority. ***Direct and indirect effects to wetlands possible if activity extends into wetlands.***	No effect	Do not concur, ***should be "may affect"***
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711-7212-0 I	Grading Mechanical .	Grading operations, such as grading, shaping, and compacting long sections of unpaved shoulder and side approaches. Incidental material may be added or removed. If the ditch. line is simultaneously improved while grading shoulders with no additional efforts, charge all work to this cost function not 71 t:-7215 shoulder cuttin g.	May affect	Concur

Moris Code	**Brief Description**	Detailed Description'	PennDOT Effect **Determination**	USFWS Effect **Determination**
711-7213-01	Stabilization - Add Material Mechanical	The application, shaping and compaction of stabilizing material over long portions of the shoulder. This type of operation is typically performed after a roadway has been resurfaced and the shoulder elevation needs to be adjusted to meet the new pavement grade.	No effect	Concur
711-7213-09	Stabilization Pre Hauling 0	Account code only - no on ,ground activity	No effect	Concur
711-7214-01	Dust Palliative Bituminous or Calcium Chloride	The application of a bituminous, calcium chloride material, or other dust palliatives on the surface of a properly graded, stabilized or earth shoulder to increase Stability.	No effect	Concur
711-7215-01	Cutting - Belt Loader	Cutting operations, such as grading, shaping, compacting, and hauling away excess material from earth shoulders and cutting· and hauling of turf from areas adjacent to paved shoulders and incidental drainage cleaning done with the grader, such as improving the flow-line or cleaning "v" ditches. ***Direct and indirect effects to wetlands are possible.***	May affect	Concur
711-7215-02	Cutting - Front End Loader	Cutting operations; such as grading, shaping, compacting, and hauling away excess material from earth shoulders and cutting and hauling of turf from areas adjacent to paved shoulders and incidental drainage cleaning done with the grader, such as improving the flow-line or cleaning "v" ditches. ***Direct and indirect effects to wetlands are possible.***	May affect	Concur
711-7216-01	Upgrading - Paving Mechanized	The upgrading of unpaved shoulders to paved shoulders, such as scarifying, shaping and/or removing existing material, the addition of new material, shaping and compacting. This action is· intended to reduce or eliminate shoulder erosion caused by high water velocities ort unpaved surfaces. The upgrading of shoulders shall be confined to areas where shoulder erosion problems exist. ***Direct and indirec effects to wetlands are possible.***	May affect	Concur

Moris Code	Brief Description	Detailed Description	PennDOT Effect Determination	USFWS Effect Determination
711-7217-01	Stabilization - Add Material Manual	The application, shaping and compaction of stabilizing material over short sections of unpaved shoulders, due to washouts or pavement edge drop-offs at the inside of curves, intersections or other locations.	No effect	Concur
Shoulders - Paved and Side Approach				
711-7221-01	Patching Manual	This activity includes all actions related to manual patching operations on paved shoulders.	No effect	Concur
711-7222-01	Patching - Mechanical . Plant Mix	This activity includes all actions related to mechanized patching operations on paved shoulders and side approaches.	No.effect	Concur
711-7222-02	Surface Treatment - Plant Mix	This activity includes all actions related to mechanized shoulder paving on paved shoulders and side approaches.	No effect	Concur
711-7224-01	Surface Treatment - Mechanical - Liquid Bituminous	This activity includes all actions related to liquid bituminous surface treatment operations on paved shoulders and side approaches.	No effect	Concur
711-7224-09	Surface Treatm mt - Liquid Bituminous - Pre Hauling	Account code only - no on ground activity	No effect	Concur
711-7225-01	Driveway Adjustment	This activity includes all actions related to driveway repairs required by paving and/or shoulder operations, such as, installing pipe, reworking the grade, etc.	No effect	Concur
711-7226-01	Base/Subbase Repair - Light Duty	This activity includes all actions related to base/subbase repair operations such as removal of surface and base/subbase material, placing of U-drains and bleeders, adding Iiew material and compaction on light duty shoulders.	No effect	Concur
711-7226-02	Base/Subbase R air - Heavy Duty	This activity includes all actions related to base/subbase repair operations, such as r(1moval of surface and base/subbase material, placing of drainage, new material, and compaction on heavy duty shoulders.	No effect	Concur
71 I-7227-01	Skin Patching - Manual - Liquid Bituminous	This activity includes all actions related to liquid bituminous skin patching 6perations on p.lived shoulders.	No effect	Concur
711-7227-02	Skin Patching , Mechanical - Liquid Bituminous	This activity includes an actions related to mechanized liquid bituminous skin patching on paved shoulders.	No effect	Concur

Moris Code	Brief Description	Detailed Description[1]	PennDOT Effect Determination	USFWS Effect Determination
711-7227-03	Skin Patching-Mech. -Liq. Bit. - Distr. And Spray Wand	This activity includes all actions related to liquid bituminous skin patching operations on paved shoulder.	No effect	Concur
711-7227-09	Skin Patching - Pre Hauling	Account code only - no on ground activity	No effect	Concur
711-7232-01	Milling	This activity includes all actions related to paved shoulder milling such as removing material, loading material and clean up on paved surfaces.	No effect	Concur
711-7233-01	Recycling	This activity includes all actions related to pavement recycling suck as removing material, adding asphalt, placing mat and compaction on paved surfaces.	No effect	Concur
Drainage Cleaning, Repair or Rep [illegible]				
711-7311-01	Cleaning - Inlet/Endwall/Basin - Manual/Mechanical	Cleaning inlets and endwalls such as removal and disposal of material. Nonnally, if the activity is just cleaning inlets and endwalls all cleaning operations perfonned in the ditch channel within 15 feet of the pipe opening and one shovel length into the pipe will be charged to this code. ***Direct and indirect effects to wetlands are possible.***	May affect	Concur
711-7311-02	Cleaning - nlet Clogged	Cleaning inlets and endwalls that are clogge4 such as removal and disposal of material. Normally, if the activity is just cleaning inlets and endwalls all cleaning operations performed in the ditch channel within 15 feet of the pipe opening and one shovel length into the pipe will be charged to this code. ***Direct and indirect effects to wetlands are possible.***	May affect	Concur
711-7312-01	Cleaning - Ditch/Drain Chan. Mech.	Mechanized cleaning and reshaping of ditches and drainage channels, such as removal and disposal of material. Ditches and drainage channels sh uld provide an obstruction free flow of surface water away from and parallel to the roadway. ***Direct and indirect effects to wetlands are possible.***	May affect	Concur

Moris Code	Brief Description	Detailed Description'	**PennDOT Effect Determination**	USFWS Effect **Determination**
711-7312-02	Cleaning - Ditch/Drain Chan. **Manual**	Cleaning flow lines (swales), such as removal and disposal of material. The cleaning of flow lines on unpaved roads is also charged to this activity. ***Direct and il tdirect effects to wetlands are possible.***	May affect	Concur
711-7312-03	Cleaning - Swales - Mech.	Cleaning flow lines (swales), such as removal and disposal of material. The cleaning of flow lines on unpaved roads is also charged to this activity. ***Direct and btdirect effects to wetlands arepossible.***	May affect	Concur
711-7314-01	Cleaning Pipes & Culverts	The mechanical cleaning of pipes and culverts and the removal and disposal of material. The flushing of pipes and culverts is accomplished by using a high velocity sewer cleaner, sewer odor or cable unit. Inlet and outlet ditches must be cleaned before the pipe cleaner arrives at the work site and charged to "ditch cleaning". ***Direct and ilidi ect effects to wetlands are possible.***	May affect	Concur
711-7315-01	Install Rock Lining	The installation of rock lining in drainage ditches. ***Direct and indirect effects to wetlands are possible.***	No affect	Do not concur, ***should be "may affect"***
711-7321 01	Replace Inlet and Endwall Manual	The repair or replacement of inlets and endwalls such as removing old materiai, excavating area, _construction of fonns,·pouring concrete or appropriate material. ***Direct and indirect effects to wetlands are !possible.***	May affect	Concur
711-7324-01	Replace Pipes & Culverts under 36" - Mech.	The replacement/installation of pipes and culverts less than 36 iriches in diameter, such as cutting/sawing pavement, excavation of trench, installing pipe, backfilling, and compac!ion. ***Direct and indirect effects to wetlands are possible.***	May affect	Concur
711-7324-02	Replace Pipes & Culverts 36" Over-Mech.	The replacement/installation of pipes and culverts 36" and greater in diameter, such as cutting/sawing pavement, excavation of trench, installing pipe, backfilling, compacting, and installation of flared end sections or construction of field stone end walls. Direct a11d i11direct ***effects to wetlands are possible.***	May affect	Concur

Moris Code	Brief Description	Detailed Description[1]	PennDOT Effect **Determination**	USFWS Effect **Determination**
711-7324-03	Replace/Install Parallel Pipe	The replacement/installation of parallel pipes such as saw cutting shoulder, excavation of trench, installation of pipe, backfilling and compacting. ***Direct and indirect effects to wetlands are possihle.***	May affect	Concur
711-7324-09	Replace Pipes & Culverts - Pre Hanling 0	Account code only - no on ground activity	No effect	Concur
711-7325-01	Repair/Replace Structure under 8' Length -	The repair or replacement of a masonry, concrete, or wood structure (arch culvert, box culvert, slab or wood deck structure, masonry structure, etc.) under 8 feet in length and which cannot be charged to activity 711-7324 pipe or metal culvert replacements. ***Direct and indirect effects to wetlands are possible.***	May affect	Concur
711-7326-01	Repair Pipe & Culvert	The repair of pipes and culvert such as installing a pipe liner, patching a pipe, replacing a sm ll end section etc. ***Direct and indirect effects to wetlands are possible.***	May affect	Concur
711-7328-01	Install Subsurface Drain (U-Drain)	The installation of subsurface drains (u-drain). ***Direct and indirect effects to Ivetlands are possible.***	May affect	Concur
Roadway Section Restoration				
711-7331-01	Side Dozing Mechanical	The removal of accumulated material from beneath guiderail such as: side dozing of vegetation and soil buildup and manually shoveling embankment if stroke of side dozer is insufficient; or manually filling of small washouts along the job course.	• No effect	Concur
711-7332-01	Repair/Install Gabions/Ret. Walls	The installation or repair of gabfons and retaip.ipg walls such as removal of material, shoring the area, building supports, etc. ***Direct and indirect effects to wetlands are possible.***	May affect	Concur
711-7333-01	Repair Sink Holes/Slides - No Storms	Re toration operation not cailSed by stonns or natural disasters. See activity 711-7341-01 for more details. ***Direct ant! indirect effects to wetlands are possible altliough typically of an emergency nature.***	May affect	Concur
711-7334-01	Graffiti Removal	The removal of graffiti from any department facilities.	No effect	Concur

Moris Code	B"rief Description	Detailed Description[1]	PennDOT Effect Determination	USFWS Effect Determination
fyff6(pfif ge and/or Disaster Restoration				
711-7341-01	Major Slides	Restoration operations caused by stonns or natural disasters regardless of the degree of damage. Activities include: disaster clean up; removal and disposal of debris from slides; clean up, repair and/or replacement operations c used by flooding; repair of cuts and fills, dressing slopes and washouts, bench cleaning, repair of sink holes, etc. Where frequent washouts are a problem, consideration should be given to using gabion baskets to control erosion. ***Direct and indirect effects to wetlands are possible a/though typically of an emergency nature.***	May affect	Concur
711-7342-01	Major Structure Damage	The repair or replacement of structures when the damage is caused by stonns or natural disasters regardless of the degree of damage. ***Direct and indirect effects o wetlands are possible although typically of an emergency nature.***	May affect	Concur
Storm Patrol				
711-7351-01	Rain or Wind Patrol	Patrolling of highways during and immediately after storms to check function of drainage artd erosion control facilities or evaluate hazard potential for motorists, etc. Includes cleaning minor surface debris from drains and roadway, removing fallen trees and branches from the travele way and any other actions required as a result of the storm. Does not include any drain cleaning which requires the removal and disposal of material other than minor surface debris.	No effect	Concur
Bnd·ge Mafor&riah$ [illegible]				
711-7425-01	Repair/lleplace - J:lridge over 8' Length	Work area includes the entire structure including footings, abutments, wingwalls, superstructure, and deck. Also any incidental roadway approach work. ***Direct and indirect effeets to wetlands are possible.***	May affect	Concur

Moris Code	Brief Description	Detailed Description	PennDOT Effect Determination	USFWS Effect Determination
711-7431-01	Cleaning/Flush Deck	Work area includes entire deck between the backs of the abutment backwalls. Remove al salt, anti-skid, dirt, debris and other.deleterious material by manually first and then ***by*** flushing. Seasonal restriction recommended over trout streams from April 10 to June 10.	No effect	Concur
711-7431-02	Cleaning/Flush - Bearing & SuEJ er Structure		No effect	Concur
711-7431-03	Cleaning/Flush - Open Grid		No eff ct	Concur
711-7432-01	Painting Spot	Superstructure painting, usually less than 35% of structure. Scaffolding or work platform maybe used. And hand or power tools for cleaning.	No effect	Concur
711-7432-02	Painting Full	Generally run through full permitting process	May affect	Concur
711-7433-01	Seal - Joints (Liquid Only)	Joints can be located anywhere withing the entire length of the bridge between the backs of the backwalls. Poured joint material.	No effect	Concur
711-7433-02	Regair Joints	Repair or re Qlace existing joint$.	No effect	Concur
711-7434-01	Repair/Replace Guiderail/Median Barrier/Parapet	Conducted on the existing bridge structure. May include limited demolition.	No effect	Concur
711-7435-01	Lubricate Bearings	Repair or replacement ofvario:us bridge superstructure components. Conducted from the existing bridge.	No effect	Concur
711-7435-02	R$E air Replace Bearings		No effect	Concur
711-7435-03	Repair/Replace - Pedestal/Seat		No effect	Concur
711-7442-01	Repair/Replace - Approac Slab		No effect	Concur
711-7443-01	Reeair/Replace Deck		No effect	Concur
711-7443-02	Repair/Replace - Sidewalk/Curb		No effect	Concur
711-7444-01	Repair/Replace - Deck Drainage		No effect	Concur
711-7446-01	Repair/Replace - Superstructure Member	This activity may involve temporary piers, jacks or other supports beneath the bridge. ***Wetlands or travel corridors may be a concern.***	No effect	Do ot concur, ***sltould be "may affect"***

Moris Code	Brief Description	Detailed Description'	PennDOT Effect Determination	USFWS Effect ·Determination
711-7447-01	Repair/Replace - Truss Member	This activity may involve temporary supports beneath the bridge. ***Wetlands or travel corridors may be a concern.***	No effect	Do not concur, ***should be "mav affect"***
711-7448-01	Repair/Replace Backwalls	These activities may involve extensive ground disturbance. ***Direct and indirect effects to wetlands !re possible.***	May affect	Concur
711-7448-02	Replace/Repair Substructure		May affect	Concur
711-7448-03	Maintenance Underoinning		May affect	Concur
711-7450-01	Maintenance **Repointing**	Masonry repair is often done by hand but may involve removal of nprap or other protective material, cofferdams, or excavation to access bridge substructure. ***Direct and indirect effects to wetlands are possible.***	No effect	Do not concur, *should be "mav affect"*
711-7451-01	Repair/Replace Slopewalls	May require excavation ;md instream/in wetland activity. ***Direct and indirect effects to wetlands are possible.***	•No effect	Do not concur, *sho7,!ld be "mav affect"*
711-7452-01.	Repair/Replace Culverts		May affect	Concur
711-7453-01	Erosion Protection - Stream Bed/Rock/Deflector		•May affect	Concur
711-7453-02	Erosion Protection - Scour Hole Backfill		May affect	Concur
711-7453-03	Erosion Protection Culverts		May affect	Concur
711-7454-01	Const/Install - Temporary Suooorts	***Direct and indirect effects possible i factivity is conducted in wetlands with pote1 1tia(hQJ! turtle habitat.***	•May affect	Concur
711-7455-01	Repair/Replace Slabs/Box Culvert	May require excavation and instream/in wetland activity.	May affect	Concur·
711-7459-0 I	Other Bridl:!e Activities	Restricted to maintenance activities that are non-structural.	No effect	Concur

Moris Code	Brief Description	Detailed Description[1]	PennDOT Effect Determination	USFWS Effect Determination
toP:JieI/aintenance & Repair				
711-7421-01	Wash/Clean· Various	*Maintenance on existing tunnel structures is not likely to affect wetlands if stagitig and other support activities are not conducted ilt or near wetlands.*	No effect	Concur
71 I-7422-01	Traffic Services Various		No effect	Concur
711 7423 01	LightSystemService Various		No effiect	CoiJcur
711-7424-01	Electro - Mech. Equipment Maintenance		No effect	Concur
711-7429-01	Other - Tunnel Activities		No effect	Concur
Special charges				
711-7491-01	Hauling Non-Disabled Equip. - Lowboy Operation Only	The hauling of non-disabled equipment using a lowboy.	No effect	Concur
Snow Season Preparation, Snow Removal & Ice Control				
712-7521-01	Plow Snow, Spread Anti-Skid, Chem or Plow	Installing chains, making minor chain repairs, plowing and removing snow, spreading chemicals/anti-skid, refueling, cleanup, attaching/detaching the plow.	No effect	Concur
712-7522-01	Snow Removal - Non Storm Activities	Snow season work that is not included in activity 712-7521- 01 such as snow fence, snow prep work, mixing winter materials, transferring material, maintenance of storage facilities, towing, dry runs, stand by, calling out crews, removing or calibrating the spreader, etc.	No effect	Concur
Pavement Marking				
713-7612-01	Traffic Line Painting Mechanized	The painting or repainting of traffic lines using line striping machines.	No effect	Concur
713-7613-01	Pavement Marking - Hand Operated Machine	Marking the pavement using hand operated machines and/or hand held rollers, such as painting gore areas, certain types of ramps, and other areas not readily accessible to the department's Jarge paint trucks,	No effect	Concur
713-7614-01	Raised Pavement Markers	The repair/replacement ofreflectorized paveme t markers such as removing and replacing damaged reflectors. (Could be raised, flush, or ed.)	No effect	Concur
713-7615-01	Pavement marking paint line eradication	The removal of traffic markings.	No effect	Concur

Moris Code	Brief Description	Detailed Description	PennDOT Effect Determination	USFWS Effect Determination
713-7616-01	Pavement marking thermo-plastics installation	All actions to installation of thermo-plastic markings.	No effect	Concur
713-7617-01	Repair Paint Machines - Crew Only	The repair of paint machines by the paint crew only..	No effect	Concur
713-7619-01	Other Pavement Marking Activities	Any miscellaneous pavement marking actiyity which cannot be properly charged to the previous marking codes. Examples include transferring materials between counties, traffic line layouts, winterization of the large paint machines, etc.	No effect	Concur
Signs				
713-7621-01	Construction Detour & Other Temporary Signs	Includes all actions related to the erection, maintenance and removal of detour and other temporary signs, such as erecting supports, mounting signs and when necessary, removing damaged materials. Also includes the costs of flasher lights attached to barricades and signs and the placement and repair of all barricades.	No effect	Concur
713-7622-01	Delineations, Hazard		No effect	Concur
713-7623-01	Sign Reviews		No effect,	Concur
713-7624-01	Regulatory, Warning & Guide Signs Under 16 Sq. Feet		No effect	Concur
713-7624-02	Regulatory, Warning & Guide Signs Over 16 Sq Feet		No effect	Concur
713-7625-01	SR & Segment Markers		No effect	Concur
713-7629-01	Other - Sign Activities		No effect	Concur

Moris Code	Brief Description	Detailed Description[1]	PennDOT Effect Determination	USFWS Effect Determination
Gu[illegible] and imp[illegible]ion devices				
713-7631-01	Guiderail Repair - Mechanical Cable		No effect	Concur
713-7631-02	Guiderail Repair-Mechanical -W/Beam		No effect	Concur
713-7631-03	Guiderail Repair/Replace Manual [illegible] tcable	The repair and/or replacement of damaged or worn guiderail cable, posts, fittings, .etc.	No effect	Concur
713-7632-01	Guiderail Removal		No effect	Concur
713-7632-02	Guiderail Removal - Dept. Force/Contract Install		No effect	Concur
713-7639-01	Other - Guiderail, Median Barr. & Impact Attenuation Dev.		No effect	Concur
Lighting				
713-7671-01	Service - Highway, Bridge & Sign Lighting System	The servicing and maintenance of highway, bridge sign, and navigation lighting systems by department employees and outside contractors.	No effect	Concur
Traffic Se[illegible] [illegible]cidental Services				
713-7681-01	Sweeping	Sweeping of curbs and gutters on streets and/or highways such as sweeping and disposal of material.	No effect	Concur
713-7689-01	Other - Incidental Service Activities	Any miscellaneous incidental service activities, such as dead animal removals, right of way fence maintenance, etc.	No effect	Concur

Moris Code	Brief Description	Detailed Description[1]	PennDOT Effect Determination	USFWS Effect Determination
Vegetation Management				
714-7711-01	Mowing	Manual roadside mowing activities such as mowing.with power driven type mower(s), sickle, scythe or other hand tools. This activity is normally performed at intersections where small traffic islands exist, or at other similar areas where larger power mowers cannot operate efficiently. This activity should not be necessary under guiderail, around delineations and signs as the non-selective herbicide program under cost function 7712-01 is designed to accomplish this vegetation control.	No effect	Concur
714-7711-02	Mowing Mechanized	Mechanized roadside mowing activities including mow-line establishment, mowing, supervision or inspection, removing litter and . mowing obstructions. This activity is performed in medians, interchanges and along the roadway to control the height of growth 9f grass and for the purpose of preventing the growth and spread of prohibited weeds and.other undesirable p!ant growth.	No effect	Concur
714-7711-03	Plant Growth Reg. (PGR's)	The application of plant growth regulators for the purpose of inhibiting seedhead formation, reducing mechanical cutting frequencies, and for the control of broadleaf weeds. This activity is recommended primarily for turf areas requiring frequent cutting and traffic isiands or other plots that require manual mowing. This activity should be perfonned between march 15 and may 15 depending on geographic location, weather conditions and growth rate and condition of the grass. The optimum condition is to have a turf height of 4" to 6" with seedheads still within the sheath. If seedheads have emerged or grass is taller than desired, the areas should be mowed and treated 5 to 7 days after the mowing. The applications must be made by a certified pesticide applicator, a trained application technician or any other person provided by a certified pesticide applicator is present at the work site.	No effect	Concur

Moris Code	Brief Description	Detailed Description[1]	**PennDOT Effect** Determination	**USFWS Effect** Determination
714-7713-01	Herb Application - Broadcast Foliage	The application of selective herbicides, for the control of undesirable weeds and woody plant growth in lawn and roadside areas. Herbicides for this activity are selective in their effects on various plants when used in accordance with label directions. Various chemicals are used in the performance of this function and are also incorporated with PGR's in the chemical mowing (program 714-7711-03). Weed and brush control applications produce the best results when applied to the foliage of plants between June 1 and July 15. The applications must pe made by a certified pesticide applicator, a trained application technician or any other person provided a certified pesticide applicator is present at the work site. *Direct and indirect effects possible if conducted in wetlands occupied by bog turtles.*	No effect	Do not concur, *should be "may affect"*
714-7714-01	Broadcast Growth Regulators (Fosamine)	The application of selective herbicides, for the control of undesirable woody growth or part thereof. This activity utilizes fosamine (Krenite) for foliage applications made with power sprayers. Fosamine application should be made (during August and September). The applications must be made by a certified pesticide applicator, a trained application technician or any other person provided a certified pesticide applicator is present at the work site. ***Direct and indirect effects*** *possible if conducted in wetlands occupied by bog turtles.*	May affect	Concur
714-7715-01	Brush & Select Tree Thin, Tree Trim & Removal - Man.	Tree trimming, brushing, selective thinning and tree removal using the appropriate power and hand tools; and the removal of stumps where required. Also included in this activity is the herbicide treatment of all cut stumps where removal or grubbing is not scheduled. ***Direct and*** *indirect effects possible if conducted in wetlands occupied by bog turtles.*	No effect	Do not concur, *should be "may affect"*

Moris Code	Brief Description	Detailed Description[1]	PennDOT Effect Determination	USFWS Effect Determination
714-7715-02	Brush & Select Tree Thin, Tree Trim & Removal - Mech.	All methods and procedures described under 714-7715-01 except that the performa ce is accomplished either by the use o fhydraulic tools, boom ann· mowers or trimmer lift equipment. ***Direct and indirect effects possibl if conducted ilt wetla1tds occuoied by bo2 turtles.***	No effect	Do not concur, ***should be "may affect***[11]
714-7715-03	Herbicide Basal Bark & Dormant Stem	The elimination o funwanted woody plants the application o fherbicides using either one o ftwo- methods-basal bark or dormant stem. Although the basal bark method may be applied at anytime o fthe y ar, for highway purposes it is also most adaptable to the dormant season. D01mant stem applications are most effective in the control o fthick stands o fsaplings generally less than 3" in diameter, or where clumps o f saplings are located adjacent to crop lands. _The basal bark method is suggested for areas inaccessible to equipment, or where selective thinning is desired either o fspecies or removal from, crownvetch or other desirable ground cover. Both methods, ·when applied during the dormant season, prevent the unsightly negative effective o fbrownout. The applications must be made by a certified pesticide applicator, or a trained application technician, or by any other person provided a certified oesticide applicator is present at the work site.	•No effect	Concur
714-7716-01	Seed & Soil Supplement	The furnishing and placing o fseed, soil supplements and mulch to roadside locations for the· purpose o fstab.ilizing roadway embankments and compliance with current erosion and sedimentation control mandates.	No effect	Concur

Moris Code	Br ef Description	Detailed Description[1]	PennDOT Effect Determination	USFWS Effect Determination
714-7717-01	Wildflower Planting	The preparation of the soil for wildflower sites; the fu shing and placing of seeds of various plants which have growth and flowering characteristics desirable for highway roadsides; the maintenance of wild flower sites; and the propagation and enhancement of naturally occurring "wildflowers". This program will provide an acceptable roadside cover while maintaining a reduced mowing schedule; and will afford the necessary er_osion and sediment control properties. Site preparation and maintenance may include_ summer spraying of Glyphosate (Roundup), 2,4-d, Garion 3, or Dicamba. Sites are not tilled unless a fumigant is used but may seed may be applied in to slits or drilled. Native wildflower stands are avoided.	No effect	Concur
714-7719-01	Other - Vegetation Management & Scenic Feature Act.	Vegetation managernentand scenic features activities which cannot be properly identified· with one of the preceding vegetation management activities. However, this activity does include revitalization of deteriorating slopes and roadside soil areas, minor planting, commemorative and cooperative planting, the maintenance of plantings, junkyard screenings (both vegetative and structural) and the planting, maintenance and management of scenic strips.	No effect	Concur
Public Setv.io6.M11 es				
714-7731-0I	Maintenance of Interstate All Weather Roadside Rests	The maintenance of roadside rests with all-weather buildings such as mowing, fertilizing, watering, raking, mulching, herbicide weed control on the grounds; repairing, replacing, repainting, deaning, and periodic equipment servicing of building and equipment. The maintenance of signs, litter containers and snow and ice control are also included. Also includes picking up litter, litter disposal, and cleaning rest rooms.	No effect	Concur

APPENDIX B

PennDOT Bog Turtle Programmatic Consultation Initiation Meeting of June 6, 2017

Meeting Notes

PARTICIPANTS:

Name	Representing	Name	Representing
Allison, Jordan	PFBC	Smith, Steven	Gannett Fleming
Brookens, Andy	Skelly & Loy	Whitson, Cy	Gannett Fleming
Scofield, Brian	USFWS	Zawisa, Toni	PennDOT BOPD

AGENDA: attached

PURPOSE AND SUMMARY

The purpose of this meeting was to communicate PennDOT intent to initiate completion of a bog turtle programmatic and to review the scope for the initiative, reaching general agency concurrence on key aspects of the effort.

Follow-up items resulting from the detailed discussions presented in these meeting notes are:

Item	Required Action	Responsible Parties	Target Completion Date
Draft Bog Turtle Programmatic Consultation	Utilizing the meeting discussion and marked up version of the 2009 version as a starting point – update and revise	Andy Brookens Cy Whitson, and Steven Smith	June 30, 2017
Bog Turtle Credit Metric Development	Complete development of a bog turtle metric for banking credits to include a conversion for take of individual animals	Brian Scofield	June 30, 2017
Advise FHWA & PennDOT Districts	Inform FHWA and Districts 5-0, 6-0, and 8-0 about the effort	Toni Zawisa	June 23, 2017
Research PFBC Special Permit needs and joint consultation opportunity	Resolve or advise PennDOT of any issues regarding the scope of the consultation (to include LAA and a take estimate) with PFBC requirements for coordination and Special Permits	Jordan Allison	June 23, 2017
EPDS Review	Initial review of draft to assess readiness for agency and District review	Toni Zawisa Drew Ames	July, 14, 2017
Agency, FHWA and District Review	Review of Draft Programmatic Biological Assessment	Jordan Allison Jon Crum Brian Scofield District EMs	August 18, 2017
Prepare Final Programmatic Biological Assessment	Revise to address comments	Andy Brookens Cy Whitson, and Steven Smith	September 8, 2017
Initiate Formal Consultation	Submission to USFWS	Toni Zawisa and Jon Crum	September 22, 2017

MEETING DISCUSSION SUMMARY

1. Toni Zawisa provided some history and background on the bog turtle programmatic consultation referencing the 2009 draft version. She noted that past issues related to PASPGP-4 that had resulted in the effort being tabled had been resolved in PASPGP-5 allowing the consultation to be completed.

2. Toni noted that since 2009, new efforts have resulted in a FHWA Biological Assessment Template, a Rangewide Indiana and NLEB Programmatic Biological Assessment/ Biological Opinion, and Automated Effect Determination through IPaC. The Bog Turtle Programmatic will be reformatted and updated to incorporate aspects of these new tools, including automated USFWS concurrence letters and review timeframes.

3. Updates to maintenance activities and a revisit of any changes to past maintenance activity effect determination concurrence provided by USFWS will also be necessary. Toni noted that she had identified the necessary changes and provided them in the comments to the draft IPaC Determination Key provided for the meeting.

4. When mitigation/purchase of bog turtle credits would be a required AMM was discussed. It was determined that short-term temporary impacts when habitats are restored would not require a purchase of credits. Permanent impacts would.

5. Andy Brookens presented the general scope as identified on the agenda. Brian Scofield and Toni Zawisa indicated that the limitations, thresholds and kickouts identified would not be necessary and that the consultation should be broader and all inclusive. If effects and take related to a project were to exceed the general intents of a programmatic, then USFWS will respond indicating a need for individual consultation on a project specific basis. It is anticipated that such occurrences would be very rare as only one individual formal consultation has been required since the late 1990s.

6. Brian Scofield indicated that USFWS requests that the consultation be submitted as a formal consultation to include Likely to Adversely Affect (LAA) with application of avoidance and minimization measures (AMMs) and, when necessary, mitigation through the purchase of USFWS approved bog turtle credits is also applied. In discussion, it was determined that this did not represent an expansion of the scope, rather there was clarification that application of AMMs and mitigation will result in a LAA rather than a NLAA as indicated in the draft IPaC determination key provided for the meeting.

7. Toni Zawisa asked Jordan Allison whether any of the plans for the bog turtle programmatic biological assessment discussed thus far would create issues for the PFBC. Jordan indicated that he would need to discuss internally within PFBC in respect to the formal consultation and any associated incidental take permitting. He noted that there should not be any issue for greater than 95% of the projects, but, that a PFBC permit

might be required for the few projects that would result in take of individual bog turtles. PFBC rules would not apply to situations where mitigation for permanent habitat losses are required by USFWS as PFBC permits are distinct to take of animals.

8. Brian Scofield indicated that he had not yet completed a bog turtle metric that included a conversion of habitat credits to offset take of individual animals. He will be able to complete this concurrent with Skelly & Loy revision to the programmatic biological assessment.

9. In respect to interrelated and interdependent actions such as geotechnical core borings and utility work it was determined that these types of activities and the effects of them should be discussed in the biological assessment to include AMMs to address these effects.

10. Toni Zawisa expressed some concern regarding the number of approved commercial bog turtle credit vendors that might be approved. Brian Scofield responded that three vendors had approached USFWS and that sole source issues should not be a concern.

11. Andy Brookens inquired about updated life history/biology references for the biological assessment. Toni Zawisa and Brian Scofield both expressed a preference for incorporating this information by reference to already developed documents. Jordan Allison will provide the PFBC Species Action Plan as one potential reference for incorporation.

12. A schedule for completion was discussed and key milestones are provided in the follow-up matrix.

APPENDIX C

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Pennsylvania Field Office
110 Radnor Road, Suite 101
State College, Pennsylvania 16801-4850

April 10, 2019

Ingrid E. Allen
U.S. Department of Transportation
Federal Highway Administration
Pennsylvania Division
228 Walnut Street, Room 508
Harrisburg, Pa 17101-1720

RE: U.S. Fish and Wildlife Service Project #2018-0076

Dear Ms. Allen:

The enclosed programmatic Biological Opinion supersedes our November 2, 2018, to incorporate minor editorial changes and clarifications (as listed in Appendix A) to *Effects of Transportation Actions on the Bog Turtle within the Commonwealth of Pennsylvania* and its effects on the federally listed threatened bog turtle (*Clemmys muhlenbergii*) in accordance with section 7 of the Endangered Species Act (16 U.S.C. 1531-1544, 87 Stat. 884), as amended (ESA). This request for formal consultation was received from the Federal Highway Administration (FHWA) on March 14, 2018.

This programmatic biological opinion is based on information provided in the March 14, 2018, programmatic biological assessment (PBA), telephone conversations, field investigations, and other sources of information. The consultation history is located after the Literature Cited. A complete administrative record of this consultation is on file in this office.

If you have any questions regarding this Opinion or our shared responsibilities under the ESA, please contact Bob Anderson by telephone at 814-234-4090 or by email at Robert_m_anderson@fws.gov.

Sincerely,

For Sonja Jahrsdoerfer
Project Leader

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1.0 PROGRAMMATIC BIOLOGICAL OPINION

The two main purposes of this Programmatic Biological Opinion (PBO) are to streamline the ESA section 7 consultation process and to promote better conservation outcomes for the bog turtle.

1.1 Programmatic Consultation Process

This PBO addresses the actions of the Pennsylvania Department of Transportation (PennDOT) in coordination with FHWA and/or the U.S. Army Corps of Engineers (USACE). FHWA supports state and local governments in the design, construction, and maintenance of the nation's highway system. For transportation agency projects that involve Federal permits, such as USACE permits under the Clean Water Act, the FHWA will generally be the lead Federal agency for the purposes of consultation with the Service under section 7 of the ESA. The lead agency may use this consultation for included activities, consult on a case-by-case basis, or use any other applicable programmatic consultation for their actions.

PennDOT receives funding from the FHWA in support of design, construction, and maintenance activities within the State through the Federal Aid Highway Program. PennDOT has been delegated by the FHWA as a non-Federal representative for the purposes of conducting section 7 ESA interagency consultation. This consultation applies to future projects that the FHWA or USACE may fund, approve, or carry out and is limited to the geographic region of Pennsylvania within the extant range of the federally threatened bog turtle. Since the listing of the species in 1997, the action agencies have consulted on a project-by-project basis to ensure compliance with the ESA. The majority of these transportation activities have resulted in no effect to the species, or reduced levels of effect with the implementation of avoidance and minimization measures (AMMs). This PBO will create a streamlined and transparent process to expedite the project review timeline through increased predictability, consistency, and standardization, in addition to providing conservation for the bog turtle.

The transportation activities included within this PBO range in scope and complexity from routine maintenance activities to the construction of new roadways on new alignments within the extant range of the bog turtle. Comprehensive descriptions of the transportation activities, AMMs, measures to reduce or offset the effect of take (characterized and proposed by FHWA as "compensatory mitigation measures" in the PBA), and conservation recommendations for this consultation are addressed in this document.

This PBO applies to those actions that the Service has determined to meet the effect determinations, project conditions, and conservation measures described in this document are intended to cover the majority of transportation actions. However, some actions upon the review of the Service may exceed the scope of this consultation and require individual or additional section 7 consultation.

This programmatic consultation approach can be broadly summarized as: 1) screening projects with the Pennsylvania Natural Diversity Inventory (PNDI) environmental review tool and conducting bog turtle habitat assessments; 2) modifying projects as possible to avoid and

minimize potential adverse effects; and/or 3) providing measures to offset adverse effects for unavoidable adverse effects.

PennDOT is leading the development of a user's guide that will instruct all parties on the specifics for project submittals, reviews, incidental take tracking, monitoring, and annual reporting. The applicants and action agencies will submit project details to the Service using a standardized Project Submittal Form (PSF) that will capture relevant site-specific information, AMMs, potential take, and restoration benefits; supporting the Service's consistency review **(Appendix C of the PBA contains an example of the interim Project Submittal Form)**. When the required information is provided and the project qualifies for programmatic coverage, informal consultations will be completed within 14 days and formal consultations will be completed within 30 days, recognizing that staffing shortages may prevent the Service's ability to meet these deadlines in some limited circumstances. Early coordination is the key to ensuring these timeframes are attained.

1.2 Effect Determinations

Section 7 of the ESA requires that Federal agencies 1) use their authority to develop programs that conserve federally listed species [section 7(a)(1)], and 2) consult with the Service to ensure that their actions do not jeopardize the continued existence of federally-listed species [section 7(a)(2)]. Consequently, this PBO considers the benefits of proposed conservation commitments associated with these actions, as well as whether implementation of these actions is likely to jeopardize the continued existence of listed endangered and threatened species.

Projects included in the programmatic scope of this consultation include those that result in no effect or in a may affect determination for the bog turtle. It provides advance Service concurrence with not likely to adversely affect (NLAA) determinations with the implementation of AMMs. For "likely to adversely affect" (LAA) determinations, it provides the opinion of the Service that projects which are consistent with the program are not likely to jeopardize the continued existence of the bog turtle. We describe no effect, NLAA, and LAA categories of projects, and the corresponding project-level processes for using this document to comply with ESA section 7 below.

1.2.1 No Effect

The following activities have been determined by FHWA/PennDOT to have no effect on the bog turtle and will not be discussed further in this Opinion. Although concurrence from the Service is not required for no effect determinations made by a Federal agency or its designated non-Federal representative, the Service agrees that the following activities would have no effect to the bog turtle.

- Transportation maintenance actions that have been determined to result in No Effect on the bog turtle as identified in appendix A, or
- Wetlands are absent from the project area (including a 300-foot buffer around the limit of disturbance/limit of indirect effect), or
- A Phase I Habitat Assessment of the project area (including a 300-foot buffer around the limit of disturbance/limit of indirect effect) has determined the absence of habitat

conditions that would support the species, or

- Transportation actions within the main channels (within the ordinary high water mark) of watercourses greater than 30 feet in width with persistent cobble/boulder substrate, or
- The transportation action has been determined by the FHWA or PennDOT to completely avoid all potential effects on the species.

1.2.2 Not Likely to Adversely Affect

Appendix A of this PBO summarizes the characteristics of transportation projects that are NLAA the bog turtle. These projects may rely on this consultation with no additional site-specific consultation between the lead agency and the Service. PennDOT will complete a PNDI and send a PSF to the Service (if necessary) prior to project commencement. PennDOT will ensure that all submitted projects are within the scope of and adhere to the criteria of this PBO. Upon receipt of the PSF, the Service may check for program consistency and request additional information that is necessary to verify such consistency. The Service has 14 calendar days to notify PennDOT if they determine a particular project does not meet the criteria for a NLAA. If reviewed before the 14 day period ends, the Service reviewer will send an email verification to expedite the project. If PennDOT is not so notified, they may proceed under the programmatic consultation. This verification period is not intended as another level of review. The presumption is that the vast majority of submitted projects fall correctly within the programmatic consultation. Rather, it is an opportunity for the Service to apply local knowledge to these projects, and they may identify a small subset of projects as potentially having unanticipated impacts.

1.2.3 Likely to Adversely Affect

The "Effects of the Action" section of this PBO summarizes the characteristics of transportation projects that are LAA for bog turtle; however, a response from the Service is required. The Service will respond within 30 calendar days to consultation requests completed by PennDOT, submitted prior to project commencement, and accompanied by a complete PNDI and PSF. However, if a project requires formal consultation for other listed species, the Service will verify project consistency with this PBO within a project-specific BO that addresses all adversely affected species, to which the standard consultation procedures and timeline (135 calendar days) apply, unless there are other established consultation timelines for those species (e.g. other programmatic consultations).

The Service response to a complete and correct effects determination (through the PNDI or PSF) for projects that are LAA the bog turtle will be to:

- verify that all applicable conservation measures are included in the project proposal;
- verify that the project is consistent with the programmatic sideboards as described in the "Description of the Proposed Action" section for covered projects;
- describe the anticipated incidental take; and,
- identify any project-specific monitoring and reporting requirements, consistent with the monitoring and reporting requirements for the program as a whole.

1.3 Adaptive Management

Adaptive management can be useful in cases where natural resources are responsive to management, but there is also uncertainty about the impacts of management interventions (Williams and Brown, 2012). Due to uncertainty regarding the type and location of actual projects and the response of the species to these actions and the proposed avoidance measures the involved stakeholders (e.g., FHWA, PennDOT, and Service staff) will periodically review new information regarding the species' ecology, conservation, and monitoring results regarding project effects to adjust how the program is working to ensure the anticipated take avoidance and conservation response from bog turtle are occurring as expected.

The FHWA/PennDOT and the Service will apply adaptive management strategies throughout the 5-year effective lifetime of this consultation. Incorporating new information on the effects of the action and the function of the program will allow FHWA/PennDOT and the Service to ensure that effects of the proposed actions are effectively minimized and that the PBO is consistent with stated efficiency and conservation goals. Changes to this consultation will be considered on an annual basis, but they may also occur at any time that the FHWA/PennDOT and the Service agree it is appropriate.

2.0 DESCRIPTION OF THE PROPOSED ACTION

As defined in the ESA section 7 regulations (50 CFR 402.02), "action" means "all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies in the United States or upon the high seas." 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."

The following is a summary of the proposed action. A detailed description can be found in the *Programmatic Biological Assessment for the Effects of Transportation Actions on the Bog Turtle within the Commonwealth of Pennsylvania* submitted to initiate this PBO.

2.1 Introduction

The FHWA provides stewardship over the construction, maintenance, and preservation of the nation's highways, bridges, and tunnels. The FHWA provides financial and technical assistance to state and local governments. Nationally, Pennsylvania ranks as the fifth largest state-maintained road system and third largest bridge system. PennDOT is directly responsible for nearly 40,000 miles of highway and approximately 25,000 bridges. PennDOT's mission is to provide a sustainable transportation system and quality services that are embraced by local communities and add value to its customers.

On an annual basis, the number of existing road miles undergoing maintenance or improvements will largely be influenced by available funding. Maintenance and improvement projects are expected to occur on only a fraction of the total infrastructure network annually. During 2017, PennDOT received nearly $1.6 billion dollars from the FHWA in support of design, construction, and maintenance activities within the State. Components of this funding are applied

to PennDOT transportation actions throughout the 17-county extant range of the bog turtle. Transportation actions throughout this range are overseen and executed by PennDOT's Engineering Districts 5-0, 6-0, and 8-0 regional management network.

2.2 General Programmatic Activity Categories

This section provides a summary of the seven different general programmatic activity categories all transportation activities fall within this PBO. The categories are based on the outcome of the activity and the potential effect it may have on the bog turtle (Table 1).

2.2.1 Programmatic Category 1A

This category encompasses actions where *temporary effects to potential hibernacula microhabitat* (i.e., spring-fed rivulets under soft mud, in muskrat burrows, under sedge clumps, at the base of tree stumps, and in meadow vole burrows (Service 2001) are anticipated to occur. Temporary impacts could include the placement of temporary crossing matting, erosion and sedimentation control features, flow diversion measures, and species exclusionary barriers. These transportation actions will be conducted in a manner that avoids any permanent effect on the hydrologic sources supporting the wetland.

Hibernacula are critical to the species being able to brumate (i.e., a hibernation-like state that cold-blooded animals utilize during very cold weather) through their winter dormancy period. Activities occurring within this microhabitat during the species inactive season, November 1 to March 31, could result in a high potential for adverse effects due to their inability to escape from disturbance activities and potential exposure to freezing conditions on the ground surface. Therefore, AMMs associated with this programmatic category focus on conducting these transportation actions only during the active season for the species, April 1 to October 31. This seasonal time period will afford a higher likelihood for the species to escape disturbance activities during non-freezing surface conditions. Since these actions will occur during the active season, additional AMMs will be necessary to remove any turtles that may be present within the limits of disturbance of the action as well as physically isolate the disturbance activities from other potentially migrating turtles. Compensatory mitigation measures could be implemented in lieu of some AMMs with the concurrence of the Service.

2.2.2 Programmatic Category 1B

This category encompasses actions where *permanent effects to potential hibernacula microhabitat* are anticipated to occur. Permanent impacts will result from the loss of this microhabitat through the placement of permanent fill materials or removal through excavation. These transportation actions will be conducted in a manner that avoids any permanent effect on the hydrologic sources supporting the wetland.

Hibernacula are critical to the species being able to bromate through their winter dormancy period. Activities occurring within this microhabitat during the species inactive season, November 1 to March 31, could result in a high potential for adverse effects due to their inability to escape from disturbance activities and potential exposure to freezing conditions on the ground surface. Therefore, AMMs associated with this programmatic category focus on conducting

these transportation actions only during the active season for the species, April 1 to October 31. This seasonal time period will afford a higher likelihood for the species to escape disturbance activities during non-freezing surface conditions. Since these actions will occur during the active season, additional AMMs will be necessary to salvage and relocate any turtles that may be present within the limits of disturbance of the action as well as physically isolate the disturbance activities from other potentially migrating turtles. Compensatory mitigation measures could be implemented in lieu of some AMMs with the concurrence of the Service. Due to the permanent loss of species supporting habitat, compensatory mitigation will be required to offset these impacts.

2.2.3 Programmatic Category 2A

This category encompasses actions where *temporary effects to potential foraging microhabitat* are anticipated to occur. Temporary impacts could include the placement of temporary crossing matting, erosion and sedimentation control features, flow diversion measures, and species exclusionary barriers. These transportation actions will be conducted in a manner that avoids any permanent effect on the hydrologic sources supporting the wetland.

Foraging microhabitat is defined within this consultation as to lack both the persistent groundwater discharge and depth of mucky soil substrate characteristics that comprise hibernaculum microhabitat. The species will be expected to potentially utilize foraging microhabitat only during its active season, April 1 to October 31, for breeding, feeding, sheltering, and migration purposes. Therefore, AMMs associated with this programmatic category focus on conducting these transportation actions during the inactive season for the species, November 1 to March 31. This seasonal time period will afford a higher likelihood for the species to escape disturbance activities since they will be expected to be in an inactive condition in hibernaculum microhabitat. Compensatory mitigation measures could be implemented in lieu of some AMMs, such as the seasonal restriction, with the concurrence of the Service.

2.2.4 Programmatic Category 2B

Category 2B encompasses actions where *permanent effects to potential foraging microhabitat* are anticipated to occur. Permanent impacts will result from the loss of this microhabitat through the placement of permanent fill materials or removal through excavation. These transportation actions will be conducted in a manner that avoids any permanent effect on the hydrologic sources supporting the wetland.

Foraging microhabitat is defined within this consultation as to lack both the persistent groundwater discharge and depth of mucky soil substrate characteristics that comprise hibernaculum microhabitat. The species will be expected to potentially utilize foraging microhabitat only during the species active season, April 1 to October 31, for breeding, feeding, sheltering, and migration purposes. Therefore, AMMs associated with this programmatic category focus on conducting these transportation actions during the inactive season for the species, November 1 to March 31. This seasonal time period will afford a higher likelihood for the species to escape disturbance activities since they will be expected to be in an inactive condition in hibernaculum microhabitat. Compensatory mitigation measures could be

implemented in lieu of some AMMs, such as the seasonal restriction, with the concurrence of the Service. Due to the permanent loss of species supporting habitat, compensatory mitigation will be required to offset these impacts.

2.2.5 Programmatic Category 3A

Category 3A encompasses *actions which will occur during the seasonal period of April 1 to October 31 and include dedicated species exclusionary measures.* These actions are typically associated with activities occurring within stream corridors, or upland habitats in the vicinity of occupied/assumed supporting wetland habitat for the species. These transportation actions will be conducted in a manner that avoids any permanent effect on the hydrologic sources supporting the wetland. Since these actions will be committed to occur during the species active season, AMMs will be necessary to remove any turtles that may be present within the limits of disturbance of the action as well as physically isolate the disturbance activities from other potentially migrating turtles. Take reduction and offsetting measures could be implemented in lieu of some AMMs with the concurrence of the Service.

2.2.6 Programmatic Category 3B

Category 3B encompasses *actions which will occur during the seasonal period of November 1 to March 31 within stream corridors or upland habitats in the vicinity of occupied/assumed supporting wetland habitat for the species*. These transportation actions will be conducted in a manner that avoids permanent effect on the hydrologic sources supporting the wetland. Commitment to this seasonal time period will afford a higher likelihood for the species to escape disturbance activities since they will be expected to be in an inactive condition in hibernaculum microhabitat and not utilizing stream corridor or upland habitat.

2.2.7 Programmatic Category 4

Category 4 encompasses *actions which result in permanent effects to the hydrologic source(s) of occupied/assumed supporting wetland habitat*. Activities which permanently alter supporting hydrologic sources during the species inactive season, November 1 to March 31, could result in a high potential for adverse effects due to their inability to escape from disturbance activities, and potential exposure to freezing conditions on the ground surface. Therefore, AMMs associated with this programmatic category focus on conducting these transportation actions only during the active season for the species, April 1 to October 31. This seasonal time period will afford a higher likelihood for the species to escape disturbance activities during non-freezing surface conditions and acclimate to the translocation habitat. Since these actions will occur during the active season, additional AMMs will be necessary to salvage and relocate any turtles that may be present within the entire affected wetland habitat as well as physically isolate the disturbance activities from other potentially migrating turtles. Due to the permanent loss of species supporting habitat, compensatory mitigation will be required to offset these impacts.

Table 1. Programmatic transportation action categories that may affect, and are likely to adversely affect bog turtles, resulting in death, injury, or harm[1].

Habitat type	Action Category	Anticipated effect
Winter (Hibernation) habitats	1A	Temporary effects to potential hibernacula microhabitat are anticipated to occur without any hydrologic modification.
	1B	Permanent effects to potential hibernacula microhabitat are anticipated to occur without any hydrologic modification.
Foraging and nesting habitats	2A	Temporary effects to potential foraging microhabitat are anticipated to occur without any hydrologic modification.
	2B	Permanent effects to potential foraging microhabitat are anticipated to occur without any hydrologic modification.
Travel Corridor habitats	3A	Proposed action will occur during the seasonal period of April 1 – October 31 with take avoidance focused on excluding bog turtles from the limit of disturbance. No permanent hydrologic modification anticipated.
	3B	Proposed action will occur from November 1 – March 31 and entirely in stream corridors, or upland habitats in proximity to occupied/assumed bog turtle habitat. No permanent hydrologic habitat modification anticipated.
	4	Permanent hydrologic effects to species supporting habitat are unavoidable.

[1] "Harm" in the definition of take means an act which kills or injures wildlife. Such act may include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering (50 CFR part 17.3).

2.3 Specific Activities

Descriptions of specific transportation activities are summarized in Table 2. A detailed description of the specific activities can be found in the PBA provided by FHWA/PennDOT as part of this consultation.

Table 2. Transportation Activities

Activity	Description	Potential Programmatic Category Type
New Road Construction	Can include but is not limited to stormwater facilities, construction, paving, bridges, and culverts	1A, 1B, 2A, 2B, 3A, 3B, 4
Roadway Widening/Shoulder Improvements	Can include but are not limited to stormwater facilities, construction, paving, bridges, and culverts	1A, 1B, 2A, 2B
Culvert Installation	Can include but not limited to dewatering, scour protection, armoring, headwalls, and vegetation disturbance	1A, 1B, 2A, 2B, 3A, 3B, 4
Bridge Replacement and Construction	Usually includes spanning a body of water, wetlands, or roadway	1A, 1B, 2A, 2B, 3A, 3B
Bridge Maintenance and Rehabilitation	Any work conducted on a current bridge including but not limited to scour repair, deck replacement, and general maintenance	1A, 2A, 3A, 3B
Drainage System Repair	Maintenance of roadside ditches, channels, cross culverts and pipes, catch basins, and retention/detention basins	1A, 1B, 2A, 2B, 3A, 3B, 4
Pavement Preservation	Patching, repairing, and replacing roadway surfaces	1A, 1B, 2A, 2B, 3A, 3B, 4
Slide Abatement	Stabilization of landslides, rockfalls, debris flow, and slope erosion and settlement	1A, 2A, 3A, 3B
Streambank Stabilization and Flood Damage Repair	Direct protection of embankments at bridges, culverts, and roadway sections from erosive flowing water	1A, 2A, 3A, 3B
Sinkhole Repair	Depressions or holes in the ground caused by surface layer collapse	1A, 1B, 2A, 3A, 3B
Transportation Alternatives Set-aside Program	Set-aside funds for small projects including pedestrian and bike facilities, recreational trails, school projects, and community improvements	1A, 2A, 3A, 3B
Take reduction and offsetting measures	Mitigation associated with unavoidable permanent impacts to aquatic resources	1A, 2A, 3A, 3B
Other Related Activities	Activities that support transportation improvements such as geotechnical investigations, use of herbicides, and public utility relocations	1A, 2A, 3A, 3B
General Maintenance	General roadway repair, rehabilitation, and maintenance activities implemented to prolong use, ensure motorist safety, and protect the environment	1A, 2A, 3A, 3B

Conservation Measures

The following conservation measures (called standard measures and AMMs) are proposed as part of the action to help avoid, minimize, and mitigate effects of the proposed action on bog turtle.

2.3.1 Standard Measures

The FHWA and PennDOT routinely implement standard measures as part of the environmental compliance process [e.g., National Environmental Policy Act (NEPA) and USACE and Pennsylvania Department of Environmental Protection (PADEP) wetland/watercourse permitting], and many of these measures reduce potential effects on the bog turtle. These standard measures include:

- Identifying in PennDOT maintenance manuals all maintenance activities (aka assemblies) that may affect the bog turtle with the following statement that serves to alert maintenance managers to coordinate these activities with their district environmental staff:

  "If the assembly is proposed within the counties of Adams, Berks, Bucks, Carbon (only Aquashicola Creek Watershed), Chester, Cumberland, Dauphin (only Spring Creek and Conewago Creek Watersheds), Delaware, Franklin (only Antietam Creek Watershed), Lancaster, Lebanon, Lehigh, Monroe, Montgomery, Northampton, Schuylkill (only Swatara Creek Watershed), and/or York; then this activity must avoid adverse impacts to the bog turtle. The bog turtle is a federally threatened, and State endangered species protected by applicable laws. Potential habitat for the species is typically characterized by wetlands with thick mucky soils and groundwater springs. If wetlands or watercourses are present within 300 feet of the disturbance area for the assemblies identified below, then AMMs including time of year restrictions may be necessary. All operators, employees, and contractors working on assemblies in areas where the species may be present must be provided briefing materials prior to the initiation of the activity. If a bog turtle is encountered, then all work activities within 300 feet of the capture will cease immediately. Coordinate with the District Project Manager and District Environmental staff. Refer to Threatened and Endangered Species Desk Reference (PennDOT 2013) for standard operating procedures for the avoidance of adverse effects to the bog turtle";
- Completing PNDI evaluations for all maintenance activities and projects that may affect the bog turtle within its range in Pennsylvania;
- Conducting annual refresher training for environmental and wetland scientists that routinely conduct Phase I bog turtle habitat assessments;
- Implementing QA/QC practices on a subset of wetland and Phase I assessments when these activities are not conducted by qualified surveyors or trained staff with considerable experience in performing these assessments;
- Wetland and watercourse habitat avoidance/minimization/compensation;
- Clearly delineating project limits of disturbance on-site; and
- Compliance with state water quality standards through erosion and sediment pollution control plans, stormwater management plans, and spill pollution control plans.

It should be noted that, through the implementation of the above mentioned screening and avoidance/minimization process, locations of concern requiring additional species surveys or conservation measures are identified and these additional measures are applied. As an example, for ditch excavation activities when potential habitat is identified and cannot be avoided, AMM 18 will be deployed (see Table 2 below).

The approach using the above standard measures can be broadly summarized as: 1) performing PNDI and habitat screening procedures; 2) modifying projects as possible to avoid and minimize impacts; 3) conducting actions during the appropriate seasonal time period to avoid adverse effects, or 4) implementing appropriate measures for the exclusion of the species from disturbance areas during their active seasonal time period, or 5) providing for compensation of anticipated limited adverse effects.

2.3.2 Avoidance and minimization measures

In addition, for actions to be covered by this programmatic consultation, specific AMMs related to the species will be implemented where applicable (see Table 3). The AMMs included in the analysis, if executed under appropriate circumstances, are expected to reduce potential impacts of the stressors. In some cases, impacts will be reduced to levels that are insignificant (the magnitude or size of the impact will never reach the scale where take occurs) or discountable (the probability is extremely unlikely for take to occur) and, therefore, not likely to adversely affect the species. In other cases, some level of take of the species will be unavoidable even with application of AMMs, but will be offset through the implementation of a compensatory AMM.

The AMMs will be applied to transportation actions encompassed by this programmatic consultation unless one of the following conclusions has been reached for the transportation action:

- Wetlands are absent from the project area (including a 300-foot buffer around the limit of disturbance/limit of indirect effect), or
- A Phase I Habitat Assessment (habitat assessment) of the project area (including a 300-foot buffer around the limit of disturbance/limit of indirect effect) has determined the absence of species-supporting habitat conditions, or
- A Phase II/Phase III Presence-Inferred Absence Survey (species survey) conducted by a qualified species surveyor has determined that the species is not likely to be present within the project area and the Service has concurred with these findings, or
- The transportation action has been determined by the FHWA or PennDOT to completely avoid all potential effects on the species.

The implementation of AMMs 1 to 9 is required for all other actions with the use of this programmatic consultation, while AMMs 10-19 are only required for specific programmatic categories (Table 3). The application of AMMs acknowledges the presence of potential species-supporting habitat and confirmed or assumed species presence within the action area of the transportation activity. Table 4 provides a summary of the Programmatic Category Actions and the necessary AMMs for application with those particular actions.

Table 3. Take avoidance and minimization measures (AMMs)

AMM	DESCRIPTION
Required for all actions	
1	Ensure that all wetland, bog turtle habitat and species surveyors, operators, employees, and contractors working in areas of known, or assumed occupied bog turtle habitat are aware of and implement all PennDOT environmental commitments, including all applicable AMMs, PA DEP permit conditions, USACE permit conditions, and Bog Turtle Health Bulletin (2015) equipment disinfection and infected specimen protocols. Sensitivity training and briefing materials will be provided to all applicable personnel prior to the initiation of the action. Sensitive resource signage will be placed at the site of the action to notify personnel of the potential presence of the species.
2	All work associated with the action shall be conducted in accordance with the Erosion and Sediment Pollution Control Plan approved by the County Conservation District or PA DEP. Erosion and sediment control best management practices will be implemented before, during, and after all land disturbance to prevent the potential for asphyxiation and smothering of species individuals as well as accidental sedimentation and filling of adjacent wetland habitats that may potentially support the species. All erosion and sediment control features will be properly installed and maintained in accordance with the County Conservation District and PA DEP. The project site will be monitored daily, as is also required for all Chapter 102 and NPDES permitting, to ensure the erosion and sedimentation control practices are implemented and properly maintained, and to identify any project related impacts due to sediment accumulation. The daily inspection may be completed by the on-site environmental monitor/inspector or project foreman.
3	All rock scour protection areas associated with an action will be completed in such a manner that precludes large voids for potential impingement and entrapment of species individuals. Any voids in the rock scour protection will be choked with smaller rock and mineral material in order to avoid the creation of potential traps for the species. All rock scour protection areas must be installed and depressed below the appropriate stream water elevation as conditioned by PA DEP authorization.
4	A hazardous material construction spill avoidance/remediation plan (Spill Prevention Control and Countermeasure Plan – SPCC Plan) will be developed and implemented during the fulfillment of the transportation action. The project site will be monitored daily to ensure spill avoidance/remediation practices are implemented. The daily inspection may be completed by the on-site environmental monitor/inspector or project foreman.
5	Project storage and staging areas will be located only in upland areas located as far as possible from wetland/watercourse habitat areas. This shall include all areas required for stockpiles, equipment storage, and parking.
6	All public utilities potentially associated with the action due to the necessary relocation of their services will be notified of the potential presence of the species and their need to consult with the Service and Pennsylvania Fish and Boat Commission (PFBC) on their respective relocation activities.
7	High visibility orange construction fencing shall be used to delineate avoidance areas during the action. The fencing will act as a visual warning to prevent construction equipment and personnel from entering and disturbing sensitive areas outside of the project limit of disturbance.
8	In order to avoid the introduction and spread of invasive species into supporting habitats, minimize the duration of exposed soils, utilize erosion control blankets on disturbed areas immediately after project completion to minimize sedimentation, and promptly re-vegetate areas of temporary disturbance with native wetland or upland seed mixes dependent on the location of the disturbance. Thoroughly wash construction equipment and vehicles offsite, especially the undercarriage and wheels, before use within 300 feet of supporting habitat. Thoroughly wash temporary crossing measures such as composite matting or timber matting before use within 300 feet of supporting habitat.

AMM	DESCRIPTION
9	Specific coordination and construction operating procedures approved by the Service/PFBC shall be implemented in the event that a bog turtle is encountered during preconstruction exclusion surveys, on-site monitoring, or within the vicinity of the limit of disturbance (LOD) during the course of the action (i.e., construction). These specific procedures include the following: • If a turtle is encountered then all construction activities within 300 feet of the capture will cease immediately. The District Environmental Manager and qualified surveyor will be contacted immediately to inform them of the encounter. • If the turtle appears dead or immobile, then the turtle will be left where it was initially observed. If the turtle appears to be mobile, then efforts will be made to temporarily contain the turtle until the qualified bog turtle surveyor can take possession of it. Temporary containment will consist of placing the turtle in a thoroughly clean bucket that has a depth of more than 18 inches. Pieces of native vegetation and 0.5 - 1 inch of water will be placed in the bucket with the turtle to keep the animal cool and hydrated. The bucket will be placed in a quiet, well- shaded area. The turtle will be handled as little as possible, and temporary containment must not exceed 6 hours. The qualified bog turtle surveyor will take possession of the turtle and identify the species as well as document the capture location and condition of the turtle. The qualified surveyor will conduct a thorough search of the area within and in the vicinity of the limit of disturbance of the action to determine if any other turtles may be in the construction area. The qualified surveyor will also inspect the exclusion barrier fencing and direct any repairs as needed. If there are breaches in the exclusion barrier and/or the turtle is identified as a bog turtle, then construction will not resume until coordination with the Service and PFBC is completed and all breaches in the exclusion barrier are repaired. If the qualified bog turtle surveyor identifies the turtle species as a bog turtle, then the surveyor will immediately notify endangered species biologists at both the Service and PFBC. The elapsed time for contacting both agencies will be as soon as possible, but must not exceed 24 hours. Following the arrival of the qualified bog turtle surveyor at the project site, the turtle must be handled by the biologist according to the recommendations of the Service and PFBC. The qualified surveyor will consult with the Service and PFBC concerning the safe handling and necessary relocation of the turtle outside of the project disturbance area. Construction will resume only after the completion of this consultation. If the qualified bog turtle surveyor identifies the turtle as a species other than the bog turtle, and the turtle appears healthy, then the qualified surveyor will release the turtle unharmed no further than 300 feet from the site of discovery to a safe location outside of the limit of disturbance. Construction may continue once the turtle is relocated If any turtle found appears injured or dead, the qualified bog turtle surveyor will coordinate with the Service and PFBC concerning the safe handling of an injured turtle and the taking of possession of the specimen whether injured or dead by one of these agencies. Construction will resume only at the completion of this coordination. In order to offset the adverse effects of the take, compensatory mitigation credits will be calculated in accordance with Service credit metrics and acquired from a Service approved conservation bank.
Required for specific programmatic categories	
10	In order to avoid the killing, harm, or harassment of brumating bog turtles within hibernacula microhabitat during the species inactive period, the action will be completed during the active season for the species between April 1 and October 31.
11	In order to avoid the killing, harm, or harassment of bog turtles during the species active period, the action will be completed during the inactive season for the species between November 1 and March 31.
12	In order to avoid the killing, harm, or harassment of individual bog turtles during the species active period, a preconstruction exclusion survey to remove any bog turtle individuals within the LOD will be conducted by a Service/PFBC recognized-qualified bog turtle surveyor immediately prior to the commencement of the action. Exclusion surveys may also be necessary for the assembly/disassembly of

AMM	DESCRIPTION
	temporary streamflow diversion measures; the placement of rock scour protection materials; and the internal confines of an existing bridge or culvert crossing structure. Any captured individuals will be relocated outside of the project disturbance area into suitable habitat. The Service/PFBC recognized-qualified bog turtle surveyor will oversee and supervise any necessary vegetation cutting or clearing (4 to 6 inches height) for the effective survey of the excluded area. All exclusionary surveys will be conducted according to the most current Phase 2/Phase 3 survey protocol(s) provided by the Service and PFBC.
13	In order to avoid the killing, harm, or harassment of individual bog turtles during the species active period, an exclusionary barrier (silt fence, super silt fence, adequate silt sock, sand bag wall, sheeting, Jersey barrier) will be erected immediately following the species exclusionary survey and prior to the commencement of the activity to isolate the disturbance area associated with the action (See Appendix D). Sand bag walls, sheeting, Jersey barrier, etc. may be necessary within watercourse channel environments to isolate in-stream disturbance areas. No other construction/maintenance activities may commence until the exclusionary barrier has been installed. The exclusionary barrier is to be installed a minimum of 6-inches into the underlying habitat where appropriate. The installation/removal of the exclusionary barrier must be completed by hand through wetland habitats. The installation/removal of the exclusionary barrier through upland habitats may be completed with the assistance of equipment. The exclusionary barrier shall be installed and removed under the supervision of a Service/PFBC recognized-qualified bog turtle surveyor. While in use, the exclusionary barrier shall be inspected daily to ensure its competency and function. The daily inspection may be completed by the on-site environmental monitor/inspector or project foreman. Straw bales, sand bags, or temporary fencing may be used as temporary barriers at ingress/egress locations to provide access to equipment/personnel through the exclusionary barrier. Should the exclusionary barrier become compromised during its use, then all construction/maintenance activities will cease until an exclusionary survey of the action area has been completed by a Service/PFBC recognized-qualified bog turtle surveyor and the compromise has been remediated. The exclusionary barrier is to be removed immediately following the completion of the action. The Service/PFBC recognized-qualified bog turtle surveyor will ensure that potential pitfalls are not created by trenching associated with the installation and/or removal of the exclusionary barrier.
14	All temporary streamflow diversion measures must be implemented in a manner that will not result in the possible collection and entrainment of species individuals into pumping equipment.
15	In order to avoid the killing, harm, or harassment of species individuals during the species active period, a Service/ PFBC recognized-qualified bog turtle surveyor shall conduct inspections of spoil materials from excavation areas to ensure that species individuals are recovered and relocated.
16	In order to avoid the killing, harm, or harassment of individual bog turtles during the species active period, a Service/ PFBC recognized-qualified bog turtle surveyor will provide continuous monitoring during the active construction.
17	A Service/PFBC recognized-qualified bog turtle surveyor will be retained throughout the duration of the transportation action to monitor the effectiveness of the implemented AMMs. The surveyor will also provide recommendations to PennDOT and the FHWA concerning the implementation of the necessary measures.
18	To reduce the amount of take associated with the permanent loss of habitat, a salvage survey effort will be undertaken in conjunction with the Service/PFBC to relocate any individuals within the impact area prior to disturbance. Any recovered individuals will be relocated a maximum of 300 feet from the impact area within the same drainage basin.
19	In order to offset the adverse effects for the permanent loss of supporting habitat and/or incidental take, compensatory mitigation credits will be calculated in accordance with Service credit metrics and purchased from a Service-approved conservation bank with receipt of credit purchase being provided to the Service prior to the start of any work. If a conservation bank has not yet been developed, PennDOT/FHWA may adopt an alternate equivalent mechanism, with Service concurrence.

Table 4. Programmatic category actions and application of avoidance and minimization measures (AMMs) Summary

Programmatic Category	Description	AMM											
		1-9	10	11	12	13	14	15	16	17	18	19	For Offsets
1A	Actions where temporary effects to potential hibernacula are anticipated to occur without any hydrologic modification.	**X**	**X**		**X**	**X**	**X**	**X**	**X**	**X**		**X**	
1B	Actions where permanent effects to potential hibernacula microhabitat are anticipated to occur without any hydrologic modification.	**X**	**X**		**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**
2A	Actions where temporary effect to potential foraging habitat are anticipated to occur without any hydrologic modification.	**X**		**X**								**X**	
2B	Actions where permanent effects to potential foraging habitat are anticipated to occur without any hydrologic modification.	**X**		**X**								**X**	**X**
3A	Actions which will occur during the seasonal period of April 1 to October 31 with exclusionary measures and without any permanent hydrologic impacts.	**X**			**X**	**X**	**X**	**X**	**X**	**X**		**X**	
3B	Actions which will occur during the seasonal period of November 1 to March 31 associated exclusively with stream corridors or upland habitats in the vicinity of occupied/assumed supporting wetland habitat without any permanent hydrologic impacts.	**X**		**X**									
4	Actions where the hydrology of supporting habitat will be permanently altered by the action, resulting in take due to modified hydrology.	**X**	**X**		**X**	**X**	**X**	**X**	**X**	**X**	**X**		**X**

3.0 ACTION AREA

The action area is defined at (50 CFR 402.02) 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 for this project is a 17 county area located in southeastern Pennsylvania (Figure 1).

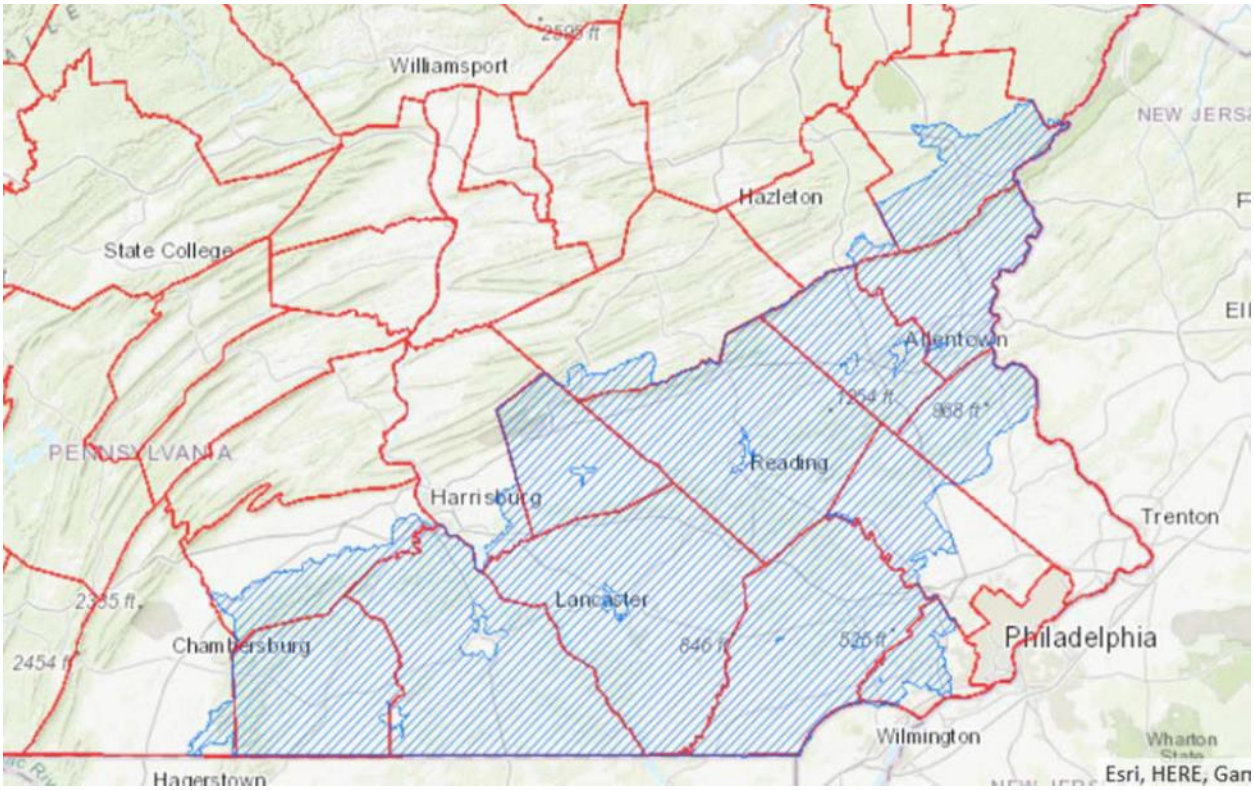

Figure 1. Action Area in southeastern Pennsylvania shade in blue, which corresponds to the range of the bog turtle in Pennsylvania. County and state lines in red. Labelled locations indicate major towns and cities.

4.0 STATUS OF THE SPECIES AND CRITICAL HABITAT

The bog turtle is the smallest member of the genus *Clemmys* (=*Glyptemys*) and one of North America's smallest turtles (Service 2001). They usually occur in small discrete populations occupying suitable wetland habitat dispersed along a watershed. Within a watershed, bog turtles inhabit a variety of wetland types that are generally small, spring/seepage-fed, open-canopy, herbaceous sedge meadows and fens bordered by more thickly vegetated and wooded areas. These areas are primarily used by bog turtles for nesting, basking, and foraging activities, and contain native sedges, grasses, forbs, scattered shrubs, saturated mud/muck-like soils, and contain shallow to deep rivulets/watery trails created by naturally flowing water or by wildlife. However, they utilize more densely vegetated areas for hibernation.

4.1 Status of the Species

Per the ESA section 7 regulations (50 CFR § 402.14(g)(2)), it is the Service's responsibility to "evaluate the current status of the listed species or critical habitat."

The Service listed the northern population of the bog turtle as a threatened species under the ESA on November 4, 1997 (Service 1997); a recovery plan was finalized on May 15, 2001 (Service 2001).

To assess the current status of the species it is helpful to understand the species' conservation needs, which are generally described in terms of reproduction, numbers, and distribution. The Service frequently characterizes reproduction, numbers, and distribution for a given species via the conservation principles of resiliency (ability of species/populations to withstand stochastic events which is measured in metrics such as numbers, growth rates), redundancy (ability of a species to withstand catastrophic events which is measured in metrics such as number of populations and their distribution), and representation (variation/ability of a species to adapt to changing conditions which may include behavioral, morphological, genetics, or other variation), collectively known as the three Rs.

To address reproduction, numbers, and distribution and the three Rs, the Service has developed a recovery program that focuses on addressing the primary threats and maintaining healthy populations across multiple recovery units. The Recovery Plan outlines the following four criteria as targets for delisting:

- Long range protection is secured for at least 185 populations distributed among five recovery units: Prairie Peninsula/Lake Plain Recovery Unit (10 populations), Outer Coastal Plain Recovery Unit (5 populations), Hudson/Housatonic Recovery Unit (40 populations), Susquehanna/Potomac Recovery Unit (50 populations), and Delaware Recovery Unit (80 populations);

- Monitoring at 5-year intervals over a 25-year period shows that these 185 populations are stable or increasing;

- Illicit collection and trade no longer constitute a threat to this species' survival; and

- Long-term habitat dynamics, at all relevant scales, are sufficiently understood to monitor and manage threats to both habitats and turtles, including succession, invasive wetland plants, hydrology, and predation.

The Service developed five recovery units to ensure long-term survival of the species across a range of habitats and genetic variation and these projects are all located in the Delaware West or Susquehanna/Potomac Recovery Units (Figure 2).

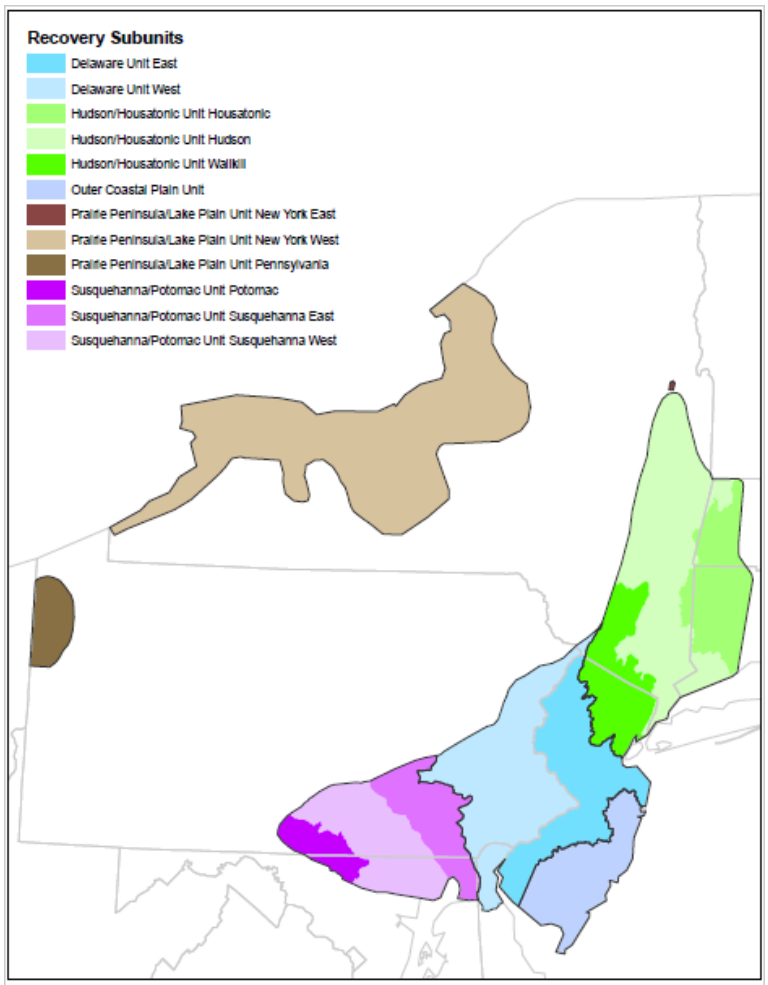

Figure 2. Recovery unit (areas outlined in black) and subunit (see map legend for corresponding colors) map for the northern population of the bog turtle.

The range-wide status of the species is considered stable to increasing based on increased survey efforts that have detected new bog turtle sites and habitat management that has resulted in the creation or expansion of suitable core habitat at many known sites. At the time of listing, the bog turtle was thought to be extant in 191 wetlands in 7 states in the northern range of the species – Connecticut, Delaware, Maryland, Massachusetts, New Jersey, New York, and Pennsylvania. Prior to listing, there were range reductions with populations lost from western Pennsylvania and northern New York. These range reductions resulted in a decline in the redundancy of populations across the northern range, also potentially reducing representation and genetic variation. However, currently there are 461 known extant sites in these states.

Pennsylvania is the only state in the northern range where new populations are continually being discovered, while other states infrequently find new sites. Extant populations in many locations are highly fragmented due to encroachment of residential and commercial development, eliminating connecting corridors to other extant wetlands, as well as habitat alterations due to vegetation succession, hydrology changes, and introduction of invasive species. These populations may generally be considered as having lower resiliency. However, there have been

no discernable range reductions since the time of listing. Instead, as mentioned above, there has been a range expansion since the Federal listing with more than 250 new sites located throughout the northern range. Within the last few years, some new sites have been found in new watersheds. Pennsylvania has seven new sites in new WBDHU12-level watersheds[2].

Tables 5 and 6 provide information for bog turtle populations for each state and Recovery Unit in the northern range, summarizing our understanding of reproduction, numbers, and distribution to date. In the future we will assess overall viability of each population using the Species Status Assessment approach.

Table 5. Bog turtle extant wetland population summary by state (from Regional Bog Turtle Population Viability Ranking Methodology, 2017).

State	No. of Extant Populations	No. of Extant Pops. by Recruitment Condition*	No. of Extant Pops. By Viability Condition†	No. of Extant Pops. w/ Habitat Management‡
Connecticut	4	Good: 3 Fair: 0 Poor: 1	Good: 1 Fair: 2 Poor: 1	0
Delaware	8	Good: 5 Fair: 0 Poor: 3	Good: 2 Fair: 1 Poor: 5	2
Maryland	90	Good: 52 Fair: 31 Poor: 7	Good: 17 Fair: 66 Poor: 7	25
Massachusetts	2	Good: 2 Fair: 0 Poor: 0	Good: 2 Fair: 0 Poor: 0	2
New Jersey	98	Good: 48 Fair: 48 Poor: 2	Good: 27 Fair: 23 Poor: 48	20
New York	66	Good: 30 Fair: 24 Poor: 12	Good: 20 Fair: 12 Poor: 34	16
Pennsylvania	193	Good: 73 Fair: 76 Poor: 44	Good: 25 Fair: 96 Poor: 72	69
Total	**461**	**Good: 213 Fair: 179 Poor: 69**	**Good: 94 Fair: 200 Poor: 167**	**134**

*Per the ranking methodology, "good" means that a population is known to have recruitment. "Fair" means that reproduction is unknown for a population. "Poor" indicates that the population is not reproducing and is not viable without intervention.

[2]See the following link for Watershed Boundary Data for Hydrologic Units (WBDHU): https://nhd.usgs.gov/userGuide/Robohelpfiles/NHD_User_Guide/Feature_Catalog/Watershed_Boundary_Dataset/Watershed_Boundary_Dataset.htm.

† Per the ranking methodology, "good" means that a population is thought to be viable based on current knowledge of the population and assuming that ≥ 16 individuals can maintain a population. "Fair" indicates that a population may be viable. "Poor" means that a population is not likely to be viable without intervention.
‡Habitat management is a tool used to help achieve viability at a site by enhancing or restoring suitable habitat (*e.g.*, removing invasive species and/or woody vegetation) for bog turtles.

Table 6. Bog turtle extant wetland population summary by recovery unit (from Regional Bog Turtle Population Viability Ranking Methodology, 2017).

Recovery Unit	No. of Extant Populations	No. of Extant Pops. by Recruitment Condition*	No. of Extant Pops. By Viability Condition†	No. of Extant Pops. w/ Habitat Management‡
Delaware	213	Good: 86 Fair: 89 Poor: 38	Good: 32 Fair: 85 Poor: 96	61
Hudson-Housatonic	105	Good: 54 Fair: 38 Poor: 13	Good: 36 Fair: 18 Poor: 51	23
Outer Coastal Plain	1	Good: 0 Fair: 1 Poor: 0	Good: 0 Fair: 0 Poor: 1	0
Prairie Peninsula-Lake Plain	5	Good: 2 Fair: 1 Poor: 2	Good: 2 Fair: 2 Poor: 1	4
Susquehanna-Potomac	137	Good: 71 Fair: 50 Poor: 16	Good: 24 Fair: 95 Poor: 18	46
Total	**461**	**Good: 213 Fair: 179 Poor: 69**	**Good: 94 Fair: 200 Poor: 167**	**134**

*Per the ranking methodology, "good" means that a population is known to have recruitment. "Fair" means that reproduction is unknown for a population. "Poor" indicates that the population is not reproducing and is not viable without intervention.
† Per the ranking methodology, "good" means that a population is thought to be viable based on current knowledge of the population and assuming that ≥ 16 individuals can maintain a population. "Fair" indicates that a population may be viable. "Poor" means that a population is not likely to be viable without intervention.
‡Habitat management is a tool used to help achieve viability at a site by enhancing or restoring suitable habitat (*e.g.*, removing invasive species and/or woody vegetation) for bog turtles.

As mentioned above, the greatest threat to the bog turtle is the loss, degradation, and fragmentation of habitat. In addition, vehicle mortality, disease outbreaks, predation, and collection may be impacting various populations. For a more detailed account of the species description, life history, population dynamics, threats, and conservation needs, refer to: https://ecos.fws.gov/ecp0/profile/speciesProfile?spcode=C048.

4.2 Status of the Critical Habitat

No critical habitat for the species has been designated.

5.0 ENVIRONMENTAL BASELINE

Regulations implementing the ESA (50 CFR 402.02) define the environmental baseline as the past and present impacts of all Federal, state, or private actions and other human activities in the action area. Also included in the environmental baseline are the anticipated and/or ongoing impacts of all proposed Federal projects in the action area that have undergone section 7 consultation, and the impacts of state and private actions which are contemporaneous with the consultation in progress.

5.1 Status of the Species within the Action Area

Currently, there are 193 extant bog turtle populations in the action area (from Regional Bog Turtle Population Viability Ranking Methodology, 2017) . In Pennsylvania, these populations are distributed across the Susquehanna/Potomac and the Delaware Recovery Units and make up 42 percent of the species extant populations. The protection and management of bog turtle populations in the action area is imperative to recovery of this species.

The bog turtles within the action area are likely suffering from the same threats identified earlier in this biological opinion, but based on the information provided above, their status is appears to be stable because of 1) improved regulatory mechanisms; 2) habitat protection (i.e., conservation easements); and 3) habitat management that has resulted in the creation or expansion of optimal habitat.

6.0 EFFECTS OF THE ACTION

Direct effects are the direct or immediate effects of the project on the species, its habitat, or designated/proposed critical habitat. Indirect effects are defined as those that are caused by the proposed action and are later in time, but still are reasonably certain to occur (50 CFR 402.02). An interrelated activity is an activity that is part of the proposed action and depends on the proposed action for its justification. An interdependent activity is an activity that has no independent utility apart from the action under consultation. Direct and indirect effects of the proposed action along with the effects of interrelated/interdependent activities are all considered together as the "effects of the action."

To ensure all components of the proposed action are considered in the effects analysis, a comprehensive species/response table was created (Appendix B). The table contains a deconstruction of the proposed action into the sub-activities and structures that have the potential to affect bog turtles through stressors[3] and/or direct interactions[4]. In addition, the table describes the relationships between the sub-activities, stressors, direct interactions, AMMs, and the

[3] A stressor is any physical, chemical, or biological alteration of the environment (i.e., increase, decrease, introduction, or removal) that can lead to an adverse individual response. Stressors act indirectly on a species through impacts to the resources it needs to fulfill its life cycle.

[4] A direct Interaction is the method or means by which an activity, structure, or stressor acts directly upon individuals of a species (in contrast to stressors which act indirectly on individuals by affecting resources used to fulfill aspects of their lifecycle).

resulting effects on individual bog turtles. The following project actions are NLAA bog turtles because the AAMs will ameliorate potential adverse effects as described in Appendix B.

- Programmatic Category 2A actions.
- Programmatic Category 3B actions.
- Transportation actions for which the species has been determined to be absent from the action area through the performance of Phase II/Phase III species surveys approved by the Service.
- Transportation maintenance actions identified as "may affect" in Appendix A that fit into Programmatic Categories 2A, and 3B and follow the AMMs identified in table 3.

Although the majority of actions encompassed in PBO are NLAA bog turtles, the following actions are LAA bog turtles.

- Programmatic Category 1A actions.
- Programmatic Category 1B actions.
- Programmatic Category 2B actions.
- Programmatic Category 3A actions.
- Programmatic Category 4 actions.
- Transportation maintenance actions identified as "may affect" in Appendix A that fit into Programmatic Categories 1A, 1B, 2B, 3A and 4 and follow the AMMs identified in table 3.

A summary of the potential effects of the proposed action are described below

6.1 Direct Effects

Direct effects to bog turtle adults, juveniles, hatchlings and nests/eggs can vary within the transportation programmatic activities. Potential direct effects include:

- Killing/harm/harassment of individuals during transportation activities from crushing, entrapping, smothering and/or injury.
- Harm of individuals due to the temporary or permanent loss/degradation of suitable foraging, basking, escape habitat and hibernaculum habitat.
- Harm/harassment of individuals during transportation activities due to construction-related noise; percussion; vibration; heavy equipment operation; trenching; grading; isolation created by operation of heavy construction equipment; installation, utilization, and removal of erosion and sedimentation pollution control measures; installation, utilization, and removal of temporary access measures including crossing matting and causeway structures; installation, utilization, and removal of temporary species exclusion measures; and utilization of temporary stream diversion and/or bypass dewatering measures.

6.2 Indirect Effects

Indirect effects to bog turtle adults, juveniles, hatchlings and nests/eggs can vary within these transportation programmatic activities. Potential indirect effects include killing/harm/harassment

of individuals following transportation activities due to increased risk for injury/mortality from vehicular collisions, modification of animal behavior, fragmentation of populations and habitat linkages, potential alteration of the supporting physical and chemical habitat environment through hydrologic modifications/nonpoint source runoff, and introduction/spread of invasive and exotic species.

6.3 Interrelated and Interdependent Actions and Activities

Transportation activities can also introduce the potential for interrelated and interdependent project effects. These potential secondary effects are generally more difficult to predict, and are usually less quantifiable than other direct and indirect effects. Secondary impacts of transportation infrastructure improvement activities are typically recognized as necessary public utility relocations, pre-construction geo-technical investigations, off-site staging/storage areas, offsite waste and borrow areas, utilization of temporary detour routes, increased transportation infrastructure usage/maintenance, and land development activities that otherwise would not occur but for the proposed action.

7.0 CUMULATIVE EFFECTS

Cumulative effects are those "effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area" considered in this Opinion (50 CFR 402.02). Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation under section 7 of the ESA.

Non-Federal activities that are reasonably certain to occur in the action area include: residential and commercial development; road construction and maintenance; construction and maintenance of utility infrastructure (e.g., pipelines, power lines, water and sewer lines, telecommunications); resource extraction (e.g., oil and gas, water, minerals); and agricultural activities. These activities may adversely affect the bog turtle populations through 1) loss, degradation, and fragmentation of habitat; 2) degradation of water quality; 3) incidental killing, injury, and disturbance to individuals; and 4) an increased risk of nest predation due to an increase in the prevalence of predators, including dogs, that thrive near human developments.

Many activities that impact streams and wetlands that are the primary habitat of bog turtles require Federal permits from the Corps under the Clean Water Act. Therefore, these potential future actions (State, Tribal, local, and private) that may affect bog turtles will be subject to ESA section 7 (a)(2) consultation.

Patterns and types of land use and development are not expected to dramatically change relative to trends seen over recent decades. Activities that have affected bog turtles and their habitat in recent years are expected to continue relatively unchanged, although various efforts at bog turtle conservation have and will continue to benefit the species (e.g., wetland conservation easements and State and Federal habitat management programs).

Projects as a part of this action are not expected to increase development in the vicinities of this project for residential or commercial use.

8.0 ANALYTICAL FRAMEWORK FOR JEOPARDY DETERMINATION

8.1 Jeopardy Determination

Section 7(a)(2) of the ESA requires that Federal agencies ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of any endangered or threatened species.

8.2 Jeopardy Analysis Framework

"Jeopardize the continued existence of" means to engage in an action that reasonably will be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species (50 CFR 402.02). The following analysis relies on four components: (1) Status of the Species, (2) Environmental Baseline, (3) Effects of the Action, and (4) Cumulative Effects. The jeopardy analysis in this Opinion emphasizes the range-wide survival and recovery needs of the listed species and the role of the action area in providing for those needs. It is within this context that we evaluate the significance of the proposed Federal action, taken together with cumulative effects, for purposes of making the jeopardy determination.

8.3 Analysis for Jeopardy

8.3.1 Effects to Individuals

The proposed action will kill or injure individual bog turtles and cause permanent and temporary impacts to habitat that supports bog turtle breeding, foraging, and hibernating . However, the conservation measures proposed will avoid, minimize or offset most of the potential adverse effects to the bog turtles and the permanent protection and management of occupied bog turtle habitat is expected to provide a conservation benefit. Because this is a programmatic consultation, the extent of the affected individuals cannot be calculated. Therefore, the amount of anticipated take is capped annually (Table 7) to facilitate this analysis.

Table 7. Maximum annual take using habitat loss as a surrogate[1].

Habitat Impacts			
Non-mucky Wetland (Temporary)	**Non-mucky Wetland (Permanent)**	**Mucky Wetland (Temporary)**	**Mucky Wetland (Permanent)**
1-acre	0.25-acre	0.25-acre	0.10-acre

[1] Numbers are based on historic disturbances in wetlands that support bog turtle or wetlands containing potential bog turtle habitat. Historically, the impacts are small, and refers to take in a year's time.

Although there will be adverse effects to individual bog turtles in both their annual survival and reproductive rates, this will be minimized with the planned conservation measures described above.

8.3.2 Effects to Populations

As we have concluded that individual bog turtles are likely to be killed and/or experience some reductions in their annual or lifetime reproductive success, we need to assess the aggregated consequences of the anticipated losses/reductions in fitness (i.e., reproductive success and long- term viability) of the exposed individuals on the population to which these individuals belong.

The majority of the habitat impacts caused by the proposed action will be temporary and the surrounding turtles should colonize the impacted area as it recovers. In addition, mitigating for impacts through the purchase of bog turtle credits from a Service-approved bog turtle conservation bank will enhance the species survival across a broader geographic area and aid in offsetting the adverse impacts associated with the proposed action. Therefore, the effects of the action are not expected to measurably decrease the fitness of this population.

8.3.3 Effects to Species

As we have concluded that populations of bog turtles are unlikely to experience reductions in their fitness, there will be no harmful effects (i.e., there will be no reduction in reproduction, numbers, and distribution) on the species as a whole.

8.4 Conclusion

We considered the current overall status of the bog turtle and the condition of the species within the action area (Environmental Baseline). We then assessed the effects of the proposed action and the potential for cumulative effects in the action area on individuals, populations, and the species as a whole. The effects of the proposed action are considered primary factors influencing the status of the bog turtle; however, we do not anticipate any reductions in the overall reproduction, numbers, and distribution of the bog turtle due to the widely scattered and localized effect and the commitment to avoid and offset the effects. It is the Service's opinion that the action, as proposed, is not likely to jeopardize the continued existence of the bog turtle.

9.0 INCIDENTAL TAKE STATEMENT

Section 9 of the ESA and Federal regulations pursuant to Section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without a special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns including breeding, feeding, or sheltering (50 CFR § 17.3). Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns, which include, but are not limited to, breeding, feeding, or sheltering (50 CFR § 17.3). Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of Section 7(b)(4) and Section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the ESA provided that such taking is in compliance with the terms and conditions of this incidental take statement.

The measures described below are nondiscretionary, and must be undertaken by the FHWA (or PennDOT acting on their behalf) so that they become binding conditions, as appropriate, for the exemption in Section 7(o)(2) to apply. The FHWA/PennDOT has a continuing duty to regulate the activity covered by this incidental take statement. If the FHWA/PennDOT (1) fails to assume and implement the terms and conditions or (2) fails to require the FHWA/PennDOT to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to any permit, construction plan, or grant document, the protective coverage of Section 7(o)(2) may lapse. To monitor the impact of incidental take, the FHWA/PennDOT must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement [50 CFR 402.14(i)(3)].

9.1 Amount or Extent of Take Anticipated

The Service anticipates incidental take of bog turtles will be difficult to detect for the following reason(s): 1) adult individuals of this species are small; 2) juveniles/hatchings of this species are even smaller; and 3) bog turtles are likely to be below the surface of the ground. However, the following level of take can be anticipated by loss of suitable habitat as described in Table 8.

Table 8. Annual Incidental take estimate

Species	Amount of Take Anticipated	Life Stage when Take is Anticipated	Type of Take	Take is Anticipated as a Result of
Bog turtle	All turtles in the 1 acre of non-mucky wetland habitat that will be temporarily impacted	Adults & Juveniles	Harmed or Harassed	Reduced fitness associated with the temporary loss or alteration of foraging and basking habitat.
	All turtles in the 0.25 acres of non-mucky wetland habitat that will be permanently impacted	Adults & Juveniles	Harmed or Harassed	Reduced fitness associated with the permanent loss or alteration of foraging and basking habitat.
	All turtles in the 0.25 acres of mucky wetland habitat that will be temporarily impacted	Adults, Juveniles, Hatchlings, & Eggs	Killed, Harmed, or Harassed	Crushing or smothering; reduced overwinter survival associated with a temporary loos of or alteration of hibernating habitat; Reduced fitness associated with the temporary loss or alteration of foraging and hibernating habitat
	All turtles in the 0.10 acres of mucky wetland habitat that will be permanently impacted	Adults, Juveniles, Hatchlings, & Eggs	Killed, Harmed, or Harassed	Crushing or smothering; reduced overwinter survival associated with a permanent loos of or alteration of hibernating habitat; Reduced fitness associated with the permanent loss or alteration of foraging and hibernating habitat

9.2 Reasonable and Prudent Measures

The Service believes that all reasonable and prudent measures necessary and appropriate to minimize impacts of incidental take of bog turtle have been incorporated into the proposed action as described above.

9.3 Terms and Conditions

In order to be exempt from the prohibitions of Section 9 of the ESA, FHWA/PennDOT must comply with the following terms and conditions, which implement the reasonable and prudent measures described above and outline required reporting/monitoring requirements. These terms and conditions are nondiscretionary.

1. FHWA/PennDOT will implement all avoidance and minimization actions, and measures to offset and monitor take, as described in the PBA.

9.3.1 Monitoring and Reporting Requirements

1. FHWA/PennDOT will provide the Service a project submittal form for every action submitted for inclusion within this programmatic consultation that may affect bog turtles prior to the commencement of the transportation action.

   The standard project submittal form will include the following:

   - describes the proposed action (e.g., type of action, location, involved Federal agencies);
   - verifies that the project is within the scope of the programmatic consultation;
   - provides a quantification of temporary and permanent impacts (e.g., square feet or acres of wetland, linear feet of watercourse channel); and
   - verifies that the action meets the requirement of implementing all applicable AMMs that will avoid, minimize, and/or compensate for the impacts of the action.

2. FHWA/PennDOT will conduct two (1-year and 4-years post-construction) mark/ recapture surveys (using a qualified bog turtle surveyor) on all bog turtle wetlands with impacts (both temporary and permanent) to hibernating habitat following a Service-approved protocol. The surveys will assess the extent of bog turtle reestablishment in the areas of impact and the overall status of the bog turtle population in the wetlands. The survey report will be submitted to the Service within 30 days of the survey being completed.

3. FHWA/PennDOT will conduct vegetation monitoring of impacted bog turtle wetlands (known sites and sites with assumed bog turtle presence) annually for a minimum of 3 years post-construction. FHWA/PennDOT will provide annual reports to the Service, including written and photo documentation of the site. The report will document the progression of revegetation, noting the types and densities of native and exotic plant species present. The presence of invasive species and/or non- native species within the site will be documented during each vegetation monitoring event. If invasive plants

and/or non-native species are found within the former construction area, the applicant will prepare a proposal to implement an invasive species

control plan in coordination with the Service.

4. FHWA/PennDOT will generate an annual report for the Service, in addition to conducting an annual program review with the Service. This report will summarize program activities and any "incidental take" for the reporting year and any information that may inform potential effect assumptions, and implementation of conservation measures. The annual review will serve as the regular forum for all parties to discuss program changes and the need for reinitiation of consultation.

5. If a dead bog turtle is found, the individual(s) should be flash frozen on dry ice to preserve biological materials in the best possible state for later analysis. The individual should then be held in a freezer until it can be transferred to the Service. In conjunction with the care of injured endangered or threatened species or preservation of biological materials from a dead animal, the finder has the responsibility to ensure that evidence associated with the specimen is not unnecessarily disturbed. The Service is to be notified within one (1) calendar day upon locating a dead or injured bog turtle. Initial notification must be made to the nearest Service Office of Law Enforcement, at (717) 221-4425, then the Pennsylvania Ecological Services Field Office, at (814)234-4090. Notification must include the date, time, precise location of the injured animal or carcass, and any other pertinent information, including age, sex, and reproductive condition of the individual(s). Formal written notification also must be submitted.

10.0 CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the ESA directs Federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of endangered and threatened species Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

- Identify locations with chronic transportation maintenance issues throughout the action area associated with inadequate or improper roadway drainage/crossing features. Develop permanent corrective actions to remedy these issues and facilitate bog turtle movement.
- Where feasible and safe to roadway users, construct permanent curbing or some other type of protective barrier around roadway culvert/bridge crossings of occupied species habitat to minimize roadway mortality.
- During the design and implementation of culvert and bridge improvement projects, utilize stream restoration measures that restore and facilitate the use of potential travel corridors near occupied habitat.
- Maintain open passage corridors through the removal or improvement of impediments that result in flooding events. Remedial actions include upgrading existing culvert crossings to clear span structures along existing travel corridors between occupied species habitats.

For the Service to be kept informed of actions minimizing or avoiding adverse effects or benefitting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

11.0 REINITIATION NOTICE

This concludes formal consultation on the actions outlined in request. As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this Opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this Opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

12.0 LITERATURE CITED

PennDOT, October 2013. Revised Threatened and Endangered Species Desk Reference. Publication No. 546. Harrisburg, Pennsylvania.

United States Fish and Wildlife Service. 1997. Final Rule to List the Northern Population of the bog turtle as threatened and the southern population as threatened due to similarity of appearance. Federal Register 62 CFR 59605-59623. November 4, 1997

United States Fish and Wildlife Service. 2001. Bog turtle (*Clemmys muhlenbergii*) Northern Population Recovery Plan (62 FR 59611). Hadley, Massachusetts.

Williams, B.K., and E.D. Brown. 2012. Adaptive Management: The U.S. Department of the Interior Applications Guide. Adaptive Management Working Group, U.S. Department of the Interior, Washington, DC. 136pp.

13.0 CONSULTATION HISTORY

January 23, 2003 The Service provided a review of roadway maintenance activities that may affect the bog turtle if conducted in, or near, occupied habitat. This consultation resulted in the concurrence that many routine maintenance activities that are conducted within the existing roadway corridor will not affect the species. However, activities that could ultimately affect wetland hydrology, migration corridors, and wetland habitat quality/characteristics either directly or indirectly were determined to potentially affect the species.

June 6, 2017 PennDOT conducts a conference call with the Service to discuss the preliminary concept of a formal programmatic consultation process for transportation actions relating to the bog turtle.

October 13, 2017 PennDOT provides Draft Programmatic Biological Assessment to FHWA, PennDOT Districts, PFBC, and the Service for review and comment.

November 2, 2017 The Service provides review comments to PennDOT on Draft Programmatic Biological Assessment.

January 11, 2018 PennDOT conducts a conference call with PennDOT Districts 5-0, 6-0 and 8-0, FHWA, SFWS, and PFBC to review comments, responses and revisions to the Draft BA.

March 14, 2018 FHWA requests Formal Consultation on the *Programmatic Biological Assessment for the Effects of Transportation Actions on the Bog Turtle within the Commonwealth of Pennsylvania*.

April 2, 2018 PennDOT conducts a conference call updating the Service and summarizing the Biological Assessment.

April 11, 2018 PennDOT conducts conference call to clarify specific questions from the Service.

April 16, 2018 The Service issues a letter to FHWA acknowledging receipt of the request for formal section 7 consultation and stated sufficient information was provided.

April 16, 2018 The Service submits additional questions to PennDOT.

April 17, 2018 A BA amendment is submitted to the Service in response to the questions.

Nov. 21, 2018 Programmatic Biological Opinion signed and delivered to PennDOT and FHWA

14.0 ACRONYMS

FHWA	Federal Highway Administration
BA	Biological Assessment and Programmatic Biological Assessment
AAH	Adopt-A-Highway Program
A-JACKS	A commercially made concrete product used for scour protection at bridge piers and on channel banks having large interstitial spaces allowing for vegetation to better take root in a more natural state to protect against erosion.
AMM	Avoidance and Minimization Measure
BO	Biological Opinion
BST	bituminous surface treatment
EPA	United States Environmental Protection Agency
EPDS	PennDOT Environmental Policy and Project Development Section
ESA	Endangered Species Act
FAST	Fixing America's Surface Transportation Act of 2015
FEMA	Federal Emergency Management Agency
GPC	Great Pennsylvania Clean-up Program
HDD	horizontal directional drilling
HMA	hot mix asphalt
IPaC	Information for Planning and Consultation System
LAA	Likely to Adversely Affect
LOD	Limit of Disturbance
NEPA	National Environmental Policy Act
NLAA	Not Likely to Adversely Affect
NLEB	Northern Long-eared Bat
NPDES	National Pollution Discharge Elimination System
OHWM	Ordinary High Water Mark
PADEP	Pennsylvania Department of Environmental Protection
PBA	Programmatic Biological Assessment
PBO	Programmatic Biological Opinion
PCCP	Portland Cement Concrete Paving
PennDOT	Pennsylvania Department of Transportation
PFBC	Pennsylvania Fish and Boat Commission
PNDI	Pennsylvania Natural Diversity Inventory
PSF	Project Submittal Form
PSI	Pounds per square inch
QA/QC	Quality Assurance/Quality Control
RU	Recovery Unit
SPCC	Spill Prevention Control and Countermeasure Plan
SU	Subunit
USACE	U.S. Army Corps of Engineers
Service	U.S. Fish and Wildlife Service

15.0 DEFINITIONS

Foraging Habitat–Wetlands that lack both persistent groundwater discharge and depth of mucky soils substrate. Areas that are utilized to feed, breed, shelter.

Hibernacula Microhabitat/Core Habitat–Wetlands that have persistent groundwater flow through the hibernating season. Essential for survival of bog turtles through the winter months.

Temporary Impact–An impact that is not permanent – Temporary crossing matting for equipment, erosion and sedimentation controls, flow diversions, and exclusionary barriers.

Potential Habitat–Wetlands that have the characteristics associated with bog turtles (persistent groundwater flow and mucky soils) but has not been surveyed to the species nor is connected to a known site.

Compensatory Mitigation–Purchase of a land parcel or easement to off-set impacts to bog turtles.

Time of Year Restriction–A restriction of time that work can be completed. There are two restrictions; Active season (April 1 to October 31) and Inactive season (November 1 to March 31).

Exclusionary Barriers–Barriers to keep bog turtles from entering the construction area, typically super-silt fence.

Appendix A

Maintenance Assemblies Effect Determinations for the Bog Turtle

CODE[5]	BRIEF DESCRIPTION	DETAILED DESCRIPTION	EFFECT DETERMINATION
711-7112-01	**Shaping**	Shaping operations, such as scarifying, grading and shaping, and compacting on long sections of unpaved roads to restore cross section, or eliminate corrugations and potholes. This may include a ditch or drainage channel with an excavator taking care to cut ditch/channel to original contour by removing only debris or deposited material.	**MAY AFFECT[6]**
711-7113-01	**Restabilization**	The application of stabilization material to long sections of unpaved roads, such as adding, shaping and compacting stabilizing material. Fine material may be graded up from the ditch and blended with the added material to improve compaction.	**MAY AFFECT[2]**
711-7114-01	**Dust Palliative - Bit./ Calcium Chloride/Other Product**	The placing of bituminous or calcium chloride materials on unpaved roads to prevent dust formation including spot treatments.	**NO EFFECT**
711-7115-01	**Patch/Base Repair**	Repairing potholes, isolated depressions, etc. on unpaved roads.	**NO EFFECT**
711-7136-01	**Pavement Widening BCBC Mechanized**	The widening of paved roadways such as scarifying, shaping and/or removing existing material, the addition of bituminous concrete base course (BCBC) shaping and compacting. The widening shall consist of a minimum of 2 feet. If both sides of the roadway are to be widened, it shall consist of a minimum of 2 feet on each side.	**MAY AFFECT[2]**
711-7137-01	**Pavement Widening Recycled Material – Mechanical**	The widening of paved roadways such as scarifying, shaping, and/or removing existing material, the addition of recycled material, shaping and compacting. The existing paved roadway width shall be 18 feet or less and the widening shall consist of a minimum of 2 feet. If both sides of the roadway are to be widened, it shall consist of a minimum of 2 feet on each side.	**MAY AFFECT[2]**
711-7151-01	**Minor Risk Management/Safety**	Completion of minor risk management/safety improvement projects. This includes designated, site-specific activities such as brushing, bank cutting/shaping, radius improvement, guiderail, etc. coordinated through the District traffic unit or the district risk engineer/specialist.	**MAY AFFECT[2]**
711-7113-01	**Dust Palliative - Bit./ Calcium Chloride/Other Product**	Spot application of dust palliatives on unpaved roads to prevent dust formation.	**NO EFFECT**
711-7115-01	**Patch/Base Repair**	Repairing potholes, isolated depressions, etc. on paved roads.	**NO EFFECT**
711-7121-01	**Patching - Manual**	This activity includes all actions to manual patching operations, such as, preparing (milling is included) and sweeping the hole, tacking (hot mix only), manually placing bituminous patching material, and compaction on paved roads.	**NO EFFECT**
711-7121-02	**Patching – Manual (Emergency)**	Manual patching using emergency repair patching procedures such as filling and compacting.	**NO EFFECT**
711-7121-03	**Patching – Manual – Pipe Trenches**	The manual placing of a bituminous course over a pipe.	**NO EFFECT**

[5] Same description of activity regardless of the first three numbers indicated – program code may also be 612, 618, 621, 663, 712, 713, or 714

[6] If conducted in or near wetlands occupied or assumed to be occupied by bog turtles

CODE[5]	BRIEF DESCRIPTION	DETAILED DESCRIPTION	EFFECT DETERMINATION
711-7121-04	**Patching – Layered – Including Patch Machine**	Pothole repair spray patching operations such as removing weakened material, cleaning, application of liquid bituminous and aggregate on paved road including rigid pavement.	**NO EFFECT**
711-7122-01	**Patching – Mechanical – Tow Paver**	Mechanical patching operations of limited areas (less than 500 feet continuous, 1300 linear feet per mile or 1750 square yards per lane mile), such as application of tack coat, placing hot plant mix material with paver and compaction on paved roads.	**NO EFFECT**
711-7122-02	**Patching – Mechanical – Mixer Paver**	Mechanical patching operations of a limited area (less than 500 feet continuous, 1300 linear feet per mile, or 1750 square yards per lane mile) using a mixer paver to place a layer of liquid bituminous and aggregate blended mix on paved roads.	**NO EFFECT**
711-7122-03	**Patching – Mechanical – Paver Finisher**	Mechanical patching operations of limited areas (less than 500 feet continuous, 1300 linear feet per mile, or 1750 square yards per lane mile); such as application of tack coat, placing hot plant mix material with a paver finisher and compaction on paved roads.	**NO EFFECT**
711-7122-04	**Patching – Edge – Mechanical**	Mechanized edge patching to repair extensive deterioration and re-establishment of roadway width over existing base, including cleaning, placement of tack coat, placement of hot plant bituminous mix, shaping and compacting. The re-established pavement width shall be equal to the roadway width as recorded in the straight-line diagram or the width of the base material as indicated by field conditions.	**NO EFFECT**
711-7123-01	**Surface Treatment – Mixer Paver**	The placing of a uniform, full width 1" (90-110 lbs. per square yard) fb application with a mixer paver; such as sweeping, applying mix to road surface and compaction on paved roads.	**NO EFFECT**
711-7123-09	**Surface Treatment – Mixer Paver – Pre-Hauling**	Stockpiling (hauling) aggregate prior to mix paver operations.	**NO EFFECT**
711-7124-01	**Surface Treatment – Liquid Bituminous Mechanical**	Liquid bituminous surface treatment operations such as sweeping, application of liquid bituminous material and placing and seating the cover aggregate on paved roads. The sweeping and cleaning of the road prior to the surface treatment, such as cleaning up aggregate, re-application of aggregate made necessary by bleeding, etc., should be charged to this code.	**NO EFFECT**
711-7124-02	**Surface Treatment – Sand Bleeding Roads**	Placing sand and/or appropriate aggregates on roads flushing/ bleeding due to liquid bituminous operations including mechanized skin patching operations.	**NO EFFECT**
711-7124-03	**Surface Treatment – Slurry Seal and Ralumac and Nova Chip**	The application of slurry seal, ralumac, or nova chip surface treatments.	**NO EFFECT**
711-7124-04	**Surface Treatment – Liquid Bituminous – Seal Coat – Double Application**	The application of liquid bituminous immediately followed by the rolling in of course aggregates repeated twice to result in a double application of each material.	**NO EFFECT**
711-7124-09	**Surface Treatment – Liquid Bituminous – Pre-Hauling**	Stockpiling (hauling) costs for surface treatment/seal coat operations where excess aggregate is stored for future use.	**NO EFFECT**
711-7126-01	**Base/Subbase Repair – Flex. Base – Light Duty**	Base/subbase repair operations, such as removal of surface and base/subbase material, placing of u-drains and bleeders, adding new material and compaction on pie crust (pancake) and light duty roads. Pie crust is defined as a roadway with less than two (2) inches total depth of bituminous surface including surface treatment build up.	**NO EFFECT**
711-7126-02	**Base/Subbase Repair – Flex. Base – Heavy Duty**	Base/subbase repair operations, such as removal of surface and base/subbase material, placing drains and bleeders, new material, and compaction on flexible base (heavy duty) roads.	**NO EFFECT**

CODE[5]	BRIEF DESCRIPTION	DETAILED DESCRIPTION	EFFECT DETERMINATION
711-7126-03	**Base/Subbase Repair – Rigid Base**	Base/subbase repair operations, such as removal of surface and base/subbase material, placing of drainage, new material, and compaction.	**NO EFFECT**
711-7126-04	**Base/Subbase Repair – Widener**	High productivity base/subbase repair operations utilizing a milling machine and a mechanized widener such as removal of surface material with a milling machine, adding bituminous base/subbase material with a widener and compaction.	**NO EFFECT**
711-7127-01	**Skin Patch – Liquid Bituminous – Manual**	Liquid bituminous skin patching operations, such as sweeping, manual application of liquid bituminous material using a heating kettle, manually spreading cover aggregate and rolling on paved roads.	**NO EFFECT**
711-7127-02	**Skin Patch – Liquid Bituminous – Mechanical**	Mechanized liquid bituminous skin patching of limited areas such as sweeping, application of liquid bituminous material and placing and seating the cover aggregate on paved roads.	**NO EFFECT**
711-7127-03	**Skin Patch – Liq. Bit. Manual – Dist. and Spray Wand**	Liquid bituminous skin patching operations, such as sweeping, application of liquid bituminous material using a distributor with spray wand, manually spreading cover aggregate and rolling on paved roads.	**NO EFFECT**
711-7128-01	**Crack Sealing – Bituminous Surface Lane**	Crack sealing bituminous surfaces with pre-packaged material in a non-over-banding operation. Activity includes routing of cracks where required (working transverse and single random cracks), cleaning of cracks, applying material, and squeegeeing on rigid or flexible base roads.	**NO EFFECT**
711-7131-01	**Leveling – Tow Pav./ Pav. Finish – Mechanical**	Applying a leveling course to re-establish the roadway cross section using a paver finisher or tow paver in excess of 500' continuous length.	**NO EFFECT**
711-7131-02	**Leveling – Mixer Paver – Mechanical**	Applying a leveling course to re-establish the roadway cross section using a mixer paver to place a layer of liquid bituminous and aggregate blended mix (fb-1 or fb-2) in excess of 500' continuous length.	**NO EFFECT**
711-7131-03	**Leveling Course > 2" – Binder Finish Paver Mechanized**	The application of a plant mixed leveling course, used to re-establish the roadway cross section, using a paver finisher over an existing paved road.	**NO EFFECT**
711-7131-09	**Leveling – Mixer Paver – Pre-Hauling**	Stockpiling (hauling) costs for a mixer paver leveling course prior to actually performing the work.	**NO EFFECT**
711-7132-01	**Milling – Bituminous Surfaces**	Pavement milling such as removing material, loading material and clean up on paved surfaces.	**NO EFFECT**
711-7132-02	**Spot Milling Only**	Spot pavement milling such as blow up removal, loading material and clean up on paved surfaces.	**NO EFFECT**
711-7133-01	**Recycling – Bituminous Surfaces**	Pavement recycling such as removing material, adding asphalt, placing mat and compaction on paved surfaces.	**NO EFFECT**
711-7134-01	**Slurry Seal and Ralumac**	The contract application of slurry seal or ralumac material.	**NO EFFECT**
711-7135-01	**Surface Treatment – Plant Mix – Paver 1½**	The application of a uniform 1½" bituminous paving operation, application of a tack coat, cutting pavement notches, placing of hot mix with bituminous paver finisher and compaction on paved roads in excess of 500 feet continuous length.	**NO EFFECT**
711-7135-02	**Surface Treatment – Plant Mix ID3**	The application of a id-3 bituminous paving operation such as sweeping, application of tack coast, cutting pavement notches, placing of hot mix with a bituminous paver finisher and compaction on paved roads in excess of 500 feet continuous length.	**NO EFFECT**
711-7141-01	**Concrete Patching – Full Depth**	The full depth patching/replacement with concrete on rigid pavements.	**NO EFFECT**
711-7141-02	**Concrete Patching – Spalls**	The partial depth patching (spall repair) with concrete on rigid pavements.	**NO EFFECT**
711-7147-01	**Joint Sealing Concrete Roads Lane**	Joint sealing operations on rigid pavements only.	**NO EFFECT**

CODE[5]	BRIEF DESCRIPTION	DETAILED DESCRIPTION	EFFECT DETERMINATION
711-7147-02	**Joint Sealing Concrete Rds. – Pavement/ Shoulders Separation Lane**	Sealing the separated area located immediately adjacent to a concrete highway and bituminous shoulder.	**NO EFFECT**
711-7148-01	**Stockpile Aggregate**	Account code only – no on ground activity.	**NO EFFECT**
711-7212-01	**Grading - Mechanical**	Grading operations, such as grading, shaping, and compacting of unpaved shoulder and side approaches. This is one of our most important preventative maintenance functions. Properly sloped and maintained shoulders aid in the quick removal of surface water from the roadway into the drainage system. Incidental material may be added or removed. If the ditch line adjacent to the effective shoulder area is cut, this should be charged to 711-7312-01 ditch cleaning.	**MAY AFFECT[2]**
711-7213-01	**Stabilization – Add Material Mechanical**	The application, shaping and compaction of stabilizing material over long portions of the shoulder. This type of operation is typically performed after a roadway has been resurfaced and the shoulder elevation needs to be adjusted to meet the new pavement grade.	**NO EFFECT**
711-7214-01	**Dust Palliative Bituminous or Calcium Chloride**	The application of a bituminous, calcium chloride material, or other dust palliatives on the surface of a properly graded, stabilized or earth shoulder to increase stability.	**NO EFFECT**
711-7215-01	**Cutting – Belt Loader**	The cutting of unpaved shoulders utilizing a belt loader including grading, shaping, adding material, compacting, and hauling away excess material from earth shoulders and cutting and hauling of turf from areas adjacent to paved shoulders.	**MAY AFFECT[2]**
711-7215-02	**Cutting – Front End Loader**	The cutting of unpaved shoulders utilizing a front-end loader including grading, shaping, adding material, compacting, and hauling away excess material from earth shoulders and cutting and hauling of turf from areas adjacent to paved shoulders.	**MAY AFFECT[2]**
711-7216-01	**Upgrading – Paving Mechanized**	The upgrading of unpaved shoulders to paved shoulders, such as scarifying, shaping and/or removing existing material, the addition of new material, shaping and compacting. This action is intended to reduce or eliminate shoulder erosion caused by high water velocities on unpaved surfaces. The grading of shoulders shall be confined to areas where shoulder erosion problems exist.	**MAY AFFECT[2]**
711-7217-01	**Stabilization – Add Material Manual**	The application, shaping and compaction of stabilizing material over short sections of unpaved shoulders, due to washouts or pavement edge drop-offs at the inside of curves, intersections or other locations.	**NO EFFECT**
711-7221-01	**Patching – Manual**	This activity includes all actions related to manual patching operations on unpaved shoulders.	**NO EFFECT**
711-7222-01	**Patching – Mechanical – Plant Mix**	This activity includes all actions related to mechanized patching operations on unpaved shoulders and side approaches.	**NO EFFECT**
711-7222-02	**Surface Treatment – Pant Mix**	This activity includes all actions related to mechanized shoulder paving on unpaved shoulders and side approaches.	**NO EFFECT**
711-7224-01	**Surface treatment – Mechanical – Liquid Bituminous**	This activity includes all actions related to liquid bituminous surface treatment operations on unpaved shoulders and side approaches.	**NO EFFECT**
711-7224-09	**Surface Treatment – Liquid Bituminous – Pre-Hauling**	Account code only – no on ground activity.	**NO EFFECT**
711-7225-01	**Driveway Adjustment**	This activity includes all actions related to driveway repairs required by paving and/or shoulder operations, such as, installing pipe, reworking the grade, etc.	**NO EFFECT**

CODE[5]	BRIEF DESCRIPTION	DETAILED DESCRIPTION	EFFECT DETERMINATION
711-7226-01	**Base/Subbase Repair – Light Duty**	This activity includes all actions related to base/subbase repair operations such as removal of surface and base/subbase material, placing of U-drains and bleeders, adding new material and compactions on light duty shoulders.	**NO EFFECT**
711-7226-02	**Base/Subbase Repair – Heavy Duty**	This activity includes all actions related to base/subbase repair operations, such as removal of surface and base/subbase material, placing drainage, new material, and compaction on heavy duty shoulders.	**NO EFFECT**
711-7227-01	**Skin Patching – Manual – Liquid Bituminous**	This activity includes all actions related to liquid bituminous skin patching operations on unpaved shoulders.	**NO EFFECT**
711-7227-02	**Skin Patching – Mechanical – Liquid Bituminous**	This activity includes all actions related to mechanized liquid bituminous skin patching on unpaved shoulders.	**NO EFFECT**
711-7227-03	**Skin Patching – Mech. – Liq. Bit. – Distr. and Spray Wand**	This activity includes all actions related to liquid bituminous skin patching operations on unpaved shoulder.	**NO EFFECT**
711-7227-09	**Skin Patching – Pre-Hauling**	Account code only – no on ground activity.	**NO EFFECT**
711-7232-01	**Milling**	This activity includes all actions related to unpaved shoulder milling such as removing material, loading material and cleanup on unpaved surfaces.	**NO EFFECT**
711-7233-01	**Recycling**	This activity includes all actions related to pavement recycling such as removing material, adding asphalt, placing mat and compaction on unpaved surfaces.	**NO EFFECT**
711-7213-01	**Stabilization – Add Material Mechanical**	The application, shaping and compaction of stabilizing material over short sections of unpaved shoulders, due to washouts or pavement edge drop-offs at the inside of curves, intersections or other locations.	**NO EFFECT**
711-7213-09	**Stabilization – Pre-Hauling**	Account code only – no on ground activity.	**NO EFFECT**
711-7214-01	**Dust Palliative Bituminous or Calcium Chloride**	The application of a bituminous, calcium chloride material, or other dust palliatives on the surface of a properly graded, stabilized or earth shoulder to increase stability.	**NO EFFECT**
711-7217-01	**Stabilization – Add Material – Manual**	The application, shaping and compaction of stabilizing material over short sections of unpaved shoulders, due to washouts or pavement edge drop-offs at the inside of curves, intersections or other locations.	**NO EFFECT**
711-7221-01	**Patching – Manual**	This activity includes all actions related to manual patching operations on paved shoulders.	**NO EFFECT**
711-7222-01	**Patching – Mechanical – Plant Mix**	This activity includes all actions related to mechanized patching operations on paved shoulders and side approaches.	**NO EFFECT**
711-7222-02	**Surface Treatment – Pant Mix**	This activity includes all actions related to mechanized shoulder paving on paved shoulders and side approaches.	**NO EFFECT**
711-7224-01	**Surface treatment – Mechanical – Liquid Bituminous**	This activity includes all actions related to liquid bituminous surface treatment operations on paved shoulders and side approaches.	**NO EFFECT**
711-7224-09	**Surface Treatment – Liquid Bituminous – Pre-Hauling**	Account code only – no on ground activity.	**NO EFFECT**
711-7225-01	**Driveway Adjustment**	This activity includes all actions related to driveway repairs required by paving and/or shoulder operations, such as, installing pipe, reworking the grade, etc.	**NO EFFECT**
711-7226-01	**Base/Subbase Repair – Light Duty**	This activity includes all actions related to base/subbase repair operations such as removal of surface and base/subbase material, placing of U-drains and bleeders, adding new material and compactions on light duty shoulders.	**NO EFFECT**

CODE[5]	BRIEF DESCRIPTION	DETAILED DESCRIPTION	EFFECT DETERMINATION
711-7226-02	**Base/Subbase Repair – Heavy Duty**	This activity includes all actions related to base/subbase repair operations, such as removal of surface and base/subbase material, placing drainage, new material, and compaction on heavy duty shoulders.	**NO EFFECT**
711-7227-01	**Skin Patching – Manual – Liquid Bituminous**	This activity includes all actions related to liquid bituminous skin patching operations on paved shoulders.	**NO EFFECT**
711-7227-02	**Skin Patching – Mechanical – Liquid Bituminous**	This activity includes all actions related to mechanized liquid bituminous skin patching on paved shoulders.	**NO EFFECT**
711-7227-03	**Skin Patching – Mech. – Liq. Bit. – Distr. and Spray Wand**	This activity includes all actions related to liquid bituminous skin patching operations on paved shoulder.	**NO EFFECT**
711-7227-09	**Skin Patching – Pre-Hauling**	Account code only – no on ground activity.	**NO EFFECT**
711-7232-01	**Milling**	This activity includes all actions related to unpaved shoulder milling such as removing material, loading material and cleanup on paved surfaces.	**NO EFFECT**
711-7233-01	**Recycling**	This activity includes all actions related to pavement recycling such as removing material, adding asphalt, placing mat and compaction on paved surfaces.	**NO EFFECT**
711-7311-01	**Cleaning – Inlet/ Endwall/Basin – Manual/Mechanical**	Cleaning inlets and endwalls such as removal and disposal of material. Normally, if the activity is just cleaning inlets and endwalls all cleaning operations performed in the ditch channel within 15 feet of the pipe opening and one shovel length into the pipe will be charged to this code.	**MAY AFFECT[2]**
711-7311-02	**Cleaning – Inlet Clogged**	Cleaning inlets and endwalls such as removal and disposal of material. Normally, if the activity is just cleaning inlets and endwalls all cleaning operations performed in the ditch channel within 15 feet of the pipe opening and one shovel length into the pipe will be charged to this code.	**MAY AFFECT[2]**
711-7312-01	**Cleaning – Ditch/Drain Chan. Mech.**	Mechanized cleaning and reshaping of ditches and drainage channels, such as removal and disposal of material. Ditches and drainage channels should provide an obstruction free flow of surface water away from and parallel to the roadway.	**MAY AFFECT[2]**
711-7312-02	**Cleaning – Ditch/Drain Chan. Manual**	Cleaning flow lines (swales), such as removal and disposal of material. The cleaning of flow lines on unpaved roads is also charged to this activity.	**MAY AFFECT[2]**
711-7312-03	**Cleaning – Swales – Mech.**	Cleaning flow lines (swales), such as removal and disposal of material. The cleaning of flow lines on unpaved roads is also charged to this activity.	**MAY AFFECT[2]**
711-7314-01	**Cleaning Pipes and Culverts**	The mechanical cleaning of pipes and culverts and the removal and disposal of material. The flushing of pipes and culverts is accomplished by using a high velocity sewer cleaner, sewer odor or cable unit. Inlet and outlet ditches must be cleaned before the pipe cleaner arrives at the work site and charged to "ditch cleaning".	**MAY AFFECT[2]**
711-7315-01	**Install Rock Lining**	The installation of rock lining in drainage ditches.	**MAY AFFECT[2]**
711-7321-01	**Replace Inlet and Endwall – Manual**	The repair or replacement of inlets and endwalls such as removing old material, excavating area, construction of forms, pouring of concrete or appropriate material.	**MAY AFFECT[2]**
711-7324-01	**Replace Pipes and Culverts under 36 inches – Mech.**	The replacement/installation of pipes and culverts less than 36 inches in diameter, such as cutting/sawing pavement, excavation of trench, installing pipe, backfilling, and compaction.	**MAY AFFECT[2]**

CODE[5]	BRIEF DESCRIPTION	DETAILED DESCRIPTION	EFFECT DETERMINATION
711-7324-02	**Replace Pipes and Culverts over 36 inches– Mech.**	The replacement/installation of pipes and culverts 36" and greater in diameter, such as cutting/sawing pavement, excavation of trench, installing pipe, backfilling, compacting, and installation of flared end sections or construction of field stone end walls.	**MAY AFFECT[2]**
711-7324-03	**Replace/Install Parallel Pipe**	The replacement/installation of parallel pipes such as saw cutting shoulder, excavation of trench, installation of pipe, backfilling and compacting.	**MAY AFFECT[2]**
711-7324-04	**Drainage – Replacement/Installation Pipes Extension Only**	This assembly is all actions related to the extension of existing pipe installation.	**MAY AFFECT[2]**
711-7324-05	**Drainage – Pipe Trenches Trench Restoration Manual**	This assembly is the placing of bituminous surface/base course after a pipe replacement.	**NO EFFECT**
711-7325-01	**Repair/Replace Structure under 8-foot Length**	The repair or replacement of a masonry, concrete, or wood structure (arch culvert, box culvert, slab or wood deck structure, masonry structure, etc.) under 8 feet in length which cannot be charged to activity 711-7324 pip or metal culver replacements.	**MAY AFFECT[2]**
711-7326-01	**Repair Pipe and Culvert**	The repair of pipes and culverts such as installing a pipe liner, patching a pipe, replacing a small end section, etc.	**MAY AFFECT[2]**
711-7328-01	**Install Subsurface Drain (U-Drain)**	The installation of subsurface drains (u-drain).	**MAY AFFECT[2]**
711-7324-09	**Replace Pipes and Culverts – Pre-Hauling**	Account code only – no on ground activity.	**NO AFFECT**
711-7332-01	**Repair/Install Gabions/ Ret. Walls**	The Installation or repair of gabions and retaining walls including the removal of material, shoring and building supports, etc.	**MAY AFFECT[2]**
711-7333-01	**Repair Sink Holes/Slides**	All actions related to roadway restoration including the removal and disposal of debris from slides, repair of cuts and fills, dressing slopes and washouts, bench cleaning, repair of sink holes, etc.	**MAY AFFECT[2]**
711-7331-01	**Side Dozing – Mechanical**	The removal of accumulated material from beneath guiderail such as: side dozing of vegetation and soil buildup and manually shoveling embankment if stroke of side dozer is insufficient; or manually filling of small washouts along the job course.	**NO EFFECT**
711-7334-01	**Graffiti Removal**	The covering (painting) or removal of graffiti form any department facilities.	**NO EFFECT**
711-7351-01	**Rain or Wind Patrol**	Patrolling of roadways and minor debris removal during the storm event including the evaluation of drainage and erosion control facilities for potential hazards to the motoring public. Includes cleaning minor surface debris from drains and roadway, removing fallen trees and branches from the traveled way and any other actions required as a result of the storm. Does not include any drain cleaning which requires the removal and disposal of material other than minor surface debris.	**NO EFFECT**
711-7425-01	**Repair/Replace – Bridge over Eight-Foot Length**	Work area includes the entire structure including footings, abutments, wingwalls, superstructure, and deck. Also, any incidental roadway approach work.	**MAY AFFECT[2]**
711-7432-02	**Painting - Full**	Generally, run through full permitting process.	**MAY AFFECT[2]**
711-7446-01	**Repair/Replace – Superstructure Member**	This activity may involve temporary piers, jacks or other supports beneath the bridge.	**MAY AFFECT[2]**
711-7447-01	**Repair/Replace – Truss Member**	This activity may involve temporary supports beneath the bridge.	**MAY AFFECT[2]**
711-7448-01	**Repair/Replace Backwalls**	These activities may involve extensive ground disturbance.	**MAY AFFECT[2]**
711-7448-02	**Replace/Repair Substructure**		**MAY AFFECT[2]**

CODE[5]	BRIEF DESCRIPTION	DETAILED DESCRIPTION	EFFECT DETERMINATION
711-7448-03	**Maintenance – Underpinning**		**MAY AFFECT**
711-7450-01	**Maintenance – Repointing**	Masonry repair is often done by hand but may involve removal of riprap or other protective material, cofferdams, or excavation to access bridge substructure.	**MAY AFFECT[2]**
711-7451-01	**Repair/Replace Slopewalls**	May require excavation and instream/in wetland activity.	**MAY AFFECT[2]**
711-7452-01	**Repair/Replace – Culverts**		**MAY AFFECT[2]**
711-7453-01	**Erosion Protection – Stream Bed/Rock/ Deflector**		**MAY AFFECT[2]**
711-7453-03	**Erosion Protection – Culverts**		**MAY AFFECT[2]**
711-7454-01	**Const./Install – Temporary Supports**		**MAY AFFECT[2]**
711-7455-01	**Repair/Replace Slabs/ Box Culvert**		**MAY AFFECT[2]**
711-7431-01	**Cleaning/Flush Deck**	Work area includes entire deck between the backs of the abutment backwalls. Remove all salt, anti-skid, dirt, debris and other deleterious material by manually first and then by flushing. Seasonal restriction recommended over trout streams from April 10 to June 10.	**NO EFFECT**
711-7431-02	**Cleaning/Flush – Bearing and Super Structure**		**NO EFFECT**
711-7431-03	**Cleaning/Flush Open Grid**		**NO EFFECT**
711-7432-01	**Painting – Spot**	Superstructure painting, usually less than 35% of structure. Scaffolding or work platform may be used, and any hand or power tolls for cleaning.	**NO EFFECT**
711-7433-01	**Seal – Joints (Liquid Only)**	Joints can be located anywhere within the entire length of the bridge between the backs of the backwalls. Poured joint material.	**NO EFFECT**
711-7433-02	**Repair Joints**	Repair or replace existing joints.	**NO EFFECT**
711-7434-01	**Repair/Replace Guiderail/Median Barrier/Parapet**	Conducted on the existing bridge structure. May include limited demolition.	**NO EFFECT**
711-7435-01	**Lubricate Bearings**	Repair or replacement of various bridge superstructure components. Conducted from the existing bridge.	**NO EFFECT**
711-7435-02	**Repair/Replace Bearings**		**NO EFFECT**
711-7435-03	**Repair/Replace – Pedestal/Seat**		**NO EFFECT**
711-7442-01	**Repair/Replace – Approach Slab**		**NO EFFECT**
711-7443-01	**Repair/Replace Deck**		**NO EFFECT**
711-7443-02	**Repair/Replace Sidewalk/Curb**		**NO EFFECT**
711-7444-01	**Repair/Replace Deck Drainage**		**NO EFFECT**
711-7459-01	**Other Bridge Activities**	Restricted to maintenance activities that are non-structural.	**NO EFFECT**
711-7421-01	**Washing**	Mechanical washing of the highway tunnel interior.	**NO EFFECT**
711-7422-01	**Traffic Services – Traffic Incident Management**	Tunnel traffic incident management activities assuming staging and other support activities are not conducted in or near wetlands.	**NO EFFECT**
711-7422-02	**Repair Tunnel Roadway Wearing Surface**	All actions related to Bituminous Asphalt or Concrete patching including preparing (milling/cutting) and cleaning the hole, tacking, manually placing hot or cold bituminous patching, including concrete material and compaction on bituminous paved tunnel roads.	**NO EFFECT**
711-7422-03	**Repair/Replace Tunnel Barrier**	All actions related to the repair and replacement of tunnel barriers.	**NO EFFECT**

CODE[5]	BRIEF DESCRIPTION	DETAILED DESCRIPTION	EFFECT DETERMINATION
711-7422-04	**Tunnel Lane Signal**	All actions related to the repair, replacement, servicing, and maintenance of all tunnel lane signals and tunnel lane signal systems including, but not limited to, replacement of lamps, testing, troubleshooting and repairs, cleaning, etc.	**NO EFFECT**
711-7422-05	**Tunnel Signs**	All actions related to the repair or replacement of tunnel signs.	**NO EFFECT**
711-7422-06	**Over Height Truck Warning System**	All actions related to the repair or replacement of tunnel Over Height Truck Warning Systems and appurtenances.	**NO EFFECT**
711-7423-01	**Lighting Systems – General Maintenance and Inspection**	All actions related to performing non-complex, minor repairs or inspections of tunnel lighting systems and lighting infrastructure.	**NO EFFECT**
711-7423-02	**Repair Tunnel Lighting Systems**	All actions related to performing moderately complex, and complex repairs to or replacement of tunnel lighting systems.	**NO EFFECT**
711-7424-01	**Electrical Systems – General Maintenance/ Inspection (SWO)**	All actions related to performing non-complex, minor repairs or inspections of tunnel electrical infrastructure and systems.	**NO EFFECT**
711-7424-02	**Electrical Systems – Switch Gear**	All actions related to performing moderately complex and complex repairs to or replacement of tunnel electrical switch gears.	**NO EFFECT**
711-7424-03	**Electrical Systems – Motor Control Center**	All actions related to performing moderately complex and complex repairs to or replacement of tunnel motor control centers.	**NO EFFECT**
711-7424-04	**Electrical Systems – Repair or Replace Transformer**	All actions related to performing moderately complex and complex repairs to or replacement of tunnel transformers.	**NO EFFECT**
711-7424-05	**Electrical Systems – Repair or Replace Transfer Switch**	All actions related to performing moderately complex and complex repairs to or replacement of tunnel electrical transfer switches.	**NO EFFECT**
711-7424-06	**Electrical Systems – Panel Board**	All actions related to performing moderately complex and complex repairs to or replacement of tunnel electrical panelboards.	**NO EFFECT**
711-7424-07	**Electrical Systems – Universal Power Supply**	All actions related to performing moderately complex and complex repairs to or replacement of tunnel universal power supply systems (UPS).	**NO EFFECT**
711-7426-01	**Structural – General Maintenance/Inspection**	All actions related to performing non-complex, minor repairs or inspections of tunnel structural members and systems.	**NO EFFECT**
711-7426-02	**Structural – Tunnel Liner**	All actions related to repairing or replacing tunnel liner systems.	**NO EFFECT**
711-7426-03	**Structural – Tunnel Roof/Ceiling Girders**	All actions related to performing moderately complex and complex repairs to or replacement of tunnel roof material, systems or ceiling girders.	**NO EFFECT**
711-7426-04	**Structural – Tunnel Cross Passageway**	All actions related to performing moderately complex and complex repairs to or replacement of tunnel cross passageways.	**NO EFFECT**
711-7426-05	**Structural – Tunnel Interior Walls**	All actions related to performing moderately complex and complex repairs to or replacement of interior tunnel walls.	**NO EFFECT**
711-7426-06	**Structural – Tunnel Portals**	All actions related to performing moderately complex and complex repairs to or replacement or tunnel portals.	**NO EFFECT**
711-7426-07	**Structural – Invert Concrete Slab on Grade**	All actions related to performing moderately complex and complex repairs to or replacement of concrete tunnel invert slabs.	**NO EFFECT**
711-7426-08	**Structural – Tunnel Invert Girders**	All actions related to performing moderately complex and complex repairs to or replacement of tunnel invert girders.	**NO EFFECT**
711-7426-09	**Structural – Tunnel Joints**	All actions related to performing moderately complex and complex repairs to or replacement of tunnel liner joint systems.	**NO EFFECT**
711-7426-10	**Structural – Tunnel Structure Members**	All actions related to performing minor, miscellaneous tunnel structural or general maintenance repairs.	**NO EFFECT**
711-7427-01	**Mechanical Systems – General Maintenance/ Inspection**	All actions related to performing non-complex, minor repairs or inspections of tunnel mechanical infrastructure systems.	**NO EFFECT**

CODE[5]	BRIEF DESCRIPTION	DETAILED DESCRIPTION	EFFECT DETERMINATION
711-7427-02	**Mechanical Systems – Ventilation Systems and Fans**	All actions related to performing moderately complex and complex repairs to or replacement of tunnel ventilation systems and fans.	**NO EFFECT**
711-7427-03	**Mechanical Systems – Drainage and Pumping Systems**	All actions related to performing moderately complex and complex repairs to or replacement of tunnel potable and ground water drainage systems including mechanical pumps.	**NO EFFECT**
711-7427-04	**Mechanical Systems – Emergency Generator Systems**	All actions related to performing moderately complex and complex repairs to or replacement of tunnel emergency generator systems.	**NO EFFECT**
711-7428-01	**Fire/Life Safety Systems – General Maintenance/ Inspection**	All actions related to performing non-complex, minor repairs or inspections of tunnel fire, life safety, and security infrastructure and systems.	**NO EFFECT**
711-7428-02	**Fire/Life Safety Systems – Carbon Monoxide Monitoring System**	All actions related to performing moderately complex and complex repairs to or replacement of tunnel carbon monoxide monitoring systems including mechanical exhaust duct work and electrical wiring.	**NO EFFECT**
711-7428-03	**Fire/Life Safety Systems – Tunnel Fire Protection System**	All actions related to performing moderately complex and complex repairs to or replacement of tunnel fire protection systems.	**NO EFFECT**
711-7428-04	**Fire/Life Safety Systems – Emergency Communication System**	All actions related to performing moderately complex and complex repairs to or replacement of tunnel emergency communication systems.	**NO EFFECT**
711-7428-05	**Fire/Life Safety Systems – Operations and Security Systems**	All actions related to performing moderately complex and complex repairs to or replacement of tunnel operations and security systems.	**NO EFFECT**
711-7428-06	**Fire/Life Safety Systems – Fire Protective Coatings**	All actions related to performing moderately complex and complex repairs to or replacement of tunnel protective fire coating systems and appurtenances.	**NO EFFECT**
711-7428-07	**Fire/Life Safety Systems – Concrete Protective Coating Systems**	All actions related to performing moderately complex and complex repairs and removal of existing protective coatings or replacement of tunnel protective concrete coating systems.	**NO EFFECT**
711-7429-01	**Other – Tunnel Activities**	Miscellaneous and incidental tunnel maintenance activities such as minor non-complex incidental repairs to tunnel systems assuming staging and other support activities are not conducted in or near wetlands.	**NO EFFECT**
711-7491-01	**Hauling Non-Disabled Equip. – Lowboy Operation Only**	The hauling of non-disabled equipment using a lowboy.	**NO EFFECT**
711-9003-01	**Under-Utilized Rented Equipment**	Accounting coding for tracking hours not used on rental equipment.	**NO EFFECT**
711-9812-01	**In-Service Training**	Accounting coding for tracking on-the-job training for non-core equipment training/certification.	**NO EFFECT**
712-7521-01	**Plowing, Applying Material/Chemicals - Mechanized**	The removal of snow and ice from roadways, ramps, intersections and gore areas including plowing, snow blowing, cutting ice, and applying material/chemicals.	**NO EFFECT**
712-7522-01	**Snow and Ice Control - Other**	Snow season work that is not included in activity 712-7521-01 such as installing snow fence; mixing winter materials; transferring/receiving material; cleanup of storage facilities; towing, dry runs, stand by, removing, installing or verifying the spreader; shoveling snow at the stock site; tire chains; other snow preparatory work; etc.	**NO EFFECT**
712-7523-01	**Anti-Icing Operations**	This assembly includes all actions related to applying anti-icing chemicals to pavement surface prior to the storm to prevent bond forming. This assembly should not be used to charge for pre-wetting of solid material.	**NO EFFECT**
712-7524-01	**Salt Brine Manufacture/ Distribution**	This assembly includes all actions related to the manufacturing and distribution of salt brine.	**NO EFFECT**

CODE[5]	BRIEF DESCRIPTION	DETAILED DESCRIPTION	EFFECT DETERMINATION
713-7611-01	**Traffic Line Painting – Mechanized Yellow**	This assembly includes all actions related to the painting or repainting of yellow traffic lines using line striping machines.	**NO EFFECT**
713-7612-01	**Traffic Line Painting – Mechanized**	The painting or repainting of traffic lines using line striping machines.	**NO EFFECT**
713-7613-01	**Pavement Marking – Hand Operated Machine**	Marking the pavement using hand operated machines and/or hand-held rollers, such as painting gore areas, certain types of ramps, and other areas not readily accessible to the department's large paint trucks.	**NO EFFECT**
713-7614-01	**Raised Pavement Markers**	The repair/replacement of reflectorized pavement markers such as removing and replacing damaged reflectors. (Could be raised, flush, or recessed.)	**NO EFFECT**
713-7615-01	**Pavement marking paint line eradication**	The removal of traffic markings.	**NO EFFECT**
713-7616-01	**Pavement marking thermoplastics installation**	All actions to installation of thermos-plastic markings.	**NO EFFECT**
713-7617-01	**Repair Paint Machines – Crew Only**	The repair of paint machines by the paint crew only.	**NO EFFECT**
713-7618-01	**Pavement Marking Small Paint – Waterborne Site**	This assembly includes all actions related to the Small Paint Program – WATERBORNE	**NO EFFECT**
713-7618-02	**Pavement Marking Small Paint – Durable**	This assembly includes all actions related to the Small Paint Program – DURABLE.	**NO EFFECT**
713-7619-01	**Other Pavement Marking activities**	Any miscellaneous pavement marking activity which cannot be properly charged to the previous marking codes. Examples include transferring materials between counties, traffic line layouts, winterization of the large paint machines, etc.	**NO EFFECT**
713-7621-01	**Construction Detour and Other Temporary Signs**	Includes all actions related to the erection, maintenance and removal of construction, detour and other temporary signs, such as erecting supports, mounting signs and when necessary removing damaged materials. Also includes the costs of flasher lights attached to barricades and signs and the placement and repair of all barricades.	**NO EFFECT**
713-7622-01	**Delineations, Hazard**		**NO EFFECT**
713-7623-01	**Sign Reviews**		**NO EFFECT**
713-7624-01	**Regulatory, Warning and Guide Signs Under 16 Sq. Feet**		**NO EFFECT**
713-7624-02	**Regulatory, Warning and Guide Signs Over 16 Sq. Feet**		**NO EFFECT**
713-7625-01	**SR and Segment Markers**		**NO EFFECT**
713-7629-01	**Other – Sign Activities**		**NO EFFECT**
713-7631-01	**Repair/Removal – Low-tension Cable Barrier (Old Style – Non-Tensioned)**	All actions related to the repair or removal of damaged or worn guide-rail cable, posts, cable fittings, etc.	**NO EFFECT**
713-7631-02	**Guide-Rail Repair/ Replace – W-Beam; Mechanized**	This assembly is all actions related to the repair and/or replacement of damaged or worn W-Beam panels, posts, fittings, etc. This includes extension or installation of any W-Beam guide rail for less than 500 continuous feet.	**NO EFFECT**
713-7631-03	**Guiderail Repair/ Replace Manual**	This assembly is all manual actions related to the repair/ replacement of all types of guiderail. Refer to Assemblies 713-7631-01 and 02.	**NO EFFECT**
713-7631-04	**Guider Rail Upgrade Remove Cable/Replace with W-Beam; Mechanized**	This assembly is all actions related to removing cable guide-rail and replacing it with W-Beam Guide-rail.	**NO EFFECT**

CODE[5]	BRIEF DESCRIPTION	DETAILED DESCRIPTION	EFFECT DETERMINATION
713-7631-05	**Guiderail Resetting W•Beam Guide Rail; Mechanized**	This assembly is all actions related to removing and resetting existing guide-rail and posts. Resetting guide-rail consists of relocation existing posts and reattaching existing panels. Do not reuse timber posts. This includes resetting W-Beam guide-rail for less than 500 continuous feet.	**NO EFFECT**
713-7632-01	**Guiderail Removal**	This assembly is all actions related to the permanent removal of unnecessary guiderail when guide-rail is not being replaced.	**NO EFFECT**
713-7632-02	**Guiderail Removal – Dept. Force/Contract install**	This assembly is all actions related to the removal of guide-rail by Department Forces where the guide-rail is to be installed by contract.	**NO EFFECT**
713-7633-01	**High-Tension Cable Median Barrier**	This assembly is all actions related to repair of damaged High-Tension Cable Median Barrier including but not limited to cable adjustment, loading and transporting of new High-Tension Cable Median Barrier for storage, mechanized straightening of rails with post straightener, all repair/replacement of end treatments associated with bridges, repair/replacement of impact attenuation devices, etc.	**NO EFFECT**
713-7639-01	**Median Barrier/ Guiderail Impact Attenuation Devices; Other**	This assembly is all actions related to miscellaneous median barrier, guiderail and impact attenuation devices including but not limited to painting, cable adjustment, loading and transporting of new guiderail for storage, mechanized straightening of rails with post straightener, all repair/ replacement of end treatments associated with bridges, repair/ replacement of impact attenuation devices, etc.	**NO EFFECT**
713-7671-01	**Traffic Services – Lighting Highway, Bridge and Sign Lighting Systems**	All actions relative to the servicing and maintenance of permanent highway, bridge sign, and navigation systems by department employees and outside contractors.	**NO EFFECT**
713-7681-01	**Sweeping; Manual/ Mechanized**	This assembly is all actions relative to sweeping and proper disposal of materials.	**NO EFFECT**
713-7682-01	**Deer Removal**	This assembly is all actions relative to the removal of deer carcasses. All other animal removal will be charged to assembly 713-7689-01 "Traffic – Incidental Services – Other".	**NO EFFECT**
713-7683-01	**Traffic Services-Homeland Security**	This assembly is all actions relative to any miscellaneous incidental services related to preparing, responding and demolishing to Federal or State authorities in response to Homeland Security events. This includes the setup, maintenance and demobilization of traffic control devices, manning traffic control points, security inspections of PennDOT facilities, and other activities performed at the request of officials. Homeland Security Events include Presidential visits, Gubernatorial events, International Dignitary events, or special security events.	**NO EFFECT**
713-7689-01	**Other – Incidental Service Activities**	This assembly is all actions relative to any miscellaneous incidental service activities such as dead animal removals, right-of-way fence maintenance, and other incidental highway services.	**NO EFFECT**
714-7711-01	**Mowing**	Manual roadside mowing activities such as mowing with power driven type mower(s), string trimmers or other hand tools. This activity is normally performed at intersections where small traffic islands exist, or at other similar areas where larger power mowers cannot operate efficiently. This activity should not be necessary under guiderail, around delineations and signs as the non-selective herbicide program under cost function 7712-01 is designed to accomplish this vegetation control.	**NO EFFECT** **REVISED 2017 MAY AFFECT[2]**

CODE[5]	BRIEF DESCRIPTION	DETAILED DESCRIPTION	EFFECT DETERMINATION
714-7711-02	**Mowing – Tractor Type; Mechanized**	Mechanized roadside mowing activities including mow-line establishment, mowing, supervision or inspection, removing litter and mowing obstructions. This activity is performed in the medians, interchanges and along the roadway to control the height of grown of grass and for the purpose of preventing the growth and spread of prohibited weeds and other undesirable plant growth.	**NO EFFECT** **REVISED 2017 MAY AFFECT[2]**
714-7711-03	**Plant Growth Reg. (PGRs) Herbicide Application**	The application of plant growth regulators for the purpose of inhabiting seed head formation, reducing mechanical cutting frequencies, and for the control of broadleaf weeds. This activity is recommended primarily for turf areas requiring frequent cutting and traffic islands or other plots that require manual mowing. The applications must be made by a certified pesticide applicator, a trained application technician or any other person provided by a certified pesticide applicator is present at the work site and within communication distance.	**NO EFFECT** **REVISED 2017 MAY AFFECT[2]**
714-7712-01	**Herbicide Application – Non-Selective**	The application of non-selective herbicides. This includes the application under guiderails and around delineators, sign posts, and similar areas where bare soil is desirable and erosion will be no problem. There are two types of non-selective herbicides: residual (through the roots) and foliar (through the leaves). The application must be made by a certified pesticide applicator, a trained application technician, or any other person provided a certified pesticide applicator is at the work site and within communication distance.	**MAY AFFECT[2]**
714-7713-01	**Herb Application – Broadcast Foliage**	All actions related to the application of selective herbicides for the control of undesirable weeds and woody plant growth in lawn and roadside areas. Herbicides for this activity are selective in their effects on various plants when used in accordance with label directions. Various herbicides are used in the performance of this assembly. Weed and brush control applications produce the best results when applied to the foliage of plants. The application must be made by a certified pesticide applicator, a trained application technician, or any other person provided a certified pesticide applicator is at the work site and within communication distance.	**MAY AFFECT[2]**
714-7714-01	**Herbicide Application Broadcast Chemical Trimming (Fosamine)**	This assembly is the application of selective herbicides for the control of undesirable woody growth or any part thereof. This includes utilizing Fosamine (Krenite) for foliage applications made with power sprayers. The application must be made by a certified pesticide applicator, a trained application technician, or any other person provided a certified pesticide applicator is at the work site and within communication distance.	**MAY AFFECT[2]**
714-7715-01	**Brushing, Selective Thinning, Tree Removal, and Tree Trimming**	This assembly is the removal and/or trimming of brush, trees, and woody vegetation including all actions related to tree trimming, brushing, selective thinning, and tree removal using the appropriate power and hand tools and the removal of stumps where required. Unless grubbing or stump removal are planned, apply a basal bark herbicide mixture to the cut surface of all live stumps, including the root collar and exposed roots.	**NO EFFECT**
714-7715-02	**Brushing, Tree Trimming, and Tree Removal; Mechanized**	This assembly is the mechanical removal and/or trimming of brush, trees, and woody vegetation including all methods and procedures described under 714-7715-01 with the use of hydraulic tools, boom arm mowers, or trimmer lift equipment.	**NO EFFECT**

CODE[5]	BRIEF DESCRIPTION	DETAILED DESCRIPTION	EFFECT DETERMINATION
714-7715-03	**Herbicide Basal Bark and Cut Stump**	This is the application of Basal Bark and cut stump treatments. This includes all herbicide applications related to the elimination of unwanted woody plants, stump re-sprouts, and root sprouting through basal bark and cut stump treatment methods. Although the basal bark method may be applied at any time of the year, for highway purposes it is also most applicable to the dormant season. The application must be made by a certified pesticide applicator, a trained application technician, or any other person provided a certified pesticide applicator is at the work site and within communication distance.	**NO EFFECT**
714-7716-01	**Revitalization – Seeding and Soil Supplement; Mechanized**	This assembly is the revitalization of roadside locations, including the furnishing and placing of seed, soil supplements and mulch to roadside locations stabilizing roadway embankments and compliance with current erosion and sedimentation control mandates.	**NO EFFECT**
714-7717-01	**Wildflowers (formerly Wildflower Planting)**	This assembly is the furnishing and placing of seeds of various plants which have growth and flowering characteristics desirable for highway roadsides, the maintenance of wildflower sites, and the propagation and enhancement of naturally occurring "wildflowers." This will provide an acceptable roadside cover while maintaining a reduced mowing schedule and will provide the necessary erosion and sediment control properties.	**NO EFFECT**
714-7731-01	**Maintenance of Interstate Roadside Rests with All-Weather Buildings**	The maintenance of roadside rests with all-weather buildings such as mowing; fertilizing; watering; raking; mulching; and herbicide weed control on the grounds as well as repairing, replacing, repainting, cleaning, and periodic equipment servicing of building and equipment. The maintenance of signs, litter containers, and snow and ice control are also included as well as picking up litter, litter disposal, and cleaning rest rooms.	**NO EFFECT**
714-7732-01	**Maintenance of Roadside Rest, Table Sites, Overlooks, Scenic Feature, and Park-and-Ride Lots**	This assembly includes all actions related to the maintenance of all other roadside rests, roadside table sites, and overlooks not covered under activity 714-7731-01 This includes roadside table sites, overlooks, and park-and-ride lots. Growing; fertilizing; watering; raking; mulching; herbicide weed control on the grounds in addition to repairing, replacing, and cleaning of the temporary facilities placing as well as maintenance of roadside tables, signs, litter containers, junkyard screenings (both vegetative and structural), and snow and ice control are included in this assembly. Also included is litter pickup and disposal and sanitary service purchase contracts.	**NO EFFECT**
714-7735-01	**Roadside Litter Pickup and Debris Removal Routine**	This assembly includes all actions related to Department Force litter pickup and debris removal (within established highway right-of-way limits). This includes litter and debris pickup and removal generated by the motoring public and normal weather and wind conditions. Contract disposal costs are also included in this activity. Pickup of debris, etc., resulting from ice storms or high wind conditions should be charged to Assembly 711-7351. This does not include three special litter pickup and debris removal programs: Great PA Cleanup (714-9813-01, Litter Brigade (714-9848-01) and Adopt-A-Highway (714-9849-01).	**NO EFFECT**
714-7735-02	**Roadside Tire Remnant Removal – Debris Removal**	This assembly includes all actions related to tire remnant removal on interstate and interstate look-alike highways.	**NO EFFECT**
714-9813-01	**Special Roadside Litter Pick Up and Debris Removal Great PA Cleanup**	This assembly is the annual Great PA Clean-up (GPC) campaign. This includes all actions related to the annual Great PA Clean-up campaign scheduled from March 1 to May 31. This is primarily an educational/public participation activity focusing on refuse bag retrieval and disposal.	**NO EFFECT**

CODE[5]	BRIEF DESCRIPTION	DETAILED DESCRIPTION	EFFECT DETERMINATION
714-9848-01	**Special Roadside Litter Pick Up and Debris Removal Litter Brigade**	This assembly is the Adult and Juvenile Litter Brigades. This includes all actions related to refuse bag retrieval and disposal.	**NO EFFECT**
714-9849-01	**Special Roadside Litter Pick Up and Debris Removal Adopt-A-Highway**	This assembly is the Adopt-A-Highway (AAH) program. This includes all actions related to the program focusing on refuse bag retrieval and disposal. This includes the collection of the refuse bags from volunteers as well as the Inmate Community Work Program.	**NO EFFECT**
719-9829-01	**Maintenance Administration**	Accounting coding assembly for employee salaries, wages, leave, subsistence, and other expenses of those employees in the County, Maintenance Districts, and Central Offices whose primary duties are related to administration and who, for payroll purposes, are regularly assigned to Program 719.	**NO EFFECT**
719-9851-01	**Hazardous Waste Inventory Control**	This assembly includes all actions related to the removal of hazardous waste material generated by all programs, except Program 813 (fuel and petroleum related), by contract to professional waste disposal contractors. This is for disposal of batteries, light bulbs, spray cans, and similar items.	**NO EFFECT**
621-2541-01	**FHWA Disaster Recovery (Federal Aid Routes) Debris Clearance**	All disaster activities for FHWA reimbursement involving tree, dirt, stone, and other debris removal.	**MAY AFFECT[2]**
621-2542-01	**FHWA Disaster Recovery (Federal Aid Routes) Protective Measures**	All disaster activities for FHWA reimbursement involving installation of road closed and detour routing signs, temporary lane restrictions, temporary traffic signals, cones, barricades, etc.	**NO EFFECT**
621-2543-01	**FHWA Disaster Recovery (Federal Aid Routes) Emergency Road Repairs**	All disaster activities for FHWA reimbursement involving any repair of the roadway surface (i.e., paving, base repair).	**NO EFFECT**
621-2544-01	**FHWA Disaster Recovery (Federal Aid Routes) Emergency Bridge Repairs**	All disaster activities for FHWA reimbursement involving any repair of bridges (i.e., abutments, piers, deck and support structure, underwater and above water inspection, material removal, and related bridge repairs).	**MAY AFFECT[2]**
621-2545-01	**FHWA Disaster Recovery (Federal Aid Routes) Emergency Shoulder Repairs**	All disaster activities for FHWA reimbursement involving reshaping, ditching, reestablishment, and rock lining of swales or ditch lining and related shoulder work.	**MAY AFFECT[2]**
621-2546-01	**FHWA Disaster Recovery (Federal Aid Routes) Emergency Pipe Installation**	All disaster activities for FHWA reimbursement involving any repair, installation, or replacement of drainage system pipes.	**MAY AFFECT[2]**
621-2549-01	**FHWA Disaster Recovery (Federal Aid Routes) Other Costs**	All other disaster activities for FHWA reimbursement which are in response to the disaster damage.	**MAY AFFECT[2]**
663-2541-01	**FEMA Disaster Recovery (Non-Federal Routes) Debris Clearance**	All disaster activities for FEMA reimbursement involving tree, dirt, stone, and other debris removal.	**MAY AFFECT[2]**

CODE[5]	BRIEF DESCRIPTION	DETAILED DESCRIPTION	EFFECT DETERMINATION
663-2542-01	**FEMA Disaster Recovery (Non-Federal Routes) Protective Measures**	All disaster activities for FEMA reimbursement involving installation of road closed and detour routing signs, temporary lane restrictions, temporary traffic signals, cones, barricades, etc.	**NO EFFECT**
663-2543-01	**FEMA Disaster Recovery (Non-Federal Routes) Emergency Road Repairs**	All disaster activities for FEMA reimbursement involving any repair of the roadway surface (i.e., paving, base repair).	**NO EFFECT**
663-2544-01	**FEMA Disaster Recovery (Non-Federal Routes) Emergency Bridge Repairs**	All disaster activities for FEMA reimbursement involving any repair of bridges (i.e., abutments, piers, deck and support structure, underwater and above water inspection, material removal, and related bridge repairs).	**MAY AFFECT[2]**
663-2545-01	**FEMA Disaster Recovery (Non-Federal Routes) Emergency Shoulder Repairs**	All disaster activities for FEMA reimbursement involving reshaping, ditching, reestablishment, and rock lining of swales or ditch lining and related shoulder work.	**MAY AFFECT[2]**
663-2546-01	**FEMA Disaster Recovery (Non-Federal Routes) Emergency Pipe Installation**	All disaster activities for FEMA reimbursement involving any repair, installation, or replacement of drainage system pipes.	**MAY AFFECT[2]**
663-2549-01	**FEMA Disaster Recovery (Non-Federal Routes) Other Costs**	All other disaster activities for FEMA reimbursement which are in response to the disaster damage.	**MAY AFFECT[2]**

Appendix B

Bog Turtle Effects Pathway Analysis

Note: All these activities are covered by the Programmatic Biological Assessment with the implementation of applicable AMM measures.

Sub- activity or Structure	Direct interaction OR Stressor	Resources affected Life stage Conservation Functions of the Resource	Species' Responses to Exposure to Direct interaction or Indirect interaction (Stressor)	Effect to individuals	Programmatic Categories	Avoidance Minimization Mitigation	Effects remaining	Determination
Use of heavy equipment	(stressor) Introduction of Contaminants causes a decrease in wetland vegetation	**Resource:** wetland vegetation **Life stage**: adults, juveniles, eggs **Function**: breeding, Feeding, sheltering	Decreased foraging success, increased energy expenditure, abandonment/ displacement from wetland, injury or mortality (loss of hibernacula causing decreased winter survival)	Reduced survivorship (predation and exposure to the elements), reduced reproductive success, and reduced fitness	1A	AMMs 1-10, 12-17, and 19a	The threats posed by contaminants should be eliminated or reduced to NLAA by implementing the AMMs and standard PennDOT BMPs	NLAA
Use vehicles off-road					1B	AMMs 1-10, 12-17, 19a, and 19b		NLAA
Cleaning/Flushing Pipes					2A	AMMs 1-9, 11, and 19a		NLAA
					2B	AMMs 1-9, 11, 19a, and 19b		NLAA
					3A	AMMs 1-9, 12-17, and 19a		NLAA
New Road (structure)					3B	AMMs 1-9 and 11		NLAA
					4	AMMs, 1-10, 12-18, and 19b		NLAA
Use of Heavy Equipment	(direct) Crushing bog turtles or nests	**Resource:** Individuals **Life stage**: adults juveniles, eggs	Injury, mortality	Reduced fitness to direct mortality	1A	AMMs 1-10, 12-17, and 19a	Although bog turtles will be moved from the area of disturbance per AMM 12, which will minimize take, it is still likely that bog turtles could escape detection during a pre-construction survey based on their cryptic nature, small size, and the frequency of this activity over the life of the PBO.	LAA
Use vehicles off-road					1B	AMMs 1-10, 12-17, 19a, and 19b		LAA
Use of motorized hand tools					2A	AMMs 1-9, 11, and 19a		NLAA
Use of Hand Tools					2B	AMMs 1-9, 11, 19a, and 19b		LAA
					3A	AMMs 1-9, 12-17, and 19a		NLAA
Walking through habitat					3B	AMMs 1-9 and 11		NLAA
					4	AMMs, 1-10, 12-18, and 19b		LAA

Sub- activity or Structure	Direct interaction OR Stressor	Resources affected Life stage Conservation Functions of the Resource	Species' Responses to Exposure to Direct interaction or Indirect interaction (Stressor)	Effect to individuals	Programmatic Categories	Avoidance Minimization Mitigation	Effects remaining	Determination
Use of Heavy Equipment	(stressor) Soil compaction in the wetlands causing alteration of site hydrology and loss of hibernacula	**Resource:** Mucky soil **Life stage**: adults, juveniles, eggs **Function**: breeding, sheltering	Displacement, decreased nesting success, injury or mortality (loss of hibernacula causing decreased winter survival)	Reduced survivorship (predation and exposure to the elements), reduced reproductive success, and reduced fitness	1A	AMMs 1-10, 12-17, and 19a	Even with the use of low pressure matting, soil compaction is still likely to occur in the wetland and, depending on the scale of the work, impacts to site hydrology may still occur.	LAA
					1B	AMMs 1-10, 12-17, 19a, and 19b		LAA
					2A	AMMs 1-9, 11, and 19a		NLAA
					2B	AMMs 1-9, 11, 19a, and 19b		LAA
Use vehicles off-road					3A	AMMs 1-9, 12-17, and 19a		NLAA
					3B	AMMs 1-9 and 11		NLAA
					4	AMMs, 1-10, 12-18, and 19b		LAA
Vegetation removal	(stressor) Decrease in wetland vegetation	**Resource:** Vegetation **Life stage:** adults, juveniles, eggs **Function:** breeding, feeding, sheltering	Decreased foraging success, increased energy expenditure, abandonment/ displacement from wetland, injury or mortality (loss of hibernacula causing decreased winter survival)	Reduced survivorship (predation and exposure to the elements), reduced reproductive success, and reduced fitness	1A	AMMs 1-10, 12-17, and 19a	The AMMs will minimize the loss of wetland vegetation, but there will still be temporary and permanent losses.	LAA
					1B	AMMs 1-10, 12-17, 19a, and 19b		LAA
					2A	AMMs 1-9, 11, and 19a		NLAA
Applying herbicides					2B	AMMs 1-9, 11, 19a, and 19b		LAA
					3A	AMMs 1-9, 12-17, and 19a		LAA
Walking through habitat					3B	AMMs 1-9 and 11		NLAA
					4	AMMs, 1-10, 12-18, and 19b		LAA
Addition of imported soils	(indirect) Introduction of non – native invasive species changing vegetation community	**Resource:** vegetation **Life stage**: adults and juveniles **Function**: feeding, sheltering	Increased energy expenditure, decreased reproduction (loss of nesting sites), displacement of bog turtles, injury or mortality (loss of hibernacula causing decreased winter survival)	Reduced reproduction, reduced growth rate, reduced survival (injury), direct mortality	All	AMM 8	AMM 8 will minimize the introduction and spread of non-native invasive species.	NLAA
Plantings								
Redistribute soils								
Spreading vegetative debris								
Use of heavy equipment								
Use vehicles off-road								
Walking through habitat								

Sub- activity or Structure	Direct interaction OR Stressor	Resources affected Life stage Conservation Functions of the Resource	Species' Responses to Exposure to Direct interaction or Indirect interaction (Stressor)	Effect to individuals	Programmatic Categories	Avoidance Minimization Mitigation	Effects remaining	Determination
De-water	(Stressor) Alteration of hydrology causing a decrease in hydrology and a decrease in wetland vegetation	**Resource**: hydrology & wet vegetation **Life Stage**: Adult, juveniles, eggs **Function:** Breeding, feeding, sheltering	Displacement, decreased nesting success, injury or mortality (loss of hibernacula causing decreased winter survival)	Reduced survivorship (predation and exposure to the elements), reduced reproductive success, and reduced fitness	1A	AMMs 1-10, 12-17, and 19a	Depending on the scale of the work, impacts to site hydrology may still occur.	LAA
New Road (structure)					1B	AMMs 1-10, 12-17, 19a, and 19b		LAA
Access Road (structure)					2A	AMMs 1-9, 11, and 19a		NLAA
Cofferdam (structure)					2B	AMMs 1-9, 11, 19a, and 19b		NLAA
Drainage Ditch (structure)					3A	AMMs 1-9, 12-17, and 19a		LAA
					3B	AMMs 1-9 and 11		NLAA
Culvert (structure)					4	AMMs, 1-10, 12-18, and 19b		LAA
Sidewalk/Bike Path (structure)[1]	Increase in pedestrian traffic increasing the risk of collection (direct) and (stressor) causing an increase in domesticated animals	**Resource:** Individuals **Life stage:** Adults, juveniles, eggs	Predation and collection	Direct mortality	n/a			LAA
Apply fertilizer	(indirect) Increase in non –native invasive species changing vegetation community	**Resource:** vegetation **Life stage**: adults and juveniles **Function**: feeding, sheltering	Increased energy expenditure, decreased reproduction (loss of nesting sites), displacement of bog turtles, injury or mortality (loss of hibernacula causing decreased winter survival)	Reduced reproduction, reduced growth rate, reduced survival (injury), direct mortality	All	AMM 8	AMM 8 will minimize the introduction and spread of non-native invasive species.	
Hydroseed								NLAA

Sub- activity or Structure	Direct interaction OR Stressor	Resources affected Life stage Conservation Functions of the Resource	Species' Responses to Exposure to Direct interaction or Indirect interaction (Stressor)	Effect to individuals	Programmatic Categories	Avoidance Minimization Mitigation	Effects remaining	Determination
Access road (structure)[1]	(stressor) Introduction of vehicle traffic causing (direct) vehicle/species collisions	**Resource:** Individuals **Life stage:** Adult, juvenile	Injury or mortality	Reduced fitness to direct mortality	All	n/a		LAA
New road (structure)[1]								
Caution fence (structure)	(direct) deters movement	**Resource:** Individuals **Life stage:** Adult, juvenile	Increased energy expenditure and mortality (predation)	Reduced fitness, reduced survival	1A	AMMs 1-10, 12-17, and 19a	Structures could impede bog turtle movement and results in reduced fitness and survival.	LAA
Construction mats (structure)					1B	AMMs 1-10, 12-17, 19a, and 19b		
Noise wall (structure)					2A	AMMs 1-9, 11, and 19a		
Permanent fence (structure)					2B	AMMs 1-9, 11, 19a, and 19b		
Silt fence (structure)					3A	AMMs 1-9, 12-17, and 19a		
New Road (structure)					3B	AMMs 1-9 and 11		
Stockpiles (structure)					4	AMMs, 1-10, 12-18, and 19b		
Riprap (structure)	(direct) Entrapment	**Resource:** Individuals **Life stage:** Adult, juvenile	Injury or mortality	Reduced fitness to direct mortality	All	AMM3	None	NLAA
Addition of Imported soils	(direct) Smothering	**Resource:** Individuals **Life stage:** Adult, juvenile, eggs	Suffocation	direct mortality	1A	AMMs 1-10, 12-17, and 19a	Although bog turtles will be moved from the area of disturbance per AMM 12, which will minimize take, it is still likely that bog turtles could escape detection during a pre-construction survey based on their cryptic nature, small size, and the frequency of this activity over the life of the PBO.	LAA
					1B	AMMs 1-10, 12-17, 19a, and 19b		LAA
					2A	AMMs 1-9, 11, and 19a		NLAA
Redistribute soils					2B	AMMs 1-9, 11, 19a, and 19b		LAA
					3A	AMMs 1-9, 12-17, and 19a		NLAA
					3B	AMMs 1-9 and 11		NLAA

Sub- activity or Structure	Direct interaction OR Stressor	Resources affected Life stage Conservation Functions of the Resource	Species' Responses to Exposure to Direct interaction or Indirect interaction (Stressor)	Effect to individuals	Programmatic Categories	Avoidance Minimization Mitigation	Effects remaining	Determination
Remove vegetation	(stressor) Increase in erosion causing an increase in sediment causing a decrease in wetlands	**Resource:** Vegetation **Life stage:** adults, juveniles, eggs **Function:** breeding, feeding, sheltering	Decreased foraging success, increased energy expenditure, abandonment/ displacement from wetland, injury or mortality (loss of hibernacula causing decreased winter survival)	Reduced reproduction, reduced growth rate, reduced survival (injury), direct mortality	All	**AMM 2**	AMM2 will minimize all potential stressors related to soil and erosion.	NLAA
Use of heavy equipment	(direct) Noise & vibrations causing turtles to potentially abandon feeding/ breeding activities	**Resource:** Individuals **Life stage**: adults and juveniles	Decreased foraging success, increased energy expenditure, abandonment/ displacement	Reduced reproduction, reduced growth rate, reduced survival	All	AMM 1 – 19b	These avoidance measures will minimize and reduce effects of the action, but not completely eliminate the threat	LAA

[1] Structure is defined as the item or object remaining, post-construction

Appendix C

Addendum, Edits, and Clarifications for the USFWS Programmatic Biological Opinion

Addendum, Edits, and Clarifications for the USFWS Programmatic Biological Opinion entitled *Effects of Transportation Actions on the Bog Turtle within the Commonwealth of Pennsylvania* (November 21, 2018)

Page	Original Comment	Addition/Edit
2	USFWS should confirm that the PSF included as Appendix C of the PBA meets their requirements	Project Submittal Form in Appendix C is an interim form. Add the TaILS project number to the project Submittal Form in Appendix C of the PBA Added: **(Appendix C of the PBA contains an example of the interim Project Submittal Form).**
3	However, if a project requires formal consultation for other listed species, the Service will verify project consistency with this PBO within a project-specific BO that addresses all adversely affected species, to which the standard consultation procedures and timeline (135 calendar days) apply, unless there are other established consultation timelines for those species (e.g. other programmatic consultations).	This will be addressed in the User's Guide, which is in the process of development - Spring 2019. Likely part of PennDOT PUB 546 the T&E Handbook. Note: This process will be detailed in a User's Guide that will be contained in PennDOT PUB 546 (the T&E Handbook).
4	5-year effective lifetime	This PBO timeline is similar to the one used for the PennDOT mussel programmatic. It includes a 5-year review and it is renewable.
7	**Take reduction and offsetting measures** could be implemented in lieu of some AMMs with the concurrence of the Service.	Language used defaults to the mitigation policy of 1981

9	Descriptions of specific transportation activities are summarized in **Table 1**.	Changed to **Table 2**.
13	**Required for specific programmatic categories** Programmatic categories should be identified for each AMM. This can be done in the User's Guide.	Note: **(Programmatic categories** will be detailed in a User's Guide that will be contained in PennDOT PUB 546 (the T&E Handbook).
14	#19 If a conservation bank has not yet been developed, PennDOT/FHWA may adopt an alternate equivalent mechanism, with Service concurrence. Describe general process….	Note: **The process of adopting an alternate equivalent mechanism** will be detailed in a User's Guide that will be contained in PennDOT PUB 546 (the T&E Handbook).
15	Table 4	Period added after Table 4.
24	Therefore, the amount of anticipated take is capped annually (**Table 6**) to facilitate this analysis	Changed to: **Table 7**
24	**Table 2.** Maximum annual take using habitat loss as a surrogate.	Changed to: **Table 7**

24	Table 7	Added a footnote: [1] **Numbers are based on historic disturbances in wetlands that support bog turtle or wetlands containing potential bog turtle habitat. Historically, the impacts are small, and refers to take in a year's time.**
26/27	However, the following level of take can be anticipated by loss of suitable habitat as described in **Table 7**.	Changed to: **Table 8**
26/27	**Table 3.** Annual Incidental take estimate	Changed to: **Table 8**
27	#2 …on all bog turtle wetlands with impacts to hibernating habitat following a Service-approved protocol.	Added: …on all bog turtle wetlands with impacts **(both temporary and permanent)** to hibernating habitat following a Service-approved protocol.
27	#3….. FHWA/PennDOT will conduct vegetation monitoring of impacted bog turtle wetlands annually for a minimum of 3 years post-construction.	Added: FHWA/PennDOT will conduct vegetation monitoring of impacted bog turtle wetlands **(known sites and sites with assumed bog turtle presence)** annually for a minimum of 3 years post-construction… **Note: The appropriate protocol for vegetation monitoring** will be detailed in a User's Guide that will be contained in PennDOT PUB 546 (the T&E Handbook)**.**
51	Clarification	Added to the top of the table in Appendix B: **Note: All these activities are covered by the Programmatic Biological Assessment with the implementation of applicable AMM measures.**

51	1A – AMM 19 vs. AMM 19a and 19b	AMM19 is from the PBO and AMM 19a and 19b is from PBA
51	1B - AMM 12-18 vs. 12-17	If there is an impact to a hibernaculum, salvaging hibernating animals is not practical due to the difficulty in finding them.
53	Sidewalk/bike path No AMMs applied, but it is LAA Clarification	Risk from collectors. Access granted that was not there before. Footnote added: **[1] Structure is defined as the item or object remaining, post-construction**
54	Access Road/New Road No AMMS applied, but it is LAA Clarification	Additional road traffic causes mortality. Also provides better opportunity for collector access. Footnote added: **[1] Structure is defined as the item or object remaining, post-construction**
55	Heavy Equipment No AMMs applied, but it is LAA	Noise affects. Changed Programmatic Categories to **All** Changed AMMs to **1-19b** Changed Effects Remaining to **These avoidance measures will minimize and reduce effects of the action, but not completely eliminate the threat** Changed Determination to **LAA**

APPENDIX D

Bog Turtle Programmatic Update

Agency Review Meeting

Subject: FHWA/PennDOT Bog Turtle Programmatic Renewal

Date: February 22, 2024

Attendees:

Robert Anderson	US Fish and Wildlife Service
Sze Wing Yu	US Fish and Wildlife Service
Melanie Barber	US Federal Highway Administration
Jesse Sabitsky	PA Department of Transportation
Corey Brown	PA Department of Transportation
Andy Brookens	Skelly and Loy (Terracon)
Barbara Weedon	Gannett Fleming

The meeting began with introductions of attendees. The discussion points were given to the attendees before the meeting. The following are the discussion points and responses.

Renewal Discussion Points	Discussion Notes
Reaffirmation that the Programmatic Consultation approach strives to encompass: 1) Screening Projects With the PNDI Environmental Review Process 2) Conducting Bog Turtle Habitat Assessments to Evaluate Projects Potentially Resulting in Effects 3) Modifying Projects as Possible to Avoid and Minimize Potential Adverse Effects 4) Providing Measures to Offset Unavoidable Adverse Effects	**Jesse**: Who will review the update? **USFWS**: PA Field Office will do the review. Sze Wing will lead the review. **Andy**: Are we tied to the 135-day review? **USFWS: May be a shorter review timeframe if the changes are minor, but the 135-day review covers the USFWS legally.** **Jesse:** Are we looking to rewrite the BA or use the BO? **USFWS:** Take the original BA, make changes, and highlight the changes for their review, and the new BO would be based on the new BA. **Note:** Be sure to incorporate the changes from the April 2018 Addendum into the new BA.

The following sections were identified as possible points of clarification or revisions.	
Screening Projects With the PNDI Environmental Review Process: Is there an opportunity to further evaluate the PNDI environmental screening process for transportation activities? Are there future planned refinements of the bog turtle extant range polygons in PNDI?	**Andy:** Will there be more refinement of the polygons in the near future? Are there projects that can be further screened out? **USFWS** feels this is outside of their purview – changes to PNDI would need to go through DCNR. Further screening parameters could be a discussion, but it would be outside of the Programmatic. **Jesse** – could it be something to be discussed during the preparation of this programmatic? Not necessarily document it in the BA. **USFWS** does not feel that changes to PNDI could occur. Agency is limited in the questions that can be asked through the PNDI screening. PNDI only tracks positive finds or results, but the system does not have the ability to track negative results.
Is there an opportunity to further refine the rationale that PNDI polygon conflict + the confirmation of potential supporting habitat = Assumed Species Presence?	**Andy:** Original thought was that the screening for BT would be done through iPAC. Has there been progress on that? **USFWS** – no. There isn't the staff to do that, but it is in the queue for iPAC updates. There are internal meetings in the field office to better use iPAC, but it is taking time.
Conducting Bog Turtle Habitat Assessments to Evaluate Projects Potentially Resulting in Effects	
Is there any new information regarding species ecology, species extant range, conservation, and monitoring results regarding project effects that should be incorporated to adjust the programmatic methodologies and approach? PennDOT will discuss this area further with additional outreach to USFWS.	1. USFWS indicated there is no current survey protocol for riverine habitat. **USFWS point of concern:** Bridge projects involving active season work in the channel has the potential to impact Bog Turtles. Concern is the current PBO doesn't assess this risk or provide coverage. 2. **USFWS:** Any feedback from districts as to why they do not use the Programmatic? **Jesse:** District 6 is still getting familiar with the programmatic. Sze Wing suggested training/ Q&A opportunity for this revision. **Jesse** confirmed that Districts will be involved in this update, along with PAFBC. PAFBC only gets involved when there is a take being authorized.

Modifying Projects As Possible to Avoid and Minimize Potential Adverse Effects	
Do the existing seven (7) different Programmatic Action Categories adequately capture the transportation action scenarios encompassed within the consultation document? Multiple project scenarios have arisen during the first 5-year period of the Programmatic that present challenges to the classification of the appropriate Programmatic Action Category. Notable scenarios frequently encountered included: 1.Classification of projects which impact wetland habitat but lack supporting habitat conditions - but the project is located within 300 feet of other habitats with potential supporting habitat/assumed presence. **2.Classification of long duration projects which extend across both species active and inactive seasons.**	So far districts have been able to avoid AMM#19. This has been done by an increased number of Phase II BT surveys. **Jesse:** Does time of year restrictions affect all of the construction activities or just certain activities? Looking to modify the screening form to be clearer on what triggers the time of year restrictions. **USFWS** agrees. **Andy:** Would question 2 warrant a new category, or would it be kicked out of the programmatic? **Jesse**: Would like to use two categories or actions for one project. **USFWS** – if a project has more than one category should still qualify under the programmatic. USFWS feels that the screening form is cumbersome and may be the cause of misunderstandings on how to clear certain projects under the programmatic. The form should be modified to enable proper documentation. **USFWS**: Yes, to question 4.
3.Classification of projects which include both species active and inactive season activities due to the constraints of asphalt paving/concrete pouring that must be completed during appropriate weather conditions. **4. Can multiple Programmatic Action Categories be utilized for the same project that extends across both active and inactive seasons?**	**Unique situation**: Project has a wetland that does not have habitat. There is a wetland within 300 feet that does have habitat. Impacts are to the wetland without habitat. Based on current programmatic, the non-habitat wetlands is considered foraging habitat. Do we add a category or do we work through coordination. **USFWS:** is it worth adding a new category? **USFWS** – if you are within 300 feet then it is considered to be potential residual usable habitat. If winter work could be done, then the risk would be low. If the work was done during the summer, then the risk is up. This would also be a project-by-project discussion. If the unsuitable habitat is separated by a road from the suitable habitat, or if the wetland habitat has been degraded by impacts to the extent that it functionally would not potentially provide even transitory habitat, then the risk could be considered removed. **USFWS** – take measures that can avoid impacts, but this may be a situation where a calculation for a take and mitigation may be needed.

	USFWS: What is the intervening habitat between suitable habitat an unsuitable habitat and the chances of a turtle moving between the two systems. **Andy**: one of the most difficult situations with the programmatic is marrying a project, with what time of year PennDOT wants to do the project, categories of the programmatic, how to fit all these things together. **USFWS**: Constraints are likely the screening form and not the BO.
With the confirmation of potential supporting habitat/assumption of species presence – the classification of the appropriate Programmatic Category can be a complex process. Is the following classification process appropriate prior to the assignment of the proper Programmatic Category: 1. Does the proposed project impact wetland or watercourse habitat? 2. Is the impacted wetland habitat supporting habitat for the species or not? 3. If supporting wetland is to be impacted, is the proposed impact permanent or temporary in nature? 4. Is the supporting wetland habitat to be impacted hibernaculum or foraging microhabitat? 5. What is the proposed project construction schedule and what is the duration of the project? Can the project implement the AMM's and conditions of the Programmatic including the specified time of year restrictions for construction?	This speaks to the potential complexity of marrying up the project details with the correct Programmatic Category. This was the hierarchy and thought process to provide assistance for assigning the correct Category. We covered the topic in the previous discussion above, maybe we can give some thought if this hierarchy and thought process makes sense?
Do the existing Take Avoidance and Minimization Measures (AMM's) adequately address tasks that can be implemented to minimize the potential for adverse effects?	Other than the stream pre-con scenario, the USFWS didn't indicate any issues with the existing AMMs. We have historically implemented AMMs related to the stream survey issue and surveying within enclosed culvert pipes, etc.
Comments regarding AMM #3 – Further emphasis needs to be placed concerning the	**USFWS**: In general, view riprap as a problematic solution for bank stabilization. Better to use a more natural

implementation of the placement of choking materials in scour protection areas.	solution. This is likely a bigger conversation than the programmatic.
Comments regarding AMM #12 – Questions have arisen concerning the adequacy of survey activities within existing culvert crossings or bridge abutments/wing walls. The Department asserts that these survey activities/assessments of conditions are adequate and appropriate when completed by a recognized-qualified bog turtle surveyor.	Discussed above.
Comments regarding AMM #13 – Questions have arisen concerning the adequacy/appropriateness of silt sock exclusionary barrier removal following the completion of the project.	Silt sock is more widely used because they are easier to install – emphasize that on completion of construction that they are adequately removed. Also emphasize that the on-site environmental construction staff needs to monitor the competency and functionality of the silt sock barrier especially for longer duration uses.
Comments regarding AMM #15 – Clarification should be added that inspections of spoil materials should be limited to wetland excavation areas.	Refine this AMM to be specific to wetland soil spoils, not spoils in general because the upland soils get pulled in.
Comments regarding AMM #16 – Questions have arisen concerning the implementation of continuous surveyor monitoring. Clarification should be added to identify when the use of the AMM is appropriate/necessary.	**Jesse**: Could we add numbers or add 17 or 17b to provide specifics? Important to specify in the submittal form who is going to be doing what when it comes to inspections. Important to make it clear that it is the condition of the exclusionary method, not the method in general. EX. Silt sock, when it deteriorates it should be replaced, not that the method isn't effective. Need to clarify the place and use of AMM 16, or other AMMs, that need refined as opposed to new AMM categories.
Providing Measures to Offset Unavoidable Adverse Effects	
Programmatic AMM #19 specifies that in order to offset the adverse effects for the permanent loss of supporting habitat and/or incidental take that compensatory mitigation credits will be purchased, or an alternate equivalent compensatory mechanism will be implemented. AMM #19 and the application of compensatory mitigation for permanent impacts remains a challenge to the use of the Programmatic due to the lack of species conservation banks.	**Andy**: Could using alternatives to managing scour or such be used later? Track and use as compensatory mitigation. Scenarios where "extra" is being done on a project where credits can be tracked and used toward other projects. **USFWS**: Possibly use properties to create as banks or obtain as banks by managing existing habitat these could be used as banks. A**ndy**: Could that be approved in the field office, or would it need to go to DC? **USFWS** not sure. **Jesse**: working toward developing mitigation measures either through a fee for implementation on

Due to the lack of species conservation banks and uncertainty of crediting for an alternate compensatory method, such as habitat management, transportation actions have been redesigned to avoid permanent impacts to potentially supporting/assumed wetland habitat and the need for AMM #19. Or these projects have been submitted for an individual project review under Informal Consultation. These projects typically would receive a Not Likely to Adversely Affect determination under Informal Consultation based on the de minimus area of impact and insignificant/discountable effects conclusion.	projects or for future projects. Such as passages for movement without having to go onto the road etc. Wildlife crossing and connectivity is a bigger initiative than it was previously.
A crediting methodology needs to be addressed or developed to account for alternate compensatory mitigation activities completed for AMM #19. These alternative mitigation activities could include vegetation management on an occupied bog turtle site; restoration of hydrology to a historic site with altered hydrology; species passage improvements at a site associated with document roadkill/passage issues; provide funding sources/compensation fund for sites with specific management needs; provide nest protection/predator control measures for sites with specific management needs.	Mitigation can be negotiated at the project level or in advance of wetland /Bog Turtle impacts. Include BMP's or alternative design elements that benefit Bog Turtle's to satisfy section 7.a.1 of the ESA (example- alternatives to rip rap for scour protection or energy dissipation)
General Programmatic Operational Questions	
Do completed Programmatic project consultations expire or have a sunset date?	Consultation receipts are valid for the life of the BO or within 2 years of the PNDI date, whichever comes first.
Are there any existing issues or proposed improvements to the Programmatic Project Submittal Format? Have there been any regulatory issues with project permitting through the US Army Corps of Engineers/PA DEP using the signed Programmatic Project Submittal Form?	Revised Project Submittal Format to be considered for simplifying the project review process. The identification of the appropriate Programmatic Category and the revision/simplification of the Project Submittal Form are closely related to one and other.
How will the overall process for Programmatic renewal proceed? Timing? Who will review it? Will the Regional Office need to provide review?	See above. PennDOT will communicate with Sze Wing early & often in advance of submitting the revised BA

Federal Highway Administration and Pennsylvania Department of Transportation

Programmatic Consultation for Bog Turtle Transportation Actions

ESA Section 7 Biological Opinion / Incidental Take Permit Renewal Process Coordination

July 12, 2024, Meeting Discussion Points

Programmatic Consultation Approach Objectives:

- Screening Projects with the PNDI Environmental Review Process
- Conducting Bog Turtle Habitat Assessments to Evaluate Projects Potentially Resulting in Effects
- Modifying Projects as Possible to Avoid and Minimize Potential Adverse Effects
- Providing Measures to Offset Unavoidable Adverse Effects

Attendees:

Joshua Wisor	PA Fish and Boat Commission
Ben Lorson	PA FBC
Sze Wing Yu	US Fish and Wildlife Service
Chad Allison	USFWS
Jennifer Kagel	USFWS
Keith Lupfer	PennDOT District 8-0
Jesse Sabitsky	PennDOT Central Office
Andy Brookens	Skelly and Loy, Inc
Barbara Weedon	Gannett Fleming, Inc

The meeting began with an introduction of the attendees. Andy reviewed why we are meeting and at what stage we are at with the programmatic update. He provided a brief description of the previous programmatic agreement and what changes are recommended based on lessons learned through the last five years of implementation.

Andy provided a description of a few of the revisions, particularly pertaining to impacts to habitat during construction, or time of year restrictions related to PennDOT projects. The primary framework for the programmatic agreement will stay the same.

Information highlighted in yellow within the revised programmatic are updated/revised items. Table 4-2 2A/2B revisions were made because PennDOT identified the need to include Programmatic Categories (PC) that offer temporary and permanent impacts to foraging habitat. So, they have been revised to allow for work to occur during the active and inactive season. 3A and 3B revisions relate to travel corridors. Districts often confused the lack of available commercial mitigation bank credits to mean that the opportunity for bog turtle mitigation did not exist. District maintenance staff often selected PC's utilizing inactive season BMPs and typically have a greater range of flexibility to when a project can be constructed than design lead contractor built construction projects. Therefore, in the future, PennDOT would like to have the option to select to do work within the active season & or inactive season, but still achieve a No Effect or Likely Not to Affect determination.

PAFBC is running into issues when trout stream restrictions and bog turtle time of year restrictions overlap. When this occurs in association with a Class A trout stream (Oct 1 to April 1 stream restriction) the Department is asking for a waiver of trout TOY restrictions to allow time to construct the project and adhere to the bog turtle inactive season time of year restrictions. PAFBC would like to see the Department & USFWS

further evaluate if bog turtles are present rather than automatically asking for a waiver to Class A stream restriction. Jesse suggested that we come up with an analysis process that could scale back the potential for a stream being a travel corridor, so that they do not need to request a waiver. USFWS response was to move to a Phase II survey, however, the cost of the survey and getting access to property outside of the review area outweighs the *effort* needed for PennDOT to request a PAFBC waiver.

Jesse suggested that there is a way to perform due diligence on a project-by-project basis to determine that there isn't a potential for the stream to be a travel corridor; thereby avoiding the time of year restrictions. USFWS stated that by doing this due diligence, it may take the project outside of the programmatic. However, Jesse suggested that by doing due diligence and a risk analysis that it could remain within the PBO and likely save time using the standard informal consultation process.

USFWS identified that this approach of providing documentation for the extra due diligence should fit under the Programmatic form Category II in the consistency determination rationale. Jesse suggested that PennDOT add the waterway and fishery status on the form. PAFBC agreed that this would be helpful and asked that the PAFBC trout water classification, not Chapter 93, be included. Questions would be, "Is it wild trout stream" and then "Is it Class A", or something to that *effect.* This would apply to the stream that is designated and a ½ mile buffer upstream on tributaries, but not beyond on the tributaries. Then a follow up question would be "Has PAFBC issued a waiver or time reduction to the instream work restriction?" Coordination needs to occur with the PAFBC when the form is being completed so that there can be planning and consideration if a waiver for trout is actually needed or not.

Projects may fit within more than one programmatic category, where some work is done during the inactive season and some work is done during the active season. Select multiple PCs and use the Project Description write up to explain which work activities will occur during the inactive season and which will occur in the active bog turtle season.

USFWS and PAFBC would like to have a follow up meeting to discuss crediting methodology. Early September would be the preferred timeframe. Mitigation options would also be discussed during this meeting. The meeting will be virtual.

PennDOT will make modifications to the draft programmatic language based on discussions during the meeting. BT Submittal form will be modified as well. USFWS can send their comments to be incorporated. The official Bog Turtle Programmatic submission will be submitted prior to the September meeting.

Once the revised programmatic has been finalized, a meeting/training will occur with the districts to bring them up to speed on how to prepare the BT forms.

Meeting Discussion Points	Discussion Notes
1. The Department wishes to discuss the existing USFWS bog turtle occurrence modelling in an effort to explore opportunities for improvements to the existing project screening process.	Will USFWS be reviewing and modifying the predictive modelling? USFWS is not aware of the modeling being refined or reviewed. This was done a while back removing urban areas. This is PAFBC data through the Western PA Conservancy. PennDOT - looking to pursue no *effect* in the future rather than going straight to inactive season. Documentation will be supplied to support this finding. This information would be included as part of Category II on the form.
2. The Department wishes to discuss the applicability of Programmatic	Skip BMPs and jump straight to AMM#19. USFWS has been stalled with developing a bank for BT. AMM#19 will

Meeting Discussion Points	Discussion Notes
AMM #19 in lieu of the application of another project specific AMMs.	not have an option for buying credits. A Crediting methodology is in place. Looking to have an In Lieu fee established similar to the one used for the Mussel Programmatic.
3. The Department wishes to discuss the review process for alternative compensatory mitigation proposals for AMM #19.	Example situation: a wetland identified at the toe of roadway slope, which would be impacted. But the wetland was not part of the core habitat. However, the mitigation treated the non-core habitat as if it were core habitat and supporting habitat. Look at draft crediting methodology from 2023 and look at possibly adding a category for non-supporting habitat.
4. USFWS - Training on how to use the PBO for PennDOT Districts and consultants. • Perhaps scheduled for Fall 2024 or Spring 2025? • Online and/or in-person + field?	Classroom could be during the winter with field during the spring of 2025.
5. *The Department wishes to discuss the crediting methodology to account for alternate compensatory mitigation activities proposed for AMM #19. (this ties into #6) • Core Bog Turtle Habitat • Contiguous Wetland Habitat Lacking Core Attributes • Upland Buffer Area • Riparian Supporting Habitat (Connected Stream Corridors Extending 0.5 mile from the Wetland Habitat)	Add to the BO to establish an in-lieu fee bank as part of the update. Compensatory options are available. Alternative options exist for vegetation management, crossings, etc. The state could set up an in-lieu fee like was done for mussels. This will be discussed between USFWS and PAFGC. If unavoidable impacts are identified, then an alternative analysis would be required to prove that this is the best approach. There are situations where it is better for the species to go to mitigation and there are situations where a robust alternatives analysis is needed to prove the need to go to mitigation.
6. *USFWS would like to discuss options for mitigation for unavoidable impacts. This ties into #5. • PennDOT bog turtle conservation projects? • An in-lieu fee modeled after the Mussel Conservation Fund? • Conservation Banks? • Other mitigation ideas?	Possible separate meeting to discuss mitigation options. Chad suggested reaching out to the solicitors and nudge them to look at the possible mitigation bank items.

* This may need to be a separate meeting with PAFBC/USFWS/PennDOT.

APPENDIX A