CONSTITUTION PIPELINE

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PRELIMINARY
MIGRATORY BIRD AND UPLAND FOREST PLAN

Submitted by:

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PREFACE

The Project falls under the jurisdiction of the Federal Energy Regulatory Commission (FERC), which is the lead agency for the Project. To facilitate the review of Project-related impacts to upland forests, FERC has requested that Constitution address measures to implement during siting, construction and operation of the Project to minimize forest impacts. The USFWS manages and protects the nation's native migratory birds under the authorities of the Migratory Bird Treaty Act (MBTA) (16 U.S.C. §§ 703-712), and the Bald and Golden Eagle Protection Act (BGEPA) (16 U.S.C. §§ 668-668d). Further, Executive Order No. 13186 emphasizes the responsibilities of all Federal agencies, such as FERC, to plan and implement actions to conserve birds in the conduct of their other federally-mandated responsibilities. Since a significant focus of potential Project-related impacts on migratory birds pertains to effects on existing forested habitat associated with construction and operation of the pipeline facilities, this Upland Forest Management Plan (UFMP or Plan) has been designed with a focus on the value of upland forest as habitat for migratory birds.

The purpose of this Plan is to set forth measures that Constitution will voluntarily implement during construction and operation of the Project to minimize temporary and permanent impacts to upland forests as well as to comply with the MBTA and the BGEPA.

1.0 INTRODUCTION

Constitution Pipeline Company, LLC (Constitution) has filed an application for a Certificate of Public Convenience and Necessity (Certificate) with the Federal Energy Regulatory Commission (FERC or Commission) for the proposed Constitution Pipeline (Project). The Project will provide 650,000 dekatherms per day (Dth/d) of new firm natural gas transportation capacity from three receipt points in Susquehanna County, Pennsylvania, to a proposed interconnection with existing Iroquois Gas Transmission System, L.P. (Iroquois) facilities in Schoharie County, New York. The facilities required to provide the proposed service include the construction of approximately 126 miles of new 30-inch diameter pipeline; temporary and permanent access roads; two meter stations; and additional ancillary facilities, such as main line valves (MLVs), cathodic protection, communication monopoles, and internal inspection device launchers and receivers.

The typical construction right-of-way (ROW) would be 110 feet wide for a majority of the pipeline route. Constitution proposes to use a narrower construction ROW in some areas to minimize impacts to sensitive environmental resources such as wetlands and interior forest and a wider ROW in areas of steep side slopes and agriculture where other construction constraints are present. Following construction, Constitution would retain a 50-foot-wide permanent easement from landowners to operate the pipeline. Within this permanent easement, Constitution will maintain their ROW. Within upland areas, the permanent easement will be maintained in an herbaceous or scrub/shrub state through periodic vegetation management. Per FERC requirements, Constitution will not maintain the entire 50-foot width in forested and scrub-shrub wetlands. Through these areas, a 10-foot area centered over the pipeline will be maintained in an herbaceous state, and trees will not be allowed within 15 feet on either side of the pipeline to ensure that root systems do not affect the pipe coating. A more detailed description of the Project is provided in Resource Report 1 of Constitution's Environmental Report (ER) as submitted to FERC.

This Plan addresses only upland habitats crossed by the Project. Constitution will address wetland habitat impacts (including palustrine forested wetlands) with applicable federal and state regulatory processes and in consultation with U.S. Fish and Wildlife Service (USFWS).

Constitution would primarily use existing public and private roads to access the construction ROW and would enhance existing roads or construct new roads to gain access to the Project area where needed. To accommodate large equipment movement, several temporary access roads (TARs) will be constructed from public roadways to the construction ROW. Permanent access roads (PARs) will remain in place to allow access during pipeline operation. Many of the existing access roads are presently in a condition that could accommodate construction traffic without significant modification or improvement. Some roads consist of small two-track roads that are not suitable for construction traffic. Constitution would improve unsuitable access roads to accommodate the turning radius of construction vehicles, pull-off/pass-by locations, and stormwater management facilities. Following construction, Constitution would restore TARs to their preconstruction contours and will allow the disturbed area to revert back to the original condition, to the extent practicable, unless otherwise requested by a landowner or land management agency. PARs will be maintained throughout the life of the Project.

2.0 REGULATORY FRAMEWORK

2.1 MIGRATORY BIRD TREATY ACT

The MBTA protects migratory birds, nests, eggs, young, and parts from possession, sale, purchase, barter, transport, import, and export, and take. For purposes of the MBTA, "take" is defined as "to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect." (50 C.F.R. § 10.12). The MBTA applies to migratory birds that are identified in 50 C.F.R. § 10.13 (defined hereafter as "migratory birds").

Although migratory bird habitat is not specifically protected under the MBTA, activities that impact habitat and result in an incidental take (i.e., wound or kill) of migratory birds would violate the MBTA. Any activities, intentional or unintentional, resulting in take of migratory birds are prohibited unless otherwise permitted by the USFWS. Many migratory birds, including raptor species, are sensitive to disturbance when nesting and roosting. Should such disturbance result in the wounding or killing of adult birds, chicks, or eggs including abandonment of a nest with eggs or young, the activity causing the disturbance would violate the MBTA. Activities involved in construction of the Project (predominantly vegetation removal) have the potential to result in take of migratory birds. After construction is completed there is also the potential for future operation and maintenance activities to take migratory birds depending on how these actions are completed.

2.2 BALD AND GOLDEN EAGLE PROTECTION ACT

The BGEPA provides additional protection to bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*). The BGEPA prohibits the take, possession, sale, purchase, barter, offer to sell, purchase, or barter, transport, export or import, of any bald or golden eagle, alive or dead, including any part, nest, or egg, unless allowed by permit [16 U.S.C. § 668(a)]. "Take" under this statute is defined as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, or molest or disturb" 50 C.F.R. § 22.3. "Disturb," in turn, is defined as "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, (1) injury to an eagle, (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior." If a proposed project or action would occur in areas where nesting, feeding, or roosting eagles occur, then project proponents may need to take additional conservation measures to achieve compliance with the BGEPA.

2.3 EXECUTIVE ORDER 13186

Executive Order 13186 of January 10, 2001 identifies the responsibility of federal agencies to protect migratory birds and their habitats, and directs executive departments and agencies to undertake actions that will further implement the MBTA. Executive Order 13186 includes a directive for federal agencies to develop a memorandum of understanding (MOU) with the USFWS to promote the conservation of migratory bird populations including their habitats, when their actions have, or are likely to have, a measurable negative effect on migratory bird populations. Whereas the MBTA only protects migratory birds, Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat.

The Executive Order encourages federal agencies to undertake several types of conservation actions associated with migratory birds including: integration of bird conservation principles, measures, and practices into agency activities; avoiding or minimizing, to the extent practicable, adverse impacts on migratory bird resources when conducting agency actions; restoration and enhancement of migratory bird habitat; evaluating the effects of actions and agency plans on migratory birds in any environmental analyses of federal actions required by the National Environmental Policy Act (NEPA) or other established environmental review processes; identifying where incidental take reasonably attributable to agency actions is having, or is likely to have, a measurable negative effect on migratory bird populations, and, relative to this take, developing and using principles, standards, and practices that will lessen the amount of unintentional take; and inventorying and monitoring bird habitat and populations within the agency's capabilities and authorities to the extent feasible.

FERC entered into a Memorandum of Understanding with the USFWS in 2011 to identify and implement strategies that promote conservation of migratory birds and to avoid or minimize adverse impacts on migratory bird populations. FERC, in coordination with the USFWS, is to develop conservation measures and ensure monitoring of conservation measures to minimize, reduce or avoid incidental takes. Within the MOU, FERC is obligated to direct applicants, where appropriate, "to jointly develop project-specific conservation measures with the USFWS during the pre-filing process and/or the initial planning of projects, to avoid or minimize, to the extent possible, impacts on migratory birds and their habitats, with emphasis on, but not exclusive to, species of concern". In addition, the MOU obligates FERC to "Include terms and conditions and appropriate recommendations that the Commission finds are in the public interest in natural gas certificate/authorizations or other authorizing Commission actions to avoid or minimize take of migratory birds and mitigate unavoidable take and adverse effects, as appropriate, with emphasis on species of concern and their habitats".

2.4 COMPLIANCE WITH REGULATORY AND CONSERVATION FRAMEWORK

Constitution will take necessary and reasonable measures to comply with the MBTA and BGEPA, and also desires to provide, per Executive Order 13186, for the reasonable restoration and conservation of upland forest habitats for migratory birds in Pennsylvania and New York where the Project will be constructed. Accordingly, Constitution will implement this Plan both during construction and operation of the Project.

3.0 HABITAT ASSESSMENT

On November 12, 2013, Constitution submitted to the FERC supplemental information in support of the ER. Resource Report 8, *Land Use, Recreation and Aesthetics*, Table 8.1-2, *Acreage Affected by Construction and Operation of the Constitution Pipeline*, detailed 10 land use types and calculated land alteration associated with the proposed pipeline facilities. Six land use types: agriculture, commercial/industrial, residential, roads, sand and gravel and special use do not provide significant breeding habitat for migratory birds. Four of the land use types: Wetlands, Waterbodies, Open Land and Upland Forest, include attributes that may support foraging and breeding habitat for migratory bird species. Wetland and waterbody habitat impacts are not addressed in this report. Land use classifications and associated habitats were determined based on available desktop information as well as direct field observations.

Constitution evaluated the Breeding Bird Atlas data for both Pennsylvania (Wilson et. al. 2013) and New York (McGowan and Corwin 2008) to determine the species richness within the census blocks crossed by the Project. In addition, the Breeding Bird Atlas data was cross referenced against the USFWS list of Birds of Conservation Concern for the region to determine which species were documented as being present in the Project area. Based upon this information, Constitution has developed this Plan to focus on the habitat requirements for those identified species, which, aside from cerulean warbler (*Dendroica cerulea*), tend to extend to the general habitat requirements for interior forest and grassland / shrub nesting species. Constitution has routed the Project ROW to avoid and minimize impacts to these habitats to the extent practicable while maintaining safe construction conditions and will adhere to the best management practices described in this Plan.

3.1 UPLAND HABITATS

3.1.1 Pennsylvania

3.1.1.1 Upland Forest

The Pennsylvania Department of Conservation and Natural Resources (PADCNR) asserts that most forested areas in Pennsylvania consist of second or third growth forest. Field observations of the Project area during environmental surveys were consistent with that assertion. Upland forest communities in the Project area are predominately deciduous hardwoods, with lesser percentages of mixed and coniferous forests. Upland forest is typically defined as land dominated by trees at least 20 feet tall and having at least 25 percent aerial cover (PADCNR 2010). In Pennsylvania, much of the conifer component in forests has been reduced, because pine and hemlock trees were selectively cut, never regaining their pre-1800s densities (PADCNR 2010).

3.1.1.1.1 Deciduous Hardwoods

The main types of deciduous forests crossed by the Project include northern hardwood forests, hemlock/northern hardwood forest, sugar maple/basswood forest, and aspen/gray birch forests. Dominant trees species in northern hardwood forests usually include American beech (*Fagus grandifolia*), red maple (*Acer rubrum*), sugar maple (*Acer saccharum*) and wild black cherry. (*Prunus serotina*). Trees that make up less than 40 percent of the cover include sweet birch (*Betula lenta*), yellow birch (*Betula*

alleghaniensis), paper birch (Betula papyrifera), northern red oak (*Quercus rubra*), and white ash (*Fraxinus americana*). Common shrubs may include rosebay (*Rhododendron maximum*), witch-hazel (*Hamamelis virginiana*), striped-maple (*Acer pensylvanicum*), witch-hobble (*Viburnum lantanoides*), mountain holly (*Ilex montana*), shadbush (*Amelanchier arborea*), and hornbeam (*Caprinus caroliniana*). The herbaceous layer is typically sparse and can include Canada mayflower (*Maianthemum canadense*), starflower (*Trientalis borealis*), New York fern (*Thelypteris novaboracensis*), fancy fern (*Dryopteris carthusiana*), shining clubmoss (*Locopodium lucidulum*), teaberry (*Gaultheria procumbens*), wild sarsaparilla (Aralia nudicaulis), and Indian cucumber-root (*Medeola virginiana*) (Zimmerman et al. 2012).

Sugar maple/basswood forests occur on a wide range of sites in western Pennsylvania, while in eastern Pennsylvania, this community is limited primarily to rich rocky slopes. Trees besides sugar maple and basswood (*Tilia americana*) include northern red oak, white ash, tuliptree (*Liriodendron tulipifera*), yellow birch, and sweet birch. Shrubs include spicebush (*Lindera benzoin*), witch-hazel (*Hamamelis virginiana*), pawpaw (*Asimina triloba*), and bladdernut (*Staphylea trifolia*) (Zimmerman et al. 2012).

The aspen/gray birch forest usually is mixed, but sometimes can contain nearly pure stands of one species or the other. The birch may be paper birch in the northern areas, sometimes sweet birch. The aspen may be large-toothed aspen (*Populus grandidentata*) or quaking aspen (*Populus tremuloides*). Additional species include sassafras (*Sassafras albidum*), maples (*Acer spp.*), and cherry (*Prunus* spp.). This forest is an early successional forest type that often is found on former agricultural land, in areas of ice scour along stream banks, and areas where there has been major disturbance (Zimmerman et al. 2012).

3.1.1.1.2 Mixed Conifer-Deciduous Hardwood Forests

Mixed conifer-deciduous hardwood forests in the Project area occur in localized areas, typically on poor soils at higher elevations. This community is similar to the previously described northern hardwood forest, except that eastern hemlock and/or eastern white pine (*Pinus strobus*) contribute more than 25 percent relative cover. Conifers may be scattered, may be locally abundant, may dominate the subcanopy, or may occur as a relict in large former canopy gaps. Hardwood species include American beech, sugar maple, red maple, black birch (*Betula nigra*), and yellow birch. Conifers include eastern white pine, or eastern hemlock, or a combination of the two. Common shrubs include rosebay, witch-hazel, moosewood, and Viburnums (*Viburnum* spp.). The herbaceous layer typically is sparse and can include Canada mayflower, star-flower, New York fern, Indian cucumber-root, shining clubmoss, partridge-berry (*Mitchella repens*), and bluebead lily (*Clintonia borealis*) (Zimmerman et al. 2012).

3.1.1.1.3 Conifer Forests

In general, coniferous forests in the Project area are limited to localized areas, typically on the lower elevations of steep hillsides, where the soils are poor and sunlight is more limited. This community has at least 75 percent cover by eastern hemlock, white pine, or, more often, a combination of the two species. Associated species include a variety of northern hardwoods and oaks, including sweet birch, yellow birch, sugar maple, red maple, red oak, black oak (*Quercus velutina*), and American beech. The shrub layer can include rosebay, witch-hobble, maple-leaved viburnum (*V. acefirolium*), and witch-hazel. Herbs and creeping shrubs include Canada mayflower, partridge-berry, ground pine (*Lycopodium* spp.), teaberry, New York fern, Indian cucumber root, and Christmas fern (*Polystichum acrostichoides*) (Zimmerman et al. 2012).

3.1.1.1.4 Open Lands

This cover type includes all non-forested vegetated areas that are not in agricultural production or landscaped such as grasslands, successional old fields and shrublands, and maintained utility ROWs. Open lands are typically previously disturbed lands that have been cleared for farming, utility construction, or other developments and then abandoned. Grasslands are dominated by grasses, such as reed canary grass, poverty grass (*Danthonia spicata*), orchard grass (Dactylis glomerata), and switchgrass (*Panicum virgatum*). Old fields are dominated by grasses and forbs, such as rough-stemmed goldenrod (*Solidago rugosa*), lance-leaved goldenrod (*Solidago graminifolia = Euthamia graminifolia*), Queen Anne's lace (*Daucus corota*), and ragweed. Shrublands have at least 50 percent cover of shrubs and saplings, such as gray birch, silky dogwood, multiflora rose (Rosa multiflora), meadowsweet, and autumn olive (*Elaeagnus umbellata*) or Russian olive (*Elaeagnus angustifolia*). Dense areas of shrubby thickets typically are not found in this cover type, except in localized areas (Zimmerman et al. 2012).

3.1.2 New York

3.1.2.1 Upland Forest

3.1.2.1.1 Hemlock / Northern Hardwood Forest

This forest is a mixed forest with hemlock as a dominant species, in addition to beech, sugar maple, white pine, and yellow birch. The community is widespread throughout the state and is located on middle to lower slopes of ravines and on the edges of swamps. The shrub layer may be sparse, depending on the hemlock cover, and generally consists of hobblebush (*Viburnum lantanoides*) and raspberries (*Rubus* sp.) (Edinger 2002).

3.1.2.1.2 Appalachian Oak-Pine Forest

This forest is a mixed forest that occurs throughout the Appalachian Plateau on sandy ravines in Pine Barrens or on rocky slopes that are well drained. The mixed forests consist of chestnut oak, red oak, and white oak. The pines can include white pine or pitch pine (*Pinus rigida*). The dominant shrub layer consists of lowbush blueberry (*Vaccinium angustifolium*) (Edinger 2002).

3.1.2.1.3 Beech-Maple Mesic Forest

This forest occurs on well-drained acidic soils and often is associated with blocks of hemlock-northern hardwood forests. It is dominated by sugar maple and beech. Other species may consist of yellow birch, white ash, eastern hop hornbeam (*Ostrya virginiana*), and red maple. There are relatively few shrubs and herbs. Characteristic small trees or tall shrubs include hobblebush (*Viburnum lantanoides*) and witch hazel (Edinger 2002).

Open Lands

Vegetation communities characterized as open lands within New York are similar to those described previously for Pennsylvania.

3.1.3 Summary of Land Uses

Impacts to Open Land are not anticipated to adversely affect migratory bird habitat following construction and during operation of the ROW, as these areas will be restored to pre-construction conditions. Available Open Land habitat is expected to increase due to the periodic maintenance of vegetation within the permanent ROW.

Of all the habitat types crossed by the Project, the potential effects on Upland Forest represent the greatest concern with respect to migratory bird habitat. However, the quality of habitat provided by Upland Forests crossed by the Project vary based on factors such as stand density and age, tree species composition, connectivity to other contiguous forest areas, and extent of interior versus edge forest.

3.2 CANONSVILLE – MILL STREAM IMPORTANT BIRD AREA

The Canonsville – Mill Stream Important Bird Area (IBA) is the only IBA crossed by the Project and is crossed in three separate locations. The criterion used by the National Audubon Society (Audubon), which is not a federal or state regulatory agency, to identify Important Bird Areas include large, intact areas that support all or most of the responsibility species (species for which a large portion of their global or regional range or population occurs in an area) in any one habitat-species assemblage. However, smaller sites containing exceptional remnants of a habitat type are also considered. The Canonsville / Steam Mill IBA was designated by Audubon based upon the presence of large forest tracts comprised of Appalachian oak-pine, deciduous wetland, evergreen northern hardwood, evergreen plantation, oak, sugar maple mesic, and successional hardwood forests. The IBA is centered on the Canonsville Reservoir within the Delaware River Valley and its associated contiguous forest.

The IBA was designated for a suite of nine species: bald eagle, black and white warbler (Mniotilta varia), black-throated blue warbler (Dendroica caerulescens), Canada warbler (Wilsonia canadensis), Eastern wood peewee (Contopus virens), least flycatcher (Empidonax minimus), Northern flicker (Colaptes auratus), scarlet tanager (Piranga olivacea), and wood thrush (Hylocichla mustelina). The Project has been sited along the western edge of the IBA in an attempt to minimize potential impacts on breeding birds. The, the IBA currently contains several linear utility / roadway corridors. The proposed workspace and permanent easement will bisect two sections of the IBA and result in the creation of smaller habitat blocks. The sizes of these habitat areas will continue to be large and therefore suitable for interior nesting species such as black and white warblers and scarlet tanagers to maintain viable populations (Cornell 2014). The development of new scrub-shrub habitat within the permanent ROW will potentially benefit species such as least flycatcher and Northern flicker that use this type of habitat for breeding or feeding. Based on the location of the Project in relation to the overall IBA, the Project is not likely to have a significant adverse effect on the ability of the IBA to provide suitable habitat for the suite of species for which it was designated.

3.3 BIRDS OF CONSERVATION CONCERN

The most significant potential impact associated with construction and operation of the Project is the fragmentation of contiguous forest blocks that may provide suitable breeding habitat for interior nesting species such as wood thrush, Canada warbler, cerulean warbler and bay-breasted warbler (*Dendroica castanea*). Review of the Breeding Bird Atlas data in both Pennsylvania (2013) and New York (2008) indicated that wood thrush, Canada warbler and cerulean warbler were the interior forest breeding species

identified as present within the Project area (see Table 1). The creation of smaller contiguous blocks of forest habitat associated with the permanent ROW may result in a slight decrease in nesting habitat for those species. For species such as blue-winged warbler (*Vermivora cyanoptera*), golden-winged warbler (*Vermivora chrysoptera*) and black-billed cuckoo (*Coccyzus erythropthalmus*) that use edge and scrub-shrub habitats for breeding, the construction workspace and permanent ROW will provide a net benefit by providing additional habitat that will be maintained in an early successional stage.

Table 1 U.S. Fish and Wildlife Service Birds of Conservation Concern Potentially Present Within Constitution Pipeline Project Area

Common Name	Scientific Name	Habitat Type	Habitat Present Within Project Area	Identified in State Breeding Bird Atlas[a]	County / State
Black-crowned Night-heron	*Nycticorax nycticorax*	Black-crowned Night-herons are wetland habitat generalists, thriving on fresh and saltwater habitats alike. The birds use marshes, swamps, estuaries, lagoons, and mudflats, as well as altered wetlands, such as canals, flooded fields, human-made islands, and aquaculture sites, often foraging within vegetated cover. Small islands near marshes and wooded or brushy swamps provide breeding sites.	Yes – foraging	Yes	Delaware / NY (one survey block)
Bald Eagle	*Haliaeetus leucocephalus*	Eagles prefer undisturbed areas near large lakes and reservoirs, marshes and swamps, or stretches along rivers where they can find open water and their primary food, fish. Historically, bald eagles nested in forests along the shorelines of oceans, lakes or rivers throughout most of North America, often moving south in winter to areas where water remained open.	Yes	Yes	Chenango / NY Delaware / NY Schoharie / NY

Table 1 U.S. Fish and Wildlife Service Birds of Conservation Concern Potentially Present Within Constitution Pipeline Project Area

Common Name	Scientific Name	Habitat Type	Habitat Present Within Project Area	Identified in State Breeding Bird Atlas[a]	County / State
Black-billed Cuckoo	*Coccyzus erythropthalmus*	This bird is found in edges and clearings of young deciduous and mixed deciduous-coniferous woods with low, dense shrubs, near abandoned farmland, brushy hillsides and pastures, roadsides, fencerows, orchards, berry blocks, and hawthorn thickets. It also frequents wet areas, often in willows near edges of bogs and marshes, or on lake and river shores. The maturation of second growth deciduous and evergreen forests may enhance habitat quality and increase habitat availability.	Yes – breeding	Yes	Susquehanna / PA Broome / NY Chenango / NY Delaware / NY Schoharie / NY
Wood Thrush	*Hylocichla mustelina*	This species breeds in the interior and edges of mature deciduous or mixed forests with a dense understory of saplings and shrubs, shade, a fairly open forest floor, moist soil, and leaf litter. It is most often found in forests larger than 200 acres, but may nest in fragments as small as 2.5 acres as well as wooded residential areas and parks. Common tree species in occupied forests include oaks, American beech, sweetgum, red maple, blackgum, eastern hemlock, flowering dogwood, American hornbeam, and pines. Common shrub species include viburnums, spicebush, rhododendron, and blueberry.	Yes – breeding	Yes	Susquehanna / PA Broome / NY Chenango / NY Delaware / NY Schoharie / NY

Table 1 U.S. Fish and Wildlife Service Birds of Conservation Concern Potentially Present Within Constitution Pipeline Project Area

Common Name	Scientific Name	Habitat Type	Habitat Present Within Project Area	Identified in State Breeding Bird Atlas[a]	County / State
Blue-winged Warbler	*Vermivora pinus*	This species is found in a wide variety of early successional habitats similar to those preferred by the Golden-winged Warbler, including shrubby fields, overgrown pastures, forest edge, clear cuts, and utility rights-of-way. The common features of these habitats are blocks of dense herbaceous growth and shrubs, scattered low trees, and wooded edges.	Yes – breeding	Yes	Susquehanna / PA Broome / NY Chenango / NY Delaware / NY Schoharie / NY
Cerulean Warbler	*Dendroica cerulea*	This species prefers large forest tracts of tall, deciduous, broad-leafed tree species. Territories often occur in the closed canopy of old growth forests near stream bottoms, lakes or rivers. Two principal breeding areas for the cerulean warbler remain in New York: the Finger Lakes highlands and the lowland plain south of Lake Ontario.	Yes – migration / breeding	Yes	Schoharie / NY (one survey block)

Table 1 U.S. Fish and Wildlife Service Birds of Conservation Concern Potentially Present Within Constitution Pipeline Project Area

Common Name	Scientific Name	Habitat Type	Habitat Present Within Project Area	Identified in State Breeding Bird Atlas[a]	County / State
Canada Warbler	*Wilsonia canadensis*	The Canada Warbler will inhabit many types of forest during the breeding season, primarily coniferous and mixed northern hardwood forests with dense, often wet, undergrowth. They appear to prefer limited ground cover, but high foliage density in the shrub layer. Important stopover habitats include bushes and vine tangles near the edge of parks, villages, and cities, and thickets of stream and woodland edges, swamps and willow trees.	Yes - breeding	Yes	Susquehanna / PA Broome / NY Chenango / NY Delaware / NY Schoharie / NY

a – Second State Breeding Bird Atlases in New York (2008) and Pennsylvania (2013)

4.0 IMPACTS TO MIGRATORY BIRDS AND UPLAND FORESTS

Construction activities will occur throughout the year and will overlap the primary migratory bird nesting season (early April through late-July) as identified by USFWS in the Project area. Primary construction impacts to migratory bird habitat will include the cutting, clearing, and removal of existing vegetation including upland forest. The primary nesting season is the most important time in which to limit construction activities and minimize potential adverse effects to migratory birds and their nesting habitat (i.e. vegetation). Direct construction impacts may modify nesting habitat and could negatively affect migratory bird populations through the loss of nests (including those with eggs and/or young), possible loss of adult birds, reduction in fecundity, displacement of birds into suboptimal habitat and loss of secondary nesting opportunities.

Construction impacts to migratory bird breeding habitat will primarily be associated with clearing of existing forested areas for construction and maintenance for operation of the pipeline facilities. In addition, temporary impacts to shrub and herbaceous habitats will occur during construction; however, these will typically be limited as these habitat types will be allowed to regenerate within the temporary workspace areas and permanent easement. Operational activities would be limited to periodic vegetation maintenance within the permanent easement as well as routine inspection and maintenance of access roads and above ground Project facilities. Vegetation within the upland portions of the 50-foot-wide permanent easement would be maintained in an herbaceous state through mechanical means or herbicides (where applicable and approved for use), outside the nesting period as described in Constitution's ECPs to maintain accessibility of the ROW and to accommodate Constitution's pipeline integrity program.

A secondary effect of the creation of a new linear corridor across the landscape is the potential for fragmentation of existing blocks of forested habitat, thereby decreasing the size of contiguous forested areas and potentially limiting available habitat for specific interior-forest breeding species. Fragmented forests have the potential to develop forest blocks or islands which may adversely affect breeding populations of some species due to limitations on available food, forest structure or breeding sites. Additionally, species populations between fragmented areas can become isolated and often result in lower genetic variability and species diversity (Jones et al. 2001). The importance and overall effects of the removal of forested interior is directly related to the size of remaining blocks of forested areas and the transition of vegetation from the edges of the construction ROW to the adjacent forested areas. Larger forested blocks or areas where fragmented forests are generally grouped close together and/or connected by vegetated corridors can still provide sufficient quality habitat for interior-breeding species. Vegetated corridors can also provide travel ways between adjacent forested areas and access to areas of remaining interior forest (Tewksbury et al. 2002).

Based on review of scientific literature and discussion with the USFWS, the minimum size of interior forest blocks that adequately support interior forest species is dependent upon the suite of species that may occur within the area. Robbins et al. (1989) demonstrated that breeding habitat requirements vary significantly among interior forest nesting species and can range from approximately three acres for species such as wood thrush to over 2,500 acres for species such as black-throated blue warblers (Robbins et al. 1989). They documented that a majority of interior forest breeding species required habitat block sizes of approximately 350 acres. The state of Maryland developed interior forest species management guidelines for birds requiring a minimum forest block size of 50 acres with a minimum of 10 acres of

interior forest (300 feet or greater distance from the forest edge) (Jones et al. 2001). Based on these studies, Constitution has developed a minimum interior forest block size of 35 acres that would adequately support interior forest species (10% interior forest based on 350-acre minimum forest block) (Harris et al. 1984, Jones et al. 2001, Trzcinski et al. 1999). It should be noted that determinations of minimum interior forest blocks are complicated by forest vegetation characteristics as well as the distance between forest blocks and is likely to be species-dependent (Lynch and Whigham 1984, Blake and Karr 1987). Constitution has, to the extent practicable, sited the Project in areas previously disturbed, such as agricultural fields, open land and along existing road and utility corridors in an attempt to limit forest fragmentation and interior forest impacts.

Coincident with the potential fragmentation of forested areas, the establishment of new ROW will increase the extent of edge habitat. Edge habitats would be dominated by early successional species and would become less distinct over time as the temporary workspace areas revegetate. Forest edges can provide a preferential travel way for avian predators that can adversely affect nest success and expose nests to increased brood parasites (Askins 1994). Interior forest species will likely temporarily leave the construction ROW to select new nesting sites within adjacent forest interiors. Although these edges may modify habitats and/or movement patterns of some habitat-specialist species, the majority of migratory bird species identified in the Project area are adaptive to changing habitat conditions and possess the capability to expand or shift their home ranges to find alternative sources of food, water, and shelter until the disturbed habitats become re-established (DeGraaf et al. 1992).

The most significant potential impact associated with construction and operation of the Project is the removal of preferred vegetation types and structure within interior forests that may provide suitable breeding habitat for interior nesting species. Direct disturbances to avian species during active construction are anticipated to be temporary as many species will disperse from the construction ROW during construction activities. Sufficient interior forests will remain undisturbed in areas outside the construction ROW and avian species are likely to populate these areas. Direct impacts to nesting interior forest bird species will be avoided as the majority of vegetation clearing activities are not anticipated to take place within the typical nesting periods for bird species in the Project area.

Based on the analysis documented above, with respect to forested areas crossed by the Project, the interior forest within and adjacent to the Breeding Bird Block where cerulean warbler was observed, the Cannonsville – Mill Stream IBA, and areas where interior forest is crossed and reduced in area below 35 acres in block size were assigned the highest value with respect to habitat for migratory birds (See Table 2). Moderate habitat value was assigned to interior forest areas crossed by the Project where the forest is bisected but still retain forest block sizes in excess of 35 acres. Edge forest associated with interior forest blocks were also assigned moderate value. Areas consisting of hedge rows and small areas of existing fragmented forest were assigned a low value based on size and lack of connectivity.

Table 2 Migratory Bird Habitat Value Associated with Upland Forest Crossed by the Project

Habitat Type	Construction ROW Impact (Acres)[a]	Operation ROW Impact (Acres)[b]	Total Impact
Forest Areas with High Value to Migratory Birds			
Interior Forest within Important Bird Area	7.16	9.12	16.28
Interior Forest Associated with Cerulean Warbler Habitat	24.87	23.88	48.75
Forest Interior Reduction Below 35 Acres	42.85	42.69	85.54
Total	**74.88**	**75.69**	**150.57**
Forest Areas with Moderate Value to Migratory Birds			
Forest Interior not included above	147.08	142.04	289.12
Forest Edge associated with impacted forest interior and forest edge associated with large forest blocks	223.86	162.29	386.15
Total	**370.94**	**304.33**	**675.27**
Forest Areas with Low Value to Migratory Birds			
Existing Edge Forest	106.14	89.21	195.35
Total	**106.14**	**89.21**	**195.35**

a – Construction impact = temporary workspace and additional temporary workspace only
b – Operation impact = new permanent easement only

Quality of forest interior habitat is measured in part by proportion of edge, which is the interface between forested and non-forested habitats. Edges fragment forest interior habitats and are associated with increased predation and brood parasitism; however, characteristics of the surrounding landscape, such as percent forest cover, determine the magnitude of local edge effects (USDA Forest Service 2004). Findings of Robinson et al. (1995) indicate that large landscapes with at least 70 to 80 percent forest cover offer high potential as quality habitat for forest interior species, where adverse effects of edge are reduced to levels compatible with productive populations.

In an attempt to quantify the potential indirect effects of the Project on interior forest habitats, Constitution evaluated the individual interior forest crossings with the highest potential habitat value for migratory birds (see Table 3). The indirect effect was based upon an edge effect of 300 feet measured laterally into the forest from the edges of the new permanent easement. This is the area that would likely be subject to increases in potential nest predation, nest parasitism and reduced fecundity for forest interior nesting species (Cornell 2014). Since these potential effects would occur subsequent to construction of the Project and cannot be directly quantified in terms of loss of individual birds / nests or breeding opportunities, the associated habitat compensation being proposed is based on habitat value versus direct area.

Table 3 Indirect Effects on High Value Interior Forest Habitat

Habitat Type	Linear Distance Crossed (Miles)	Indirect Effect (Acres)[a]
Interior Forest within Important Bird Area	2.38	173.09
Interior Forest Associated with Cerulean Warbler Habitat	0.50	36.36
Forest Interior Reduction Below 35 Acres	7.07	514.18
Total	**9.95**	**723.63**

a – Indirect effect is measured 300 feet laterally from both edges of permanent easement (600 feet in total width)

5.0 MANAGEMENT MEASURES

Implementation by Constitution of the measures set forth in Sections 5.1, 5.2, and 5.3 is intended solely as a mechanism to avoid an incidental take of migratory birds. Management measures detailed in Section 5.4 are intended to offset temporary and permanent impacts to upland forest areas affected by Project activities.

5.1 GENERAL AVOIDANCE AND IMPACT MINIMIZATION MEASURES

Following construction, stabilization, and establishment of vegetative cover, temporarily disturbed areas will be allowed to revegetate via natural succession. Revegetation success in these areas will be enhanced through the control of invasive species as outlined in Constitution's Invasive Species Management Plan for Pennsylvania and New York provided in Volume II, Appendix I and J of the FERC Environmental Report. This natural revegetation process will gradually develop a stratified vegetative cover between the Operation ROW and adjacent forested areas. In addition, the majority of the remaining tracts of contiguous forest outside the construction ROW will remain large enough to maintain interior forest habitat and species populations that rely on these habitats are not anticipated to significantly decline.

Constitution will implement the following temporal and spatial conservation measures:

- Constitution will, whenever practicable, avoid impacts to migratory birds by completing vegetation clearing activities outside the migratory bird nesting season. The maximum migratory bird nesting season generally extends from mid-March to late July. Within this time period the primary migratory bird nesting season extends from early April to mid-July. By implementing the best possible timing for vegetation clearing and by buffering active nests (i.e., nests with eggs or young in them) from construction activities during nesting, Constitution will avoid impacts to most nesting bird species.
- For those construction activities such as preparation of access roads and waterbody crossings containing sensitive fisheries with associated timing restrictions where Constitution must commence construction during the migratory bird nesting season, Constitution will, where possible, direct construction activities to begin in areas of least importance to migratory birds. Based upon the conflicts related to seasonal timing restrictions between migratory birds and coldwater fisheries, Constitution will coordinate with USFWS prior to commencement of clearing activities within the migratory bird breeding season to ensure that potential impacts to breeding birds are minimized to the greatest extent practicable.
- Constitution has routed the pipeline to avoid the majority of interior forest associated with the Canonsville / Steam Mill IBA by siting the pipeline as far to the west toward Interstate 88 (I-88) as possible while maintaining safe construction conditions. Siting the route further west toward I-88 would significantly increase the extent of side-slope construction which would necessitate increased workspace and result in an increase in overall land alteration.
- Construction workspace within interior forest areas has been reduced from 110 feet to 100 feet with the exception of areas where additional temporary workspace is required to ensure safe working conditions (steep side-slope, steep slopes, etc.).

- Constitution will commit to the development of vegetation restoration measures for the operation ROW to benefit early-successional species. Specialized seed mix specifications and their application locations will be developed in consultation with the applicable regulatory agencies and non-governmental organizations such as the National Wild Turkey Federation
- For any communication monopoles constructed as part of the Project, Constitution will implement applicable conservation measures from the USFWS Guidance on the Siting, Construction, Operation and Decommissioning of Communication Towers (USFWS 2000).
- The Project is divided into five construction spreads, i.e., segments of pipeline being constructed concurrently in an assembly line fashion, as described in Constitution's Environmental Report. Where Constitution is able to commence construction on a given construction spread prior to the primary nesting season, Constitution will, where possible, direct construction activities within that spread to begin in areas of greater biological importance to migratory birds. This will increase the likelihood of completing construction of that spread within those areas prior to the start of the nesting season.
- Constitution will abide by FERC's requirement that all post-construction vegetation maintenance activities during pipeline operation be conducted outside of the migratory bird breeding season unless otherwise approved by FERC and completed in a manner that will not result in a take of migratory birds.

5.2 BALD EAGLES

The following are best management practices that have been identified to avoid and/or minimize potential Project-related impacts on bald eagles. Constitution will request technical assistance from the USFWS and other federal and state agencies as necessary:

- During construction, Constitution will utilize the spatial buffers around active eagle nests as prescribed through consultation with the USFWS. Exceptions to the buffer zones will be considered on a case-by-case basis, based on biological support and in coordination with the USFWS. In some cases natural barriers, such as topography or vegetation, located between the nest and the Project may serve to minimize impacts and thus may be acceptable by the USFWS to justify modifying a protective spatial buffer.
- When active bald eagle nests are located on or within 0.5 mile of the Project ROW, Constitution will coordinate with USFWS regarding appropriate measures to apply in the event that blasting is required within 0.5 miles of an active nest.
- In coordination with the USFWS and other appropriate resource management agencies, noise reduction barriers may be used to minimize disturbance when blasting activities are proposed within an established protective buffer.
- If blasting or other activities are proposed that could potentially affect nesting bald eagles, Constitution will apply for and acquire a Permit for Non-Purposeful Take from FWS.

5.3 POST-CONSTRUCTION ACTIVITIES

The following are commitments Constitution will implement following construction of the pipeline:

- To reduce impacts on vegetation within the Project workspace and to improve the probability of successful revegetation of disturbed areas, Constitution will implement the restoration measures included in Constitution's Pennsylvania and New York ECPs. To the extent practicable, native seed mixes to promote wildlife habitat will be used during revegetation of the workspace.
- In accordance with the FERC Plan and Procedures (2013), routine vegetation maintenance work (clearing, cutting, etc.) will not occur between April 15 and August 1 in any year. Invasive species management will be limited to the permanent easement and temporary workspace areas (only until successful revegetation is achieved). During operation of the pipeline, vegetation management will occur only within the permanent easement due to access limitations.
- Constitution will discontinue Project-related use of all temporary access roads after construction is completed and will restore these areas to their original grade, establish herbaceous vegetation cover for soil stability and allow the area to revegetate and progress through natural succession. This is subject to approval from private landowners and applicable federal and state agencies.
- If non-routine actions must be performed to alleviate, avoid, or respond to potential Project or pipeline-related risks to public health and safety, Constitution will coordinate with the USFWS prior to taking those actions if they could result in the incidental take of migratory birds.
- In the event of an emergency that threatens public health and safety, Constitution will take the necessary actions to address the emergency and then coordinate with USFWS if the action is likely to result in the incidental take of migratory birds.

5.4 UPLAND FOREST CONSERVATION

Constitution recognizes that Project construction will alter upland forest and associated migratory bird habitats. As such, Constitution will perform the following actions to offset potential temporary and permanent effects to upland forests and associated migratory bird habitats that are impacted by Project-related activities.

Constitution will coordinate with the USFWS, New York State Department of Environmental Conservation (NYSDEC), Pennsylvania Department of Conservation and Natural Resources – Bureau of Forestry (PADCNR), and the Pennsylvania Game Commission (PAGC) to address Project impacts on upland forests and migratory bird habitat (such as forest loss, impairment or loss of riparian habitats, and habitat fragmentation) by identifying and acquiring parcels of land within the Project area (counties crossed by the proposed pipeline alignment) containing significant blocks of interior forest and high value habitat for migratory bird conservation purposes. To accomplish this objective, Constitution will deposit funds in an account (or accounts, if necessary) to be used for the conservation of migratory bird habitat through one or more of the following measures:

- the acquisition of lands with federal and/or state importance for upland forest management and migratory bird conservation (through fee title or perpetual conservation easements);
- implementation of restoration measures to re-establish upland forest, riparian corridors and migratory bird habitat within acquired land or existing federal / state-owned parcels;
- Public outreach / awareness programs to promote protection of upland forests and migratory birds;

- Grants for federal and/or state projects / programs designed to study or preserve upland forests and / or migratory bird habitats;
- Long-term management of the lands for the benefit of migratory birds;
- Research projects for migratory birds, northern long-eared bats (*Myotis septentrionalis*) or other species of concern dependent upon upland forest habitats.

The amount of the funds contributed by Constitution would be based on the qualitative value to migratory birds of habitats lost or degraded; land values; fee title costs; easement costs; habitat restoration or improvement costs; costs for administration of the funds; long-term management and maintenance costs; and other anticipated costs necessary to accomplish the conservation actions determined by Constitution, in collaboration with the USFWS and other regulatory agencies as appropriate to offset Project impacts to upland forests and migratory bird habitats.

Prior to commencement of construction, Constitution will place funding (the amount to be determined in coordination with USFWS and applicable state agencies) in an interest-bearing escrow account fund to be used to conserve upland forest and associated migratory bird habitat (see Table 4). Constitution will identify an appropriate third-party, non-profit conservation organization(s) that will develop a Memorandum of Understanding (MOU) with the agencies establishing criteria for ensuring that the funds from the conservation escrow account are disbursed in accordance with the Final Plan for property acquisition, restoration, enhancement, improvement, and/or management efforts. This third-party non-profit independent conservation organization will be responsible for documenting that Constitution provides the funds as described above. This third-party non-profit conservation organization would be involved with site selection, monitoring and reporting on the implementation and success of habitat acquisitions/management, restoration/enhancements, etc. based on the conservation standards established by USFWS and Constitution and in coordination with NYSDEC, PADCNR and the PAGC as part of the establishment of the escrow account.

Table 4 Proposed Preservation / Restoration Funding to Compensate for Project-Related Effects on Upland Forest and Migratory Bird Habitat

Habitat Type	Number of Acres Affected	Proposed Funding
Forest Areas with High Habitat Value	150.57	To be determined
Forest Areas with Moderate Habitat Value	675.27	To be determined
Indirect Effects on Forest Areas with High Habitat Value	723.63	To be determined
Total	**1549.47**	To be determined

The funds in this account will be disbursed by the selected third-party, non-profit conservation organization. The amount is based upon an average raw land value in the Project area.

Constitution, in coordination with USFWS, will develop a separate agreement with the third-party organization to identify conservation standards and objectives and to address how the third-party

conservation organization will disburse funds for projects. Constitution will seek the technical assistance of the USFWS, NYSDEC, PADCNR and the PAGC with respect to restoration, enhancement, and management efforts for specific acquisitions. Constitution has conducted a preliminary analysis of available land parcels with significant acreage of upland forest and has identified five parcels in the direct Project area that may be suitable for preservation. Information regarding these parcels is provided in Attachment A to this Plan. Constitution will continue to work directly with USFWS, NYSDEC, PADCNR and the PAGC to identify additional parcels that may be of conservation importance for upland forests and migratory birds. Constitution anticipates that final site selection will be a direct result of the iterative process between Constitution, USFWS, NYSDEC, PADCNR and the PAGC to determine adequate compensation for the function and value impacts of the Project on upland forests and migratory bird habitat.

Land acquisitions and enhancement / restoration projects to benefit upland forests and migratory bird habitats completed using funding provided by Constitution will be monitored after they have been implemented. This monitoring should be relatively simple and cost effective. The primary goals of monitoring these projects are first to determine if they were completed and, second, to determine whether they met the stated migratory bird conservation objective they were designed to accomplish. Constitution will work with the third-party conservation organization, USFWS, and any other appropriate parties to develop appropriate monitoring plans. Constitution will seek technical assistance from the USFWS on monitoring and reporting protocols. The costs associated with monitoring and reporting to the USFWS will be funded from the conservation account established by Constitution pursuant to this section.

5.5 COORDINATION WITH FEDERAL AND STATE AGENCIES

Constitution will continue to coordinate with applicable state and federal agencies on migratory bird conservation efforts. The USFWS, in coordination with NYSDEC, PADCNR and the PAGC will:

- Provide Constitution with technical assistance and guidance concerning reasonable measures to be taken by Constitution to comply with the MBTA and BGEPA and avoid or minimize the impacts to migratory birds during construction of the Project.
- Provide guidance to Constitution for post-construction operation and maintenance actions so that such actions are conducted in a way that avoids or minimizes impacts to migratory birds.
- Provide guidance to Constitution with respect to monitoring of lands acquired for conservation of migratory birds, as described in this Plan.

6.0 CONTACTS

Notifications and or contacts anticipated by this Plan may be sent by first class mall, postage pre- paid, or by properly addressed electronic mail to the following principal contacts:

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New York Regional Field Office
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Cortland, NY 13045

U.S. Fish and Wildlife Service
Attn: Ms. Jennifer Siani
Pennsylvania Regional Field Office
315 South Allen Street – Suite 300
State College, PA 16801

New York State Department of Environmental Conservation (NYSDEC)
Attn: Mr. Stephen Tomasik
625 Broadway
Albany, NY 12233

Pennsylvania Department of Conservation and Natural Resources
Bureau of Forestry - Ecological Services Section
Attn: Ms. Ellen Schultzabarger
Division Chief – Bureau of Forestry
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Pennsylvania Game Commission
Bureau of Wildlife Habitat Management
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