Wetlands, Riparian, and Littoral Habitat Study Report

Byllesby-Buck Hydroelectric Project (FERC No. 2514)

November 17, 2021

Prepared by:

Prepared for:
Appalachian Power Company

This page intentionally left blank.

Contents

Tables

Figures

Attachments

Acronyms

AEP	American Electric Power
Appalachian or Licensee	Appalachian Power Company
CFR	Code of Federal Regulations
EAV	emergent aquatic vegetation
FERC or Commission	Federal Energy Regulatory Commission
GIS	Geographic Information System
GPS	Global Positional System
HDR	HDR Engineering, Inc.
ILP	Integrated Licensing Process
ISR	Initial Study Report
m	meter
NWI	National Wetlands Inventory
PAD	Pre-Application Document
PEM	palustrine emergent wetlands
PFO	palustrine forested wetlands
PM&E	Protection, mitigation, and enhancement
PSS	palustrine scrub-shrub
PRB	palustrine rock bottom
Project	Byllesby-Buck Hydroelectric Project
PUB	palustrine unconsolidated bottom
RM	River mile
RSP	Revised Study Plan
SAV	submerged aquatic vegetation
SPD	Study Plan Determination
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
USR	Updated Study Report
VDEQ	Virginia Department of Environmental Quality
VDCR	Virginia Department of Conservation and Recreation
WetCAT	Wetland Conditional Assessment Tool

This page intentionally left blank.

1 Project Introduction and Background

Appalachian Power Company (Appalachian or Licensee), a unit of American Electric Power (AEP), is the Licensee, owner, and operator of the two-development Byllesby-Buck Hydroelectric Project (Project) (Project No. 2514), located on the upper New River in Carroll County, Virginia. The Byllesby Development is located about 9 miles north of the city of Galax, and the Buck Development is located approximately 3 river miles (RM) downstream of Byllesby and 43.5 RM upstream of Claytor Dam.

The Project is currently licensed by the Federal Energy Regulatory Commission (FERC or Commission). The Project underwent relicensing in the early 1990s, including conversion to run-of-river operations and incorporating additional protection, mitigation, and enhancement (PM&E) measures (FERC 1994). The current operating license for the Project expires on February 29, 2024. Accordingly, Appalachian is pursuing a subsequent license for the Project pursuant to the Commission's Integrated Licensing Process (ILP), as described at 18 Code of Federal Regulations (CFR) Part 5. In accordance with FERC's regulations at 18 CFR §16.9(b), the licensee must file its final application for a new license with FERC no later than February 28, 2022.

In accordance with 18 CFR §5.11 of the Commission's regulations, Appalachian developed a Revised Study Plan (RSP) for the Project that was filed with the Commission and made available to stakeholders on October 18, 2019. On November 18, 2019 FERC issued the Study Plan Determination (SPD). On December 12, 2019, Appalachian filed a clarification letter on the SPD with the Commission. On December 18, 2019, Appalachian filed a request for rehearing of the SPD. The SPD was subsequently modified by FERC by an Order on Rehearing dated February 20, 2020.

On July 27, 2020, Appalachian filed an updated ILP study schedule and a request for extension of time to file the Initial Study Report (ISR) to account for Project delays resulting from the COVID-19 pandemic. The request was approved by FERC on August 10, 2020, and the filing deadline for the ISR for the Project was extended from November 17, 2020 to January 18, 2021. Stakeholders provided written comments in response to Appalachian's filing of the ISR meeting summary, which are addressed in this Updated Study Report (USR) along with study methods and results.

In accordance with 18 CFR §5.15, Appalachian has conducted studies as provided in the RSP as subsequently approved and modified by the FERC. This report describes the methods and results of the Wetlands, Riparian, and Littoral Habitat Study conducted in support of preparing an application for new license for the Project.

2 Study Goals and Objectives

The goal of the Wetlands, Riparian, and Littoral Habitat Characterization Study is to identify and characterize the existing wetlands, waterbodies, and riparian and littoral vegetative habitats (including emergent and submerged aquatic vegetation beds) in the study area. Specific study goals and objectives include the following:

- Perform a desktop characterization using the U.S. Fish and Wildlife Service (USFWS) (2019) National Wetlands Inventory (NWI), the Wetland Condition Assessment Tool (WetCAT) (VDEQ 2021), and other resources such as Geographic Information System

(GIS)-based topographic maps, hydrography, aerial imagery, and soil surveys to identify and describe, approximate, and classify wetlands and waterbodies (i.e., streams, creeks, rivers) within the study area (including upland, littoral, and riparian zones);

- Perform a field verification survey to confirm the location, dominant vegetative community, and vegetation classification identified in the previous desktop survey;
- The field verification will include identification of littoral and instream vegetation in the study area to characterize the availability of littoral, submerged, and emergent vegetative habitat;
- Using the results of the desktop characterization and field verification, develop a GIS-based map identifying wetlands, waterbodies, and riparian, littoral, and instream vegetative community composition according to the Cowardin Classification System (Cowardin et al. 1979);
- Riparian communities will be classified according to the Virginia Department of Conservation and Recreation (VDCR) Natural Communities of Virginia of Ecological Groups and Community Types Third Approximation (Version 3.3); and
- Using the results of the desktop and field verification efforts, evaluate the potential for Project effects on wetlands, riparian, and littoral habitat in the study area.

3 Study Area

The 480-acre study area for the Wetlands, Riparian, and Littoral Habitat Characterization Study includes the riparian zone on each bank of the upper New River and lowermost tributary segments of Crooked Creek and Chestnut Creek (Figure 1). The study area extends 3.4 miles upstream of Byllesby Dam and 1.15 miles downstream of Buck Dam and includes 2.7 miles of the New River in between the two dams. The Study Area is located in the easternmost portion of the Mt. Rogers National Recreation area and the New River Trail State Park is also situated within the Study Area (Figure 1).

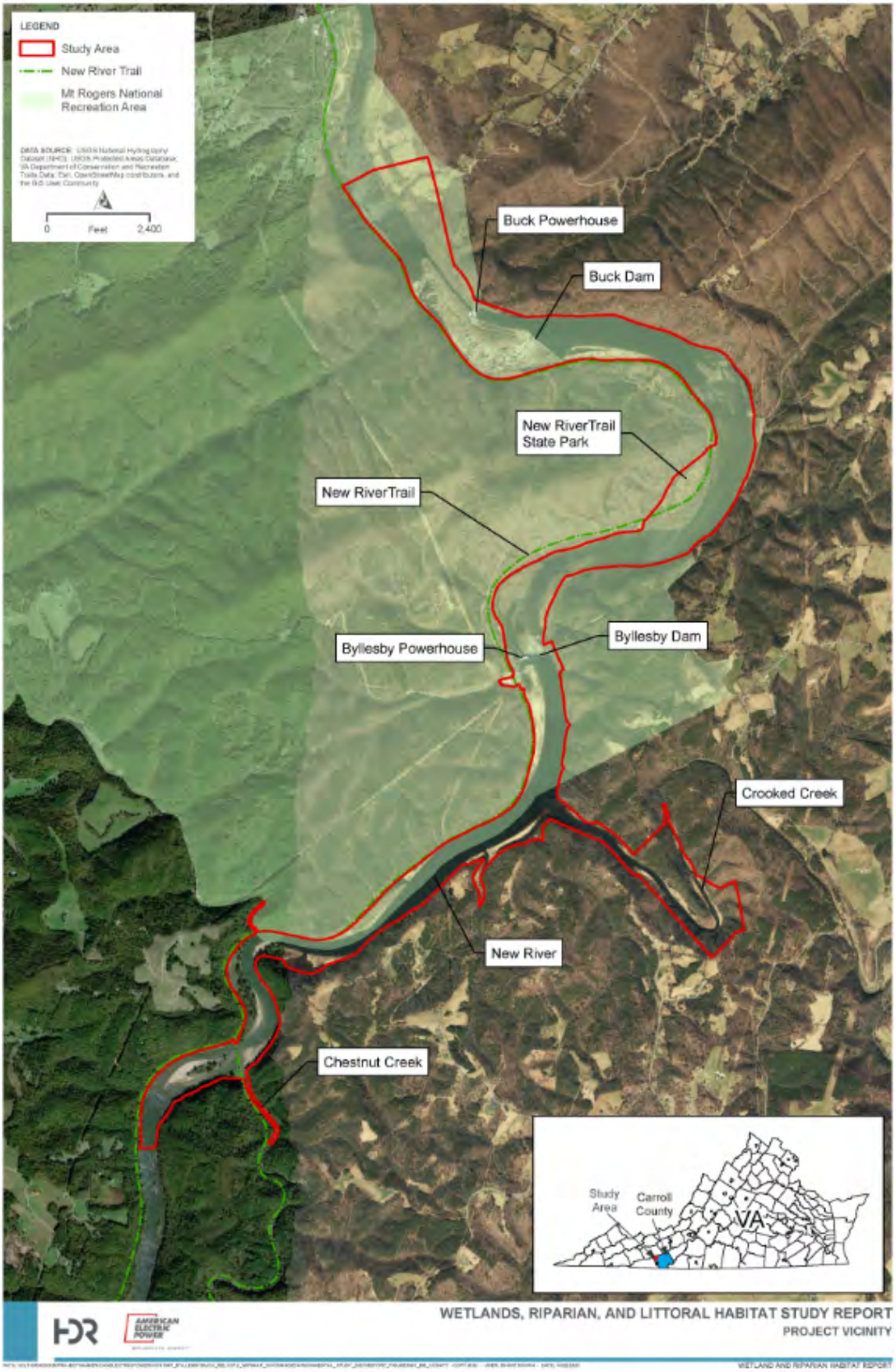

Figure 1. Study Area for Wetlands, Riparian, and Littoral Habitat Study

4 Background and Existing Information

Existing relevant and reasonably available information regarding wetlands in the Project vicinity is presented in Section 5.6 of the Byllesby-Buck Pre-Application Document (PAD) (Appalachian 2019). Wetland, riparian, and littoral habitats within the study area are associated with the near-shore areas of the impoundments. Wetlands are defined as "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support…vegetation typically adapted for life in saturate soil conditions" (USACE 1987). The littoral zone, in the context of a large river system, is the habitat between approximately a half-meter of depth and the depth of light penetration (Wetzel 1975). Riparian habitats are areas found along waterways such as lakes, reservoirs, rivers, and streams (NRCS 1996).

According to the NWI and review of digital orthoimagery, potential wetlands, riparian and littoral habitat within the study area exists for palustrine forested wetlands along the New River, palustrine emergent wetlands along the edge of the river channel, and aquatic beds in the impoundments, as defined by Cowardin et al. (1979). Palustrine wetlands are non-tidal wetlands dominated by trees, shrubs, and/or persistent plants/mosses, generally representing marsh, swamp, and small ponds. Sediment deposition in the backwater areas of the Project reservoirs has created sites suitable for wetland vegetation, including about 27 acres of emergent wetland vegetation bordering the Byllesby reservoir and about 15 acres bordering the Buck reservoir (Appalachian 1991). Additional wetlands are also created by sediment deposition in other areas, including a small area approximately 100 yards upstream of the gated spillway dam at the Buck Development. Additional information on existing wetland resources is provided in Section 5.6 of the PAD.

The riparian plant Virginia spiraea (*Spiraea virginiana*), which is listed as federally threatened and state endangered, has been historically reported by the USFWS upstream of the Byllesby Dam; however, there is no documentation or verification of historical presence or exact location. A habitat assessment performed in 2017 identified few areas suitable for this species within the Study Area (ESI 2017). Additional information regarding the previous Virginia spiraea survey and potential habitat within the study area is included in Sections 5.6.2 and 5.7.1.3 of the PAD.

Invasive aquatic plants are known to exist in the New River, including hydrilla (*Hydrilla verticillata*), curly-leaf pondweed (*Potamogeton crispus*), and brittle naiad (*Najas minor*). An aquatic plant community study performed in 2012 between Buck Dam and upper Claytor Lake identified 13 macrophyte species, including curly-leaf pondweed (Weberg et al. 2015). Additional information regarding invasive aquatic plants found in the New River is provided in Section 5.6.2 of the PAD.

5 Methodology

An initial desktop study was carried out to identify areas likely to contain wetlands, riparian, and littoral habitat and estimate the amount of each resource area. Wetland areas and streams identified in the desktop study were field-verified, but not formally delineated (i.e., no flagging or boundary marking). The study methods proposed by Appalachian outlined below provide adequate information to assess potential Project operations-related effects to wetlands, riparian, and littoral habitats in the study area.

5.1 Desktop Characterization of Wetland, and Riparian, and Littoral Habitats

A desktop characterization of existing and potential wetlands and waterbodies, and existing riparian and littoral vegetation was performed. For the purposes of this study, the riparian zone was defined as terrestrial areas 100 feet from the shoreline (VDCR 2006) or to the study area boundary, whichever is closer. The littoral zone was defined as the shallow shoreline area of the New River from the stream bank down to the maximum depth of light penetration in the water column and also includes instream emergent and/or submerged aquatic vegetation beds.

Information sources included the USFWS NWI, the Virginia Department of Environmental Quality (VDEQ) WetCAT (VDEQ 2021), U.S. Geological Survey (USGS) topographic maps and National Hydrography Dataset, elevation data, high-resolution orthoimagery, and Natural Resources Conservation soil surveys. WetCAT query results were used to score wetland types based on the habitat and water quality stressors associated with surrounding land use types; classifications include slightly stressed, somewhat stressed, somewhat severely stressed, and severely stressed.

Data collected during the desktop survey were used to create preliminary habitat characterization maps that was used to facilitate the field verification efforts.

5.2 Field Verification

5.2.1 Wetlands and Waterbodies

Potential streams and wetland areas not confirmed previously (i.e., through prior licensing studies or other sources) were field-verified by HDR Engineering, Inc (HDR) wetland scientists between July 20-22, 2021. HDR performed field verification of wetlands and waterbodies according to the methodologies and guidance described in the U.S. Army Corps of Engineers (USACE) 1987 Wetland Delineation Manual (USACE 1987) and USACE Eastern Mountains and Piedmont Regional Supplement (Version 2.0) (USACE 2012) and USACE Regulatory Guidance Letter 05-05 Ordinary High Water Mark Identification (USACE 2005). A visual assessment and field evaluation of wetland hydrology, hydrophytic vegetation, and hydric soils was performed to identify wetlands. Wetland cover types were classified according to dominance by trees (palustrine forested), shrub species (palustrine scrub-shrub) herbaceous species (palustrine emergent), and rocky bottom (palustrine rocky bottom). Ordinary high water mark indicators including bed and banks, change in sediment texture, deposition, shelving, and change in vegetation were identified in the field to assess the presence of non-wetland waterbodies and streams.

Wetland scientists used hand-held global positional system (GPS) units to estimate the boundaries of wetlands within the Study Area. For wetlands, once the approximate upland boundary of the resource was determined, field personnel identified the edges of the wetland habitat, creating a polygon. In some instances, it was determined that all or a portion of the wetland observed in the field was consistent with boundaries depicted by on the USFWS NWI as well as topography contours. In these instances, the confirmed desktop information including USFWS National Hydrography Dataset, USFWS NWI boundaries and topography contours were used to digitize stream and wetlands boundaries in GIS. USACE Wetland Determination Data Sheets were completed in the field for representative wetland types and are included in Attachment 5.

5.2.2 Littoral Zone

The four main categories of aquatic plants include algae, emergent aquatic vegetation (EAV), submerged aquatic vegetation (SAV), and floating plants. Algae are simple plants without true roots, leaves, or flowers. They are found either free floating in water or attached to other plants, bottom sediments, rocks, or other solid structures. EAV grows along water body edges, with only short portions of their stems and roots are submerged. SAV grows in deeper water and usually are attached to the bottom. They remain underwater until flowers and seeds form out of the water. Floating plants are rooted, with much of their structure, especially leaves, floating on the surface. They can also be unattached, obtaining nutrients through small rootlets that dangle in the water. A visual assessment was performed to characterize the availability of littoral zone aquatic habitats including emergent aquatic vegetation and submerged aquatic vegetation beds occurring within the bypass reach and reservoir. The species and general location of invasive aquatic vegetation and observed during the field assessment were also noted.

Transect-based surveys were performed to characterize the availability of littoral zone aquatic habitats within the study area. Seven transect lines were evaluated in each of the Project reservoirs and four additional transect lines were evaluated in the tailrace and bypass portions downstream of the Byllesby and Buck dams (shown on Figure 2). In the reservoirs, transects were oriented parallel to the shoreline in boat accessible areas, with transects distributed to represent both shorelines. In the tailrace and bypass reaches of the river, transects were oriented perpendicular to the shoreline to include littoral zones along the stream margins and potential instream shallows where emergent or submerged vegetation may occur.

Each transect line was 100 meters (m) in length and 1.0-m^2 areas (i.e., quadrants) spaced equally along the transect line at 10-meter intervals were surveyed. For two of the eleven transects (littoral zones 10 and 11), four quadrants were sampled along the transect. The survey at each of the intervals consisted of a visual presence/absence assessment for emergent or visible submerged aquatic vegetation. A vegetation sampling throw rake was also deployed at each sample area on transect lines (when feasible) to capture any non-visible submerged aquatic vegetation. The location and scientific name of each vegetation sample were recorded during the survey.

5.2.3 Riparian Zone

Data from the desktop review were used to perform the riparian habitat field verification. To facilitate the field verification of the preliminary vegetative cover maps, the riparian habitat within each vegetative community type was characterized by recording the dominant species of vegetation at three strata (tree, sapling/shrub, and herb). HDR biologists used relevant reference materials including regional field guides and plant identification mobile apps to identify plants to genus and species level. Riparian areas located in within the study area resembled Piedmont/Mountain Floodplain Forest and Swamps as described in the VDCR Natural Communities of Virginia Ecological Groups and Community Types -Third Approximation (Version 3.3) (VDCR 2021).

5.3 Virginia Spiraea Review

Field teams performed a review of Virginia spiraea during field activities which was in the blooming window of the species (May-July). The results from the Virginia spiraea habitat assessment performed in 2017 (ESI 2017) were used to perform field-based habitat assessments and visual

assessments in areas with potential habitat. Coordinates of the approximate location of potentially suitable habitat were recorded and representative photographs were taken (Attachment 4).

6 Study Results

6.1 Wetlands and Waterbodies

Wetland cover types were classified according to Cowardin et. al (1979) which included palustrine (emergent, scrub-shrub, forested, and rock bottom) and riverine systems. These wetland and waterbody features were verified in the field (Table 1 and Figure 2). A description of the general Project-related wetland and waterbody information is provided below along with representative photographs in Attachment 1.

A total of 95.43 acres of wetlands were field verified July 20-22, 2021. There were 50.72 acres of palustrine emergent wetlands, 11.6 acres of palustrine scrub shrub, 15.37 acres of palustrine forested, and 17.74 of rock bottom wetlands. Table 1 provides information of individual wetlands found in the study area. The VDEQ (2021) WetCAT results indicated that there were no stressed areas of wetlands in the study area.

A total of 15,608.42 linear feet of riverine features were field verified along with the wetlands. There were 514.9 linear feet of perennial stream habitat and 501 linear feet of intermittent stream habitat. Table 2 provides information describing streams in the study area.

6.1.1 Palustrine Emergent Wetlands

Palustrine emergent wetlands comprise the majority of the wetlands within the study area and occur primarily as fringe wetlands and floodplain wetlands along the shorelines of the New River and Crooked Creek, as well as on islands within the New River (Figure 2 and Attachment 1). The largest area of palustrine emergent wetland occurs upstream of the Byllesby Dam near the canoe portage take-out where herbaceous strata is dominant and includes Japanese stilt grass (*Microstegium viminium*), soft rush (*juncus effusus*), canary reed grass (*Phalaris arundinacea*), deer tongue grass (*Dichanthelium clandestinum*), cattails (*Typha sp*.), falsenettle (*Boehmeria cylindrica*), bulrush (*Scirpoides holoschoenus*), and woolgrass (*Scirpus cyperinus*). The percent cover of vegetation throughout these wetlands ranged from 5 to 90 percent with low diversity and relatively uniform cover. Saturation and high water tables were common throughout these wetlands and many had surface water, particularly at the boundary of the wetland and the stream. Substrate consisted mainly of silt and clay with hydric soil indicators such as depleted matrix and redox dark surface.

6.1.2 Palustrine Forested Wetlands

Palustrine forested wetlands within the Study Area occur primarily on the higher floodplains and point bars of the New River (Figure 2 and Attachment 1). The dominant vegetation in these wetlands included American sycamore (*Platanus occidentalis*), box elder (*Acer negundo*), red maple (*Acer rubrum*), black walnut (*Juglans nigra),* and silver maple (*Acer saccharinum*)*.* The majority of understory included Japanese stilt grass, reed canary grass (*Phalaris arundinacea*), falsenettle, highbush blackberry (*Rubus argutus*) and smart weed. Canopy composition was moderately diverse with a cover percentage ranging from 10 to 70 percent. Soil saturation and high water tables were common throughout these wetlands with some spots of standing water, typically near the toe of

slope extent. Flooding of these types of wetlands was less frequent due to higher elevations (i.e., floodplains, bars).

6.1.3 Palustrine Scrub-Shrub Wetlands

Palustrine scrub-shrub wetlands within the study area occur primarily in the floodplain of the New River at an elevation higher than most of the emergent wetlands but lower than the forested wetlands where frequent inundation could occur (Figure 2 and Attachment 1). Most of this cover type occurs adjacent to emergent wetlands. The shrub vegetation consisted of American sycamore, box elder, and silver maple. The herbaceous vegetation included canary reed, grass, deer tongue, falsenettle, and soft rush. Saturation and high water tables were common in most of these wetlands. Substrate consisted mainly of silt and clay.

6.1.4 Palustrine Rock Bottom Wetlands

Palustrine rock bottom wetlands are seasonally flooded to intermittently exposed trees, shrubs, and herbaceous vegetation on boulder and cobble deposition bars, or less frequently bedrock exposures, on the shores and islands of high-gradient streams. In the study area, these occur primarily within the Byllesby and Buck bypass reaches (Figure 2). The dominant tree vegetation in these types of wetlands include American sycamore, alder (*Alnus* sp.), and willow (*Salix* sp.). The dominant herbaceous vegetation includes spike rush (*Eleocharis palustris*), cattails, asters, smart weed (*Persicaria pensylvanica*), and water willow (*Justicia americana*). The substrate of these wetlands consisted of angular bed rock and sand bars with organic material. Pools of surface water were present throughout the wetlands with patchy vegetation.

6.1.5 Riverine

Riverine habitats in the study area include the New River and associated tributaries. The New River is a lower perennial riverine feature on the upstream and downstream limits of the study area. There are several perennial tributaries that flow into the New River including Chestnut Creek, Crooked Creek, Rocky Branch, Poor Branch, Big Branch, and Brush Creek along with eight unnamed tributaries. In general, these perennial riverine habitats included several areas of scour with dominant vegetation consisting of American sycamore, boxelder, cattails, and reed canary grass. The dominant substrate included cobble to boulder sized rock along with bedrock. Additionally, there are four intermittent streams that flow into the New River. These streams had similar dominant vegetation as the perennial streams with a substrate consisting of mud to cobble.

Table 1. Field Verified Wetlands in Study Area

Wetland Number	Coordinates (decimal degrees)	Cowardin et al. (1979) Classification[1]	Estimated Acres
Wetland 1	36.759009 -80.960207	PEM	0.03
Wetland 2	36.759746 -80.960682	PEM	0.02
Wetland 3	36.761681 -80.955008	PEM	0.07
Wetland 4	36.763144 -80.954669	PEM	0.09
Wetland 5	36.764569 -80.956177	PFO	8.57

Wetland Number	Coordinates (decimal degrees)	Cowardin et al. (1979) Classification[1]	Estimated Acres
Wetland 6	36.768343 -80.955143	PEM	0.02
Wetland 7	36.770779 -80.944087	PSS	8.39
Wetland 7	36.770905 -80.943297	PEM	0.42
Wetland 8	36.782522 -80.933081	PEM	17.26
Wetland 9	36.785501 -80.934788	PEM	0.38
Wetland 10	36.785902 -80.93497	PEM	0.19
Wetland 11	36.785897 -80.935283	PEM	0.21
Wetland 12	36.789201 -80.93654	PFO	0.47
Wetland 13	36.790216 -80.934183	PEM	0.15
Wetland 14	36.793727 -80.928082	PEM	0.13
Wetland 15	36.805674 -80.929075	PEM	6.64
Wetland 15	36.805831 -80.926859	PSS	2.94
Wetland 16	36.805453 -80.933384	PRB	1.78
Wetland 17	36.805803 -80.935885	PRB	0.87
Wetland 18	36.804308 -80.937275	PRB	0.79
Wetland 19	36.805006 -80.938208	PRB	1.14
Wetland 20	36.807444 -80.94027	PRB	11.96
Wetland 21	36.807124 -80.935493	PEM	0.51
Wetland 22	36.817095 -80.946182	PEM	0.33
Wetland 23	36.815291 -80.945638	PEM	0.14
Wetland 24	36.81447 -80.943847	PFO	2.3
Wetland 25	36.813258 -80.942915	PFO	0.1
Wetland 26	36.81205 -80.942162	PFO	0.18
Wetland 27	36.811552 -80.94188	PFO	0.05
Wetland 28	36.810265 -80.940278	PFO	0.98
Wetland 29	36.802149 -80.916507	PSS	0.13
Wetland 30	36.793097 -80.921259	PEM	0.05
Wetland 31	36.792198 -80.925934	PEM	0.03

Wetland Number	Coordinates (decimal degrees)	Cowardin et al. (1979) Classification[1]	Estimated Acres
Wetland 32	36.7889 -80.932528	PRB	1.2
Wetland 33	36.789763 -80.932072	PFO	0.74
Wetland 34	36.776203 -80.930155	PEM	1.52
Wetland 35	36.774089 -80.925964	PEM	1.16
Wetland 36	36.771005 -80.921339	PEM	1.68
Wetland 37	36.769382 -80.918157	PEM	0.05
Wetland 38	36.770681 -80.91925	PEM	0.24
Wetland 39	36.772551 -80.920091	PEM	0.09
Wetland 40	36.769917 -80.917954	PEM	0.3
Wetland 41	36.770048 -80.921166	PEM	0.42
Wetland 42	36.772325 -80.92415	PEM	3.16
Wetland 43	36.774715 -80.928032	PEM	1.68
Wetland 44	36.774541 -80.933913	PEM	4.67
Wetland 45	36.772704 -80.93709	PEM	1.8
Wetland 46	36.77106 -80.936989	PSS	0.14
Wetland 47	36.766158 -80.949684	PEM	5.46
Wetland 48	36.766606 -80.951983	PFO	1.98
Wetland 49	36.758734 -80.956248	PEM	1.58
Wetland 50	36.757326 -80.960264	PEM	0.24
		Total	**95.43**

[1] PEM: Palustrine Emergent.
PSS: Palustrine Scrub-Shrub.
PFO: Palustrine Forested.
PRB: Palustrine Rock Bottom

Table 2. Field Verified Streams in Study Area

Stream Number	Coordinates (decimal degrees)	Cowardin et al. (1979) Classification[1]	Linear Feet
Stream 1	36.757351 -80.963421	R5UB	4.99
Stream 2	36.757903 -80.963086	R5UB	18.22
Stream 3	36.785697 -80.935238	R5UB	18.3
Stream 4	36.786761 -80.935575	R5UB	11.84
Stream 5	36.79022 -80.936482	R5UB	147.65
Stream 6	36.805405 -80.923981	R4SB	94.11
Stream 7	36.80526 -80.930796	R4SB	25.25
Stream 8 (Big Branch)	36.809067 -80.943427	R5UB	41.1
Stream 9	36.816282 -80.944068	R5UB	1201.65
Stream 10	36.811017 -80.941006	R4SB	381.97
Stream 11 (Poor Branch)	36.801904 -80.916201	R5UB	24.89
Stream 12 (Rocky Branch)	36.79676 -80.917398	R5UB	27.92
Stream 13	36.771979 -80.93728	R5UB	1428.64
Stream 14	36.764523 -80.956305	R5UB	670.85
Stream 15 (Brush Creek)	36.769003 -80.955318	R5UB	913.21
Stream 16 (Crooked Creek)	36.77046 -80.921317	R5UB	8561.46
Stream 17 (Chestnut Creek)	36.756648 -80.954166	R5UB	2036.37
		Total	**15,608.42**

[1]R4SB: Riverine, Intermittent, streambed.
R5UB: Riverine, Perennial, unconsolidated bottom.

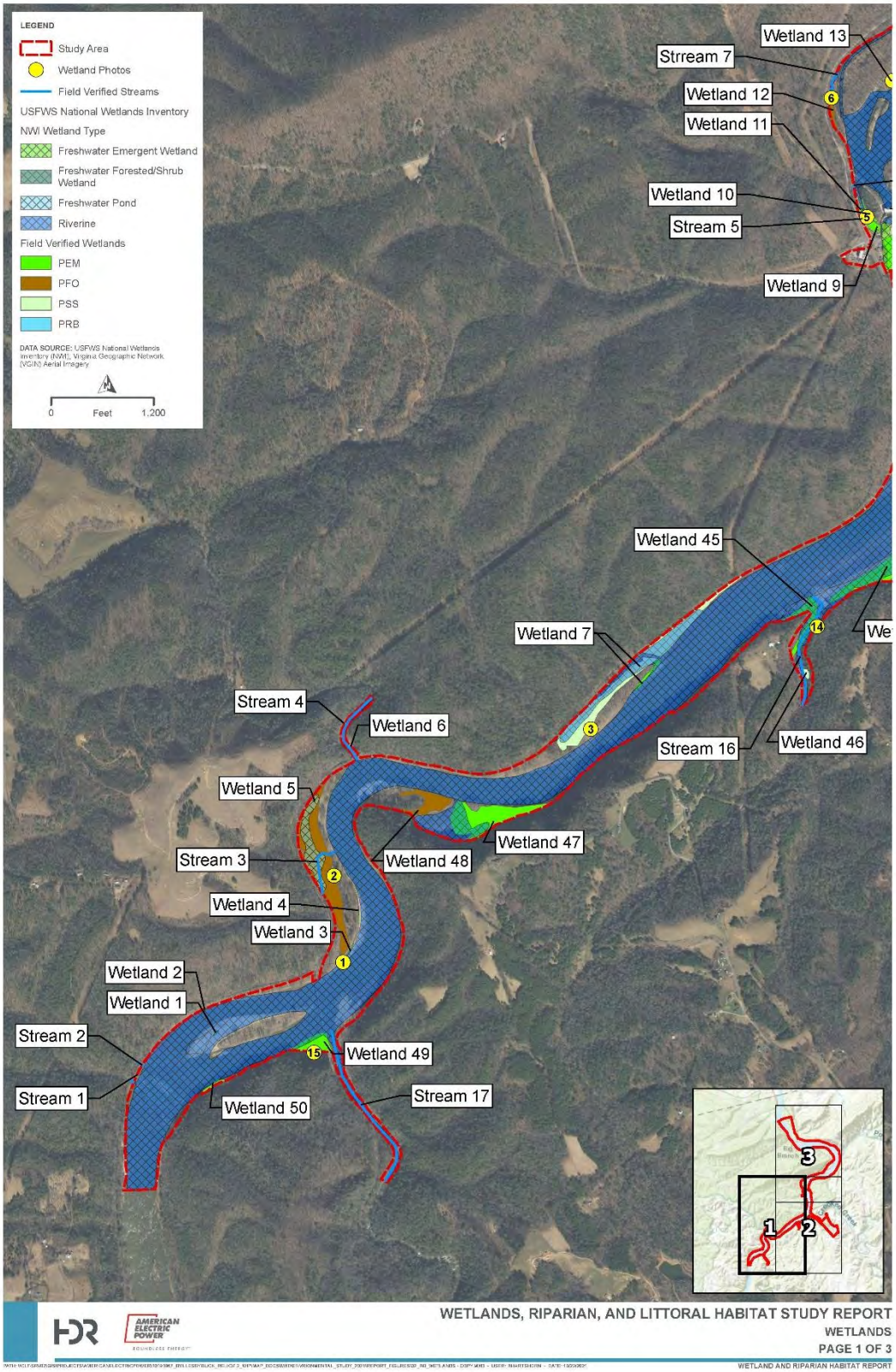

Figure 2a. Wetland and Riparian Habitat in the Study Area

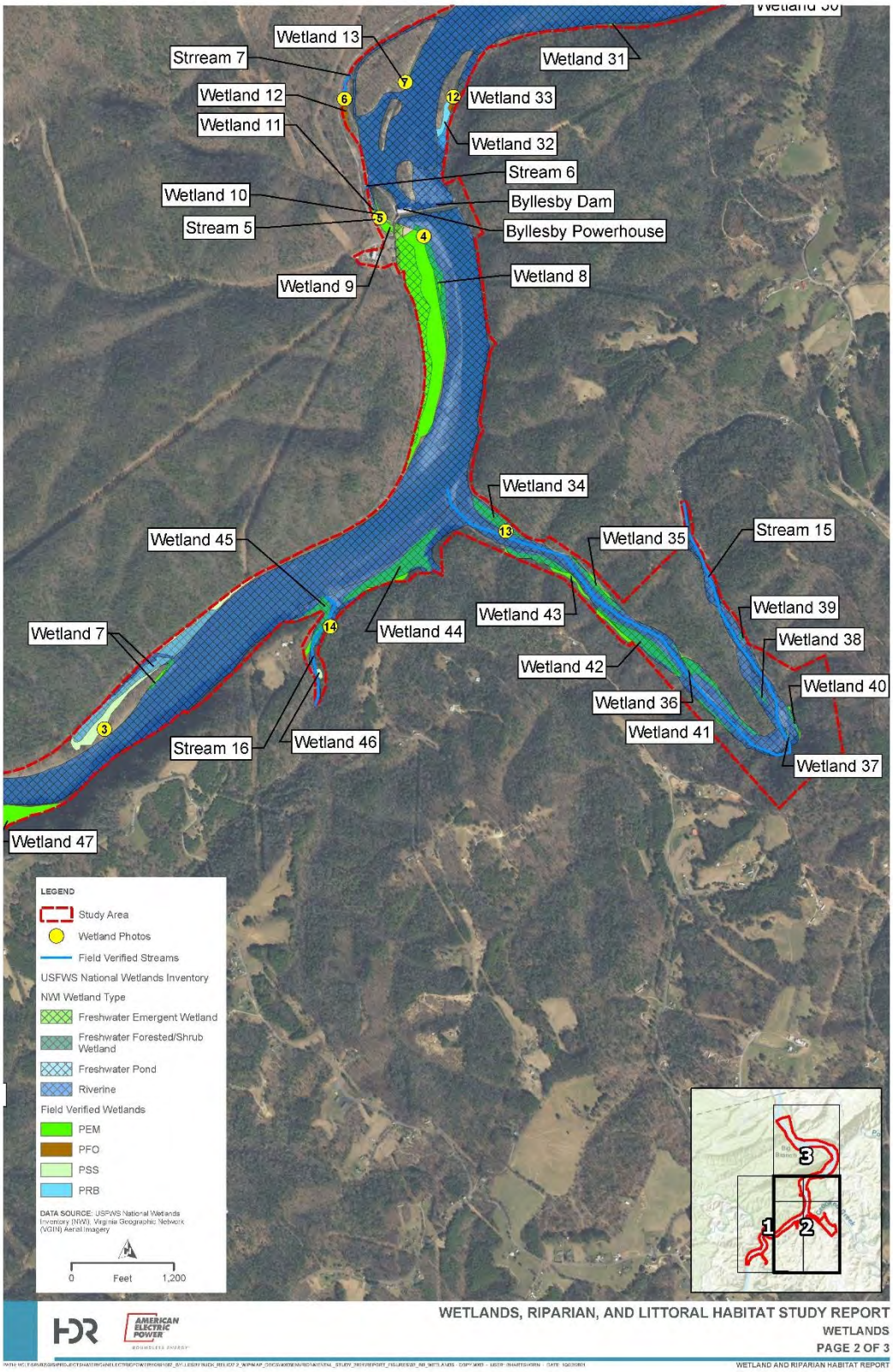

Figure 2b. Wetland and Riparian Habitat in the Study Area

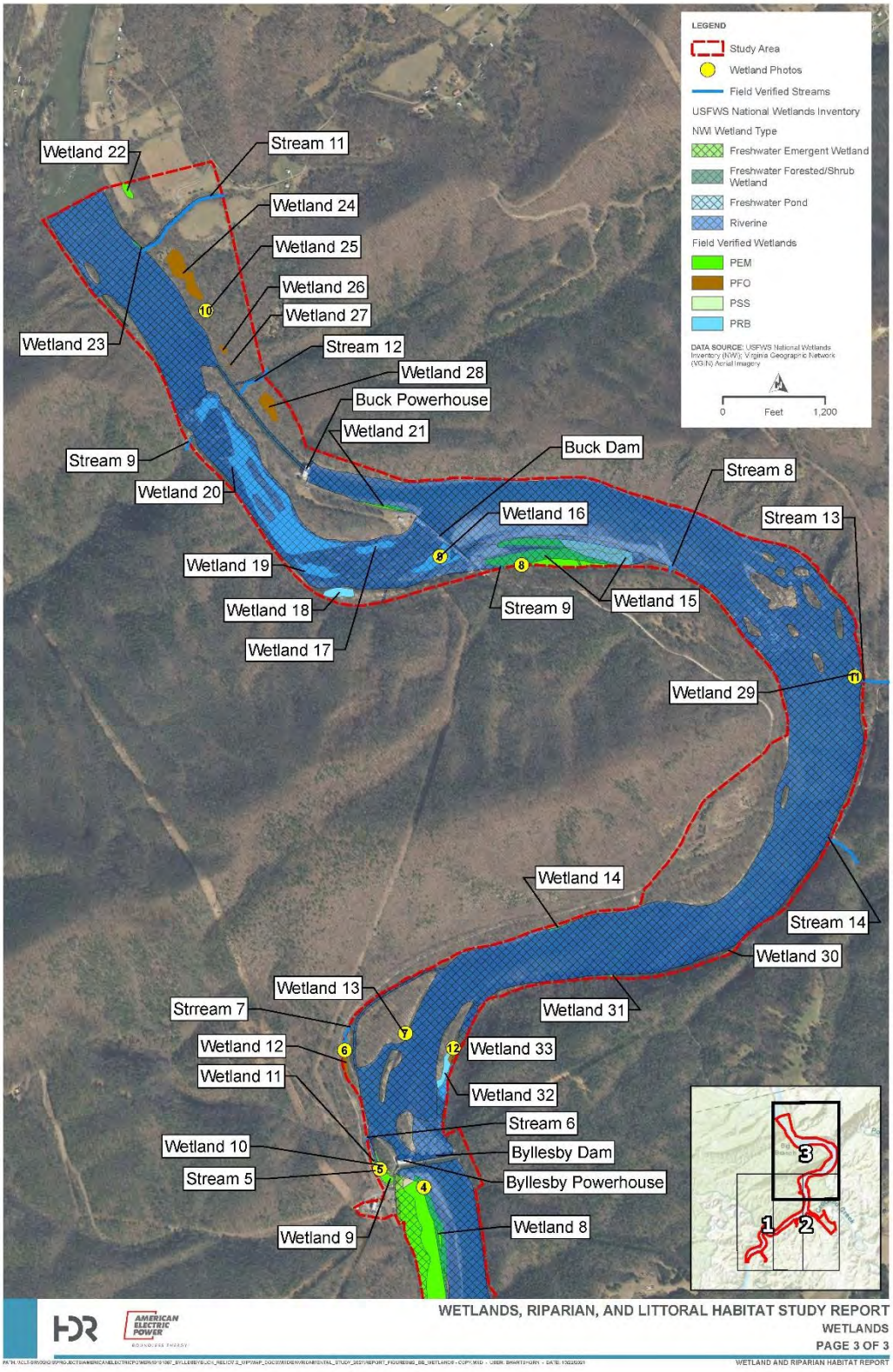

Figure 2c. Wetland and Riparian Habitat in the Study Area

6.2 Littoral Zone

The littoral zone contains seasonally flooded to intermittently exposed herbaceous vegetation along depositional bars on the shores of the reservoirs and within the rock exposures of the bypass reaches. Figure 3 shows the location of littoral zone transects. Substrates consisted of angular bed rock and depositional bars of sand and organic material. Pools of surface water were present throughout the surveyed littoral zones with patchy vegetation growth in areas that were above water level.

Table 3 provides results of the 2021 littoral zone survey. Littoral zone vegetation included *Elodea Spp*, algae, curly pondweed (*Potamogeton crispis*), Parrot's feather (*Myriophyllum aquaticum*), Broad leaf pondweed (*Potamogeton natans*), smartweed (*Polygonum* sp.) spike rush, bulrush, rice cut grass, soft rush, water willow, shallow sedge (*Carex lurida*), Japanese honeysuckle (*Lonicera japonica*), goldenrod (*Solidago sp*.), Virginia creeper (*Parthenocissus quinquefolia*) and American sycamore. Curly pondweed is considered to be a non-native invasive species. Elodea was the most abundant SAV throughout the reach located close to the stream bank adjacent to wetlands. Although present throughout the reach, algae was dominant in the littoral zone upstream from the Byllesby Dam where water flow was slower. In the bypass reaches, Elodea and algae were the dominant aquatic plants. Representative photographs of habitat at littoral zone transects are provided in Attachment 2.

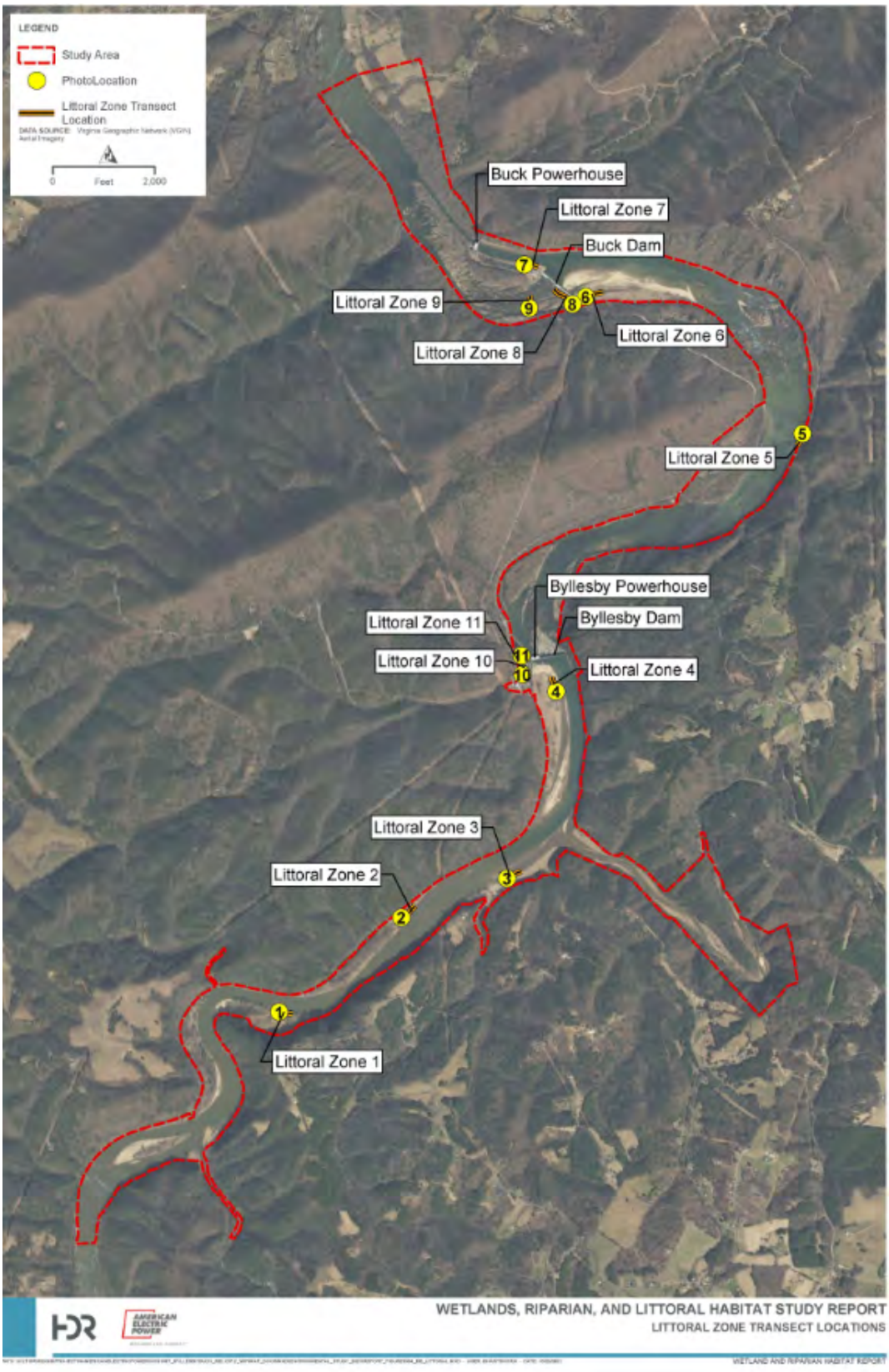

Figure 3. Littoral Zone Transect Locations

Table 3. Littoral Zone Transects and Vegetation Percentage

Littoral Zone 1										
Species	**Quadrant**									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Elodea	5	5	10	10	20	20	10	50	15	--
Algae	1	1	1	--	--	--	--	--	--	--
Curly pondweed	--	--	--	--	30	5	--	--	--	--
Total	**6**	**6**	**11**	**10**	**50**	**25**	**10**	**50**	**15**	**0**
Littoral Zone 2										
Species	**Quadrant**									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Elodea	5	5	2	20	10	10	30	10	10	30
Curly pondweed	--	--	2	--	--	--	--	--	--	--
Unknown pondweed	--	--	--	--	5	--	5	40	--	2
Total	**5**	**5**	**4**	**20**	**15**	**10**	**35**	**50**	**10**	**32**
Littoral Zone 3										
Species	**Quadrant**									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Elodea	60	50	5	5	2	30	15	5	5	--
Unknown pondweed	--	--	--	--	--	--	--	--	2	--
Parrot's feather	10	10	5	5	2	10	--	--	--	2
Total	**70**	**60**	**10**	**10**	**4**	**40**	**15**	**5**	**7**	**2**
Littoral Zone 4										
Species	**Quadrant**									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Elodea	--	10	5	5	5	2	5	5	2	--
Algae	40	60	40	40	40	30	40	10	15	15
Unknown pondweed	--	--	2	--	--	--	--	--	--	--
Parrot's feather	20	--	--	--	--	--	5	--	--	--
Ludwigia	10	--	--	--	--	--	--	--	--	--
Spike rush	10	--	--	--	--	--	--	--	--	--
Smartweed	--	--	--	--	--	2	--	--	2	2
Grass	--	--	--	10	30	20	30	--	15	15
Total	**80**	**60**	**47**	**55**	**75**	**54**	**80**	**15**	**34**	**32**
Littoral Zone 5										
Species	**Quadrant**									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Elodea	25	60	30	25	5	5	--	--	--	5

Parrot's feather	--	--	--	--	5	10	--	--	--	--
Curly Pondweed					15		5			
Grass	--	--	--	--	--	--	--	60	5	--
Broad Leaf pondweed	5	--	20	5	10	--	15	10	5	2
Total	**30**	**60**	**50**	**30**	**35**	**15**	**20**	**70**	**10**	**7**
Litorral Zone 6										
Species	**Quadrant**									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Elodea	5	5	--	5	40	--	70	70	80	80
Algae	--	--	--	--	--	--	--	--	5	5
Parrot's feather	50	80	100	70	40	90	10	30	10	10
Total	**55**	**85**	**100**	**75**	**80**	**90**	**80**	**100**	**95**	**95**
Littoral Zone 7										
Species	**Quadrant**									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Elodea	5	20	--	10	20	5	15	15	5	5
Algae	30	--	--	--	--	--	--	--	10	--
Curly pondweed	--	--	2	--	--	--	--	--	--	--
Parrot's feather	--	--	--	--	--	--	--	5	--	5
Smartweed	--	2	--	--	--	--	--	--	--	--
Total	**35**	**22**	**2**	**10**	**20**	**5**	**15**	**20**	**15**	**10**
Littoral Zone 8										
Species	**Quadrant**									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Elodea	40	--	--	--	--	--	20	40	5	30
Algae	--	--	--	--	--	--	--	20	--	10
Curly pondweed	--	5	60	--	--	--	--	--	--	--
Parrot's feather	--	5	--	--	--	--	--	--	--	--
Smartweed	--	--	--	--	--	--	--	--	--	5
Spike rush	5	--	--	--	50	--	--	--	--	--
Bulrush	2	--	--	2	--	2	--	--	--	--
Rice cut grass	--	70	--	--	30	30	5	--	70	10
Ludwigia	--	2	--	--	--	60	--	--	--	--
Soft rush	--	--	--	60	--	--	--	--	--	--
Water willow	--	--	--	--	--	--	5	--	--	--
Total	**47**	**82**	**60**	**62**	**80**	**92**	**30**	**60**	**75**	**55**
Littoral Zone 9										
Species	**Quadrant**									

	1	2	3	4	5	6	7	8	9	10
Elodea	--	--	2	--	--	--	5	5	5	--
Algae	--	--	30	--	--	--	--	--	--	--
Parrot's feather	--	--	--	--	--	--	--	--	5	--
Grass	--	--	--	--	--	2	--	--	--	--
Smartweed	--	2	--	5	5	2	--	--	--	--
Broad Leaf pondweed	--	--	--	--	--	--	--	--	--	--
Ludwigia	--	--	--	--	--	--	--	5	--	--
American sycamore	2	2	--	--	--	--	--	--	--	--
water willow	--	2	--	--	--	5	--	--	--	--
Carex sp.	--	--	--	5	5	--	--	10	--	--
Unknown aquatic grass	--	--	--	--	--	--	--	--	--	10
Total	**2**	**6**	**32**	**10**	**10**	**9**	**5**	**20**	**10**	**10**

Littoral Zone 10

Species	**Quadrant**			
	1	**2**	**3**	**4**
Elodea	30	--	60	60
Algae	20	--		20
Ludwigia	--	--	10	--
American sycamore	--	10	--	--
water willow	--	10	--	--
Smartweed	--	10	--	--
Bulrush	--	--	10	--
Rice cut grass	--	--	10	10
Total	**50**	**30**	**90**	**90**

Littoral Zone 9

Species	**Quadrant**			
	1	**2**	**3**	**4**
Elodea	--	20	70	--
Algae	--	--	10	--
Shallow sedge	--	--	--	10
Curly dock	--	--	--	10
Soft rush	--	--	5	--
Japanese honeysuckle	10	--	--	--
Goldenrod	10	--	--	--
Virginia creeper	20	--	--	--
American sycamore	--	--	--	30
Total	**40**	**20**	**85**	**50**

6.3 Riparian Zone

The riparian area consists of approximately 177 acres and is mainly found along the shoreline, on islands, and within the bypass reach (Figure 4). The riparian area varies in width from 5 to 520 feet wide. Dominant vegetation in the over story includes black walnut, black cherry (*Prunus serotina*), red maple, Northern red oak (*Quercus rubra*), Eastern red cedar (*Juniperus virginiana*), Virginia pine (*Pinus virginiana*), black willow (*Salix Nigra*), American sycamore, Sugar Maple (*Acer saccharum*), box elder, chestnut oak (*Quercus montana*), green ash (*Fraxinus pennsylvanica*), and white pine (*Pinus strobus*). The understory typically included blackberry *(Rubus argutus*), mountain laurel (*Kalmia latifolia*), and witch hazel (*Hamamelis sp.*). The herbaceous vegetation consisted of Christmas fern (*Polystichum acrostichoides*), mayapple (*Podophyllum peltatum*), wingstem (*Verbesina alternifolia*), bedstraw (*gallium aparine*), muscadine grape (*Vitis rotundifolia*), Virginia creeper (*Parthenocissus quinquefolia*), cinnamon fern (*Osmunda cinnamomea*) and poison ivy (*Toxicodendron radicans*). Japanese knotweed (*Reynoutria japonica*), multiflora rose (*Rosa multiflora*), oriental bittersweet (*Celastrus orbiculatus*), and Tree of Heaven (Ailanthus altissima) which are all considered a non-native invasive species are present in the riparian habitat. Documented occurrences of these non-native invasive species are noted in Appendix E (Terrestrial Resources Study Report).

The majority of the riparian area appeared to be flooded on a seasonal or annual basis. The riparian areas surveyed ranged from early to mid-successional stage, with most trees at an intermediate age and height, between 20 and 70 feet. Diversity and patchiness were generally moderate. In some areas, particularly in the riparian islands, coarse litter was abundant in the form of trees, limbs and other debris washed in during high water events. Photos of representative habitat in riparian zones can be found in Attachment 3.

6.4 Virginia Spiraea Review

There were no observed occurrences of Virginia spiraea in areas identified in the ESI (2017) survey. However, potentially suitable habitat was observed throughout the study area in rocky, low flow areas of streams, and on portions of bars and benches (Attachment 4 and Figure 4). Figure 4 shows the location of potential Virginia spiraea habitat and provides a classification of low suitability or moderate suitability.

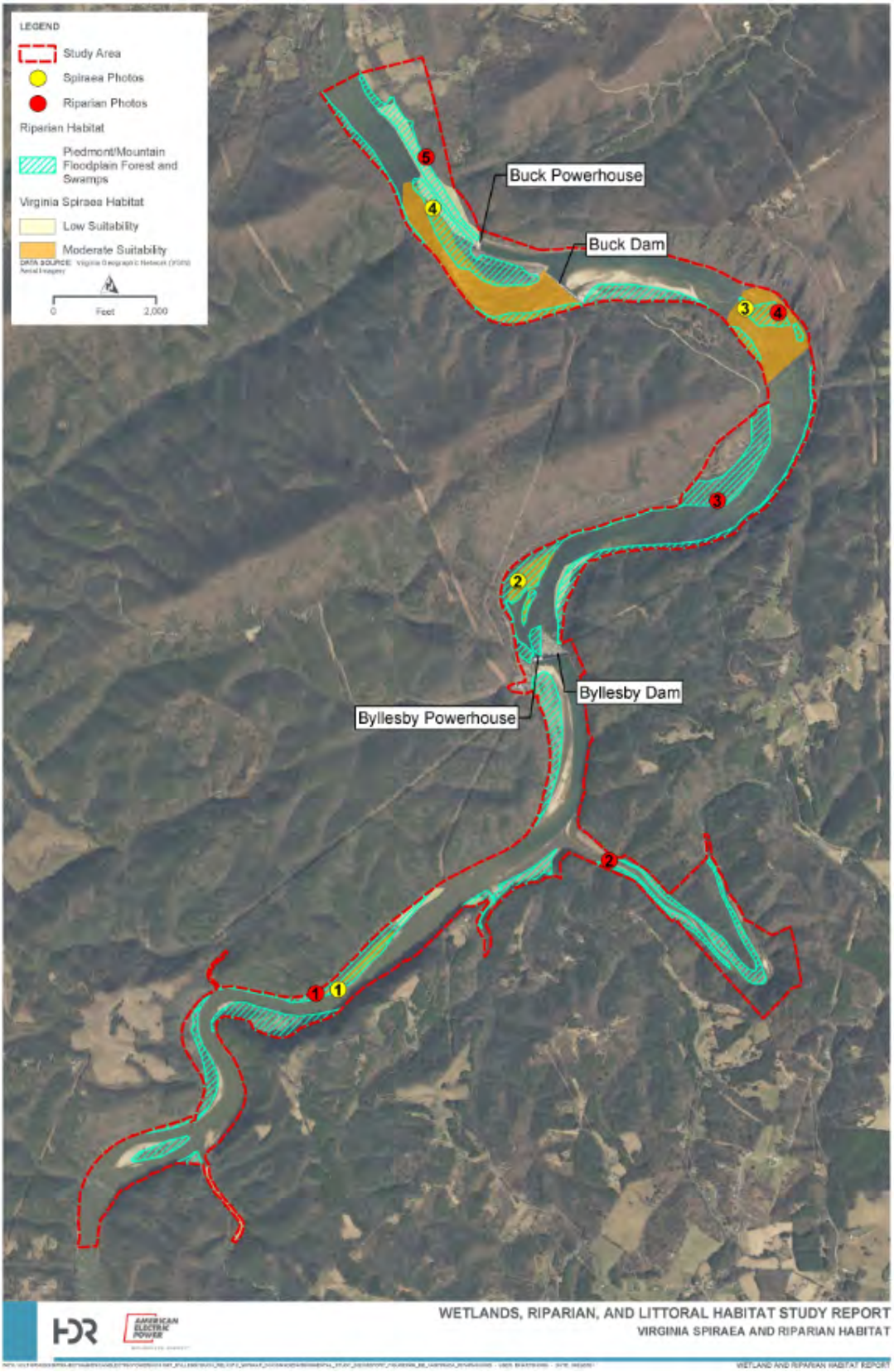

Figure 4. Virginia Spiraea and Riparian Habitat

7 Summary and Discussion

The NWI wetland and waterway boundaries within the study area were ground-truthed and found to generally represent the correct classification and areal extents. During the field verification, 95.43 acres of wetlands and 15,608.42 linear feet of stream were identified and field-verified and are illustrated on Figure 2. The wetland types in the study area appeared to reflect the natural community expectations for this location.

7.1 Wetland Habitat

Four major types of aquatic habitat systems occur in the study area: (1) emergent wetlands dominated by herbaceous vegetation, (2) forested wetlands dominated by trees, (3) scrub-shrub wetlands dominated by shrubs and saplings, and (4) rocky bottom wetlands dominated by bedrock substrate. Most of the banks of the New River and associated tributaries consisted of wetlands. Wetlands, particularly when associated with riverine systems, provide important functions for wildlife and flood storage as well as serving as important recreational resources.

The most commonly observed wetlands within the study area were emergent wetlands. These wetlands were mainly along the banks of the New River and associated tributaries. The largest emergent wetland habitat areas occur upstream of the dams and are subject to regular water level fluctuations; however emergent wetland species are often adapted to changes in water surface elevation. In some cases, increased diversity of emergent species can be attributed to regular changes in inundation, provided the duration, magnitude and seasonality of the water level changes are tolerable by those species.

Forested wetlands and scrub-shrub wetlands were mainly observed on the floodplain of the New River and associated tributaries. Functions of these wetlands are important and are most commonly associated with wildlife habitat, sediment/shoreline stabilization, and flood flow alteration. These wetlands receive hydrologic input during high flow events and then may remain dry for several weeks to months at a time.

Rocky bottom wetlands were mainly observed in the bypass reaches. These wetlands are subject to flow based on release from the Byllesby-Buck developments. The stability of the bottom allows for more diverse plant species to develop and thrive. Typically these wetlands are high energy habitats with well-aerated waters.

7.2 Riverine Habitat

Riverine habitat occurs in the New River and associated tributaries throughout the study area. The principal functions and value associated with riverine habitat include fish habitat, production export, wildlife habitat, recreation, visual quality/aesthetics, and endangered species habitat. The nature of the Project results in the existence of an extensive open-water cover type (i.e., the reservoirs).

7.3 Littoral Habitat

Littoral habitat is an important feature within aquatic systems, particularly for fish and other aquatic wildlife. Observations were undertaken to generally characterize the existence and extent of aquatic

vegetation. SAV in the form of Elodea and pondweeds encompassed the majority of littoral habitat in the study area. Within the bypasses, there was a more diverse occurrence of EAV species.

7.4 Riparian Habitat

Riparian habitat is also present in most of the study area adjacent to the New River. These areas support a wide variety of communities on the small islands, cobble and boulder laden slopes, and floodplains that formed by river flows and riverine processes. The areas contain a mixture of forests, forested wetlands, emergent wetlands, and scrub-shrub wetland habitat.

7.5 Invasive Plant Species

The invasive plant species observed in the study area were Japanese knotweed, multiflora rose, oriental bittersweet, and Tree of Heaven. These species were located along the banks of the New River and several associated tributaries as well as within the floodplain. These results are reflective of the region-wide invasion of these invasive and non-native species in the eastern U.S.

8 Project Impacts on Wetlands, Riparian, and Littoral Habitat

Periodic drawdowns of the impoundment for Project maintenance have the potential to temporarily dewater wetland, riparian, or littoral areas, though for short-duration drawdowns, soils are likely to remain saturated between inundation periods. Longer-term drawdowns could potentially cause soils in wetland areas to lose saturation, resulting in temporary loss of wetland vegetation. This potential Project impact has been previously studied at the Byllesby wetland. Following completion of maintenance activities at Byllesby Dam in 2005-2006 that required a drawdown of the impoundment by approximately 11 feet, Appalachian conducted monitoring of the plant community in an adjacent wetland that was created by deposition of dredged material in shallow water during 1997, pursuant to a Virginia Water Protection Permit. Monitoring of the plant community was performed each year from 2004 through 2007. Despite the lower water levels during two growing seasons during this period, no appreciable change in the extent or composition of the wetland plant community occurred.

Sediment accumulation is known to be slowly occurring at locations within and around the impoundments, in some cases leading to the creation of new wetland areas. If such areas interfere with Project operations, there could be a need in the future to dredge such areas, such as was done during 1997 and 2014. Adverse effects of this activity would be addressed through the protections and mitigations required by approvals and permits to be issued by the applicable regulatory agencies and FERC standard license articles.

The Licensee does not anticipate that operation and maintenance of the Project over the new license term will have any short- or long-term, unavoidable, adverse impacts on wetland, riparian, and littoral resources.

9 Variances from FERC-Approved Study Plan

The Wetland, Riparian, and Littoral Habitat Study was conducted in conformance to the FERC-Approved Study Plan.

10 Correspondence and Consultation

No coordination with state or federal agencies was undertaken for this updated study report.

11 Literature Cited

Appalachian Power Company (Appalachian). 1991. Application for License for Major Project Existing Dam. Byllesby/Buck Hydroelectric Project No. 2514 American Electric Power Service Corporation, Roanoke, VA.

Appalachian Power Company (Appalachian). 2019. Pre-Application Document Byllesby-Buck Hydroelectric Project FERC No. 2514. January 2019.

Cowardin, L.M., V.C. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. United States Fish and Wildlife Service, Washington, D.C. 131 pp.

Environmental Solutions & Innovations, Inc. (ESI). 2017. Field Surveys for Virginia Spiraea and Bald Eagle on the AEP Byllesby/Buck Hydroelectric Project. Prepared for Appalachian Power Company. July 24, 2017.

Federal Energy Regulatory Commission (FERC). 1994. Final Environmental Assessment, Byllesby-Buck Hydroelectric Project, FERC No. 2514-003, Virginia. March 15, 1994.

Natural Resources Conservation Service (NRCS). 1996. Riparian Areas Environmental Uniqueness, Functions, and Values RCA Issue Brief #11. Accessed 05/23/2019. https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/technical/?cid=nrcs143_014199#w hat.

U.S. Army Corps of Engineers (USACE). 2005. Regulatory Guidance Letter RGL 05-05 Ordinary High Water Mark (OHWM) Identification. https://www.nap.usace.army.mil/Portals/39/docs/regulatory/rgls/rgl05-05.pdf

_____. 1987. Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1. Vicksburg, MS.

U.S. Fish and Wildlife Service (USFWS). 2019. National Wetland Inventory. Accessed 05/24/2019. [URL]: https://www.fws.gov/wetlands/.

Weberg, M.A., B.R. Murphy, A.L. Rypel, and J.R. Copeland. 2015. A survey of the New River Plant Community in Response to Recent Triploid Grass Carp Introductions into Claytor Lake, Virginia. Southeastern Naturalist 14(2): 308-318.

Wetzel, R.G. 1975. Limnology. W.B. Saunders Co., Philadelphia, PA. 743 pp.

Virginia Department of Conservation and Recreation (VDCR). 2021. The Natural Communities of Virginia Classification of Ecological Groups and Community Types. Virginia Department of Conservation and Recreation, Richmond, VA.

_____2006. Riparian Buffers Modification & Mitigation Guidance Manual. Virginia Department of Conservation and Recreation, Richmond, VA.

Virginia Department of Environmental Quality (VDEQ). 2021. Wetland Condition Assessment Tool (WetCAT). Accessed 06/16/2021. http://cmap2.vims.edu/WetCAT/WetCAT_Viewer/WetCAT_VA_2D.html.

This page intentionally left blank.

Attachment 1

Attachment 1 – Representative Photographs of Wetland Habitat

This page intentionally left blank.

Photograph 1 – Representative Fringe Wetland (dated July 20, 2021).

Photograph 2 – Representative Forested Wetland (dated July 20, 2021).

Photograph 3 – Representative Scrub-Shrub Wetland (dated July 20, 2021).

Photograph 4 – Representative Emergent Wetland (dated July 20, 2021).

Photograph 5 – Representative Rocky Bottom Wetland near Byllesby Dam (dated July 21, 2021).

Photograph 6 – Representative Forested Wetland (dated July 21, 2021).

Photograph 7 – Representative Fringe Wetland (dated July 21, 2021).

Photograph 8 – Representative Emergent Wetland near Byllesby Dam (dated July 21, 2021).

Photograph 9 – Rocky Bottom Wetland in Buck Bypass (dated July 21, 2021).

Photograph 10 – Representative Forested Wetland (dated July 21, 2021).

Photograph 11 – Rocky Bottom Wetland on Island (dated July 21, 2021).

Photograph 12 – Representative Rocky Bottom Wetland (dated July 21, 2021).

Photograph 13 – Representative Emergent Wetland along Crooked Creek (dated July 22, 2021).

Photograph 14 – Representative Emergent Wetland along Road (dated May 27, 2021).

Photograph 15 – Representative Emergent Wetland along Chesnut Creek (dated July 20, 2021).

Attachment 2

Attachment 2 – Representative Photographs of Littoral Zone Habitat

This page intentionally left blank.

Photograph 1 – Littoral Zone 1 (dated July 22, 2021).

Photograph 2 – Littoral Zone 2 (dated July 22, 2021).

Photograph 3 – Littoral Zone 3 (dated July 22, 2021).

Photograph 4 – Littoral Zone 4 (dated July 22, 2021).

Photograph 5 – Littoral Zone 5 (dated July 22, 2021).

Photograph 6 – Littoral Zone 6 (dated July 22, 2021).

Photograph 7 – Littoral Zone 7 (dated July 22, 2021).

Photograph 8 – Littoral Zone 8 (dated July 22, 2021).

Photograph 9 – Littoral Zone 9 (dated July 22, 2021).

Photograph 10 – Littoral Zone 10 (dated July 22, 2021).

Photograph 11 – Littoral Zone 11 (dated July 22, 2021).

Attachment 3

Attachment 3 – Representative Photographs of Riparian Habitat

This page intentionally left blank.

Photograph 1 – Representative Riparian Habitat in Southern Portion of Project Area.

Photograph 2 – Representative Flooded Riparian Habitat.

Photograph 3 – Representative Floodplain Riparian Habitat.

Photograph 4 – Riparian Habitat on Islands in middle of New River.

Photograph 5 – Riparian Habitat in Northen Portion of Project Area

This page intentionally left blank.

Attachment 4

Attachment 4 – Photographs of Potential Virginia Spiraea Habitat

This page intentionally left blank.

Photograph 1 – Potential Virginia Spiraea Habitat on Bank of New River

Photograph 2 – Potential Virginia Spiraea Habitat on Floodplain

Photograph 3 – Potential Virginia Spiraea Habitat on Islands

Photograph 4 – Potential Virginia Spiraea Habitat downstream from Buck Bypass

Attachment 5

Attachment 5 – Wetland Data Forms

This page intentionally left blank.

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region
See ERDC/EL TR-07-24; the proponent agency is CECW-CO-R

OMB Control #: 0710-xxxx, Exp: Pending
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Byllesby-Buck City/County: Carroll Sampling Date: 7/20/2021

Applicant/Owner: Appalachian Electric Power State: NC Sampling Point: DP1_Fringe

Investigator(s): Eric Mularski, Jake Irvin Section, Township, Range:

Landform (hillside, terrace, etc.): Floodplain Local relief (concave, convex, none): none Slope (%): 0-1

Subregion (LRR or MLRA): LRR N, MLRA 130B Lat: 36.761681 Long: -80.955008 Datum: NAD83

Soil Map Unit Name: Ha - Hatboro silt loam NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
DP1 is representative of fringe Palustrine Emergent Wetlands in the Study Area. Climatic/hydrologic conditions were normal as determined by the Antecedent Precipitation Tool.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ____ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- X Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Aquatic Fauna (B13)
- ____ True Aquatic Plants (B14)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres on Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Tilled Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- ____ Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ____	Depth (inches): ____
Water Table Present?	Yes X	No ____	Depth (inches): 2
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches): 0

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Primary wetland indicators are present.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP1_Fringe

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 5)			
1. *Juncus effusus*	60	Yes	FACW
2. *Carex lurida*	40	Yes	OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100 =Total Cover		
50% of total cover: 50	20% of total cover: 20		
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody Vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)
Hydrophytic vegetation is dominant.

SOIL

Sampling Point: DP1_Fringe

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-20	10YR 4/1	80	10YR 4/6	20	C	PL/M	Loamy/Clayey	Prominent redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Mucky Mineral (F1) **(MLRA 136)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 122, 136)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147, 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (F21) **(outside MLRA 127, 147, 148)**
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

Hydric soils are present.

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region
See ERDC/EL TR-07-24; the proponent agency is CECW-CO-R

OMB Control #: 0710-xxxx, Exp: Pending
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Byllesby-Buck City/County: Carroll Sampling Date: 7/20/2021

Applicant/Owner: Appalachian Electric Power State: NC Sampling Point: DP2_PEM

Investigator(s): Eric Mularski, Jake Irvin Section, Township, Range:

Landform (hillside, terrace, etc.): Floodplain Local relief (concave, convex, none): concave Slope (%): 0-1

Subregion (LRR or MLRA): LRR N, MLRA 129 Lat: 36.782522 Long: -80.933081 Datum: NAD83

Soil Map Unit Name: W- Water NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
DP2_PEM is representative of Palustrine Emergent Wetlands along the New River. Climatic/hydrologic conditions were normal as determined by the Antecedent Precipitation Tool.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes X	No ____	Depth (inches): 1
Water Table Present?	Yes X	No ____	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches): 0

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Primary wetland hydrology indicators are present.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP2_PEM

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 5)			
1. *Microstegium vimineum*	40	Yes	FAC
2. *Phalaris arundinacea*	40	Yes	FACW
3. *Boehmeria cylindrica*	10	No	FACW
4. *Leersia oryzoides*	10	No	OBL
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100 =Total Cover		
50% of total cover: 50	20% of total cover: 20		
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody Vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)
Hydrophytic vegetation is present.

SOIL

Sampling Point: DP2_PEM

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 4/2	80	10YR 5/1	10	D	M	Loamy/Clayey	
			7.5YR 5/8	10	C	PL/M		Prominent redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Mucky Mineral (F1) **(MLRA 136)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 122, 136)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147, 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (F21) **(outside MLRA 127, 147, 148)**
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

Hydric soils are present.

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region
See ERDC/EL TR-07-24; the proponent agency is CECW-CO-R

OMB Control #: 0710-xxxx, Exp: Pending
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Byllesby-Buck City/County: Carroll Sampling Date: 7/20/2021
Applicant/Owner: Appalachian Electric Power State: NC Sampling Point: DP3_PFO
Investigator(s): Josh Mace, Blake Hartshorn Section, Township, Range:
Landform (hillside, terrace, etc.): Floodplain Local relief (concave, convex, none): Concave Slope (%): 0-1
Subregion (LRR or MLRA): LRR N, MLRA 129 Lat: 36.81447 Long: -80.943847 Datum: NAD83
Soil Map Unit Name: Cu - Comus fine sandy loam NWI classification: PFO
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
DP2_PFO is representative of Palustrine Forested Wetlands on the floodplain of the New River. Climatic/hydrologic conditions were normal as determined by the Antecedent Precipitation Tool.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches): 2

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Primary wetland hydrology indicators are present.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP3_PFO

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Platanus occidentalis*	40	Yes	FACW
2. *Pinus taeda*	10	No	FAC
3. *Ulmus americana*	5	No	FACW
4.			
5.			
6.			
7.			
	55	=Total Cover	
50% of total cover: 28		20% of total cover:	11
Sapling/Shrub Stratum (Plot size: 15)			
1. *Rubus argutus*	40	Yes	FACU
2. *Lindera benzoin*	10	No	FAC
3. *Green ash*	5	No	
4.			
5.			
6.			
7.			
8.			
9.			
	55	=Total Cover	
50% of total cover: 28		20% of total cover:	11
Herb Stratum (Plot size: 5)			
1. *Juncus tenuis*	40	Yes	FAC
2. *Carex striata*	30	Yes	OBL
3. *Microstegium vimineum*	10	No	FAC
4. *Toxicodendron radicans*	5	No	FAC
5. *Fragaria vesca*	5	No	FACU
6. *Juncus effusus*	5	No	FACW
7.			
8.			
9.			
10.			
11.			
	95	=Total Cover	
50% of total cover: 48		20% of total cover:	19
Woody Vine Stratum (Plot size: 5)			
1. *Smilax rotundifolia*	10	Yes	FAC
2. *Lonicera japonica*	10	Yes	FACU
3. *Toxicodendron radicans*	10	Yes	FAC
4.			
5.			
	30	=Total Cover	
50% of total cover: 15		20% of total cover:	6

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 71.4% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	30	x 1 =	30
FACW species	50	x 2 =	100
FAC species	95	x 3 =	285
FACU species	55	x 4 =	220
UPL species	0	x 5 =	0
Column Totals:	230 (A)		635 (B)

Prevalence Index = B/A = 2.76

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody Vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: DP3_PFO

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-20	7.5YR 4/2	60	10YR 5/6	40	C	PL	Loamy/Clayey	Prominent redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Mucky Mineral (F1) **(MLRA 136)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 122, 136)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147, 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (F21) **(outside MLRA 127, 147, 148)**
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

Hydric soil indicators are present.

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region
See ERDC/EL TR-07-24; the proponent agency is CECW-CO-R

OMB Control #: 0710-xxxx, Exp: Pending
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Byllesby-Buck City/County: Carroll Sampling Date: 7/20/2021
Applicant/Owner: Appalachian Electric Power State: NC Sampling Point: DP4_PSS
Investigator(s): Eric Mularski, Jake Irvin Section, Township, Range:
Landform (hillside, terrace, etc.): Floodplain Local relief (concave, convex, none): Concave Slope (%): 0-1
Subregion (LRR or MLRA): LRR N, MLRA 129 Lat: 36.805831 Long: -80.926859 Datum: NAD83
Soil Map Unit Name: Ha - Hatboro silt loam NWI classification: PSS
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
P3_PSS is representative of Palustrin Scrub-Shrub Wetlands. Climatic/hydrologic conditions were normal as determined by the Antecedent Precipitation Tool.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ____ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Aquatic Fauna (B13)
- ____ True Aquatic Plants (B14)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres on Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Tilled Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- X Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ____	Depth (inches): ____
Water Table Present?	Yes X	No ____	Depth (inches): 3
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches): 0

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Primary weltand hydrology indicators are present.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP4_PSS

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Platanus occidentalis*	60	Yes	FACW
2. *Acer negundo*	30	Yes	FAC
3. *Acer saccharinum*	20	No	FACW
4.			
5.			
6.			
7.			
8.			
9.			
	110 =Total Cover		
50% of total cover: 55	20% of total cover: 22		
Herb Stratum (Plot size: 5)			
1. *Phalaris arundinacea*	70	Yes	FACW
2. *Dichanthelium clandestinum*	40	Yes	FAC
3. *Boehmeria cylindrica*	30	No	FACW
4. *Juncus effusus*	30	No	FACW
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	170 =Total Cover		
50% of total cover: 85	20% of total cover: 34		
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody Vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)
Hydrophytic vegetation is dominant.

SOIL

Sampling Point: DP4_PSS

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-20	10YR 3/1	90	10YR 4/6	10	C	PL/M	Loamy/Clayey	Prominent redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Mucky Mineral (F1) **(MLRA 136)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 122, 136)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147, 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (F21) **(outside MLRA 127, 147, 148)**
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

Hydric soil indicators are present.

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region
See ERDC/EL TR-07-24; the proponent agency is CECW-CO-R

OMB Control #: 0710-xxxx, Exp: Pending
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Byllesby-Buck City/County: Carroll Sampling Date: 7/20/2021
Applicant/Owner: Appalachian Electric Power State: NC Sampling Point: DP5_PRB
Investigator(s): Eric Mularski, Jake Irvin Section, Township, Range:
Landform (hillside, terrace, etc.): Floodplain/riverine Local relief (concave, convex, none): Concave Slope (%): 0-1
Subregion (LRR or MLRA): LRR N, MLRA 129 Lat: 36.80744 Long: -80.94027 Datum: NAD83
Soil Map Unit Name: W - Water NWI classification: PRB
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
DP4_PRB is representative of Palustrine Rocky Bottom wetlands. Climatic/hydrologic conditions were normal as determined by the Antecedent Precipitation Tool.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- X Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes X	No ____	Depth (inches): 6
Water Table Present?	Yes X	No ____	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches): 0

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Primary and secondary wetland hydrology indicators are present.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP5_PRB

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Platanus occidentalis*	40	Yes	FACW
2. *Quercus phellos*	20	Yes	FAC
3. *Acer negundo*	10	No	FAC
4.			
5.			
6.			
7.			
8.			
9.			
	70 =Total Cover		
50% of total cover: 35	20% of total cover: 14		
Herb Stratum (Plot size: 5)			
1. *Eleocharis palustris*	20	Yes	OBL
2. *Persicaria pensylvanica*	20	Yes	FACW
3. *Carex lurida*	10	No	OBL
4. *Impatiens capensis*	10	No	FACW
5. *Typha sp.*	5	No	
6. *Justicia americana*	5	No	OBL
7.			
8.			
9.			
10.			
11.			
	70 =Total Cover		
50% of total cover: 35	20% of total cover: 14		
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody Vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)
Hydrophytic vegetaton is dominant.

SOIL

Sampling Point: DP5_PRB

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Mucky Mineral (F1) **(MLRA 136)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 122, 136)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147, 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (F21) **(outside MLRA 127, 147, 148)**
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Bed Rock

Depth (inches): 1

Hydric Soil Present? **Yes** X **No** ___

Remarks:

Soils are assumed hydric. Substrate consist of bed rock.