United States Department of the Interior

FISH AND WILDLIFE SERVICE
Pennsylvania Field Office
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April 15, 2014

Keith Lynch
Federal Highway Administration
228 Walnut Street, Room 508
Harrisburg, PA 17101-1720

RE: USFWS Project #2007-0039

Dear Mr. Lynch:

This responds to your letter February 18, 2014, requesting our review of the Tier 2 Biological Assessment (BA) for the State Route (S.R.) 2082, Section A08, (Hulton Road) bridge replacement project over the Allegheny River located in located in Harmar Township and Oakmont Borough, Allegheny County, Pennsylvania. The following comments 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.

On December 15, 2011, the Fish and Wildlife Service (Service) issued a programmatic biological opinion (PBO) regarding the effects of the Pennsylvania Department of Transportation's (PennDOT) bridge replacement, removal, restoration/rehabilitation, and preservation projects within the Ohio River basin in Pennsylvania (hereafter referred to as Bridge Program). The Service's PBO evaluated the potential effects of PennDOT's bridge program activities on the endangered northern riffleshell (*Epioblasma torulosa rangiana*), clubshell (*Pleurobema clava*). The PBO was revised on December 6, 2012, to also consider three recently listed species, the rayed bean (*Villosa fabalis*), snuffbox (*Epioblasma triquetra*), sheepnose (*Plethobasis cyphyus*), and amended December 13, 2013 to consider the rabbitsfoot (*Quadrula cylindrica cylindrica*). In the PBO, we determined that carrying out the Bridge Program during the five year period considered, with full implementation of avoidance, minimization, and conservation measures, as proposed, was not likely to jeopardize the northern riffleshell, clubshell, rayed bean, snuffbox, sheepnose, or rabbitsfoot mussels.

Although the Service provided a PBO for the Bridge Program to the Federal Highway Administration (FHWA) and PennDOT, the Service will review site-specific projects that the project proponents determine "may affect" federally listed species. The Service will determine if any adverse effects are likely to occur as a result of a site-specific project in a manner, or to an extent, not evaluated or previously disclosed and considered in the Service's PBO. We consider

this site-specific project analysis to be "Tier 2" of the consultation process, with the programmatic consultation (and resulting PBO) constituting the "Tier 1" consultation. Our project-specific (Tier 2) consultations will focus on: 1) compliance with the reasonable and prudent measures and associated terms and conditions in the PBO; 2) consistency with the scope and effects previously analyzed in that opinion; 3) project-specific incidental take versus take estimated in the PBO; and 4) any project-specific reasonable and prudent measures and associated terms and conditions that may further reduce the likelihood or quantity of take. If implementation of the measures outlined in the PBO can avoid the take of listed mussels, such that the Service can determine that a project is not likely to adversely affect listed species, no further evaluation by the Service is necessary, and section 7(a)(2) consultation will be considered complete for that project with documentation provided via our written concurrence.

We reviewed the information provided in the "Tier 2" Hulton Road Bridge Replacement Project biological assessment, which describes the potential effects of the proposed project on federally listed species. The proposed project type (i.e., bridge replacement) and the anticipated effects were discussed and evaluated in the Bridge Program biological assessment and PBO. Therefore, this consultation qualifies as a "Tier 2" consultation under the Bridge Program PBO (Tier 1) consultation.

FHWA and PennDOT Effect Determinations

The project area was surveyed for presence of federal and state listed freshwater mussels in July 2008. The survey results indicated that a diverse mussel assemblage (17 species) is present, unique within the impounded reaches of the Allegheny River. Suitable habitat for the listed mussel species is present as well, although no federally listed mussels were found in the 2008 survey. Based on the level of survey effort, results indicate that not all species were detected, and there is a 29 percent possibility that listed mussels may be present at densities below detection limits.

The original bridge design approved for construction, and for which informal consultation was undertaken with the Service, included measures to avoid and minimize adverse effects on federally listed mussels. Originally, the Service did not concur with FHWA's "no effect" determination for the clubshell and northern riffleshell, and concluded in 2008 that the project, as then designed, and with implementation of the specified avoidance and minimization measures, "may affect, but is not likely to adversely affect" federally listed mussels. In our letter of November 14, 2012, we again concluded that the project, as then proposed, was not likely to adversely affect either clubshell or northern riffleshell, if the species are extant in this portion of the river. Subsequent to our 2012 letter, three additional mussel species have been listed as endangered (rayed bean, snuffbox, and sheepnose) for which suitable habitat exists in the project area and, therefore, might also be present at low population densities.

Construction of Hulton Bridge replacement project began in 2013. In November 2013, the construction contractor proposed changes to the design that partially eliminated a western causeway positioned in unsuitable mussel habitat. The alternative method is to use a crane, positioned on barges, to construct the western bridge spans. While this change reduces the overall area of riverbed directly disturbed by placement of a causeway, new areas of disturbance are proposed to provide barge access. These new impacts include dredging riverbed material between the new bridge alignment and Twelve Mile Island to allow for barge-staging areas.

Based on the inconclusive nature of the July 2008 freshwater mussel survey result, and the anticipated additional direct disturbance in identified suitable mussel habitat now proposed, FHWA determined that replacement of the Hulton Road Bridge may affect clubshell, northern riffleshell, rayed bean, snuffbox, and sheepsnose pearly mussels. FHWA also determined that the Project will have "no effect" on the rabbitsfoot, which has not been reported in navigation pool habitat of either the Ohio or Allegheny Rivers. We concur with these effect determinations.

The following Tier 2 biological opinion (BO) considers the effect on clubshell, northern riffleshell, rayed bean, snuffbox, and sheepnose during the removal of the existing Hulton Road Bridge and bridge piers; construction of a replacement structure and bridge piers; temporary placement of access areas (causeways and barge staging areas); associated dredging; and implementation of avoidance and minimization measures, as described in the biological assessment (BA). This Tier 2 BO evaluates whether the project, as now proposed, is consistent with PBO and, assuming that this is the case, estimates the incidental take anticipated due to implementation of the Hulton Road Bridge replacement project and the cumulative total incidental take due to the Bridge Program implementation.

Description of the Proposed Action

The Hulton Bridge is located at approximately Allegheny River mile 12 (*i.e.*, 12 miles upstream of the Allegheny River confluence with the Ohio River), immediately downstream from Twelve-Mile Island. The existing bridge is a five-span Pratt through-truss bridge constructed in 1908. The existing bridge is a narrow two-lane structure (two 10.5-foot lanes with no shoulders or median) with a sidewalk. The proposed new structure is a steel plate girder bridge set immediately upstream of the existing structure. The new, wider, four-span structure includes an additional travel lane in each direction, 6-foot wide shoulders, a 4-foot wide median, and a 5-foot sidewalk. This structure will be set on three instream piers (the existing bridge has four piers). Associated bridge approach activities include constructing left turning lanes on Freeport Road (S.R. 1001) to accommodate traffic turning onto the Hulton Bridge and rebuilding Second Street, located on the eastern side of the Allegheny River.

In 2009, the anticipated area of direct streambed disturbance in habitat that appeared to be suitable for endangered mussel species (Figure 1) was at the two proposed 85 foot by 12 foot piers for a total of 2040 ft^2 (190 m^2) and in beneath the 13,000 ft^2 fall area when the existing bridge is demolished of 8667 ft^2 (805 m^2) because approximately two-thirds of the channel with suitable mussel habitat. Since 2012, the direct and indirect disturbance area has incrementally increased to include support towers, pre-excavation at pier location outside of cofferdams with resulting silt plumes, and dredging to allow barge access below Twelve-Mile Island. The biological assessment concludes that project design and construction activities will result in 3,270 m^2 (35,199 ft^2) direct riverbed disturbance in the area the project proponents define as suitable mussel habitat.

Overall direct disturbance in suitable habitat has increased by 3,080 m^2 from original 2009 design, including proposed disturbance in suitable mussel habitat that was not previously surveyed. This new disturbance area is intended to accommodate construction barges that require a minimum 6 foot draft, which is not available at all areas at the downstream point of the

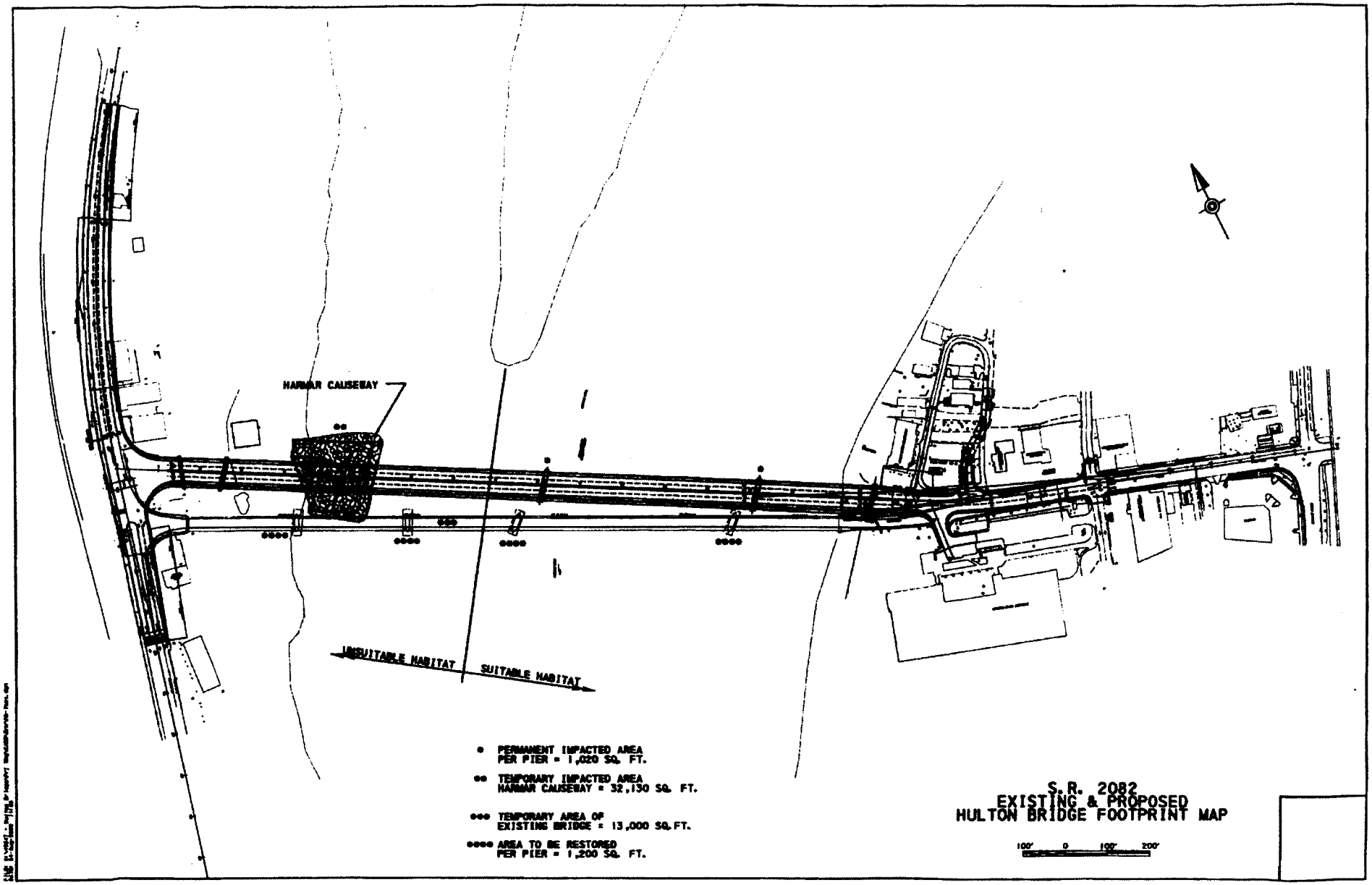
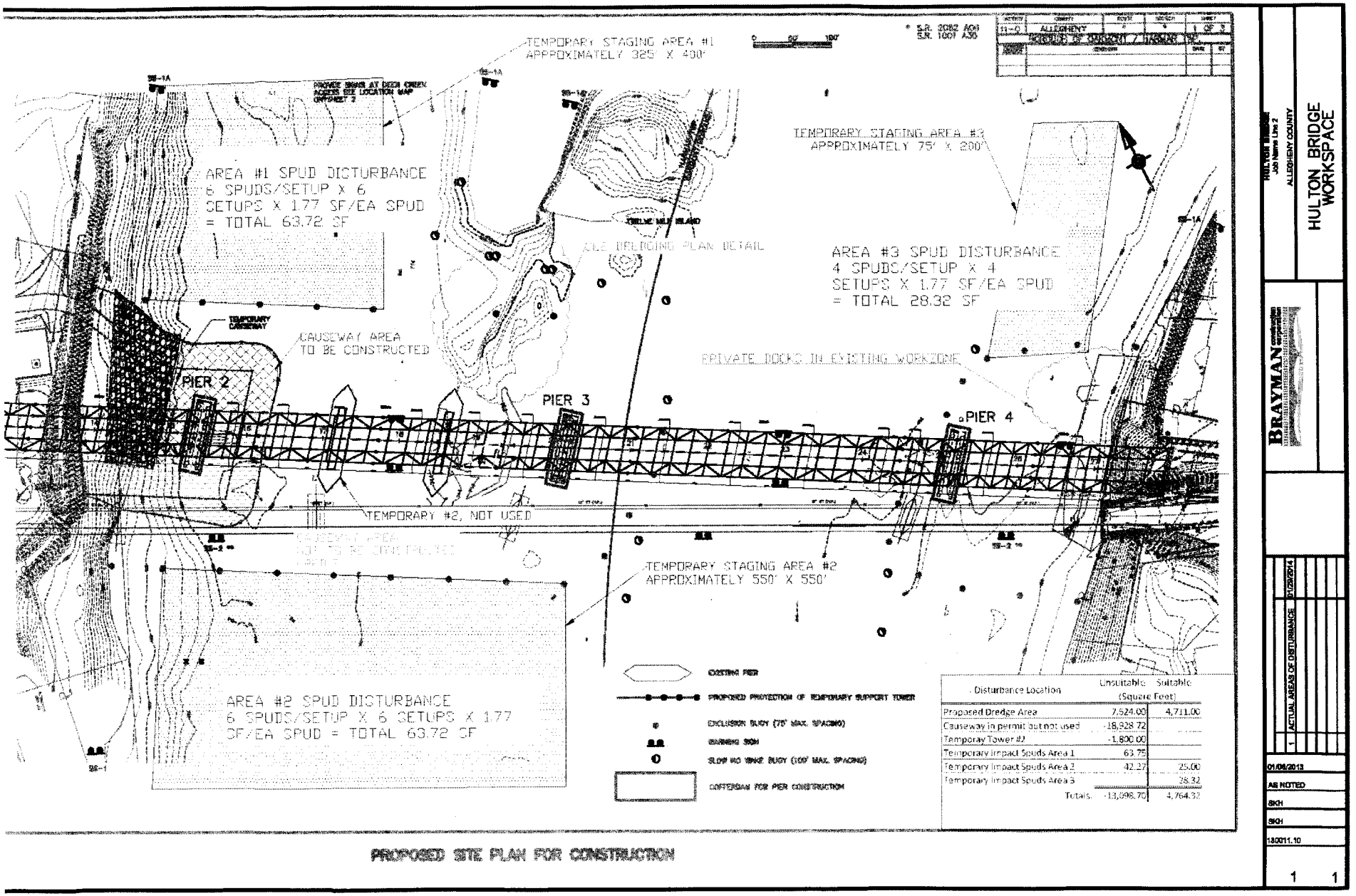


Figure 1. Allegheny River at S.R. 2082 (Hulton Bridge) riverbed disturbance as proposed in 2009.



PROPOSED SITE PLAN FOR CONSTRUCTION

Figure 2. Allegheny River at S.R. 2082 (Hulton Bridge) riverbed disturbance as proposed in 2014. Adapted from the Tier 2 biological assessment.

Twelve-Mile Island. Dredging is proposed in both suitable and unsuitable mussel habitat. The proposed dredging area (including a buffer) necessary to accommodate barge access results in approximately 438 m^2 (4,711 ft^2) of disturbance in suitable mussel habitat (and 699 m^2 (7,524 ft^2) in locations that appears to be largely unsuitable mussel habitat). In addition, about 15 m^2 (159.34 ft^2) will be disturbed at barge spud anchor points (comprising about 5 m^2 (53 ft^2) in suitable habitat. The total area of riverbed disturbance now proposed for dredging, spud-anchor points, and staging is about 443 m^2 (4,764 ft^2) in suitable mussel habitat, and 709 m^2 (7,630 ft^2) of unsuitable habitat. In addition, the predicted temporary riverbed disturbance associated with demolition of the existing bridge has increased from a total of 1,208 m^2 (13,000 ft^2) to 6,863 m^2 (73,872 ft^2) with 2,685 m^2 (28,901 ft^2) predicted to fall on to suitable endangered mussel habitat. A summary of total anticipated area of riverbed disturbance as described in the BA is presented in Table 4-1 (BA, page 13) and Appendix B of the BA.

Consistent with the Programmatic bridge consultation a number of best management practices will be incorporated into the project design (biological assessment, pages 14 to 20). These measures are necessary to reduce the amount of take.

The action area is defined as all areas affected directly or indirectly by the Federal action and not merely the immediate area (footprint) involved in the action. The action area identified by the project proponents for the construction of the Hulton Road Bridge extends 656 feet (200 meters) upstream and 1,312 feet (400 meters) downstream of the existing bridge, to encompass the section of the river and adjacent riverbanks where direct and indirect environmental consequence from project implementation and operation are anticipated to occur. We concur with the action area identified in the biological assessment (page 21).

No utilities will be relocated in the river therefore no effects to listed species or occupied habitats will occur as a result of utility relocation.

Conservation Measures

Conservation measures represent actions pledged in the project description that the action agency or the applicant will implement to further the species' recovery. Such measures may be tasks recommended in the species' recovery plan, should be closely related to the action, and should be achievable within the authority of the action agency or applicant. The beneficial effects of conservation measures are taken into consideration in the Service's conclusion of jeopardy or non-jeopardy to the listed species, and in the analysis of incidental take. Such measures, however, must minimize adverse effects to listed species within the action area in order to be factored into the Service's analyses

The following conservation measures have been incorporated into the project description for the Hulton Bridge replacement project. These measures are designed specifically to avoid and minimize impacts of the proposed action on endangered mussels. The Service has analyzed the effects of the proposed action based on the assumption that all conservation measures will be implemented. More detailed descriptions of the conservation measures are provided in the biological assessment (in part, on page 11).

Off-site Measures:

Consistent with the programmatic biological assessment for projects in Management Unit 2, a contribution of $44,300 will be made to the Pennsylvania Mussel Conservation Fund, an *in-lieu-fee* fund to partially offset adverse effects to endangered mussels, rather than completing an adequate mussel survey and mussel salvage/relocation prior to dredging.

On-site Measures:

Partial restoration of mussel habitat at the pier demolition locations will be completed by refilling excavated holes with blocks from the existing pier and capping with native river stone or equivalent (*i.e.*, #1 grade or A57 rock) (personal communication with M. Young and J. Myler , March 18, 2014).

Status of the Species

Species description, life history, population dynamics, status, and distribution are fully described for the clubshell, northern riffleshell, rayed bean, sheepnose, and snuffbox mussels in the revised December 13, 2013, Mussel Programmatic Biological Opinion (PBO, amended) on pages 26 to 40. This information is hereby incorporated by reference. Since issuance of the Service's Tier 1 PBO, there are no substantial changes in the status of the clubshell, northern riffleshell, rayed bean, snuffbox, or sheepnose mussels.

Environmental Baseline

The Environmental Baseline for the Bridge Program action area is described on pages 40 to 43 of the Tier 1 PBO (amended), and is hereby incorporated by reference. Since issuance of the Service's PBO, there are no substantial changes in the environmental baseline.

Factors Affecting the Species' Environment at the Hulton Road Bridge

The Hulton Road Bridge over the Allegheny River is set in a suburban/commercial/ industrial area in Harmer Township and Oakmont Borough. Other land uses in the project vicinity are a mix of rural wooded land, public and private neighborhoods, businesses, industry, riverside property, and recreation. Riparian buffer areas are limited on this reach of river. The Allegheny River at this location is somewhat impounded by Lock and Dam Number 2, located at river mile 6.7, about 5.3 miles downstream near the towns of Sharpsburg, Aspinwall and Etna, Pennsylvania. The navigational channel is maintained for a minimum 9 foot depth in the navigation channel.

Deer Creek flows through Harmer Township and empties into the Allegheny River on river right, just upstream of the project in the back channel of Twelve Mile Island. Deer Creek is listed on the 303(d) list for impairment (1998) due to variety of pollutants, including abandoned mine drainage, metals, turbidity, and suspended solids. The Allegheny Valley Joint Sewage Authority Treatment Plant also discharges in to the back channel area upstream of the action area. These factors likely contribute to the absence of suitable mussel habitat in the western portion of the action area. The main channel of the Allegheny River in, and upsteam of, the action area has a high diversity of riverine fish and mussel species that indicate good water and habitat quality. Between Hulton Bridge and Lock and Dam Number 3 (located at river mile 14.5 and also known as C.W. Bill Young Lock and Dam), 22 species of freshwater mussels have been identified making this among the most diverse freshwater

mussel communities in Pennsylvania. The presence of fish species more typical of free flowing river reaches (*e.g.*, bluebreast and Tippecanoe daters) indicate that flow is adequate to support these species, despite the lock and dam system.

Status of the Species within the action area

A freshwater mussel survey was completed in the originally defined action area on July 15 and 22, 2008. The survey methodology followed a semi-quantitative sampling design that included a combination of diver-searched transects (timed-searches) and excavated quadrats to estimate search efficiency. The survey area extended from River Mile 12.4 to 12.8. Phase 1 (qualitative sampling encompassed 200 meters upstream and 400 meters downstream of the Hulton Bridge. Unsuitable mussel habitat (influenced by Deer Creek) in the western side of the channel was eliminated from the survey area. Semi-qualitative searches were completed along 15 transects, established at 30-meter intervals in the upstream portion of the study area, with two additional downstream transects spaced at 60-meter intervals in deeper water habitat. A diver using surface-supplied air searched a one-meter wide swath along each transect, with a search time of about 70 minutes per 100 meters of transect. Three quantitative sampling sites were established near the bridge in areas of observed high and low mussel population density. Phase 2 sampling included 104 0.25-square meter quadrats that were excavated, and sorted on the surface.

Surveyors located 194 mussels representing 14 species along the 13 transects (3,600 linear meters total), resulting in an average mussel density of 0.108 mussel per square meter. The Qualitative Phase 2 sampling reveled a substantially different relative abundance and much greater overall mussel abundance (2.88 mussels per square meter) than were found during transect searches, largely the result of greater diver sampling efficiency in locating smaller mussels not detected visually on the substrate surface. Combined, 269 mussels representing 17 species (15 alive and two represented by freshly dead specimens). Habitat was reported to range from slower current/silted areas to current-swept gravel and cobble habitat.

No federally listed species were reported, though potential habitat for these species exists throughout the surveyed area. Further, given the level of survey effort, species with a population density of $\leq$0.003 were not likely to be detected. The probability of detecting any mussel species present (including endangered species) was 0.71. Rayed bean is among the smallest of freshwater mussels and would have been among the species likely to be overlooked in transect surveys, based on the significantly greater detection of small mussels during the limited Phase 2 sampling. Because additional species continued to be found as sampling continued, it is unlikely that all species present were located and the survey report concludes that there is a 29 percent probability that an endangered species at low population density may not have been found.

Clubshell, northern riffleshell, and rayed bean mussels have been documented elsewhere in the impounded reaches of the Allegheny River navigation channels, where a similar diversity of mussel species occurs (clubshell – Pools 7, 8, and 9; northern riffleshell – Pools 6, 8, and 9; and rayed bean – Pools 5, 6, 7, 8, and 9).

Sheepsnose and snuffbox mussels are not known to occur in the maintained navigation channel of the Allegheny River. Therefore, they are not likely to occur within the action area. Consequently, we would not expect them to be killed, harmed, or harassed as result of this project.

The above data represents the best available information. Because the action area and immediate upstream river reach support an exceptionally high diversity of mussel species (including two species that until recently were thought to be extinct in the Commonwealth), one or more endangered mussels, especially clubshell, northern riffleshell, or rayed bean, may be present, albeit at population densities less than 0.003 per square meter.

Effects of the Action

Direct Effects

Direct effects are the immediate effects of the project on the species or its habitat. Direct effects result from the agency action and include the effects of interrelated and interdependent actions. Future federal actions that are not part of the action under consideration are discussed under *Indirect Effects* section. Additional descriptive information of the types of effects that typically occur as a result of bridge program projects is provided in the Tier I PBO on pages 53 to 58, and page 62.

In our letters of December 31, 2008, and November 30, 2009, regarding this project, the Service agreed that actions associated with the Hulton Bridge replacement project were not to likely adversely affect the clubshell and northern riffleshell. This determination was based on the low anticipated population density ($\leq 0.003/m^2$) and the limited area (995 m^2) of disturbance in suitable mussel habitat. Based on our analysis of the information provided in the Tier 2 BA, we anticipate that direct adverse effects will result from the Hulton Road Bridge replacement project when clubshell, northern riffleshell, and rayed bean are killed, injured, or harmed (via crushing, directly removal with substrate, dewatering, and smothering) in areas of direct streambed disturbance due to dredging. Sources of adverse effects from dredging include removal of substrate, side-slope failure of substrate disturbed but not physically removed, siltation downstream of dredging, minor backwater and scour effects around the barge positions below Twelve Mile Island, and increased barge spud anchor points.

During construction, the partial causeway, barges position at the end of Twelve Mile Island, and coffer dams at the new piers (*e.g.,* stream diversion) may result in minor increases the river stage during higher flows. Localized backwater effects may facilitate deposition, while streambed scour may increase downstream. Localized scour and redisposition is likely to occur near dredged areas that may result in substrate movement that mussels are not able to tolerate. The streambed material, and any mussels occurring in the scoured areas, will be re-deposited downstream when water velocity decreases. Dislodged and re-deposited mussels may be smothered when sediments settle out. Those mussels not killed or injured during this process may still suffer death (suffocation), injury (gill clogging), or increased predation risk (increased exposure if they are unable to right themselves and re-burrow into suitable habitat) downstream.

During the demolition phase of the project, all non-structural members of the bridge will be removed prior to dropping the bridge in the River. At comparable bridge demolition sites (*e.g.,* East Brady Bridge (S.R. 62) over the Allegheny River) we estimated that the actual disturbed area is approximately fifty percent of the area under the bridge after removal of all non-critical bridge members; utilizing control burn demolition; and picking, rather than dragging, the demolished bridge

from the river. Although any mussels directly hit by bridge sections will be killed, crushed, or injured, the disturbance will be spread over a relatively wide area. The Tier 2 BA describes an increased area of riverbed disturbance, albeit temporary, during bridge demolition beyond what was described in 2009. Any clubshell, northern riffleshell and rayed bean that are struck by falling bridge sections, or when sections are removed, will likely be killed or injured. Those not directly impacted may still be adversely affected by associated silt and contaminates associated with demolition that may cause them to cease feeding or respiring for a period of time, and gravid females may abort young depending on the timing of demolition.

The extent of additional adverse effects will depend on river flow and silt load in disturbed substrate. Cranes and barges are at risk of flooding during high flow events if the barges that they rest on are not secure. Further, construction materials and equipment may affect mussels if the equipment is washed into the river and is either physically transported downstream by currents, or if toxic materials, such as fuel, spill into the river. Such spills could directly or indirectly affect endangered mussels, resulting in take. The project proponents have developed a Pollution Prevention Plan (PPP; Appendix D in the Tier 2 BA) and are committed to implement it, but toxic spills cannot be anticipated if crane pads, cranes, or other construction features are flooded or become unsecured (*e.g.*, barges). The PPP details strict implementation of siltation and erosion measures, off-site storage of toxic materials, and construction crew education to reduce the risk of accidental or unintended catastrophic events. Although there appears to be a relatively low population density of endangered mussels in the action area, such an event would increase the amount of take and expand the area in which endangered mussels are killed, harmed, or harassed.

The programmatic Tier 1 biological assessment estimated that without avoidance and minimization measures, replacement of the Hulton Road Bridge could result in a total disturbance area of up to 590 m^2 (6,350.7 ft^2). The Tier 2 BA indicated that the total direct disturbance area proposed (including pier construction, western causeway, support tower, bridge demolition, dredging, and staging) is a total of 3,270 m^2 (35,198 ft^2) in suitable endangered mussel habitat, with the greatest risk of take occurring during riverbed dredging and associated silt transport and during bridge demolition. Table 4-1 in the BA outlines the proposed impacts by activity type.

The project design exceeds the level of streambed disturbance considered in the PBO for this bridge. If clubshell, northern riffleshell, and/or rayed bean occur in the action area, they are likely at low population densities, as predicted in the PBO (0.001 mussels per square meter). However, the results of the 2008 survey indicates that the detection limit of the effort extended was $\leq 0.003/m^2$, therefore, 0.001 may not be have been detected. If clubshell, northern riffleshell and/or rayed bean occur in the action area, the population densities are likely $\leq 0.003/ m^2$. We used the population density detection limit in this biological opinion used to estimate take (See Tables 1a, 1b, and 1c).

Indirect Effects

Indirect effects are those effects that are caused by, or will result from, the proposed action and are later in time, but are still reasonably certain to occur (50 CFR §402.02). Additional descriptive information of the types of indirect effects that typically occur as a result of bridge program projects are provided in the Tier 1 PBO on pages 56 to 58.

Indirect effects for the Hulton Road Bridge project include injury resulting from altered hydrology and short-term sedimentation effects that occur as a consequence of the newly proposed dredging. As filter feeders on microscopic food items, the northern riffleshell, clubshell, and rayed bean are very susceptible to smothering by silt and other sediments in the water. Siltation also may result in reduced dissolved oxygen and increased organic material at the substrate level. At sublethal levels, silt interferes with feeding and metabolism in general. Because the clubshell typically burrows completely beneath the substrate, and rayed bean are small, and tend to occupy habitat along the stream margin or other flow refugia, these species may be particularly susceptible to siltation, which clogs the substrate interstices and suffocates the animal.

Mussels will be smothered, buried, or have their gills clogged from project-related silt and other sediments. The extent of the silt plume will depend upon background silt load during dredging and bridge demolition, water velocity, and particle size. Silt plumes during commercial dredging operations may extend more than 1,500 feet (457 m^2) below active dredging in the Allegheny River. The level of proposed disturbance is less than would be associated with a commercial river mining operation; therefore, the extent of the silt plume should also be less extensive. The estimated area of incidental take for the Hulton Bridge project extends 656 feet (200 meters) upstream and 1,312 feet (400 meters) downstream of the existing bridge where the anticipated dredging operation will occur within suitable mussel habitat (approximately 100 feet (30.6 meters)). Within the silt plume, mortality, injury, or stress to mussels is expected from siltation and other types of sedimentation caused by both in-water construction (*i.e.,* dredging and bridge demolition) and onshore construction (*i.e.,* realignment of the bridge approaches, abutment construction, staging areas, and access road construction). Implementation of erosion and sedimentation control practices are critical to minimize these sources of sediment.

Cumulative Effects

Cumulative effects include the effects of future State, tribal, local, or private actions, not involving a Federal action, that are reasonably certain to occur in the action area considered in this biological opinion. 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 Endangered Species Act. Cumulative effects are described on page 63 of the Tier 1 PBO, and are hereby incorporated by reference.

The Hulton Road Bridge is in a suburban/commercial/industrial setting between Harmer Township and Oakmont Borough. While a variety of activities are likely to occur in such a setting, we are not aware of specific actions that are likely to occur and that would adversely affect the species in the action area, beyond the section 7 action considered in this opinion.

Conclusion

After reviewing the size and scope of the proposed project; the environmental baseline; the overall status of the clubshell, northern riffleshell, rayed bean, sheepnose, and snuffbox mussels; the effects of the action; and the cumulative effects, we conclude that the Hulton Road Bridge replacement project may affect, and is likely to adversely affect the clubshell, northern riffleshell, and rayed bean mussels. However, the effects of the action will not result in adverse effects to these three species that are beyond those that were considered in the Service's *PBO.*

We further conclude that the Hulton Road Bridge replacement project will have no effect on sheepnose or snuffbox mussels, because the best available commercial and scientific information suggests that these species do not occur within the action area (See Summary of Effect Determination below).

No designated or proposed critical habitat is present in the project; therefore, none will be affected. This project has not resulted in a jeopardy determination because: (1) the effects of the project are consistent with those considered in the PBO; (2) the Federal Highway Administration and PennDOT will implement conservation measures to maintain water quality and minimize impacts to mussel habitat; (3) in lieu of a more compressive mussel survey or salvage and relocation of endangered mussels, the project proponents will utilize the Mussel Conservation Fund for conservation of federally listed mussels at a rate of $100 per square meter for 443 m^2 ($44,300) to partially offset the effect of dredging in suitable endangered mussel habitat; (4) project proponents have committed to restore some mussel habitat at the site of the existing bridge.

Summary of Effect Determinations

Species	**Listing Status**	**FHWA Effect Determination (FWS concurrence)**
Pleurobema clava (clubshell)	Federal and State Endangered	May Effect, Likely to Adversely Affect (FWS concurs)
Epioblasma torulosa rangiana (northern riffleshell)	Federal and State Endangered	May Effect, Likely to Adversely Affect (FWS concurs)
Villosa fabalis (rayed bean)	Federal and State Endangered	May Effect, Likely to Adversely Affect (FWS concurs)
Plethobasus cyphyus (sheepnose)	Federal Endangered and State Threatened	May Effect, Likely to Adversely Affect (FWS does not concur; concludes No Effect)
Epioblasma triquetra (snuffbox)	Federal and State Endangered	May Effect, Likely to Adversely Affect (FWS does not concur; concludes No Effect)
Quadrula cylindrica cylindrica (rabbitsfoot)	State Endangered and Federal Threatened	No Effect (FWS concurs)

Incidental Take Statement

This "Tier 2" biological opinion is based on potential adverse effects to the clubshell, northern riffleshell, and rayed bean mussels during removal and replacement of the Hulton Road Bridge over the Allegheny River. This "Tier 2" BO identifies the incidental take anticipated due to implementation of this Management Unit 2 bridge replacement project with the incorporation of

measures to minimize take. The cumulative total incidental take resulting from Bridge Program actions to the date of this Tier 2 BO is included in Appendix A.

Construction related to the removal and replacement of the Hulton Road Bridge will occur between 2014 and 2018, and may result in take of clubshell, northern riffleshell, and rayed bean mussels. Consistent with the approach taken in the PBO, incidental take of clubshell, northern riffleshell, and rayed bean is measured indirectly as the area of direct streambed habitat disturbed (m^2 of area) based on the estimated population density and the observed and predicted species distributions during the 2008 mussel survey. This take is counted toward the cumulative total incidental take as outlined in the PBO.

Table 1a. Clubshell incidental take estimates for the Hulton Road Bridge (S.R. 2082) Replacement Project, Allegheny County, PA.

Area Within Which Take Will Occur	Type of Take	Estimated mean population density	Number of Clubshell
Area of suitable mussel habitat directly disturbed 3,774 m^2. Includes pier construction (504 m^2), support towers (142 m^2), bridge demolition 2,685 m^2), dredging and staging (443 m^2).	Clubshell killed, harmed or harassed by crushing smothering, or dislodging during construction.	≤0.003 clubshell/m^2	≤11[1]
Area exposed to backwater effects, sedimentation and siltation during dredging, scour during and following construction, altered hydrology (200-m upstream, 400-m downstream, 30.6-m wide); 18,397 m^2	Clubshell harmed or harassed during construction and post-construction	≤0.003 clubshell/m^2	≤55[2]
Total incidental take			≤66

[1] 3,774 m^2 (direct habitat disturbance) x 0.003 clubshell/m^2 = 11 clubshell (*rounded to nearest whole animal)

[2] 18,397m^2 x 0.003 clubshell/m^2 = 55 clubshell (*rounded to nearest whole animal)

Table 1b. Northern riffleshell incidental take estimates for the Hulton Road Bridge (S.R. 2082) Replacement Project, Allegheny County, PA.

Area Within Which Take Will Occur	Type of Take	Estimated mean population density	Number of Northern Riffleshell
Area of suitable mussel habitat directly disturbed 3,774 m^2. Includes pier construction (504 m^2), support towers (142 m^2), bridge demolition 2,685 m^2), dredging and staging (443 m^2).	Northern riffleshell killed killed, harmed or harassed by crushing smothering, or dislodging during construction.	≤0.003 Northern riffleshell/m^2	≤11[3]
Area exposed to backwater effects, sedimentation and siltation during dredging, scour during and following construction, altered hydrology (200-m upstream, 400-m downstream, 30.6-m wide); 18,397 m^2	Northern riffleshell harmed or harassed during construction and post-construction	≤0.003 Northern riffleshell/m^2	≤55[4]
Total incidental take			≤66

[3] 3,774 m^2 (direct habitat disturbance) x 0.003 northern riffleshell/m^2 = 11 northern riffleshell (*rounded to nearest whole animal)

[4] 18,397m^2 x 0.003 northern riffleshell/m^2 = 55 northern riffleshell (*rounded to nearest whole animal)

Table 1c. Rayed bean incidental take estimates for the Hulton Road Bridge (S.R. 2082) Replacement Project, Allegheny County, PA.

Area Within Which Take Will Occur	Type of Take	Estimated mean population density	Number of Rayed bean
Area of suitable mussel habitat directly disturbed 3,774 m^2. Includes pier construction (504 m^2), support towers (142 m^2), bridge demolition 2,685 m^2), dredging and staging (443 m^2).	Rayed bean killed, harmed or harassed by crushing smothering, or dislodging during construction.	≤0.003 Rayed bean/m^2	≤11[5]
Area exposed to backwater effects, sedimentation and siltation during dredging, scour during and following construction, altered hydrology, and altered stormwater runoff (200-m upstream, 400-m downstream, 30.6-m wide); 18,397 m^2	Rayed bean harmed or harassed during construction and post-construction	≤0.003 Rayed bean/m^2	≤55[6]
Total incidental take			≤66

[5] 3,774 m^2 (direct habitat disturbance) x 0.003 rayed bean/m^2 = 11 rayed bean (*rounded to nearest whole animal)

[6] 18,397m^2 x 0.003 rayed bean/m^2 = 55 rayed bean (*rounded to nearest whole animal)

Reasonable and Prudent Measures

The Service believes the following reasonable and prudent measures are necessary and appropriate to minimize take of northern riffleshell, clubshell, and rayed bean.

1. Implement project-specific avoidance, minimization, and conservation measures described in the biological assessment (pages 14 to 19) and all Reasonable and Prudent Measures and Terms and Conditions detailed in the PBO and applicable Management Unit 2, Tier 2 actions.

2. Ensure that all contractors are aware of the significant consequences of deviating from full implementation of all measures to avoid and minimize adverse effects, as detailed in the opinion. Of particular importance to contractors are those measures designed to prevent the release of petroleum products or other hazardous substances and to ensure the appropriate installation and maintenance of erosion and sediment control measures.

Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the Act, the Federal Highway Administration, U.S. Army Corps of Engineers, Pennsylvania Department of Transportation, and their contractors, must comply with the following terms and conditions, which implement the reasonable and prudent measures described above, and outline reporting and monitoring requirements. These terms and conditions are non-discretionary.

1. Contractors or PennDOT will maintain a daily written log of weather and river stage (utilizing the U.S. Geological Survey stream gage for the Allegheny River, gages 0304964—Acmetonia, and 03049680—Aspinwall, PA), and will immediately stabilize the work area and remove any hazardous materials from the river and the floodplain in the event that flooding is expected.

    a. The weather and river stage-monitoring log must be made available to the Service upon request and a copy provided to the Service when the project is complete.

    b. If a spill or siltation event does occur in the Allegheny River, all construction must cease until emergency remediation procedures are implemented to contain the spill, and consultation (including a revised biological opinion) is completed.

    c. The Service will be notified immediately of any failures of erosion and sedimentation control measures or spills of hazardous materials.

2. All excavated materials from dredging or earthmoving activities will be stored at a predetermined, confined, upland site and precluded from re-entry into any aquatic resource.

    a. As a key measure of water quality, monitor turbidity 100 feet upstream and 500 and 1000 feet downstream during active dredging, on a continuous or hourly basis, to monitor the extent of the downstream area of anticipated take.

i. Monitoring shall minimally occur downstream of the dredging area and at both the substrate level and mid-water column. A record of turbidity monitoring shall be made available to the Service upon request.

ii. Significant downstream turbidly beyond that assessed in this opinion may indicate a larger than anticipated level of take and may require additional mussel survey effort to evaluate if the incidental take has been exceeded.

3. After pier removal at Hulton Bridge, fill the resulting holes in the riverbed to conform to the surrounding bed elevations. This will be done using natural bed material reserved from the new pier locations (or areas not inhabited by mussels). This differs from the conservation measure proposed in the biological assessment, but will allow for more rapid mussel recolonization and limit erosion. Contractors will expedite all restoration efforts directly after construction to reduce run-off into aquatic areas downstream.

4. Project proponents will re-establish riparian areas to avoid post-construction erosion and reduce run-off into the Allegheny River using plant species that are native to the local area.

5. Prior to the disturbance to suitable mussel habitat, in lieu of a mussel salvage and relocation from the proposed dredge area, a contribution to the Mussel Conservation Fund of $44,300 ($100 x 443 m^2 of disturbed suitable habitat) will be made for conservation of federally listed mussels.

6. Contractors will "pick" out (using mechanical means), rather than drag out, bridge members during demolition activities to reduce adverse effects on benthic habitat and species.

Reinitiation Notice

In accordance with our amended December 13, 2013, biological opinion, incidental take that occurs as a result of this and other Bridge Program projects cannot exceed the annual or cumulative incidental take levels established in the programmatic biological opinion. If implementation of any project or projects is anticipated to exceed these take levels, further consultation will be necessary. To ensure that incidental take is not exceeded, annual reports should be provided to this office tabulating the amount of incidental take (as it occurs) on projects being implemented throughout the programmatic action area.

Should new information reveal that the agency action may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; or 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 a new species is listed or critical habitat is designated that may be affected by the action; or the amount or extent of take as identified in Table 2 is exceeded, reinitiation of formal consultation as outlined in 50 CFR 402.16 is required.

If you have any questions regarding this matter, please contact Jennifer Kagel of this office at 814-234-4090.

Sincerely,

Lora Zimmerman
Field Office Supervisor

cc:
PFBC – Urban, Savage
PennDOT – District 11-0 – Young
ACOE – Edris
DEP – Baxter Barkley

Appendix A

Bridge Program projects by project type and Management Unit (adapted from Appendix C of the BA). Tier 2 incidental take estimates (in parentheses and bold text) verses those considered during the program biological assessment.

County	Project Title	Project Type	MU	Density Estimates (Estimates based upon site specific survey information)				Proposed area of direct riverbed disturbance (M2)	Direct Effect Take Estimate (Estimates based upon site specific survey information)				Project Status
				Northern Riffleshell	Clubshell	Rayed bean	Snuffbox		Northern Riffleshell	Clubshell	Rayed bean	Snuffbox	
Mercer	Carlton Rd Bridge/New Lebanon over French Creek	Replacement	1	1.82 (3.21)	# (0)	3.35 (2.18)	0.33 (0.08)	432 (533)	786 (1708)	4 (0)	1447 (1160)	143 (43)	Tier 2 consultation 2013
Bridge replacement projects in MU 1 = 1 of 6				**Tier 1 Estimated Incidental Take** **Tier 2 Estimated Incidental Take** **Potential salvaged** **Remaining Tier 1 Incidental Take considered**					**2475** **(1708)** **854** **767**	**252** **(0)** **Na** **253**	**4381** **(1160)** **580** **3221**	**648** **(43)** **21** **605**	
Mercer	Race Street bridge/Greenville over Lt Shenango River	Replacement	2	0.0 (0)	0.001 (0)	0 (0)	0.080 (0.061)	234 (501+770)	0	0	0	18 (78)	Tier 2 consultation 2013
Allegheny	Hulton Road Bridge over the Allegheny River	Replacement	2	0.001 (0.003)	0.001 (0.003)	0.001 (0.003)	0.001 (0)		11 (66)	11 (66)	11 (66)	0 (0)	Tier 2 consultation 2014
	Bridge replacement projects in MU 2 = 1 of 10			**Tier 1 Estimated Incidental Take** **Tier 2 Estimated Incidental Take** **Potential salvaged** **Remaining Tier 2 Incidental Take considered**					**89** **(66)** **0** **23**	**126** **(66)** **0** **60**	**129** **(66)** **0** **63**	**339** **(78)** **15** **276**	

cc:
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PennDOT – District 11-0 – Young
COE - Pittsburgh
DEP - SWRO
ES file –
Reader's file
Project file
ES:PAFO:
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