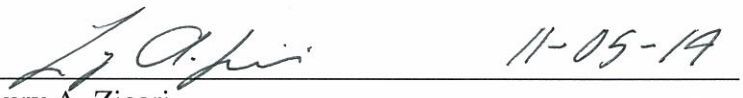
TIER 2 BIOLOGICAL OPINION UNDER THE U.S. FISH AND WILDLIFE SERVICE FORMAL PROGRAMMATIC INTRA-SERVICE BIOLOGICAL OPINION FOR HABITAT RESTORATION PRACTICES (Log No. 05E1ME00-2012-F-0282)

Lead Action Agency:	U.S. Department of Interior, Fish and Wildlife Service, Gulf of Maine Coastal Program
Activity:	Town of Phillips, Reed's Mills Road Culvert Replacement and Effects to Atlantic Salmon and Critical Habitat
Consultation Conducted By:	U.S. Fish and Wildlife Service, Maine Field Office (Log No. 05E1ME00-2014-F-0206)
Date Issued:	November 5, 2014

Approved By:  11-05-14

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This biological opinion (Opinion) is provided in response to the U.S. Fish and Wildlife Service (Service) Gulf of Maine Coastal Program's (GOMCP) October 7, 2014 request to initiate formal consultation pursuant to section 7(a)(2) of the Endangered Species Act (ESA) of 1973, as amended. Your biological evaluation, as submitted through an *Intra-Service Section 7 Biological Evaluation Form*, describes the potential effects of Service implementation of the Reed's Mills Road culvert replacement project on Warm Brook, in the Town of Phillips, Franklin County, Maine, on the federally endangered Atlantic salmon (*Salmo salar*) and its designated critical habitat.

The proposed culvert replacement project will occur on a paved road owned and maintained by the Town of Phillips. The project will involve removal of an existing, under-sized primary round culvert and a small overflow round culvert and their replacement with a channel-spanning embedded four-sided box culvert.

The Warm Brook culvert replacement project was identified through comprehensive stream barrier assessments led by the GOMCP and in cooperation with other conservation partners. The GOMCP is working with municipalities, non-governmental organizations, and private landowners to implement stream connectivity projects throughout the Gulf of Maine Distinct Population Segment of Atlantic Salmon (GOM DPS) to assist with ongoing recovery efforts for this endangered species. The GOMCP responded to a direct request from the Town of Phillips and its Road Commissioner to provide leadership, technical assistance and some funding in the replacement of its failing Warm Brook crossing with a new crossing that would follow the principles of Stream Simulation (USDA-FS 2008) and prove an effective infrastructure investment. The GOMCP has participated in multiple site visits with Town officials and the Town's consulting engineer. In addition, Service engineering staff with fish passage expertise has provided technical assistance.

The GOMCP has worked on project planning activities by conducting Stream Simulation assessments at the site including longitudinal profiles, cross sections and substrate characterization of Warm Brook. The GOMCP has provided a total of $7,500 in funding for site and geotechnical assessments and provided conceptual design information to the Town's engineer. The GOMCP staff and contractors will work closely to manage project construction activities.

The proposed project will require a Federal permit under the Clean Water Act (CWA) from the U.S. Army USACE of Engineers (USACE) for the placement of fill materials in a regulated water body (i.e., Warm Brook); this permit will be issued to the Town of Phillips. The USACE has agreed to have the Service serve as the lead Federal action agency for ESA section 7 consultation. All conservation measures identified by the Service during this consultation to avoid and minimize effects to salmon and their critical habitat will be incorporated as permit conditions by the USACE. The GOMCP staff will work with the Town of Phillips and their contractors to ensure that all the USACE permit conditions are followed during construction.

The new road-stream crossing structure will result in improvements to aquatic organism passage and improvements to natural stream function in Warm Brook. This perennial stream, a tributary

of the Sandy River, is currently occupied by Atlantic salmon and is designated as critical habitat for this endangered species.

This Opinion and incidental take statement (ITS) were prepared by the Service's Maine Field Office (MEFO) in accordance with section 7(b) of the ESA of 1973, as amended (16 U.S.C. 1531, *et seq.*) and implementing regulations at 50 CFR 402. With respect to designated critical habitat, the following analysis relied only on the statutory provisions of the ESA and not on the regulatory definition of "destruction or adverse modification" at 50 CFR 402.02.

I. Background

On October 8, 2012, the Service completed a programmatic intra-service biological opinion (PBO) for the effects of seven specific habitat restoration activities on Atlantic salmon and their critical habitat. This PBO covers restoration activities that various Service offices in Maine may either 1) carry out on Service lands or 2) provide funding or technical assistance to other project partners for projects located on private or other public lands. This PBO covers activities over a period of five years.

The seven activities addressed by the PBO are the following:

a. Stream crossing replacements
b. Stream crossing removals
c. Large woody debris and boulder supplementation
d. Side channel or off-channel reconnection
e. Remnant dam removals
f. Installation/repair/replacement of Denil and Alaska Steeppass fishways
g. Earthen dam removals

Information on the specific characteristics of each covered activity can be found in greater detail in the PBO, which we incorporate herein by reference (USFWS 2012). The PBO established a two-tiered consultation process for each applicable future Service restoration project action regarding activities subject to section 7(a)(2) of the ESA, with issuance of the PBO being Tier 1 and all subsequent site-specific project analyses constituting Tier 2 consultations covered by the PBO. Under this tiered consultation process, the Service produces a Tier 2 Opinion when it is determined that a proposed Service action is "likely to adversely affect" federally endangered Atlantic salmon or designated critical habitat in the action area and the project is also covered by the PBO.

The Service has determined that the Town of Phillips project meets the criteria for inclusion as an activity covered by the PBO. Therefore, this Tier 2 Opinion regarding the effects of the project on Atlantic salmon and Atlantic salmon critical habitat in Warm Brook can tier from the October 8, 2012 PBO.

II. Consultation History

The PBO contains information on the consultation history for the Tier 1 process, specific information on the status of Atlantic salmon and Atlantic salmon critical habitat throughout the

Gulf of Maine Distinct Population Segment (pages 5-19), the environmental baseline for each future Tier 2 project (pages 20-21), and the Service's analysis of the effects of stream crossing replacement projects (pages 22-40).

The PBO concluded that, after considering the current status of Atlantic salmon and its designated critical habitat, the environmental baseline, the effects of the proposed action, and the potential for future cumulative effects in the action area, it is the Service's biological opinion that the proposed action by the Service – implementation of seven specific habitat restoration activities - is not likely to jeopardize the continued existence of the GOM DPS of Atlantic salmon throughout all or a significant portion of its range. Furthermore, the proposed action is not expected to result in the destruction or adverse modification of critical habitat. In reaching these conclusions, the Service considered the best available scientific and commercial information regarding Atlantic salmon and the likely effects of the Service's implementation of seven habitat restoration activities on salmon and their critical habitat.

The consultation history for the Town of Phillips project is as follows:

- On July 2, 2014, the GOMCP sent the MEFO a draft *Intra-service Section 7 Biological Evaluation Form* for the proposed Warm Brook culvert replacement project.
- On August 21, 2014 the GOMCP and the MEFO exchanged emails and telephone conversations regarding the proposed design of the replacement culvert.
- On August 25, 2014 the GOMCP and the MEFO exchanged emails and telephone conversations about the draft *Intra-service Section 7 Biological Evaluation Form.* In particular, discussions focused on the replacement culvert design and whether the consultation might need to be formal (versus informal) to account for the potential presence of Atlantic salmon in the action area, given the project location in the context of ongoing egg planting and adult translocations in the Sandy River drainage for recovery purposes.
- On September 12, 2014 the GOMCP sent a revised draft *Intra-service Section 7 Biological Evaluation Form* to the MEFO.
- On September 15, 2014, the MEFO sent the GOMCP comments on the draft *Intra-service Section 7 Biological Evaluation Form.*
- On September 18, 2014 the GOMCP called the MEFO to notify us that the Maine Department of Marine Resources (MEDMR) had electrofished the project site that day and found Atlantic salmon parr both above and below the Reed's Mills Road culvert.
- On September 19, 2014, the GOMCP sent a revised draft *Intra-service Section 7 Biological Evaluation Form* to the MEFO to reflect the presence of Atlantic salmon in the project action area and the need for formal section 7 consultation.
- On September 29, 2014 staff from the GOMCP and the MEFO had a conference call to discuss whether or not this project is consistent with the PBO. Much of the discussion focused on the likelihood of effects to adults during the spawning season, which is not contemplated in the PBO. The MEFO asked the GOMCP to conduct a field survey of salmon habitat between the Reed's Mills Road culvert downstream to the confluence of the Sandy River to determine if there is salmon spawning habitat present in Warm Brook.
- On October 2, 2014 GOMCP sent a revised draft *Intra-service Section 7 Biological Evaluation Form* to the MEFO.

- On October 3, 2014 the MEFO sent comments back to the GOMCP on the revised draft *Intra-service Section 7 Biological Evaluation Form.*
- On October 3, 2014, the Town of Phillips submitted a CWA permit application to the USACE. Subsequently, the USACE determined that the project needs an individual permit because it requires formal ESA section 7 consultation.
- The MEFO has reviewed the information contained in the final biological evaluation submitted by the GOMCP on October 7, 2014, as well as additional project plans and site assessment information.
- On October 31, 2014 the MEFO and the GOMCP participated in a pre-construction meeting along with the USACE, the Town of Phillips, the Town's consulting engineer, and the project contractor.

We concur with your determination that the Town of Phillips project is likely to adversely affect Atlantic salmon, which occur within the action area based on the findings in your biological evaluation. We have also determined, based on information given in your biological evaluation, that the Town of Phillips project is likely to adversely affect the primary constituent elements of the critical habitat present in the action area. These adverse effects to salmon and their critical habitat are associated with project construction activities. The long-term effects of the project on salmon and their critical habitat are expected to be beneficial, consistent with the effects described in the PBO.

III. Scope of the Tier 2 Biological Opinion and Applicability of the PBO

The Warm Brook project fits the description of *"Stream Crossing Replacements"* as evaluated in the Tier 1 PBO. Furthermore, the project is also consistent with the "*General Best Management Practices"* (pages 62-70) that apply to all activities covered by the PBO, with the exception of the proposed instream work window. The PBO (page 63) generally requires that all work below the ordinary high water mark (OHWM) of a stream be conducted between July 15 and September 30 during the summer low-flow period. The GOMCP is proposing that all instream work associated with the Warm Brook culvert replacement project be completed by December 5, 2014.

The PBO allows for work below the OHWM outside the typical instream work window in limited occasions with prior written approval of the MEFO. See more discussion below of the instream work window for the Warm Brook project under **Project Description** and **Effects of the Action**.

The effects of the Warm Brook project, on both Atlantic salmon and critical habitat, are also expected to be consistent with those described in the PBO. As a result, the Warm Brook project can be an activity covered by the PBO and then evaluated using the Tier 2 abbreviated consultation approach.

IV. Project Description (From the GOMCP Biological Evaluation Form)

The proposed project involves the removal of an existing 72-inch primary round culvert and an existing 30-inch round overflow culvert from the Reed's Mills Road, a paved road owned and maintained by the Town of Phillips, Franklin County, Maine. The GOMCP staff and contractors will work closely to manage project activities and ensure adherence to the requirements of the PBO and the USACE permit conditions during construction.

The existing culverts are on Warm Brook, a tributary of the Sandy River. These existing culverts are undersized, causing water to frequently overtop the road. Consequently, the road is damaged and road-related sediments are discharged to the stream. The existing primary culvert has very shallow water at low stream flows and has high velocities at other times, posing a barrier to aquatic organism passage at certain times of the year, including movements of Atlantic salmon.

The existing culverts will be replaced with a new 5.94-meter wide (19.5-foot wide) precast concrete box culvert with concrete wing walls and head walls. The new road-stream crossing structure was designed by the GOMCP and the Town's consulting engineer consistent with requirements of the PBO. Bankfull width of Warm Brook at the project site was determined by the GOMCP during Stream Simulation field assessments to be approximately 4.88 meters (16 feet). The box culvert is designed to pass a 100-year flood event. Precast concrete wing walls and head walls will be installed to protect the inlet and outlet of the box culvert from erosion. Rip-rap will also be placed in association with the wing walls to stabilize the road embankment. Existing stream substrate materials that are excavated during construction, plus other appropriate rock material brought from off-site as needed, will be placed on the bottom of the embedded box culvert to replicate the natural bottom and bank lines of Warm Brook through the structure.

To minimize construction-related effects on Warm Brook, a temporary bypass road will not be constructed. Instead, Reed's Mill Road will be closed to all traffic for approximately three to four weeks during construction. The project is scheduled to have all instream construction work completed by December 5, 2014, which is outside of the normal instream work window specified in the PBO. The PBO, however, does allow for instream work outside the typical July 15 to September 30 work window with prior written approval of the MEFO (page 63).

The GOMCP and the Town of Phillips are proposing this later-than-usual work window because the culvert is currently failing and a portion of the road surface is undermined; this failing portion of the road is barricaded from vehicle traffic. When the Town discovered the failing culvert in spring 2014, they immediately reached out to conservation partners for assistance with a replacement project. Since that time, the GOMCP has been diligently working with the Town and other partners to design an environmentally sound project and complete all required permitting and other environmental reviews to allow the project to be completed as soon as possible in 2014. Due to the risk of catastrophic failure, the Town believes it would need to completely close the road, which is an important travel way for numerous residences and businesses, if the culvert is not replaced before winter arrives.

The GOMCP has provided the MEFO with project-specific final plans drawn by the Town's engineering consultant. The GOMCP has also provided a site assessment report written by their

staff and based on the protocols of the U.S. Forest Service's Stream Simulation methodology. The GOMCP has submitted a Clean Water Act permit application to the USACE on behalf of the Town and provided a copy to the MEFO. The Town was also notified by the Maine Department of Environmental Protection that is project is exempt from permitting requirements under the Natural Resources Protection Act. All of the documents mentioned above support that the proposed Warm Brook culvert replacement project is consistent with the requirements of the PBO.

BMPs to Minimize Adverse Effects

A number of best management practices (BMPs), as outlined in the PBO, will be incorporated into the Warm Brook project to ensure that adverse effects to Atlantic salmon and its critical habitat are avoided and minimized as much as possible. Most of these BMPs are outlined on pages 62 through 70 of the PBO under **General Best Management Practices**.

Required BMPs include (but are not limited to) the following (see the PBO for a complete list of required conservation measures):

- A pre-construction meeting between the lead GOMCP, the MEFO, and the contractor is required at least one week prior to the commencement of construction.
- Service will require by contract that installers or other entities responsible for implementing conservation practices will use all measures necessary to protect aquatic organisms and their habitats during construction. This includes all work necessary to control erosion and sediment pollution, chemical pollution, water pollution and air pollution.
- Erosion controls shall be installed before any soil moving activities are started and shall be inspected regularly for effectiveness during the course of construction.
- The removal of riparian vegetation for access will be minimized, and clearing limits associated with site access will be clearly marked.
- In most circumstances, instream-projects must be conducted in the dry and effects to Atlantic salmon and other fish will be avoided and minimized. Exceptions to instream work in the dry must follow all other requirements in the PBO. See the Worksite Isolation and Fish Removal Sections in the PBO for additional guidance.
- All projects will maintain downstream flows with negligible changes in water quality.
- All construction sites that require de-watering will also control groundwater entry to the worksite to facilitate proper installation of structures, like culverts.
- Fish will be excluded and removed from the worksite before any instream work is started (with the exception of cofferdam installation and dewatering) using protocols described in the PBO (pages 65 through 69).
- All construction sites will be stabilized during any significant break in work and within 3 days of the end of construction activities.

V. Status of the Species and Critical Habitat

The species description, life history, population dynamics, status and distribution are fully described in the PBO on pages 5 through 19 for the Atlantic salmon and its critical habitat and

are hereby incorporated by reference. Since issuance of the Service's PBO in October 2012, there are no substantial changes in status of Atlantic salmon or its critical habitat. Minor updates to the Status of the Species and Critical Habitat section of the PBO can be found in a more recent Biological Opinion issued by the MEFO on September 25, 2014 (USFWS 2014). A copy of this Biological Opinion can be obtained by contacting the MEFO.

VI. Environmental Baseline

The Tier 1 PBO could not predict the exact location and action area for future projects and, therefore, could not describe the environmental baseline for any particular project. Consequently, the PBO provided several assumptions regarding the environmental baseline that should be applicable to each future project action area and that allowed the Service to complete our programmatic analyses regarding both 1) jeopardy to the species and 2) destruction or adverse modification of critical habitat (page 20).

We have reviewed these PBO assumptions in relationship to the Warm Brook project action area and have determined that these assumptions are applicable to this project. Below is a brief summary regarding the current status of Atlantic salmon and their habitat in and near the action area for the Warm Brook project.

The proposed project on Warm Brook is located about 600 feet upstream from the confluence with the Sandy River. The project location is within the range of the GOM DPS and within the Merrymeeting Bay Salmon Habitat Recovery Unit (SHRU) for Atlantic salmon. The Sandy River and several of its tributaries are actively managed by the Service, the National Marine Fisheries Service, and MEDMR to facilitate recovery of endangered Atlantic salmon in this watershed.

Atlantic salmon habitat has been field surveyed and mapped by agency biologists in the Sandy River and some of its tributaries. Warm Brook, however, has not been surveyed. A model developed to predict the occurrence of juvenile salmon rearing habitat within perennial streams in the GOM DPS, however, shows approximately 78.9 units (one unit = 100 square meters) of juvenile rearing habitat available within Warm Brook and its tributaries (Wright et al. 2008). The majority of this juvenile habitat is above the project culvert location.

The MEDMR biologists familiar with Warm Brook have observed some small patches of spawning habitat upstream of the project location. The stretch of Warm Brook between the project site and the Sandy River contains substrates that are generally too coarse and water depths that are too shallow for salmon spawning. Overall, MEDMR biologists characterize Warm Brook as offering very small amounts of low quality spawning habitat for Atlantic salmon.

On September 18, 2014, biologists from the MEDMR electrofished Warm Brook and captured several Atlantic salmon 1+ parr[1] in the vicinity of the project site. A single electrofishing pass was made both upstream of the crossing for 107 seconds in 0.4 units of riffle/run habitat, yielding four Atlantic salmon 1+ parr, and downstream of the crossing for 188 seconds in 0.8

[1] A 1+ parr is a juvenile Atlantic salmon during the period from July 1 to December 31 one year after hatching.

units of riffle/run habitat, yielding four 1+ parr. This event results in a one-run parr density of 6.67 per unit. This density indicates that Warm Brook provides high quality rearing habitat for juvenile Atlantic salmon. MEDMR biologists expect that these parr were likely hatched from a redd that was not identified during 2013 redd surveys in the mainstem of the Sandy River near the confluence with Warm Brook. Springs within Warm Brook likely provide an important source of summer cold water refuge habitat for juvenile salmon when water temperatures in the Sandy River or other tributaries become elevated.

As part of salmon restoration efforts in the Sandy River drainage, egg planting occurred in Warm Brook in 2005 and 2007. In 2006 seven parr were captured, but no salmon were recovered when electrofishing was conducted in 2008 and 2009. Egg planting in Warm Brook was discontinued due to poor results.

Since 2009, the closest location MEDMR staff have planted salmon eggs in proximity to the confluence of Warm Brook (Riverkm 91.07) is downstream in the Sandy River, at mainstem Riverkm 89.4, and upstream at Riverkm 92.9 at the mouth of Cottle Brook (Figure 1). It is possible that the parr observed on September 18, 2014 were hatched from one of these 2013 egg planting sites, though considered less likely by MEDMR biologists. More likely, MEDMR believes the 2014 salmon parr were likely hatched from a previously unknown redd in the Sandy River near the mouth of Warm Brook and then the parr moved upstream into Warm Brook. Although MEDMR surveys spawning habitat in the Sandy River and several tributaries for the presence of redds each fall, redds can be missed during these surveys.

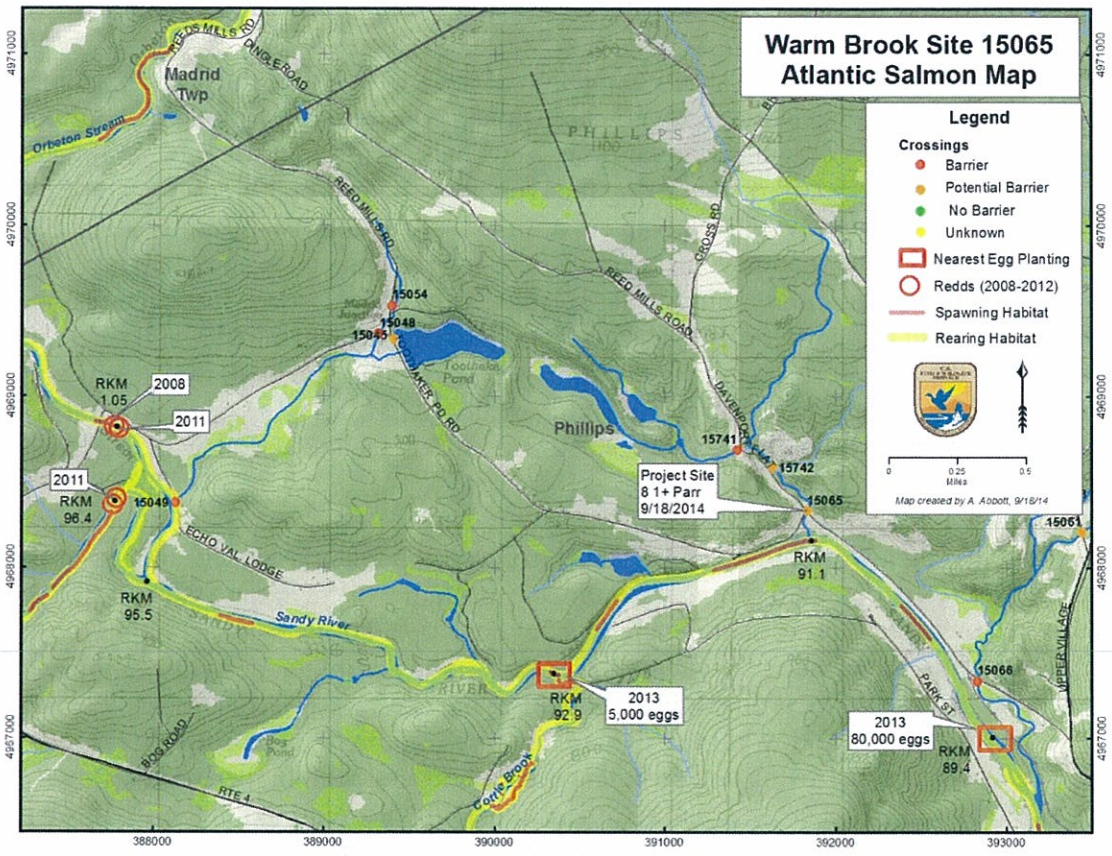

Figure 1. 2013 Atlantic salmon egg planting locations in the vicinity of the Warm Brook culvert replacement project. Map provided by the GOMCP.

The existing culvert on Warm Brook is negatively impacting Atlantic salmon habitat by at least partially blocking upstream passage. Furthermore, this undersized culvert is negatively affecting the movement of sediment and woody debris through the stream. The current condition of the road at the crossing results in the stream frequently over-topping the road, which washes road materials into the stream and degrades downstream aquatic habitat. Two upstream road-stream crossings have also been identified as barriers to stream connectivity in the Warm Brook drainage. These culverts may also be replaced in the future with more stream-friendly structures.

VII. Effects of the Action

Based on our analysis of the information provided in the biological evaluation for the Phillips project, the Service concurs that the proposed project will result in adverse effects to Atlantic salmon and Atlantic salmon critical habitat within Warm Brook due to installation of cofferdams, stream dewatering, sedimentation, and disturbing or handling salmon during fish evacuation activities. These adverse effects will all be relatively short-term during the proposed construction activities.

Effects of a Modified Instream Work Window

The project construction schedule calls for completion of the Warm Brook culvert replacement project during a three to four week period, with all instream construction work being completed by December 5, 2014. Project planning and design, as well as permitting, were not completed in time to allow the instream work to occur during the typical instream work window of July 15 through September 30. Currently, the existing culvert is at substantial risk of failure during to failing joints. One half of the road pavement is cracked, and pavement has sunk into a void created by road base material falling into the damaged culvert. This section of the road is currently barricaded and closed to traffic. Due to the risk of catastrophic culvert and road failure, there is a hope that the culvert replacement and damaged road repair can be completed before winter arrives. If the culvert is not replaced now, the road will have to be closed to all traffic, causing a hardship to approximately 125 homes and at least five businesses, as well as school bus routes.

Recognizing that instream work in November and early December could involve higher stream flows than are usually encountered during the summer instream work window, the GOMCP has worked with the Town and their consulting engineer to develop additional conservation measures to address the possible occurrence of higher stream flows. The ability to adequately control water under higher stream flows is an explicit element of the contract specifications. The contractor will be required to follow all reasonable measures required to control water flows to minimize the risks of greater erosion and sedimentation associated with higher stream flows. The project will also follow all erosion and sediment control BMPs outlined in the PBO, such as installation of silt fence or other erosion controls to protect Warm Brook from soil disturbance in areas adjacent to the brook.

Stream flow will be diverted around the instream work section of Warm Brook by use of sandbag cofferdams, an oversized bypass channel, and pumps. The bypass channel, which will run roughly parallel to the stream channel on river left, will be hardened and stabilized to minimize erosion and downstream sedimentation and will be designed to carry the two-year stream flow event, which is estimated at 5.48 cubic meter per second (cms) (193.7 cubic feet per second (cfs)). Pumping capacity will be sufficient to pass 0.14 cms (5 cfs) of stream flow. The November median stream flow for the project location is estimated at 0.14 cms and the December medial stream flow is estimated at 0.13 cms (4.5 cfs). Backup pumps will be available at the project site on standby to provide added pump capacity or to replace broken equipment. The GOMCP will have staff on site to inspect all water control elements throughout the project and ensure that effects from erosion and sedimentation are minimized. In addition, the GOMCP and contractors will work closely to manage project activities and ensure adherence to the USACE permit conditions during construction.

Due to the late season timing of the project, there may be insufficient time to establish natural vegetation on road embankments and stream banks in the construction area through the use of a native conservation seed mix. If natural re-vegetation is not sufficient to stabilize disturbed soils, additional measures will be taken to ensure erosion is minimized until the earliest practical time that vegetation can be established in the following growing season. These additional measures may include the use of geotextile fabric, staked hay bales, and mulch.

The MEFO has carefully reviewed these additional conservation measures aimed at controlling erosion and sedimentation during times of higher precipitation and stream flows than would usually occur during the normal instream work window of July 15 to September 30. These conservation measures should result in very little erosion and sedimentation affecting Warm Brook above that already expected and analyzed in the PBO for a stream crossing replacement project. Therefore, we conclude that the effects of replacing the Warm Brook culverts outside of the normal instream work window, but with all instream construction work completed by December 5, are still consistent with those effects analyzed in the PBO and any additional effects would be insignificant in size.

Because of the standard instream work window of July 15 to September 30, the PBO does not anticipate any effects to adult salmon during the spawning season or to salmon eggs or alevins present in redds. Salmon typically spawn in Maine from mid-October through mid-November, with spawning triggered by photoperiod and cooler water temperatures. Therefore, the standard instream work window avoids effects to spawning adults. Eggs typically hatch in March or April, with the alevins remaining in the redd for about six weeks until their yolk sac is almost completely absorbed. Therefore, the standard instream work window avoids effects to salmon eggs or alevins. Because instream work will occur in November and the first week of December, which is during or just after the salmon spawning season, the Warm Brook culvert replacement project has the potential to affect both spawning adults or eggs that have been newly deposited in a redd. Given the proposed timing of the Warm Brook project, there would be no effects on alevins.

Mapped spawning habitat is present in the Sandy River in the vicinity of Phillips and surrounding towns and has been used by spawning salmon in the last few years. The nearest downstream spawning habitat in the Sandy River that could be affected by sediment generated from the project is located approximately 0.8 km (0.5 mi) downstream. The minor pulses of sediment that will be generated by instream work in Warm Brook, primarily from the initial opening of the bypass channel and the installation and removal of the cofferdams, would not be detectable 0.8 km (0.5 mi) downstream because of 1) the generally course nature of the sediments in the work area, including cobbles, boulders, and ledge outcrops; 2) the minor amount of sediment typically generated by these activities; and 3) the various conservation measures that will be employed to reduce erosion and sedimentation.

Salmon habitat has not been mapped in Warm Brook. Biologists from the MEDMR, however, are familiar with the brook from their previous experiences with egg planting and their general salmon restoration work in the Sandy River drainage. Although Warm Brook provides quality rearing habitat for juvenile salmon, it only offers very small patches of lower quality spawning gravels. In general, the small size of Warm Brook and limited water depths make the brook not conducive to salmon spawning. The MEDMR biologists have not observed any suitable spawning substrates in the reach of Warm Brook from the Reed's Mills Road culvert downstream to the confluence with the Sandy River. They have observed small patches of spawning gravels upstream of the culvert, but these areas are also limited by shallow water depths that are not suitable for salmon spawning. The spawning potential of Warm Brook is also limited by the lack of deep pools that are needed to provide holding cover for both pre- and post-spawn Atlantic salmon.

In 2014, there are 18 known Atlantic salmon in the Sandy River drainage. All of these adults were trapped during the summer at the Lockwood Dam on the Kennebec River and then transported by truck for release into the Sandy River for spawning. Sixteen of these adults were naturally reared from egg-planting sites. These adults are most likely the offspring from 2010 egg-planting efforts in Mount Blue Stream, Cottle Brook, Orbeton Stream, or Avon Valley Stream. These 2014 adult returns are most likely imprinted on their natal streams, and MEDMR biologists consider it extremely unlikely that any of these salmon would choose Warm Brook, which is much smaller than the egg-planting sites and offers very limited, low quality spawning habitat.

The MEFO has carefully reviewed the Warm Brook project in light of the proposed late season construction schedule and the current presence of juvenile Atlantic salmon in the project action area in terms of potential effects on adult Atlantic salmon and eggs deposited in redds. Based on the discussion above, we conclude that it is extremely unlikely that adult salmon would spawn in Warm Brook in 2014. Furthermore, we conclude that while it is possible that adults may spawn in the Sandy River downstream of the confluence with Warm Brook, effects to these spawning adults or eggs deposited in these redds from construction activities in Warm Brook are extremely unlikely to happen in light of the conservation measures designed to minimize the effects of erosion and sedimentation.

In the long term, this project will result in beneficial effects to Atlantic salmon and their critical habitat by replacing an undersized culvert that is having negative effects on fish passage and natural stream function. Installation of an embedded channel-spanning box culvert should allow relatively natural movements of salmon and other fish species in Warm Brook and should also improve natural stream functions, like movement of sediment and woody debris through the stream reach. Furthermore, the project should substantially reduce the amount of road-related sediment that is discharged into Warm Brook, thereby improving downstream aquatic habitat conditions.

VIII. Cumulative Effects

Cumulative effects include the effects of future State, local, or private (non-Federal) actions that are reasonably certain to occur in the action area considered in this Opinion. A non-Federal action is "reasonably certain" to occur if the action requires the approval of a State or local resource or land-control agency, such agencies have approved the action, and the project is ready to proceed. Other indicators which may also support such a "reasonably certain to occur" determination include whether a) the project sponsors provide assurance that the action will proceed; b) contracting has been initiated; c) State or local planning agencies indicate that grant of authority for the action is imminent; or d) where historic data have demonstrated an established trend, that trend may be forecast into the future as reasonably certain to occur. These indicators must show more than the possibility that the non-Federal project will occur; they must demonstrate with reasonable certainty that it will occur. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act and would be consulted on at a later time.

Cumulative effects are described on pages 71 through 72 of the Tier 1 PBO and are hereby incorporated by reference. Since issuance of the Service's PBO, there have been no substantial changes in cumulative effects associated with the action area for the Warm Brook culvert replacement project.

IX. Conclusions

The Service concludes that the proposed Reed's Mill Road culvert replacement project in Phillips, Maine is consistent with the Tier 1 PBO for effects to Atlantic salmon and salmon critical habitat. After reviewing site specific information including 1) the scope of the Federal action; 2) the environmental baseline; 3) the status of the Atlantic salmon in the Sandy River watershed and the current occurrence of juvenile salmon within the project action area; 4) the status of Atlantic salmon critical habitat within the project action area; 5) the effects of the project; and 6) any cumulative effects, it is the Service's biological opinion that the Reed's Mill Road project, as described, is not likely to jeopardize the continued existence of the GOM DPS of Atlantic salmon throughout all or a significant portion of its range. Furthermore, the proposed action is not expected to result in the destruction or adverse modification of salmon critical habitat. In reaching these conclusions, the Service considered the best available scientific and commercial information regarding Atlantic salmon and the likely effects of the proposed actions on Atlantic salmon and their critical habitat.

X. Incidental Take Statement

Section 9 of ESA and Federal regulations pursuant to section 4(d) of ESA prohibit the take of endangered and threatened species without 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, and applies to individual members of a listed species. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. 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 ESA provided that such taking is in compliance with the terms and conditions of this incidental take statement (ITS).

The Department of the Interior, acting through the Service, is implementing all pertinent Reasonable and Prudent Measures and implementing Terms and Conditions that are stipulated in the Tier 1 PBO Incidental Take Statement (pages 78 through 80 of the PBO), which will minimize the anticipated incidental take of Atlantic salmon. If the amount or extent of incidental take outlined in the Tier 1 PBO and the Tier 2 Opinion is exceeded for the Reed's Mill Road project, the GOMCP will expeditiously reinitiate consultation with the MEFO.

The Service anticipates that there may be both lethal and non-lethal take of juvenile Atlantic salmon as a result of the proposed actions addressed in this Opinion. Incidental take caused by the adverse effects of the proposed action will include the following: 1) the capture and relocation of juvenile fish during instream work area isolation and dewatering; 2) the death of juvenile salmon as a result of capture techniques, including electrofishing; and 3) the death of juvenile salmon left stranded inside of dewatered cofferdams. The following discussion summarizes the anticipated amount of incidental take associated with these activities, as derived from the analysis and discussion in Section 6.2.2 of the October 8, 2012 PBO (pages 25 through 31).

The GOMCP estimates that about 130.1 m^2 (1400 ft^2) of stream channel will be temporarily affected during construction activities. This area of disturbance is equivalent to about 1.3 units of salmon habitat. Based on electrofishing done in Warm Brook in the vicinity of the Reed's Mill Road culvert on September 18, 2014, the MEDMR estimates salmon parr density in the action area as 6.67 per unit of habitat.

Therefore, the Service authorizes the take of up to nine (9) juvenile Atlantic salmon during construction of the Reed's Mill Road culvert replacement project (6.67 parr/unit x 1.3 units = 8.671 parr; rounded up to 9 parr). Take of Atlantic salmon would primarily be related to fish relocation activities carried out in association with isolation and dewatering of the instream work area for the culvert replacement. This authorized take includes both non-lethal (e.g., capture and relocation) and lethal (e.g., mortality associated with electrofishing or stranding inside a de-watered cofferdam) take of juvenile Atlantic salmon, although the majority of the take is expected to be non-lethal.

This ITS specifically does not authorize the take (lethal or non-lethal) of any **adult** Atlantic salmon. If take of an adult salmon becomes a concern during this project, all activities that may be contributing to this concern – particularly instream construction activities – should immediately cease and the MEFO should be contacted to discuss next steps. Reinitiation of section 7 consultation may be necessary, depending on the particular circumstances at hand. As required by the PBO, the GOMCP is required to submit an annual report to the MEFO that summarizes all work conducted under the PBO. This report will account for incidental take associated with the Reed's Mill Road project, as well as a cumulative accounting of all take of Atlantic salmon authorized under the PBO for previous GOMCP projects (if any).

XI. Reinitiation Notice

This concludes formal consultation on the actions outlined in the October 7, 2014 request from the GOMCP. 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, the specific action(s) causing such take shall be subject to reinitiation expeditiously.

Requests for reinitiation or questions regarding reinitiation should be directed to the Service Field Office below.

Laury Zicari
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XII. Conservation Recommendations

Section 7(a)(1) of ESA directs Federal agencies to utilize their authorities to further the purposes of 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 an action on listed species or critical habitat, to help implement recovery plans, or to develop information. Conservation recommendations are provided in the PBO (page 81) and are hereby incorporated by reference.

XIII. Documents Cited

U.S. Department of Agriculture, Forest Service (USDA-FS). 2008. Stream simulation: an ecological approach to providing passage for aquatic organisms at road-stream crossings. National Technology and Development Program. *http://www.fs.fed.us/eng/pubs/pdf/StreamSimulation/index.shtml* (accessed October 30, 2014)

U.S. Fish and Wildlife Service. 2012. Final intra-service biological opinion on the effects of the implementation of habitat restoration practices by the U.S. Fish and Wildlife Service on the Gulf of Maine Distinct Population Segment of Atlantic salmon and its designated critical habitat. Maine Field Office, Orono, Maine.

U.S. Fish and Wildlife Service. 2014. Final biological opinion to the Federal Highway Administration on the proposed funding of Route 6/116/155 Bridge Replacement over the Penobscot River (16705.00): Howland and Enfield, Maine. Maine Field Office, Orono, Maine.

Wright, J., J. Sweka, A. Abbott, and T. Trinko. 2008. GIS-Based Atlantic Salmon Habitat Model (Draft). Appendix C in: NOAA Fisheries (National Marine Fisheries Service). 2009. Biological valuation of Atlantic salmon habitat within the Gulf of Maine Distinct Population Segment. NOAA National Marine Fisheries Service, Northeast Regional Office, Gloucester, Massachusetts.