

**Environmental Report
for the
New Asheville – Enka 115kV West Line
in Buncombe County, NC**



December 22, 2010

Prepared For:

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1.0 INTRODUCTION

Carolina Power & Light Company d/b/a Progress Energy Carolinas (PEC) proposes to design, build, and operate a new 115kV overhead electric transmission line to ensure continuation of reliable electric service to customers in western North Carolina. The new 115kV transmission line will extend generally north and west approximately 7.6 miles from an existing substation at PEC's Asheville Generating Plant (located at Skyland south of Asheville) to PEC's existing Enka Substation (located south of Enka near the intersection of Smoky Park Highway and Sand Hill Road). The entire project is located in Buncombe County, North Carolina. A USGS topographic map is included for review (Figure Key and 1-11).

The purpose of this environmental report is to document the results of the desktop and field surveys that were conducted to:

- Determine the occurrence of or the potential for existence of state and federally listed plant and animal species within the proposed transmission line corridor that are known to occur in Buncombe County and, in particular, within a 2-mile radius of the project area; and
- Identify general habitat types within the proposed transmission line corridor, including jurisdictional streams and wetlands.

Completion of this assessment was directed by and complies with four current state and federal regulations: Federal Endangered Species Act of 1973 (16 USC 1531-1543), North Carolina Endangered Species Act (N.C.G.S. Sect. 113 article 25), and North Carolina Plant Protection and Conservation Act of 1979 (N.C.G.S. Sect. 19b 106: 202.12-22); Section 404 of the Clean Water Act (33 USC 1344), 33 CFR Part 328.3(b).

2.0 METHODOLOGY

Recent database information for listed species was acquired from the US Fish and Wildlife Service (FWS) and the NC Natural Heritage Program (NHP) database on May 10, 2010 concerning the existence or potential existence of federally or state listed species within Buncombe County, North Carolina and within a 2-mile radius of the proposed transmission line corridor.

During a desktop survey, the preferred habitat type for each listed species was identified and compared to the observed habitat type identified within the proposed transmission line corridor: riparian forest, mixed pine/hardwood, mixed upland hardwood, mountain mixed pine, herbaceous cover, streams, and wetlands. Species were then categorically excluded from the field survey based on their preferred habitat and the commonality of the preferred habitat and the existing habitat.

Field surveys of the proposed transmission line corridor were conducted from May 11 through 27, 2010. For the purposes of this assessment a 50-foot wide corridor on either side of the 7.6-mile proposed transmission line center-line was reviewed. Total area within the proposed transmission line corridor is approximately 92 acres. Fauna were identified to the taxonomic unit level necessary to determine if the observed specimen is a protected species. Flora were identified to the lowest taxonomic level readily discernible in the field during the time of survey.

ClearWater Environmental Consultants, Inc. (CEC) completed a delineation of “waters of the United States” (wetlands and streams) from May 11 through 27, 2010. Stream and wetland maps are included for review (Figure Key and 1-11).

Wetlands identified on site include areas with the presence of three wetland criteria as outlined in the *Corps of Engineers Wetlands Delineation Manual* (1987 Manual): presence of hydric soil, hydrophytic vegetation, and evidence of wetland hydrology and connectivity. Indicators of hydrology include, but are not limited to, saturation in the upper 12 inches of the soil profile, drift lines, water marks, and sediment deposits. In general, hydric soils have a chroma 1 or less, with or without oxidized root channels; or chroma 2 or less with oxidized root channels in the upper 12 inches of the “A” horizon. Vegetation holding “FAC”, “FAC+”, “FACW”, or “OBL” designations are considered to be hydrophytic. Plant communities in subject areas include hydrophytic vegetation at a proportion of at least 50 percent.

Channel determinations are based primarily on the definition of “waters of the United States” found in 33 Code of Federal Regulations, Section 328. The jurisdictional extent is considered the upper limits of the ordinary high water mark as identified in the field. The US Army Corps of Engineers (Corps) District Office has provided additional regional guidance for jurisdictional designations on drainage features. Only those channels with adequate groundwater discharge to maintain intermittent or perennial flow are found to be jurisdictional.

3.0 HABITAT DESCRIPTION

3.1 Riparian Forest

Riparian forests are located adjacent to Pond Branch and unnamed tributaries, Boring Mill Branch and unnamed tributaries, the French Broad River and unnamed tributaries, and Clayton Creek and unnamed tributaries. Because the riparian forest areas represent the interface between the aquatic and upland areas on site, the vegetation in the riparian area has characteristics of both aquatic and upland habitats. Many of the plant species in the riparian area require increased amounts of water and are adapted to alluvial soils with shallow water table conditions. Tree growth rate is high and vegetation under the canopy is denser and includes a wide variety of shrubs, grasses, and other herbaceous species. Species common in this habitat type that were observed include: red maple (*Acer rubrum*), tulip poplar (*Liriodendron tulipifera*), American sycamore (*Platanus occidentalis*), ironwood (*Carpinus caroliniana*), American holly (*Ilex opaca*),

black gum (*Nyssa sylvatica*), service berry (*Amelanchier arborea*), witch-hazel (*Hamamelis virginiana*), spice bush (*Lindera benzoin*), wild yam (*Dioscorea villosa*), rattlesnake plantain (*Goodyera pubescens*), and cinnamon fern (*Osmundastrum cinnamomea*).

3.2 Mixed Pine/Hardwood

The mixed pine/hardwood forest is well-developed and is comprised of a closed-canopy dominated by deciduous hardwood trees on mesic soils. There is a diverse assemblage of deciduous and evergreen tree species in the canopy and understory, shade-tolerant shrubs, and a sparse groundcover. Species common in this habitat type that were observed include: shortleaf pine (*Pinus echinata*), tulip poplar, white pine (*Pinus strobus*), Northern red oak (*Quercus rubra*), red maple, flowering dogwood (*Cornus florida*), American holly, sassafras (*Sassafras albidum*), Christmas fern (*Polystichum acrostichoides*), false Solomon's seal (*Maianthemum racemosum*), and poison ivy (*Toxicodendron radicans*).

3.3 Mixed Upland Hardwood

Upland hardwood forest habitat occurs on upland sites that lack a significant presence of pine and on soils that retain water. A continuous, often dense, canopy of deciduous trees characterizes this habitat. Older forests commonly have several nearly closed layers of woody plants, including a well defined canopy, understory, and shrub layer. These layers combine to produce continuous cover. Species common in this habitat type that were observed include: tulip poplar, white oak (*Quercus alba*), red maple, mockernut hickory (*Carya tomentosa*), sourwood (*Oxydendrum arboreum*), Christmas fern, false Solomon's seal, and Virginia creeper (*Parthenocissus quinquefolia*).

3.4 Mountain Mixed Pine

Mixed pine forest habitat occurs on upland sites that lack a significant presence of hardwoods and on soils that are acidic. A continuous, often dense, canopy of pines and a locally dense shrub layer characterizes this habitat. Species common in this habitat type that were observed include: white pine, Virginia pine (*Pinus virginiana*), chestnut oak (*Quercus montana*), lowbush blueberry (*Vaccinium pallidum*), wild azalea (*Rhododendron periclymenoides*), rosebay rhododendron (*Rhododendron maximum*), and mountain laurel (*Kalmia latifolia*).

3.5 Herbaceous Cover

Areas of herbaceous cover within the proposed transmission line corridor lack a significant presence of trees and shrubs and include those areas maintained for livestock, utility line corridors (i.e. existing transmission line), and herbaceous wetlands (Section 3.7). Herbaceous plants are those that are non-woody and usually die back following each growing season. These include grasses and forbs; the latter being the broad-leaved herbaceous plants including wildflowers and "weeds". These naturally occurring herbaceous plants are a valuable source of food and cover for wildlife. Species common in this habitat type that were observed include: ox-eye daisy (*Leucanthemum vulgare*), English plantain

(*Plantago lanceolata*), bulbous buttercup (*Ranunculus bulbosus*), goldenrod (*Solidago spp.*), white clover (*Trifolium repens*), narrowleaf vetch (*Vicia sativa spp. nigra*), sweet vernal grass (*Anthoxanthum odoratum*), and orchard grass (*Dactylis glomerata*).

3.6 Streams

Streams within the proposed transmission line corridor include Pond Branch, Boring Mill Branch, the French Broad River, Clayton Creek, and unnamed tributaries. Unnamed tributaries on site hold the same stream classification as the named tributary into which they flow. The French Broad River is classified as a Class “B” water by the NC Division of Water Quality (DWQ); all other tributaries are classified as Class “C” waters.

Class “B” Waters are those waters protected for primary recreation, including frequent or organized swimming and other uses suitable for Class “C” waters. Discharges and sources of water pollution which preclude any of these uses on either a short-term or long-term basis shall be considered to be a violation of water quality standards.

Class “C” Waters are those waters protected for secondary recreation, fishing, wildlife, fish and aquatic life propagation and survival, agriculture and other uses suitable for class “C”. Secondary recreation includes wading, boating, and other uses involving human body contact with water where such activities take place in an infrequent, unorganized, or incidental manner. There are no restrictions on watershed development or types of discharges.

3.7 Wetlands

Forested and herbaceous wetlands exist within the proposed transmission line corridor. Species common in this habitat type include: American sycamore, ironwood (*Carpinus caroliniana*), green ash (*Fraxinus pennsylvanica*), tag alder (*Lindera benzoin*), arrowwood (*Viburnum dentatum*), yellowroot (*Xanthorhiza simplicissima*), Joe-pye weed (*Eupatorium fistulosum*), jewelweed (*Impatiens capensis*), and great bladder sedge (*Carex intumescens*). Data form for wetlands within the transmission line corridor are included for review (Appendix A).

A list of all plant species observed on site is included for review (Appendix B).

4.0 LISTED SPECIES

The NHP and FWS identify 158 state and federally listed plant and animal species as existing or potentially existing in Buncombe County. The NHP identifies 51 state and federally listed plant and animal species as existing or potentially existing within the Asheville, Enka, and Skyland USGS topographic quadrangles. More specifically, the NHP identifies 20 state and federally listed plant and animal species existing or potentially existing within 2-miles of the proposed transmission line corridor. The table below lists the

20 species identified by the NHP. These species were included in the desktop and field surveys.

Table 1. State and Federally Listed Species

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u>Federal Status</u>	<u>Habitat Present</u>	<u>Significant Effect</u>
Invertebrate Animal					
<i>Macdunnoa brunnea</i>	A Mayfly	SR	None	Y	N
Vascular Plant					
<i>Dendrolycopodium dendroideum</i>	Prickly Ground-pine	SR-P	None	N	N
<i>Helianthus occidentalis</i>	Naked-stem Sunflower	SR-P	None	Y	N
<i>Hexastylis rhombiformis</i>	French Broad Heartleaf	T	FSC	Y	N
<i>Lysimachia fraseri</i>	Fraser's Loosestrife	E	FSC	Y	N
<i>Spiraea virginiana</i>	Virginia Spiraea	E	T	N	N
Vertebrate Animal					
<i>Ambystoma talpoideum</i>	Mole Salamander	SC	None	Y	N
<i>Apalone spinifera spinifera</i>	Eastern Spiny Softshell	SC	None	Y	N
<i>Crotalus horridus</i>	Timber Rattlesnake	SC	None	Y	N
<i>Cryptobranchus alleganiensis</i>	Hellbender	SC	FSC	Y	N
<i>Dendroica cerulea</i>	Cerulean Warbler	SC	FSC	Y	N
<i>Erimystax insignis eristigma</i>	Mountain Blotched Chub	SR	FSC	Y	N
<i>Eumeces anthracinus</i>	Coal Skink	SR	None	Y	N
<i>Glyptemys muhlenbergii</i>	Bog Turtle	T	T(S/A)	Y	N
<i>Hemidactylium scutatum</i>	Four-toed Salamander	SC	None	Y	N
<i>Myotis leibii</i>	Eastern Small-footed Myotis	SC	FSC	N	N
<i>Necturus maculosus</i>	Common Mudpuppy	SC	None	Y	N
<i>Percina williamsii</i>	Sickle Darter	SC	FSC	Y	N
Vertebrate Animal					
<i>Polyodon spathula</i>	Paddlefish	E	FSC	Y	N
<i>Vireo gilvus</i>	Warbling Vireo	SR	None	Y	N

Source: US Fish and Wildlife Service and the North Carolina Natural Heritage Program, May/June 2010
See Appendix C for explanation of codes.

4.1 Impacts to State and Federally Listed Species

None of the species listed in Table 1 were observed on site during the pedestrian survey. It is the opinion of CEC, that the species listed above will not be directly impacted by construction and maintenance of the proposed transmission line corridor.

The Eastern small-footed bat requires caves, mines, and/or hollow trees year round for roosting. No caves or mines are located along the proposed transmission line corridor; and few dead stands were identified although there are many fallen trees within portions of the proposed transmission line corridor. Construction and maintenance of the proposed transmission line corridor will not have a significant effect on this species.

The common mudpuppy, Eastern spiny softshell, and hellbender are found in large streams and rivers. The proposed transmission line corridor will cross the French Broad River three times but will not directly impact the river. Construction and maintenance of the proposed transmission line corridor will not have a significant effect on these species.

Bog turtles prefer open wet meadow/pasture habitats. Some wetlands within the proposed transmission line corridor are herbaceous wetlands and may be suitable for bog turtle. It is likely that maintenance of the existing transmission line corridor contributes to the presence of the habitat by restricting tree growth and forested conditions. Currently, permanent impacts are not proposed in the herbaceous wetlands that represent the most suitable bog turtle habitat. Maintenance on the proposed transmission line will be consistent with maintenance on the existing line. Construction and maintenance of the proposed transmission line corridor is not likely to have a significant effect on this species.

Virginia spiraea and naked-stem sunflower have been listed as “destroyed” by the NHP. The last observation of these species was 1919 and 1897, respectively. These species were not observed during field surveys. Construction and maintenance of the proposed transmission line corridor is not likely to have a significant effect on these species.

Sandy bottomlands and alluvial meadows are the preferred habitat for Fraser’s loosestrife. Moderately suitable habitat for Fraser’s loosestrife is present adjacent to the French Broad River. The last observation of this species was 1897. This species was not observed during field surveys. Construction and maintenance of the proposed transmission line corridor is not likely to have a significant effect on this species.

Warbling vireo and cerulean warbler are birds which prefer hardwood forest or riparian hardwood forest habitats. Hardwood forests exist within the proposed transmission line corridor. Both species are transient and are not year-round residents in western North Carolina. Birds will only be temporarily displaced during construction of the proposed transmission line. These species, which breed in western North Carolina in the summer season or fly through during migration, will find nesting areas and stop-over shelter outside of the existing and proposed transmission line corridor. Construction and maintenance of the proposed transmission line corridor is not likely to have a significant effect on these species.

Prickly ground-pine prefers mountain bald habitats. Balds do not exist within the proposed transmission line corridor. Construction and maintenance of the proposed transmission line corridor will not have a significant effect on these species.

The coal skink prefers rocky slopes, wooded hillsides, and road banks. Suitable habitat for the coal skink exists within the proposed transmission line corridor. The coal skink may be temporarily displaced; however, impacts will be minimal. Additionally, the coal skink has been listed as “historic” by the NHP. The last observation of this species was 1937. Construction and maintenance of the proposed transmission line corridor is not likely to have a significant effect on these species.

French Broad heartleaf prefers cove forests in the mountain and piedmont region of North Carolina. Cove forests do exist within the proposed transmission line corridor. French Broad heartleaf was not observed during field surveys. Construction and maintenance of the proposed transmission line corridor is not likely to have a significant effect on these species.

Mole salamanders prefer fish-free semi-permanent woodland ponds. Moderately suitable habitat for the species exists within the proposed transmission line corridor; however, impacts will be minimal and associated with clearing and not actual tower placement or permanent fill. Construction and maintenance of the proposed transmission line corridor is not likely to have a significant effect on these species.

Four-toed salamanders prefer pools, bogs, and wetland within hardwood forests. Suitable habitat for four-toed salamanders exists within the proposed transmission line corridor. Impacts will be minimal and associated with clearing and not actual tower placement or permanent fill. Construction and maintenance of the proposed transmission line corridor is not likely to have a significant effect on these species.

Timber rattlesnake occupies a variety of habitats depending on the time of year. Summer ranges include heavily forested areas, rocky hillsides, and fields bordered by forests. In early fall, timber rattlesnake begin moving towards their winter hibernation dens which are typically rocky outcrops with deep crevices leading well below the frost line. Habitat for timber rattlesnake is present within the proposed transmission line corridor; however, the species was not observed during field surveys. Members of this species are transient and would be able to move to more suitable areas during construction and maintenance. Additionally, the NHP’s last recorded observation date was 1960 with the element occurrence accuracy identified as “very low”. Construction and maintenance of the proposed transmission line corridor is not likely to have a significant effect on these species.

Sickle darter, *Macdunnoa brunnea*, mountain blotched chub, and paddlefish are known to occur or historically occur in the French Broad River or drainage. The proposed transmission line corridor will cross the French Broad River three times but will not directly impact the river. Additionally, there will be no permanent impacts to streams within the proposed transmission line corridor. Construction and installation of the proposed transmission line corridor will not have a significant effect on these species.

5.0 Summary and Conclusion

The site is mostly forested with mixed pine/hardwood and mixed upland hardwood forests as the dominant forest types. The proposed transmission line corridor will cross several streams and wetlands. Although forested habitat occurs on significant portions of the proposed transmission line corridor, the nature of the forested habitat provides little in the way of high quality or unique wildlife habitat. While these forested areas do provide habitat for some species, the proposed transmission line corridor could not be considered unique or significant in its contribution to wildlife habitat. Because the areas that will be disturbed provide relatively common habitat, impacts are not likely to be significant.

Based upon the desktop and field surveys, along with the habitat assessment, it is the opinion of CEC that:

- the forest types on site are not an unusual or rare habitat for the region,
- federally and state listed species are not present within the proposed transmission line corridor, and
- construction of the proposed transmission line is not likely to threaten the continued existence of listed species or their preferred habitat.

6.0 References

Radford, A.E., H.E. Ashles and C.R. Bell. 1964. Manual of the Vascular Flora of the Carolinas. The University of North Carolina Press. Chapel Hill, NC. 1183 pp.

United States Army Corps of Engineers (USACE). 1987. United States Army Corps of Engineers Wetland Delineation Manual. Tech. Rpt. Y-87-1, US Army Engineer Waterways Experiment Station, Vicksburg, Mississippi.

United States Fish and Wildlife Service Division of Endangered Species. Species accounts at <http://www.fws.gov>.

North Carolina Natural Heritage Program database. Species accounts at <http://www.ncnhp.org>.

7.0 Statement of Qualifications

ClearWater Environmental Consultants, Inc. was formed as a professional environmental consulting firm in 2002 devoted to environmental services in the areas of wetland delineation, stream evaluation, habitat assessments, threatened and endangered species surveys, NEPA/SEPA environmental assessments, environmental permitting, development planning, and consulting. ClearWater Environmental Consultants, Inc.

located in Hendersonville, North Carolina, is positioned to handle projects throughout North Carolina and the upstate of South Carolina and eastern Tennessee.

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Rebekah L. Newton

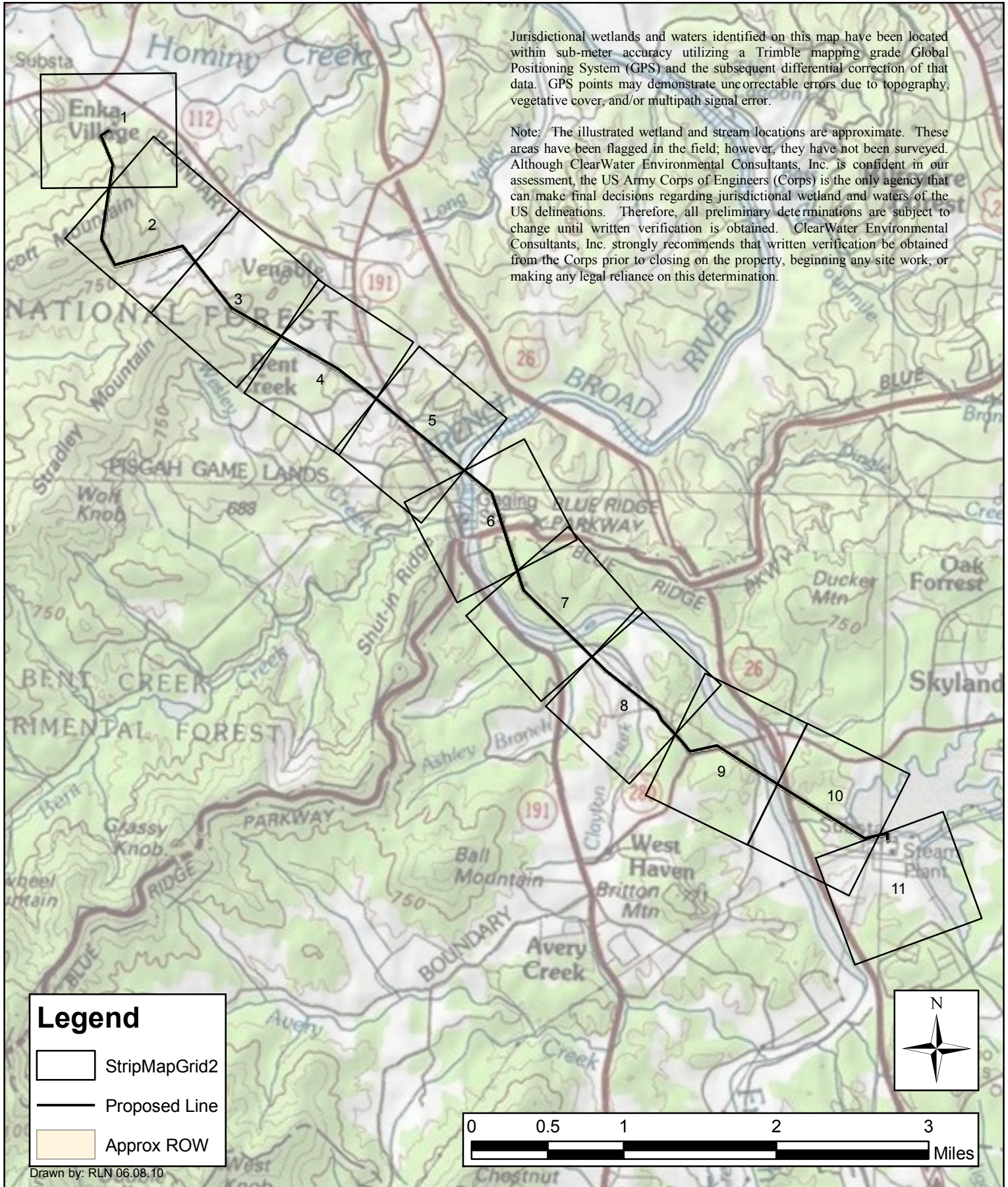
Bachelor of Science, Environmental Science, Jacksonville University, 2003.

Julie Smoak

Bachelor of Science, Biology and French, Wofford College, 1997.

Master of Science, Botany, Clemson University, 2005.

Asheville-Enka 115kV Line - Progress Energy



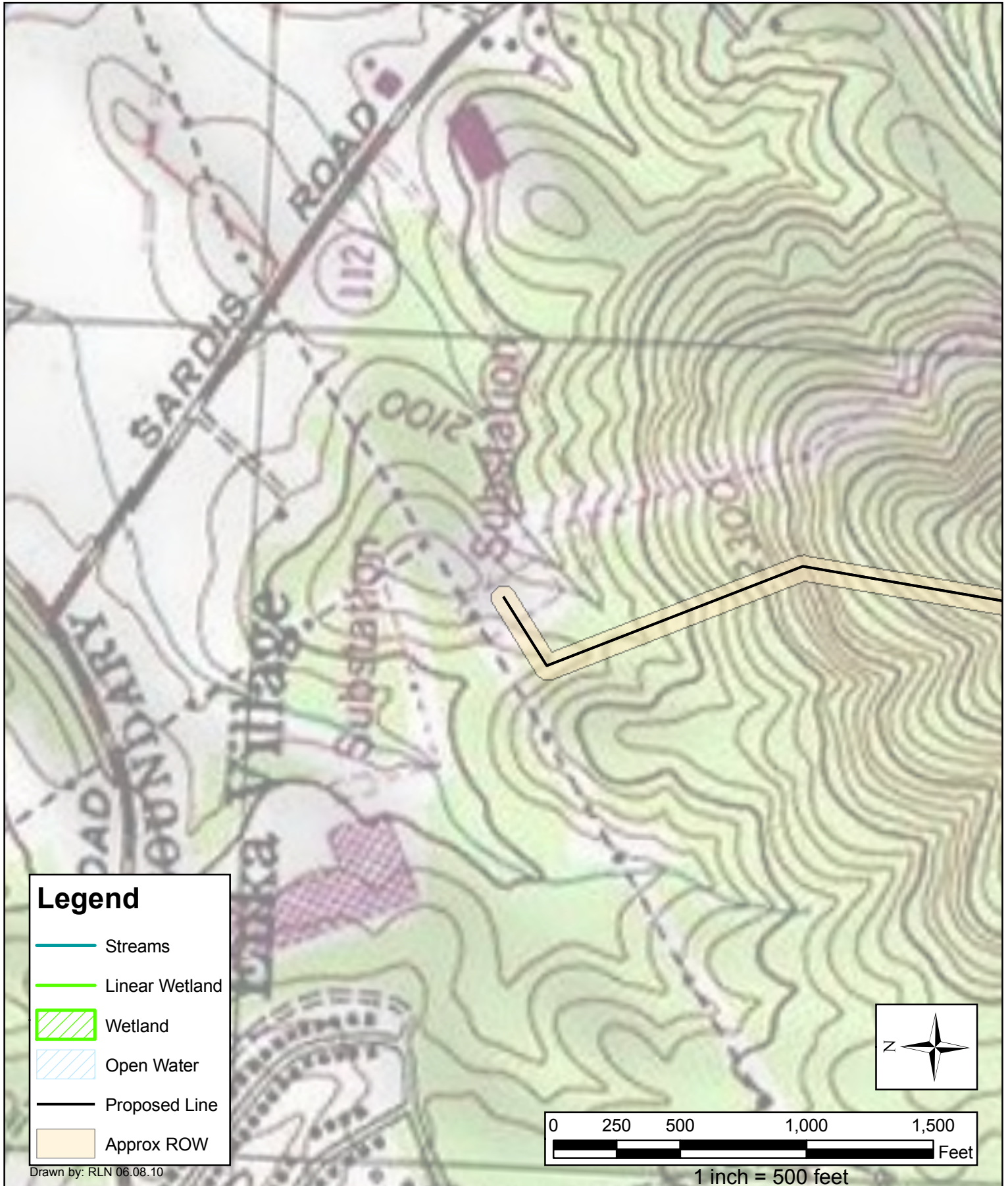
Buncombe County,
North Carolina

ClearWater

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Stream and Wetland
Delineation Map
Key

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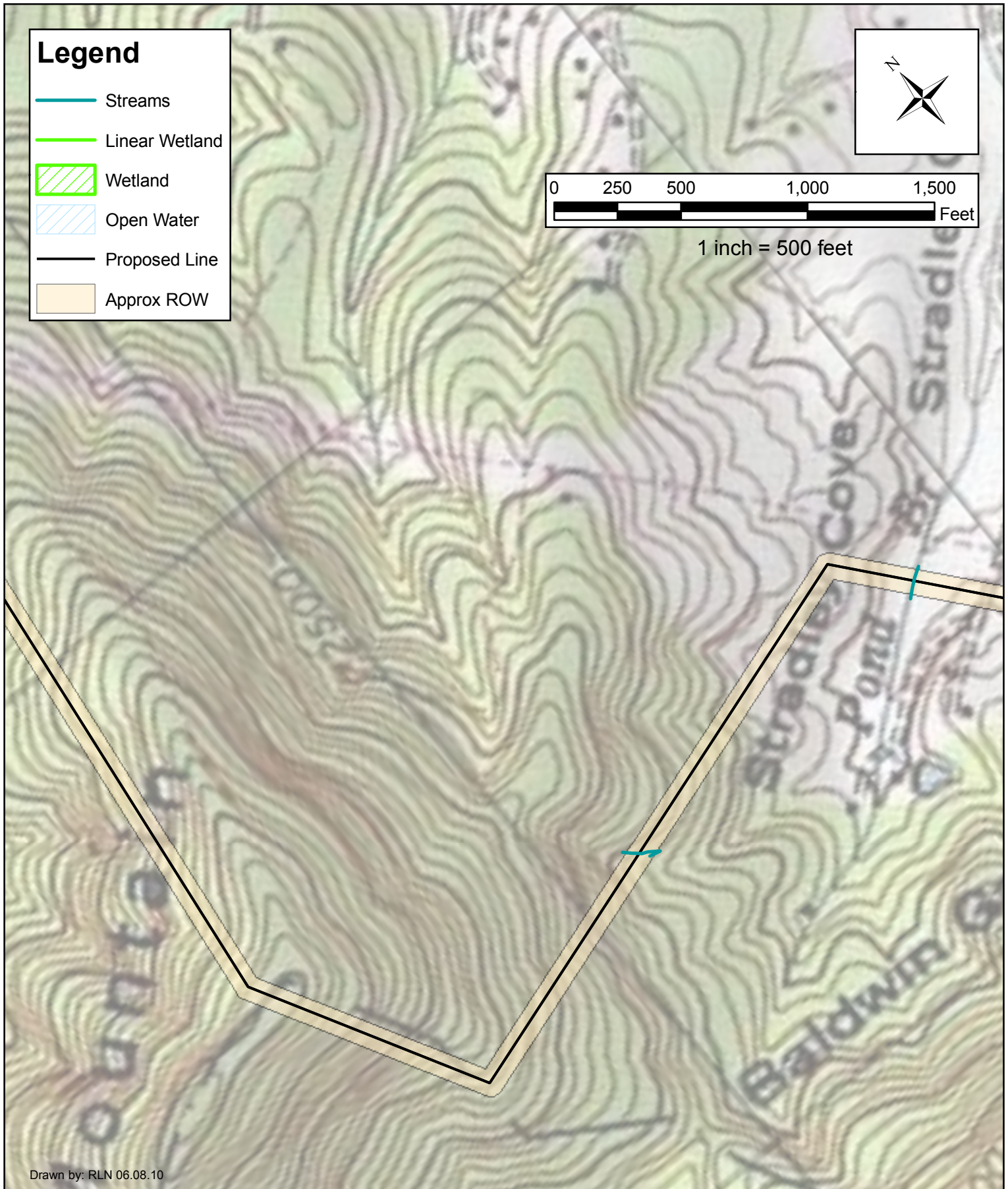
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Stream and Wetland
Delineation Map
1 of 11

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Stream and Wetland
Delineation Map
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Stream and Wetland
Delineation Map
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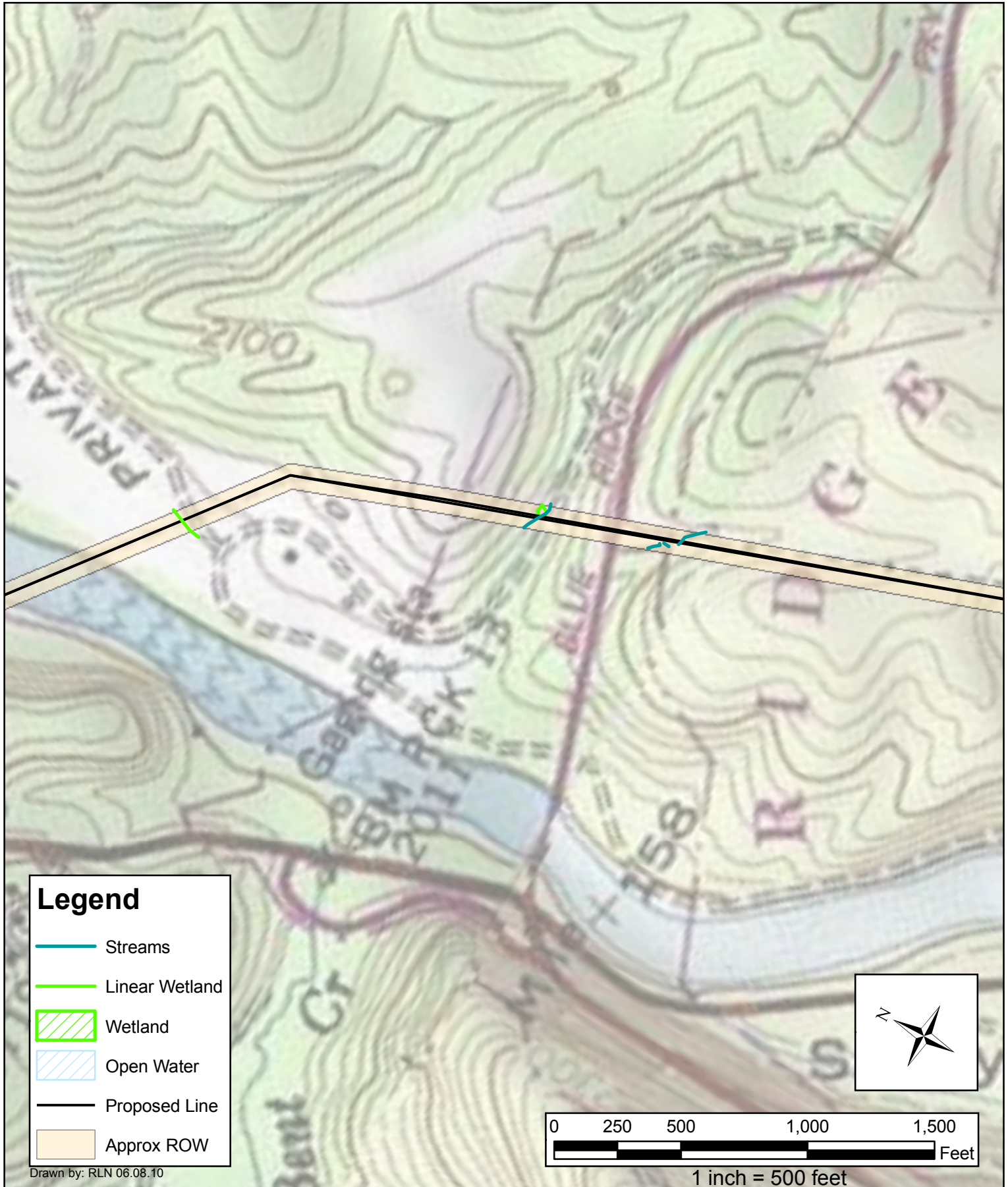
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Stream and Wetland
Delineation Map
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Asheville-Enka 115kV Line - Progress Energy



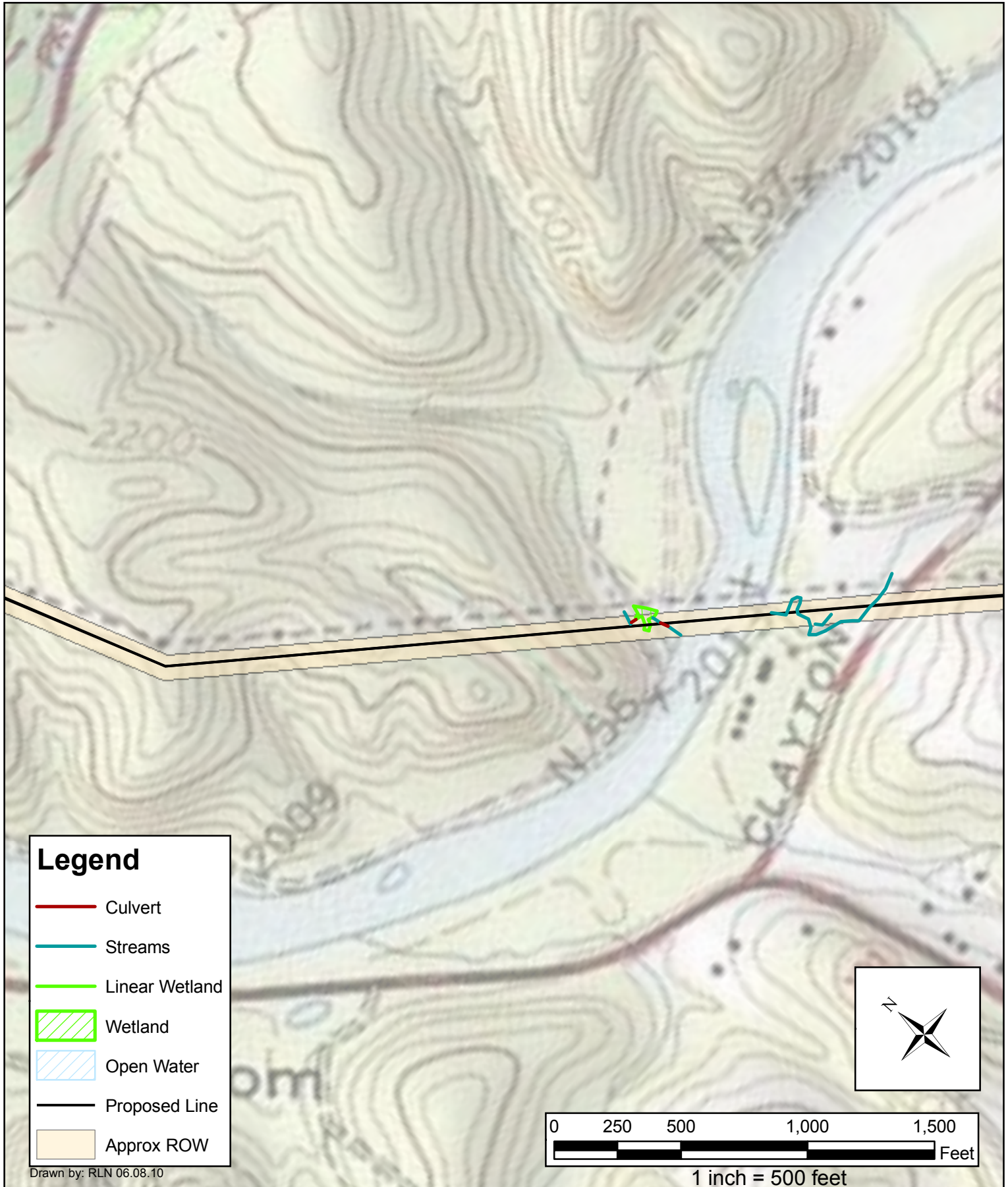
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Stream and Wetland
Delineation Map
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Stream and Wetland
Delineation Map
7 of 11

This topographic map shows the Clayton area with contour lines indicating elevation. A proposed line, shown as a thick black line, runs horizontally across the middle of the map. A light orange shaded area represents the approximate right-of-way (ROW) for this line. Two culvert points are marked with red dots on the proposed line. Green lines and green hatched areas indicate linear wetlands and wetlands, respectively. Blue hatched areas represent open water, including Roberts Lake and Clayton Creek. A legend in the bottom left corner defines these symbols. A scale bar at the bottom right shows distances from 0 to 1,500 feet, with a note that 1 inch equals 500 feet. A north arrow is also present in the bottom right corner.

Legend

- Culvert Pt
- Culvert
- Streams
- Linear Wetland
- ▨ Wetland
- ▨ Open Water
- Proposed Line
- Approx ROW

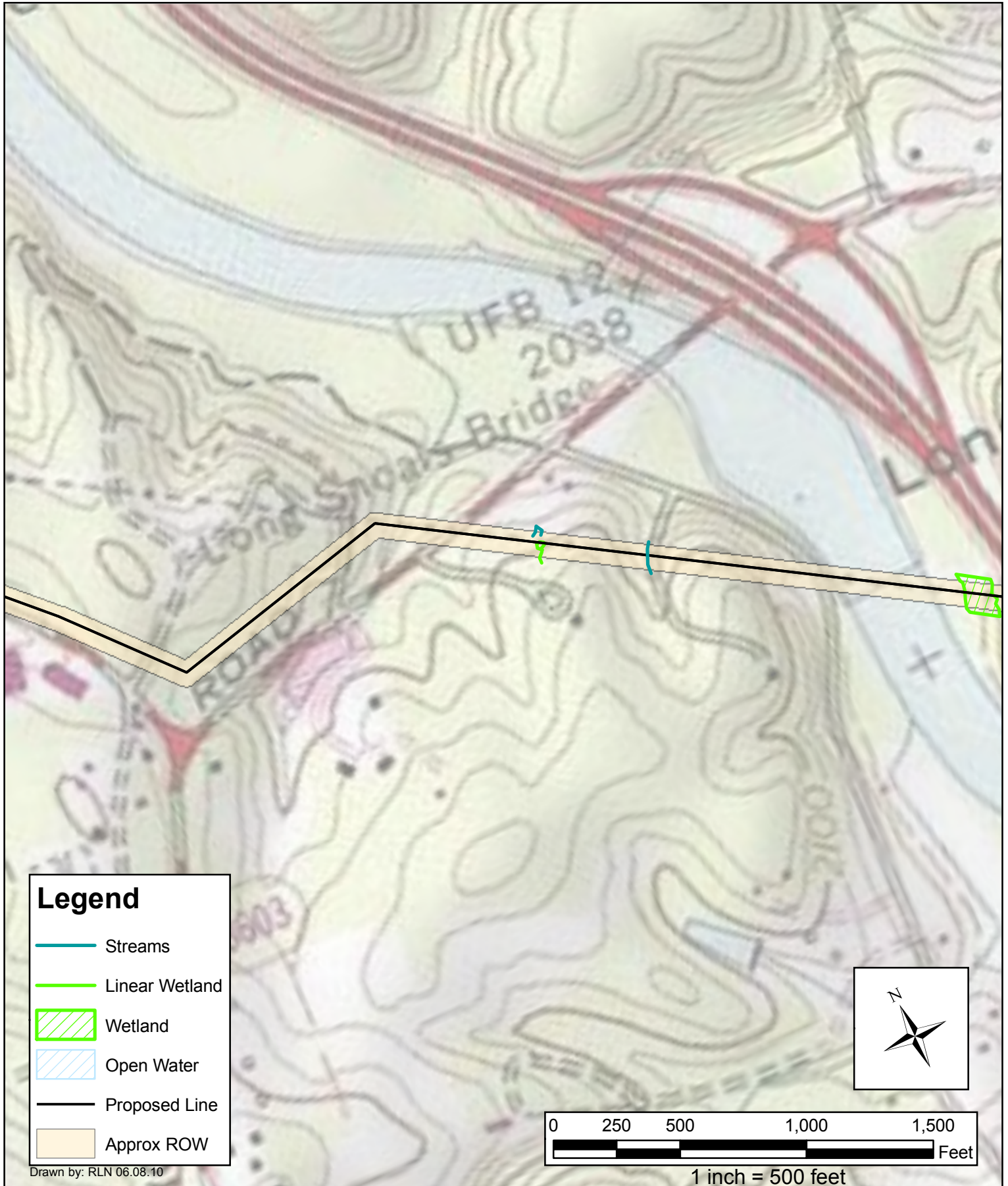
0 250 500 1,000 1,500 Feet

1 inch = 500 feet

ClearWater

Stream and Wetland
Delineation Map
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Asheville-Enka 115kV Line - Progress Energy



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Stream and Wetland
Delineation Map
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Asheville-Enka 115kV Line - Progress Energy



Asheville-Enka 115kV Line - Progress Energy



Drawn by: RLN 06.08.10

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Stream and Wetland
Delineation Map
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Appendix A
Wetland Data Forms

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Determination Manual)

Project / Site: <u>Asheville-Enka 115kV Line</u> Applicant / Owner: <u>Progress Energy Carolinas, Inc.</u> Investigator: <u>Rebekah Newton, Clement Riddle</u>	Date: <u>05/25/10</u> County: <u>Buncombe</u> State: <u>NC</u>
Do normal circumstances exist on the site? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Is the site significantly disturbed (Atypical situation)? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Is the area a potential problem area? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> (explain on reverse if needed)	Community ID: <u>WL</u> Transect ID: _____ Plot ID: <u>BD</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Acer rubrum</u>	<u>T</u>	<u>FAC</u>	9. <u>Arundinaria gigantea</u>	<u>H</u>	<u>FACW</u>
2. <u>Betula nigra</u>	<u>T</u>	<u>FACW</u>	10. <u>Microstegium viminium</u>	<u>H</u>	<u>FAC+</u>
3. <u>Salix nigra</u>	<u>T</u>	<u>OBL</u>	11. <u>Polystichum acrostichoides</u>	<u>H</u>	<u>FAC</u>
4. <u>Cornus florida</u>	<u>T</u>	<u>FACU</u>	12. <u>Toxicodendron radicans</u>	<u>V</u>	<u>FAC</u>
5. <u>Ligustrum sinense</u>	<u>S</u>	<u>FAC</u>	13. _____	_____	_____
6. <u>Lonicera japonica</u>	<u>V</u>	<u>FAC-</u>	14. _____	_____	_____
7. <u>Carex spp</u>	<u>H</u>	<u>>FACW</u>	15. _____	_____	_____
8. <u>Carex lurida</u>	<u>H</u>	<u>OBL</u>	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW, or FAC excluding FAC-). 10/12 = 83%

Remarks:

HYDROLOGY

<p>___ Recorded Data (Describe In Remarks):</p> <p>___ Stream, Lake, or Tide Gauge</p> <p>___ Aerial Photographs</p> <p>___ Other</p> <p><u>X</u> No Recorded Data Available</p> <p>Field Observations:</p> <p>Depth of Surface Water: <u>0->12</u> (in.)</p> <p>Depth to Free Water in Pit: <u>0-3</u> (in.)</p> <p>Depth to Saturated Soil: <u>0-3</u> (in.)</p>	<p>Wetland Hydrology Indicators</p> <p>Primary Indicators:</p> <p><u>X</u> Inundated</p> <p><u>X</u> Saturated in Upper 12"</p> <p><u>X</u> Water Marks</p> <p>___ Drift Lines</p> <p>___ Sediment Deposits</p> <p><u>X</u> Drainage Patterns in Wetlands</p> <p>Secondary Indicators:</p> <p><u>X</u> Oxidized Roots Channels in Upper 12"</p> <p><u>X</u> Water-Stained Leaves</p> <p>___ Local Soil Survey Data</p> <p><u>X</u> FAC-Neutral Test</p> <p>___ Other (Explain in Remarks)</p>
<p>Remarks: <u>Old pond.</u></p>	

SOILS

Map Unit Name

(Series and Phase): _____ Drainage Class: _____

Taxonomy (Subgroup): _____ Confirm Mapped Type? Yes ___ No ___

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-12	A	10YR4/2	10YR4/6	few/distinct	loam

Hydric Soil Indicators:

- | | |
|---|---|
| <input type="checkbox"/> Histosol | <input type="checkbox"/> Concretions |
| <input type="checkbox"/> Histic Epipedon | <input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils |
| <input checked="" type="checkbox"/> Sulfidic Odor | <input type="checkbox"/> Organic Streaking in Sandy Soils |
| <input type="checkbox"/> Aquic Moisture Regime | <input type="checkbox"/> Listed On Local Hydric Soils List |
| <input checked="" type="checkbox"/> Reducing Conditions | <input type="checkbox"/> Listed on National Hydric Soils List |
| <input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors | <input type="checkbox"/> Other (Explain in Remarks) |

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampling Point
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soils Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Determination Manual)

Project / Site: <u>Asheville-Enka 115kV Line</u> Applicant / Owner: <u>Progress Energy Carolinas, Inc.</u> Investigator: <u>Rebekah Newton, Clement Riddle, Julie Smoak</u>	Date: <u>05/11/10</u> County: <u>Buncombe</u> State: <u>NC</u>
Do normal circumstances exist on the site? Yes <u>X</u> No <u> </u> Is the site significantly disturbed (Atypical situation)? Yes <u> </u> No <u>X</u> Is the area a potential problem area? Yes <u> </u> No <u>X</u> (explain on reverse if needed)	Community ID: <u>WL</u> Transect ID: <u> </u> Plot ID: <u>CD/CE</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Acer rubrum</u>	<u>T</u>	<u>FAC</u>	9. <u>Viburnum dentatum</u>	<u>S</u>	<u>FAC</u>
2. <u>Liriodendron tulipifera</u>	<u>T</u>	<u>FAC</u>	10. <u>Xanthorhiza simplicissima</u>	<u>S</u>	<u>FACW-</u>
3. <u>Betula nigra</u>	<u>T</u>	<u>FACW</u>	11. <u>Thelypteris noveboracensis</u>	<u>H</u>	<u>FAC+</u>
4. <u>Halesia tetraptera</u>	<u>T</u>	<u>No status</u>	12. <u>Woodwardia areolata</u>	<u>H</u>	<u>OBL</u>
5. <u>Nyssa biflora</u>	<u>T</u>	<u>OBL</u>	13. <u>Arundinaria gigantea</u>	<u>H</u>	<u>FACW</u>
6. <u>Alnus serrulata</u>	<u>S</u>	<u>FACW+</u>	14. <u>Carex intumescens</u>	<u>H</u>	<u>FACW</u>
7. <u>Itea virginica</u>	<u>S</u>	<u>FACW+</u>	15. <u>Dichanthelium clandestinum</u>	<u>H</u>	<u>FACW</u>
8. <u>Vaccinium corymbosum</u>	<u>S</u>	<u>FACW</u>	16. <u> </u>	<u> </u>	<u> </u>

Percent of Dominant Species that are OBL, FACW, or FAC excluding FAC-). 14/15 = 93%

Remarks:

HYDROLOGY

<p><u> </u> Recorded Data (Describe In Remarks): <u> </u> Stream, Lake, or Tide Gauge <u> </u> Aerial Photographs <u> </u> Other</p> <p><u>X</u> No Recorded Data Available</p> <p>Field Observations:</p> <p>Depth of Surface Water: <u>0-1</u> (in.)</p> <p>Depth to Free Water in Pit: <u>0-1</u> (in.)</p> <p>Depth to Saturated Soil: <u>0</u> (in.)</p>	<p>Wetland Hydrology Indicators</p> <p>Primary Indicators: <u>X</u> Inundated <u>X</u> Saturated in Upper 12" <u>X</u> Water Marks <u> </u> Drift Lines <u>X</u> Sediment Deposits <u>X</u> Drainage Patterns in Wetlands</p> <p>Secondary Indicators: <u>X</u> Oxidized Roots Channels in Upper 12" <u>X</u> Water-Stained Leaves <u> </u> Local Soil Survey Data <u>X</u> FAC-Neutral Test <u> </u> Other (Explain in Remarks)</p>
<p>Remarks:</p>	

SOILS

Map Unit Name _____
(Series and Phase): _____ Drainage Class: _____

Taxonomy (Subgroup): _____ Confirm Mapped Type? Yes ___ No ___

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-1+	A	10YR4/1			loam
		10YR2/1			

Hydric Soil Indicators:

- | | |
|---|---|
| <input type="checkbox"/> Histosol | <input type="checkbox"/> Concretions |
| <input type="checkbox"/> Histic Epipedon | <input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils |
| <input checked="" type="checkbox"/> Sulfidic Odor | <input type="checkbox"/> Organic Streaking in Sandy Soils |
| <input type="checkbox"/> Aquic Moisture Regime | <input type="checkbox"/> Listed On Local Hydric Soils List |
| <input checked="" type="checkbox"/> Reducing Conditions | <input type="checkbox"/> Listed on National Hydric Soils List |
| <input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors | <input type="checkbox"/> Other (Explain in Remarks) |

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampling Point	
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Within a Wetland?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soils Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Determination Manual)

Project / Site: <u>Asheville-Enka 115kV Line</u> Applicant / Owner: <u>Progress Energy Carolinas, Inc.</u> Investigator: <u>Rebekah Newton, Clement Riddle, Julie Smoak</u>	Date: <u>05/12/10</u> County: <u>Buncombe</u> State: <u>NC</u>
Do normal circumstances exist on the site? Yes <u>X</u> No <u> </u> Is the site significantly disturbed (Atypical situation)? Yes <u> </u> No <u>X</u> Is the area a potential problem area? Yes <u> </u> No <u>X</u> (explain on reverse if needed)	Community ID: <u>WL</u> Transect ID: <u> </u> Plot ID: <u>CK</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Acer rubrum</u>	<u>T</u>	<u>FAC</u>	9. <u>Viburnum dentatum</u>	<u>S</u>	<u>FAC</u>
2. <u>Liriodendron tulipifera</u>	<u>T</u>	<u>FAC</u>	10. <u>Xanthorhiza simplicissima</u>	<u>S</u>	<u>FACW-</u>
3. <u>Platanus occidentalis</u>	<u>T</u>	<u>FACW-</u>	11. <u>Rosa multiflora</u>	<u>S</u>	<u>UPL</u>
4. <u>Carpinus caroliniana</u>	<u>T</u>	<u>FAC</u>	12. <u>Eupatorium fistulosum</u>	<u>H</u>	<u>FAC+</u>
5. <u>Fraxinus pennsylvanica</u>	<u>T</u>	<u>FACW</u>	13. <u>Impatiens capensis</u>	<u>H</u>	<u>FACW</u>
6. <u>Ilex opaca</u>	<u>T</u>	<u>FAC-</u>	14. <u>Osmunda regalis</u>	<u>H</u>	<u>OBL</u>
7. <u>Alnus serrulata</u>	<u>S</u>	<u>FACW+</u>	15. <u>Podophyllum peltatum</u>	<u>H</u>	<u>FACU</u>
8. <u>Lindera benzoin</u>	<u>S</u>	<u>FACW</u>	16. <u>Carex intumescens</u>	<u>H</u>	<u>FACW</u>

Percent of Dominant Species that are OBL, FACW, or FAC excluding FAC-). 13/15 = 81%

Remarks:

HYDROLOGY

<p><u> </u> Recorded Data (Describe In Remarks): <u> </u> Stream, Lake, or Tide Gauge <u> </u> Aerial Photographs <u> </u> Other</p> <p><u>X</u> No Recorded Data Available</p> <p>Field Observations:</p> <p>Depth of Surface Water: <u> 0 </u> (in.)</p> <p>Depth to Free Water in Pit: <u> 2 </u> (in.)</p> <p>Depth to Saturated Soil: <u> 2 </u> (in.)</p>	<p>Wetland Hydrology Indicators</p> <p>Primary Indicators: <u> </u> Inundated <u>X</u> Saturated in Upper 12" <u> </u> Water Marks <u> </u> Drift Lines <u>X</u> Sediment Deposits <u>X</u> Drainage Patterns in Wetlands</p> <p>Secondary Indicators: <u>X</u> Oxidized Roots Channels in Upper 12" <u>X</u> Water-Stained Leaves <u> </u> Local Soil Survey Data <u>X</u> FAC-Neutral Test <u> </u> Other (Explain in Remarks)</p>
<p>Remarks:</p>	

SOILS

Map Unit Name

(Series and Phase): _____ Drainage Class: _____

Taxonomy (Subgroup): _____ Confirm Mapped Type? Yes ___ No ___

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-4	A	10YR3/2			loam
4+	A	10YR4/2	10YR4/4	few/distinct	loam

Hydric Soil Indicators:

- | | |
|---|---|
| <input type="checkbox"/> Histosol | <input type="checkbox"/> Concretions |
| <input type="checkbox"/> Histic Epipedon | <input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils |
| <input checked="" type="checkbox"/> Sulfidic Odor | <input type="checkbox"/> Organic Streaking in Sandy Soils |
| <input type="checkbox"/> Aquic Moisture Regime | <input type="checkbox"/> Listed On Local Hydric Soils List |
| <input checked="" type="checkbox"/> Reducing Conditions | <input type="checkbox"/> Listed on National Hydric Soils List |
| <input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors | <input type="checkbox"/> Other (Explain in Remarks) |

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampling Point	
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Within a Wetland?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soils Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Determination Manual)

Project / Site: <u>Asheville-Enka 115kV Line</u> Applicant / Owner: <u>Progress Energy Carolinas, Inc.</u> Investigator: <u>Rebekah Newton, Clement Riddle, Julie Smoak</u>	Date: <u>05/12/10</u> County: <u>Buncombe</u> State: <u>NC</u>
Do normal circumstances exist on the site? Yes <u>X</u> No <u> </u> Is the site significantly disturbed (Atypical situation)? Yes <u> </u> No <u>X</u> Is the area a potential problem area? Yes <u> </u> No <u>X</u> (explain on reverse if needed)	Community ID: <u>WL</u> Transect ID: <u> </u> Plot ID: <u>CP</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Salix nigra</u>	<u>S</u>	<u>OBL</u>	9. <u>Verbasina alternifolia</u>	<u>H</u>	<u>FAC</u>
2. <u>Barbarea vulgaris</u>	<u>H</u>	<u>FAC</u>	10. <u>Carex spp</u>	<u>H</u>	<u>>FACW</u>
3. <u>Cicuta maculata</u>	<u>H</u>	<u>OBL</u>	11. <u>Dichanthelium clandestinum</u>	<u>H</u>	<u>FACW</u>
4. <u>Eupatorium fistulosum</u>	<u>H</u>	<u>FAC+</u>	12. <u>Microstegium viminium</u>	<u>H</u>	<u>FAC</u>
5. <u>Eupatorium perfoliatum</u>	<u>H</u>	<u>FACW+</u>	13. <u> </u>	<u> </u>	<u> </u>
6. <u>Impatiens capensis</u>	<u>H</u>	<u>FACW</u>	14. <u> </u>	<u> </u>	<u> </u>
7. <u>Sagittaria latifolia</u>	<u>H</u>	<u>OBL</u>	15. <u> </u>	<u> </u>	<u> </u>
8. <u>Sisyrinchium angustifolium</u>	<u>H</u>	<u>FAC</u>	16. <u> </u>	<u> </u>	<u> </u>

Percent of Dominant Species that are OBL, FACW, or FAC excluding FAC-). 12/12 = 100%

Remarks:

HYDROLOGY

<p><u> </u> Recorded Data (Describe In Remarks): <u> </u> Stream, Lake, or Tide Gauge <u> </u> Aerial Photographs <u> </u> Other</p> <p><u>X</u> No Recorded Data Available</p> <p>Field Observations:</p> <p>Depth of Surface Water: <u>0->12</u> (in.)</p> <p>Depth to Free Water in Pit: <u>0-2</u> (in.)</p> <p>Depth to Saturated Soil: <u>0</u> (in.)</p>	<p>Wetland Hydrology Indicators</p> <p>Primary Indicators: <u>X</u> Inundated <u>X</u> Saturated in Upper 12" <u>X</u> Water Marks <u> </u> Drift Lines <u> </u> Sediment Deposits <u>X</u> Drainage Patterns in Wetlands</p> <p>Secondary Indicators: <u>X</u> Oxidized Roots Channels in Upper 12" <u>X</u> Water-Stained Leaves <u> </u> Local Soil Survey Data <u>X</u> FAC-Neutral Test <u> </u> Other (Explain in Remarks)</p>
<p>Remarks: Beaver impounded.</p>	

SOILS

Map Unit Name

(Series and Phase): _____ Drainage Class: _____

Taxonomy (Subgroup): _____ Confirm Mapped Type? Yes ___ No ___

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-2	A	10YR3/2			loam
3+	A	10YR3/2	10YR4/6	few/faint	loam

Hydric Soil Indicators:

- | | |
|---|---|
| <input type="checkbox"/> Histosol | <input type="checkbox"/> Concretions |
| <input type="checkbox"/> Histic Epipedon | <input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils |
| <input checked="" type="checkbox"/> Sulfidic Odor | <input type="checkbox"/> Organic Streaking in Sandy Soils |
| <input type="checkbox"/> Aquic Moisture Regime | <input type="checkbox"/> Listed On Local Hydric Soils List |
| <input checked="" type="checkbox"/> Reducing Conditions | <input type="checkbox"/> Listed on National Hydric Soils List |
| <input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors | <input type="checkbox"/> Other (Explain in Remarks) |

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampling Point	
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Within a Wetland?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soils Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Determination Manual)

Project / Site: <u>Asheville-Enka 115kV Line</u> Applicant / Owner: <u>Progress Energy Carolinas, Inc.</u> Investigator: <u>Rebekah Newton, Clement Riddle, Julie Smoak</u>	Date: <u>05/11/10</u> County: <u>Buncombe</u> State: <u>NC</u>
Do normal circumstances exist on the site? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Is the site significantly disturbed (Atypical situation)? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Is the area a potential problem area? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> (explain on reverse if needed)	Community ID: <u>WL</u> Transect ID: _____ Plot ID: <u>RD</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Betula nigra</u>	<u>T</u>	<u>FACW</u>	9. <u>Boehmeria cylindrica</u>	<u>H</u>	<u>FACW+</u>
2. <u>Platanus occidentalis</u>	<u>T</u>	<u>FACW-</u>	10. <u>Impatiens capensis</u>	<u>H</u>	<u>FACW</u>
3. <u>Salix nigra</u>	<u>T</u>	<u>OBL</u>	11. <u>Lobelia cardinalis</u>	<u>H</u>	<u>FACW+</u>
4. <u>Alnus serrulata</u>	<u>S</u>	<u>FACW+</u>	12. <u>Peltandra virginica</u>	<u>H</u>	<u>OBL</u>
5. <u>Cornus amomum</u>	<u>S</u>	<u>FACW+</u>	13. <u>Carex crinita</u>	<u>H</u>	<u>FACW+</u>
6. <u>Physocarpus opulifolius</u>	<u>S</u>	<u>FAC-</u>	14. <u>Carex lurida</u>	<u>H</u>	<u>OBL</u>
7. <u>Sambucus canadensis</u>	<u>S</u>	<u>FACW-</u>	15. <u>Dichanthelium clandestinum</u>	<u>H</u>	<u>FACW</u>
8. <u>Vitis labrusca</u>	<u>V</u>	<u>FAC+</u>	16. <u>Juncus effusus</u>	<u>H</u>	<u>FACW+</u>

Percent of Dominant Species that are OBL, FACW, or FAC excluding FAC-). 15/16 = 94%

Remarks:

HYDROLOGY

<p>___ Recorded Data (Describe In Remarks):</p> <p style="margin-left: 20px;">___ Stream, Lake, or Tide Gauge</p> <p style="margin-left: 20px;">___ Aerial Photographs</p> <p style="margin-left: 20px;">___ Other</p> <p><u> X </u> No Recorded Data Available</p> <p>Field Observations:</p> <p style="margin-left: 40px;">Depth of Surface Water: <u> 0-3 </u> (in.)</p> <p style="margin-left: 40px;">Depth to Free Water in Pit: <u> 0 </u> (in.)</p> <p style="margin-left: 40px;">Depth to Saturated Soil: <u> 0 </u> (in.)</p>	<p>Wetland Hydrology Indicators</p> <p>Primary Indicators:</p> <p style="margin-left: 20px;"><u> X </u> Inundated</p> <p style="margin-left: 20px;"><u> X </u> Saturated in Upper 12"</p> <p style="margin-left: 20px;"><u> X </u> Water Marks</p> <p style="margin-left: 20px;">___ Drift Lines</p> <p style="margin-left: 20px;">___ Sediment Deposits</p> <p style="margin-left: 20px;"><u> X </u> Drainage Patterns in Wetlands</p> <p>Secondary Indicators:</p> <p style="margin-left: 20px;"><u> X </u> Oxidized Roots Channels in Upper 12"</p> <p style="margin-left: 20px;"><u> X </u> Water-Stained Leaves</p> <p style="margin-left: 20px;">___ Local Soil Survey Data</p> <p style="margin-left: 20px;"><u> X </u> FAC-Neutral Test</p> <p style="margin-left: 20px;">___ Other (Explain in Remarks)</p>
<p>Remarks:</p>	

SOILS

Map Unit Name _____
(Series and Phase): _____ Drainage Class: _____

Taxonomy (Subgroup): _____ Confirm Mapped Type? Yes ___ No ___

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-4	A	10YR3/2	2YR8/4	fine/distinct	loam
5+	A	10YR2/1			loam

Hydric Soil Indicators:

- | | |
|---|---|
| <input type="checkbox"/> Histosol | <input type="checkbox"/> Concretions |
| <input type="checkbox"/> Histic Epipedon | <input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils |
| <input checked="" type="checkbox"/> Sulfidic Odor | <input type="checkbox"/> Organic Streaking in Sandy Soils |
| <input type="checkbox"/> Aquic Moisture Regime | <input type="checkbox"/> Listed On Local Hydric Soils List |
| <input checked="" type="checkbox"/> Reducing Conditions | <input type="checkbox"/> Listed on National Hydric Soils List |
| <input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors | <input type="checkbox"/> Other (Explain in Remarks) |

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampling Point	
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Within a Wetland?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soils Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Determination Manual)

Project / Site: <u>Asheville-Enka 115kV Line</u> Applicant / Owner: <u>Progress Energy Carolinas, Inc.</u> Investigator: <u>Rebekah Newton, Clement Riddle, Julie Smoak</u>	Date: <u>05/11/10</u> County: <u>Buncombe</u> State: <u>NC</u>
Do normal circumstances exist on the site? Yes <u>X</u> No <u> </u> Is the site significantly disturbed (Atypical situation)? Yes <u> </u> No <u>X</u> Is the area a potential problem area? Yes <u> </u> No <u>X</u> (explain on reverse if needed)	Community ID: <u>WL</u> Transect ID: <u> </u> Plot ID: <u>RF</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Alnus serrulata</u>	<u>S</u>	<u>FACW+</u>	9. <u> </u>	<u> </u>	<u> </u>
2. <u>Lobelia cardinalis</u>	<u>H</u>	<u>FACW+</u>	10. <u> </u>	<u> </u>	<u> </u>
3. <u>Carex crinita</u>	<u>H</u>	<u>FACW+</u>	11. <u> </u>	<u> </u>	<u> </u>
4. <u>Carex intumescens</u>	<u>H</u>	<u>FACW</u>	12. <u> </u>	<u> </u>	<u> </u>
5. <u>Carex lurida</u>	<u>H</u>	<u>OBL</u>	13. <u> </u>	<u> </u>	<u> </u>
6. <u>Dichanthelium clandestinum</u>	<u>H</u>	<u>FACW</u>	14. <u> </u>	<u> </u>	<u> </u>
7. <u>Microstegium viminium</u>	<u>H</u>	<u>FAC+</u>	15. <u> </u>	<u> </u>	<u> </u>
8. <u> </u>	<u> </u>	<u> </u>	16. <u> </u>	<u> </u>	<u> </u>

Percent of Dominant Species that are OBL, FACW, or FAC excluding FAC-). 7/7 = 100%

Remarks:

HYDROLOGY

<p>___ Recorded Data (Describe In Remarks): ___ Stream, Lake, or Tide Gauge ___ Aerial Photographs ___ Other</p> <p><u>X</u> No Recorded Data Available</p> <p>Field Observations:</p> <p>Depth of Surface Water: <u>0</u> (in.)</p> <p>Depth to Free Water in Pit: <u>1</u> (in.)</p> <p>Depth to Saturated Soil: <u>0</u> (in.)</p>	<p>Wetland Hydrology Indicators</p> <p>Primary Indicators: ___ Inundated <u>X</u> Saturated in Upper 12" ___ Water Marks ___ Drift Lines <u>X</u> Sediment Deposits ___ Drainage Patterns in Wetlands</p> <p>Secondary Indicators: ___ Oxidized Roots Channels in Upper 12" <u>X</u> Water-Stained Leaves ___ Local Soil Survey Data <u>X</u> FAC-Neutral Test ___ Other (Explain in Remarks)</p>
<p>Remarks:</p>	

SOILS

Map Unit Name

(Series and Phase): _____ Drainage Class: _____

Taxonomy (Subgroup): _____ Confirm Mapped Type? Yes ___ No ___

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-3	A	10YR6/3			loam
4+	A	10YR3/1			loam

Hydric Soil Indicators:

- | | |
|---|---|
| <input type="checkbox"/> Histosol | <input type="checkbox"/> Concretions |
| <input type="checkbox"/> Histic Epipedon | <input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils |
| <input checked="" type="checkbox"/> Sulfidic Odor | <input type="checkbox"/> Organic Streaking in Sandy Soils |
| <input type="checkbox"/> Aquic Moisture Regime | <input type="checkbox"/> Listed On Local Hydric Soils List |
| <input checked="" type="checkbox"/> Reducing Conditions | <input type="checkbox"/> Listed on National Hydric Soils List |
| <input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors | <input type="checkbox"/> Other (Explain in Remarks) |

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is the Sampling Point	
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Within a Wetland?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soils Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Determination Manual)

Project / Site: <u>Asheville-Enka 115kV Line</u> Applicant / Owner: <u>Progress Energy Carolinas, Inc.</u> Investigator: <u>Rebekah Newton, Clement Riddle, Julie Smoak</u>	Date: <u>05/11/10</u> County: <u>Buncombe</u> State: <u>NC</u>
Do normal circumstances exist on the site? Yes <u>X</u> No <u> </u> Is the site significantly disturbed (Atypical situation)? Yes <u> </u> No <u>X</u> Is the area a potential problem area? Yes <u> </u> No <u>X</u> (explain on reverse if needed)	Community ID: <u>WL</u> Transect ID: <u> </u> Plot ID: <u>RG</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Cornus amomum</u>	<u>S</u>	<u>FACW+</u>	9. <u> </u>	<u> </u>	<u> </u>
2. <u>Commelina communis</u>	<u>H</u>	<u>FAC</u>	10. <u> </u>	<u> </u>	<u> </u>
3. <u>Eupatorium fistulosum</u>	<u>H</u>	<u>FAC+</u>	11. <u> </u>	<u> </u>	<u> </u>
4. <u>Peltandra virginica</u>	<u>H</u>	<u>OBL</u>	12. <u> </u>	<u> </u>	<u> </u>
5. <u>Carex crinita</u>	<u>H</u>	<u>FACW+</u>	13. <u> </u>	<u> </u>	<u> </u>
6. <u>Dichanthelium clandestinum</u>	<u>H</u>	<u>FACW</u>	14. <u> </u>	<u> </u>	<u> </u>
7. <u>Juncus effusus</u>	<u>H</u>	<u>FACW+</u>	15. <u> </u>	<u> </u>	<u> </u>
8. <u> </u>	<u> </u>	<u> </u>	16. <u> </u>	<u> </u>	<u> </u>

Percent of Dominant Species that are OBL, FACW, or FAC excluding FAC-). 7/7 = 100%

Remarks:

HYDROLOGY

<p>___ Recorded Data (Describe In Remarks): ___ Stream, Lake, or Tide Gauge ___ Aerial Photographs ___ Other</p> <p><u>X</u> No Recorded Data Available</p> <p>Field Observations:</p> <p>Depth of Surface Water: <u>0-3</u> (in.)</p> <p>Depth to Free Water in Pit: <u>0-1</u> (in.)</p> <p>Depth to Saturated Soil: <u>0</u> (in.)</p>	<p>Wetland Hydrology Indicators</p> <p>Primary Indicators: <u>X</u> Inundated <u>X</u> Saturated in Upper 12" <u>X</u> Water Marks ___ Drift Lines <u>X</u> Sediment Deposits <u>X</u> Drainage Patterns in Wetlands</p> <p>Secondary Indicators: <u>X</u> Oxidized Roots Channels in Upper 12" <u>X</u> Water-Stained Leaves ___ Local Soil Survey Data <u>X</u> FAC-Neutral Test ___ Other (Explain in Remarks)</p>
<p>Remarks:</p>	

SOILS

Map Unit Name

(Series and Phase): _____ Drainage Class: _____

Taxonomy (Subgroup): _____ Confirm Mapped Type? Yes ___ No ___

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-1	A	10YR2/1	10YR5/8	many/distinct	loam
2+	A	10YR5/2			loam

Hydric Soil Indicators:

- | | |
|---|---|
| <input type="checkbox"/> Histosol | <input type="checkbox"/> Concretions |
| <input type="checkbox"/> Histic Epipedon | <input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils |
| <input checked="" type="checkbox"/> Sulfidic Odor | <input type="checkbox"/> Organic Streaking in Sandy Soils |
| <input type="checkbox"/> Aquic Moisture Regime | <input type="checkbox"/> Listed On Local Hydric Soils List |
| <input checked="" type="checkbox"/> Reducing Conditions | <input type="checkbox"/> Listed on National Hydric Soils List |
| <input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors | <input type="checkbox"/> Other (Explain in Remarks) |

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampling Point	
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Within a Wetland?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soils Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Determination Manual)

Project / Site: <u>Asheville-Enka 115kV Line</u> Applicant / Owner: <u>Progress Energy Carolinas, Inc.</u> Investigator: <u>Rebekah Newton, Clement Riddle</u>	Date: <u>05/14/10</u> County: <u>Buncombe</u> State: <u>NC</u>
Do normal circumstances exist on the site? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Is the site significantly disturbed (Atypical situation)? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Is the area a potential problem area? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> (explain on reverse if needed)	Community ID: <u>WL</u> Transect ID: _____ Plot ID: <u>RN</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Acer rubrum</u>	<u>T</u>	<u>FAC</u>	9. <u>Impatiens capensis</u>	<u>H</u>	<u>FACW</u>
2. <u>Liriodendron tulipifera</u>	<u>T</u>	<u>FAC</u>	10. <u>Juncus effusus</u>	<u>H</u>	<u>FACW+</u>
3. <u>Platanus occidentalis</u>	<u>T</u>	<u>FACW-</u>	11. <u>Osmunda cinnamomea</u>	<u>H</u>	<u>FACW+</u>
4. <u>Alnus serrulata</u>	<u>S</u>	<u>FACW+</u>	12. _____	_____	_____
5. <u>Lindera benzoin</u>	<u>S</u>	<u>FACW</u>	13. _____	_____	_____
6. <u>Rosa multiflora</u>	<u>S</u>	<u>UPL</u>	14. _____	_____	_____
7. <u>Sambucus canadensis</u>	<u>S</u>	<u>FACW-</u>	15. _____	_____	_____
8. <u>Carex spp</u>	<u>H</u>	<u>>FACW</u>	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW, or FAC excluding FAC-). 10/11 = 91%

Remarks:

HYDROLOGY

<p>___ Recorded Data (Describe In Remarks):</p> <p style="margin-left: 20px;">___ Stream, Lake, or Tide Gauge</p> <p style="margin-left: 20px;">___ Aerial Photographs</p> <p style="margin-left: 20px;">___ Other</p> <p><u> x </u> No Recorded Data Available</p> <p>Field Observations:</p> <p style="margin-left: 40px;">Depth of Surface Water: <u> 0-5 </u> (in.)</p> <p style="margin-left: 40px;">Depth to Free Water in Pit: <u> 0-2 </u> (in.)</p> <p style="margin-left: 40px;">Depth to Saturated Soil: <u> 0 </u> (in.)</p>	<p>Wetland Hydrology Indicators</p> <p>Primary Indicators:</p> <p style="margin-left: 20px;"><u> x </u> Inundated</p> <p style="margin-left: 20px;"><u> x </u> Saturated in Upper 12"</p> <p style="margin-left: 20px;"><u> x </u> Water Marks</p> <p style="margin-left: 20px;">___ Drift Lines</p> <p style="margin-left: 20px;">___ Sediment Deposits</p> <p style="margin-left: 20px;"><u> x </u> Drainage Patterns in Wetlands</p> <p>Secondary Indicators:</p> <p style="margin-left: 20px;">___ Oxidized Roots Channels in Upper 12"</p> <p style="margin-left: 20px;"><u> x </u> Water-Stained Leaves</p> <p style="margin-left: 20px;">___ Local Soil Survey Data</p> <p style="margin-left: 20px;"><u> x </u> FAC-Neutral Test</p> <p style="margin-left: 20px;">___ Other (Explain in Remarks)</p>
<p>Remarks:</p>	

SOILS

Map Unit Name

(Series and Phase): _____ Drainage Class: _____

Taxonomy (Subgroup): _____ Confirm Mapped Type? Yes ___ No ___

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-12	A	10YR2/1			loam

Hydric Soil Indicators:

- | | |
|---|---|
| <input type="checkbox"/> Histosol | <input type="checkbox"/> Concretions |
| <input type="checkbox"/> Histic Epipedon | <input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils |
| <input checked="" type="checkbox"/> Sulfidic Odor | <input type="checkbox"/> Organic Streaking in Sandy Soils |
| <input type="checkbox"/> Aquic Moisture Regime | <input type="checkbox"/> Listed On Local Hydric Soils List |
| <input checked="" type="checkbox"/> Reducing Conditions | <input type="checkbox"/> Listed on National Hydric Soils List |
| <input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors | <input type="checkbox"/> Other (Explain in Remarks) |

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampling Point	
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Within a Wetland?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soils Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Determination Manual)

Project / Site: <u>Asheville-Enka 115kV Line</u> Applicant / Owner: <u>Progress Energy Carolinas, Inc.</u> Investigator: <u>Rebekah Newton, Clement Riddle</u>	Date: <u>05/14/10</u> County: <u>Buncombe</u> State: <u>NC</u>
Do normal circumstances exist on the site? Yes <u>X</u> No <u> </u> Is the site significantly disturbed (Atypical situation)? Yes <u> </u> No <u>X</u> Is the area a potential problem area? Yes <u> </u> No <u>X</u> (explain on reverse if needed)	Community ID: <u>WL</u> Transect ID: <u> </u> Plot ID: <u>RR</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Acer rubrum</u>	<u>T</u>	<u>FAC</u>	9. <u> </u>	<u> </u>	<u> </u>
2. <u>Toxicodendron radicans</u>	<u>V</u>	<u>FAC</u>	10. <u> </u>	<u> </u>	<u> </u>
3. <u>Rosa multiflora</u>	<u>S</u>	<u>UPL</u>	11. <u> </u>	<u> </u>	<u> </u>
4. <u>Ligustrum sinense</u>	<u>S</u>	<u>FAC</u>	12. <u> </u>	<u> </u>	<u> </u>
5. <u>Lindera benzoin</u>	<u>S</u>	<u>FACW</u>	13. <u> </u>	<u> </u>	<u> </u>
6. <u>Impatiens capensis</u>	<u>H</u>	<u>FACW</u>	14. <u> </u>	<u> </u>	<u> </u>
7. <u>Carex spp</u>	<u>H</u>	<u>>FACW</u>	15. <u> </u>	<u> </u>	<u> </u>
8. <u> </u>	<u> </u>	<u> </u>	16. <u> </u>	<u> </u>	<u> </u>

Percent of Dominant Species that are OBL, FACW, or FAC excluding FAC-). 6/7 = 86%

Remarks:

HYDROLOGY

<p>___ Recorded Data (Describe In Remarks): ___ Stream, Lake, or Tide Gauge ___ Aerial Photographs ___ Other</p> <p><u>X</u> No Recorded Data Available</p> <p>Field Observations:</p> <p>Depth of Surface Water: <u>0-1</u> (in.)</p> <p>Depth to Free Water in Pit: <u>0-2</u> (in.)</p> <p>Depth to Saturated Soil: <u>0</u> (in.)</p>	<p>Wetland Hydrology Indicators</p> <p>Primary Indicators: <u>X</u> Inundated <u>X</u> Saturated in Upper 12" <u>X</u> Water Marks ___ Drift Lines ___ Sediment Deposits <u>X</u> Drainage Patterns in Wetlands</p> <p>Secondary Indicators: ___ Oxidized Roots Channels in Upper 12" <u>X</u> Water-Stained Leaves ___ Local Soil Survey Data <u>X</u> FAC-Neutral Test ___ Other (Explain in Remarks)</p>
<p>Remarks:</p>	

SOILS

Map Unit Name

(Series and Phase): _____ Drainage Class: _____

Taxonomy (Subgroup): _____ Confirm Mapped Type? Yes ___ No ___

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-12	A	10YR2/1	10YR3/6	few/distinct	loam

Hydric Soil Indicators:

- | | |
|---|---|
| <input type="checkbox"/> Histosol | <input type="checkbox"/> Concretions |
| <input type="checkbox"/> Histic Epipedon | <input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils |
| <input checked="" type="checkbox"/> Sulfidic Odor | <input type="checkbox"/> Organic Streaking in Sandy Soils |
| <input type="checkbox"/> Aquic Moisture Regime | <input type="checkbox"/> Listed On Local Hydric Soils List |
| <input checked="" type="checkbox"/> Reducing Conditions | <input type="checkbox"/> Listed on National Hydric Soils List |
| <input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors | <input type="checkbox"/> Other (Explain in Remarks) |

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampling Point	
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Within a Wetland?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soils Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Determination Manual)

Project / Site: <u>Asheville-Enka 115kV Line</u> Applicant / Owner: <u>Progress Energy Carolinas, Inc.</u> Investigator: <u>Rebekah Newton, Clement Riddle</u>	Date: <u>05/14/10</u> County: <u>Buncombe</u> State: <u>NC</u>
Do normal circumstances exist on the site? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Is the site significantly disturbed (Atypical situation)? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Is the area a potential problem area? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> (explain on reverse if needed)	Community ID: <u>WL</u> Transect ID: _____ Plot ID: <u>RT</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator
1. <u>Acer rubrum</u>	<u>T</u>	<u>FAC</u>
2. <u>Liriodendron tulipifera</u>	<u>T</u>	<u>FAC</u>
3. <u>Rosa multiflora</u>	<u>S</u>	<u>UPL</u>
4. <u>Sambucus canadensis</u>	<u>S</u>	<u>FACW-</u>
5. <u>Lindera benzoin</u>	<u>S</u>	<u>FACW</u>
6. <u>Xanthorhiza simplicissima</u>	<u>S</u>	<u>FACW-</u>
7. <u>Carex spp</u>	<u>H</u>	<u>>FACW</u>
8. <u>Impatiens capensis</u>	<u>H</u>	<u>FACW</u>

Dominant Plant Species	Stratum	Indicator
9. <u>Eupatorium fistulosum</u>	<u>H</u>	<u>FAC+</u>
10. _____	_____	_____
11. _____	_____	_____
12. _____	_____	_____
13. _____	_____	_____
14. _____	_____	_____
15. _____	_____	_____
16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW, or FAC excluding FAC-). 8/9 = 89%

Remarks:

HYDROLOGY

<p>___ Recorded Data (Describe In Remarks): ___ Stream, Lake, or Tide Gauge ___ Aerial Photographs ___ Other</p> <p><u> x </u> No Recorded Data Available</p> <p>Field Observations:</p> <p>Depth of Surface Water: <u> 0-1 </u> (in.)</p> <p>Depth to Free Water in Pit: <u> 0-2 </u> (in.)</p> <p>Depth to Saturated Soil: <u> 0 </u> (in.)</p>	<p>Wetland Hydrology Indicators</p> <p>Primary Indicators:</p> <p><u> x </u> Inundated <u> x </u> Saturated in Upper 12" <u> x </u> Water Marks ___ Drift Lines ___ Sediment Deposits <u> x </u> Drainage Patterns in Wetlands</p> <p>Secondary Indicators:</p> <p>___ Oxidized Roots Channels in Upper 12" <u> x </u> Water-Stained Leaves ___ Local Soil Survey Data <u> x </u> FAC-Neutral Test ___ Other (Explain in Remarks)</p>
Remarks:	

SOILS

Map Unit Name

(Series and Phase): _____ Drainage Class: _____

Taxonomy (Subgroup): _____ Confirm Mapped Type? Yes ___ No ___

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-12	A	10YR2/1	10YR3/6	few/distinct	loam

Hydric Soil Indicators:

- | | |
|---|---|
| <input type="checkbox"/> Histosol | <input type="checkbox"/> Concretions |
| <input type="checkbox"/> Histic Epipedon | <input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils |
| <input checked="" type="checkbox"/> Sulfidic Odor | <input type="checkbox"/> Organic Streaking in Sandy Soils |
| <input type="checkbox"/> Aquic Moisture Regime | <input type="checkbox"/> Listed On Local Hydric Soils List |
| <input checked="" type="checkbox"/> Reducing Conditions | <input type="checkbox"/> Listed on National Hydric Soils List |
| <input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors | <input type="checkbox"/> Other (Explain in Remarks) |

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampling Point
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soils Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	

Remarks:

Appendix B
List of Observed Plant Species

Stratum	Scientific Name	Common Name
Canopy		
	<i>Acer rubrum</i>	red maple
	<i>Carya glabra</i>	pignut hickory
	<i>Carya tomentosa</i>	mockernut hickory
	<i>Fraxinus americana</i>	American ash
	<i>Juglans nigra</i>	black walnut
	<i>Liquidambar styraciflua</i>	sweetgum
	<i>Liriodendron tulipifera</i>	tulip poplar
	<i>Pinus echinata</i>	shortleaf pine
	<i>Pinus strobus</i>	white pine
	<i>Pinus virginiana</i>	Virginia pine
	<i>Platanus occidentalis</i>	American sycamore
	<i>Prunus serotina</i>	black cherry
	<i>Quercus alba</i>	white oak
	<i>Quercus coccinea</i>	scarlet oak
	<i>Quercus falcata</i>	Southern red oak
	<i>Quercus montana</i>	chestnut oak
	<i>Quercus rubra</i>	Northern red oak
	<i>Quercus velutina</i>	black oak
	<i>Salix nigra</i>	black willow
	<i>Tsuga canadensis</i>	Eastern hemlock
Understory		
	<i>Acer pensylvanicum</i>	striped maple
	<i>Acer rubrum</i>	red maple
	<i>Ailanthus altissima</i>	tree-of-heaven
	<i>Betula lenta</i>	sweet birch
	<i>Betula nigra</i>	river birch
	<i>Carpinus caroliniana</i>	ironwood
	<i>Carya tomentosa</i>	mockernut hickory
	<i>Cornus florida</i>	flowering dogwood
	<i>Diospyros virginiana</i>	persimmon
	<i>Fagus grandifolia</i>	American beech
	<i>Fraxinus americana</i>	American ash
	<i>Fraxinus pennsylvanica</i>	green ash
	<i>Halesia tetraptera</i> var. <i>tetraptera</i>	common silverbell
	<i>Ilex opaca</i>	American holly
	<i>Juglans nigra</i>	black walnut
	<i>Ligustrum sinense</i>	common privet
	<i>Liriodendron tulipifera</i>	tulip poplar
	<i>Morus rubra</i>	red mulberry

Stratum	Scientific Name	Common Name
Understory	<i>Nyssa biflora</i>	swamp gum
	<i>Nyssa sylvatica</i>	black gum
	<i>Oxydendrum arboreum</i>	sourwood
	<i>Pinus strobus</i>	white pine
	<i>Prunus serotina</i>	black cherry
	<i>Quercus rubra</i>	Northern red oak
	<i>Quercus velutina</i>	black oak
	<i>Robinia pseudo-acacia</i>	black locust
	<i>Salix nigra</i>	black willow
Shrub		
	<i>Acer pensylvanicum</i>	striped maple (young)
	<i>Alnus serrulata</i>	tag alder
	<i>Amelanchier arborea</i>	serviceberry
	<i>Amorpha fruticosa</i>	mountain indigo bush
	<i>Aralia spinosa</i>	devil's walking stick
	<i>Berberis canadensis</i>	American barberry
	<i>Castanea dentata</i>	American chestnut
	<i>Clethra acuminata</i>	mountain sweet pepperbush
	<i>Cornus amomum</i>	silky dogwood
	<i>Elaeagnus angustifolia</i>	Russian olive
	<i>Euonymus americanus</i>	hearts-a-bustin'
	<i>Fraxinus americana</i>	American ash (saplings)
	<i>Hamamelis virginiana</i> var. <i>virginiana</i>	witch hazel
	<i>Ilex decidua</i> var. <i>decidua</i>	possumhaw holly
	<i>Ilex opaca</i>	American holly
	<i>Itea virginica</i>	Virginia sweetspire
	<i>Kalmia carolina</i>	Southern sheepkill
	<i>Kalmia latifolia</i>	mountain laurel
	<i>Leucothoe fontanesiana</i>	mountain dog hobble
	<i>Ligustrum sinense</i>	common privet
	<i>Lindera benzoin</i>	spicebush
	<i>Mahonia bealei</i>	leatherleaf Mahonia
	<i>Morus rubra</i>	red mulberry
	<i>Physocarpus opulifolius</i>	common ninebark
	<i>Prunus serotina</i>	black cherry
	<i>Pyrularia pubera</i>	buffalo nut
	<i>Rhododendron calendulaceum</i>	flame azalea
	<i>Rhododendron maximum</i>	rosebay Rhododendron
	<i>Rhus glabra</i>	smooth sumac

Stratum	Scientific Name	Common Name
Shrub	<i>Rosa multiflora</i>	multiflora rose
	<i>Rubus flagellaris</i>	dewberry
	<i>Rubus phoenicolasius</i>	wineberry
	<i>Rubus</i> spp.	blackberry
	<i>Sambucus canadensis</i>	elderberry
	<i>Sassafras albidum</i>	sassafras
	<i>Vaccinium corymbosum</i>	highbush blueberry
	<i>Vaccinium pallidum</i>	lowbush blueberry
	<i>Viburnum dentatum</i>	arrowwood
	<i>Viburnum nudum</i>	possumhaw viburnum
	<i>Xanthorhiza simplicissima</i>	yellow root
Herb		
	<i>Achillea millefolium</i>	yarrow
	<i>Adiantum pedatum</i>	maidenhair fern
	<i>Agrimonia parviflora</i>	Southern agrimony
	<i>Ambrosia artemisiifolia</i>	ragweed
	<i>Anemonella thalictroides</i>	rue-anemone
	<i>Angelica venosa</i>	hairy Angelica
	<i>Antennaria plantaginifolia</i>	plantain pussy toes
	<i>Arisaema triphyllum</i>	Jack-in-the-pulpit
	<i>Asplenium platyneuron</i>	ebony spleenwort
	<i>Barbarea vulgaris</i>	common wintercress
	<i>Boehmeria cylindrica</i>	false nettle
	<i>Cardamine diphylla</i>	toothwort
	<i>Cardamine hirsuta</i>	hairy bittercress
	<i>Cerastium fontanum</i> ssp. <i>vulgare</i>	mouse-ear chickweed
	<i>Chimaphila maculata</i>	spotted wintergreen
	<i>Cicuta maculata</i>	water hemlock
	<i>Cimicifuga racemosa</i>	black cohosh
	<i>Commelina communis</i>	Asiatic dayflower
	<i>Conopholis americana</i>	squawroot
	<i>Cypripedium acaule</i>	pink lady's slipper
	<i>Dioscorea quaternata</i>	whorled wild yam
	<i>Dioscorea villosa</i>	wild yam
	<i>Diphasiastrum digitatum</i>	common running pine
	<i>Diphasiatrum digitatum</i>	common running pine
	<i>Epigaea repens</i>	trailing arbutus
	<i>Eupatorium fistulosum</i>	Joe-pye-weed
	<i>Eupatorium perfoliatum</i>	boneset

Stratum	Scientific Name	Common Name
Herb	<i>Fragaria virginiana</i>	wild strawberry
	<i>Galium aparine</i>	bedstraw
	<i>Galium circaezans</i> var. <i>circaezans</i>	bedstraw
	<i>Geranium maculatum</i>	wild geranium
	<i>Goodyera pubescens</i>	rattlesnake plantain
	<i>Heuchera americana</i>	American alumroot
	<i>Hexastylis arifolia</i>	arrowhead heartleaf
	<i>Hieracium venosum</i>	rattlesnake weed
	<i>Houstonia purpurea</i> var. <i>purpurea</i>	summer bluet
	<i>Huperzia lucidula</i>	shining clubmoss
	<i>Hylodesmum nudiflorum</i>	trick-trefoil
	<i>Hypericum</i> spp.	St. John's wort
	<i>Hypochaeris radicata</i>	spotted cat's-ear
	<i>Hypoxis hirsuta</i>	yellow stargrass
	<i>Impatiens capensis</i>	jewel weed
	<i>Ipomoea</i> spp.	morning glory
	<i>Iris cristata</i>	dwarf-crested Iris
	<i>Isotria verticillata</i>	large-whorled pogonia
	<i>Lespedeza cuneata</i>	sericea lespedeza
	<i>Leucanthemum vulgare</i>	ox-eye daisy
	<i>Lobelia cardinalis</i>	cardinal flower
	<i>Lobelia puberula</i>	downy lobelia
	<i>Maianthemum racemosum</i> ssp. <i>Racemosum</i>	false Solomon's seal
	<i>Medeola virginiana</i>	Indian cucumber root
	<i>Mitchella repens</i>	partridge berry
	<i>Myosotis scorpiodes</i>	water scorpion grass
	<i>Nuttallanthus canadensis</i>	toadflax
	<i>Osmorhiza claytonii</i>	sweet Cicely
	<i>Osmunda regalis</i> var. <i>spectabilis</i>	royal fern
	<i>Osmunda regalis</i> var. <i>spectabilis</i>	royal fern
	<i>Osmundastrum cinnamomeum</i>	cinnamon fern
	<i>Oxalis dillenii</i>	wood sorrel
	<i>Oxalis violacea</i>	violet wood sorrel
	<i>Packera aurea</i>	golden ragwort

Stratum	Scientific Name	Common Name
Herb	<i>Peltandra virginica</i>	green arrow-arum
	<i>Penstemon australis</i>	Southeastern beardtongue
	<i>Persicaria longiseta</i>	tufted knotweed
	<i>Persicaria sagittata</i>	tearthumb
	<i>Phytolacca americana</i>	poke weed
	<i>Plantago lanceolata</i>	English plantain
	<i>Podophyllum peltatum</i>	May-apple
	<i>Polystichum acrostichoides</i>	Christmas fern
	<i>Potentilla indica</i>	Indian strawberry
	<i>Pteridium aquilinum</i>	bracken fern
	<i>Pteridium aquilinum</i>	bracken fern
	<i>Ranunculus abortivus</i>	kidneyleaf buttercup
	<i>Ranunculus bulbosus</i>	bulbous buttercup
	<i>Reynoutria japonica</i>	Japanese knotweed
	<i>Rumex acetocella</i>	sourgrass
	<i>Rumex crispus</i> ssp. <i>crispus</i>	curly dock
	<i>Sagittaria latifolia</i>	arrowhead
	<i>Salvia lyrata</i>	lyre-leaf sage
	<i>Sanguinaria canadensis</i>	bloodroot
	<i>Sceptridium biternatum</i>	Southern grape fern
	<i>Sisyrinchium angustifolium</i>	stout blue-eyed grass
	<i>Solanum carolinense</i> var. <i>carolinense</i>	horse nettle
	<i>Solidago</i> spp.	goldenrod
	<i>Stellaria media</i>	chickweed
	<i>Taraxacum officinale</i>	common dandelion
	<i>Thelypteris noveboracensis</i>	New York fern
	<i>Tipularia discolor</i>	crane fly orchid
	<i>Toxi codendron radicans</i>	poison ivy
	<i>Trifolium dubium</i>	least hop clover
	<i>Trifolium dubium</i>	least hop clover
	<i>Trifolium pratense</i>	red clover
	<i>Trifolium repens</i>	white clover
	<i>Trillium</i> spp.	trillium (not in flower)
	<i>Triodanus perfoliata</i>	Venus' looking glass
	<i>Urtica chamaedryoides</i>	dwarf stinging nettle
	<i>Uvularia perfoliata</i>	perfoliate bellwort

Stratum	Scientific Name	Common Name
Herb	<i>Uvularia sessilifolia</i>	sessile-leaf bellwort
	<i>Valerianella radiata</i>	corn-salad
	<i>Verbasina alternifolia</i>	common wingstem
	<i>Vicia sativa</i> ssp. <i>Nigra</i>	narrowleaf vetch
	<i>Vicia tetrasperma</i>	slender vetch
	<i>Viola sororia</i>	common blue violet
	<i>Viola</i> spp.	violet
	<i>Woodwardia areolata</i>	netted chain fern
Vine	<i>Celastrus orbiculatus</i>	Oriental bittersweet
	<i>Clematis virginiana</i>	virgin's bower
	<i>Hedera helix</i>	English ivy
	<i>Lonicera japonica</i>	Japanese honeysuckle
	<i>Parthenocissus quinquefolia</i>	Virginia creeper
	<i>Smilax bona -nox</i>	greenbrier
	<i>Smilax glauca</i>	whiteleaf greenbrier
	<i>Smilax rotundifolia</i>	common greenbrier
	<i>Toxicodendron radicans</i>	poison ivy
	<i>Vitis labrusca</i>	fox grape
	<i>Vitis rotundifolia</i>	muscadine
	<i>Wisteria frutescens</i>	American wisteria
	<i>Wisteria sinensis</i>	Chinese Wisteria
Grass	<i>Andropogon virginicus</i> var. <i>virginicus</i>	broomsedge
	<i>Anthoxanthum odoratum</i>	sweet vernal grass
	<i>Arundinaria gigantea</i>	river cane
	<i>Bromus pubescens</i>	common Eastern brome
	<i>Carex crinita</i> var. <i>crinita</i>	fringed sedge
	<i>Carex intumescens</i>	greater bladder sedge
	<i>Carex lurida</i>	shallow sedge
	<i>Cyperus pseudovegetus</i>	green flatsedge
	<i>Dactylis glomerata</i>	orchard grass
	<i>Dichanthelium clandestinum</i>	deer-tongue witchgrass
	<i>Dichanthelium dichotomum</i>	forked witchgrass
	<i>Glyceria striata</i> var. <i>striata</i>	fowl manna grass
	<i>Juncus effusus</i>	common rush

Stratum	Scientific Name	Common Name
Grass	<i>Microstegium viminium</i>	Nepalese browntop
	<i>Miscanthus sinensis</i>	Chinese silvergrass

Appendix C

Explanation of Codes

EXPLANATION OF CODES FOR COUNTY AND QUAD STATUS LISTS

The county and quadrangle status lists provided by the NC Natural Heritage Program tally the elements of natural diversity (rare plants and animals, rare and exemplary natural communities, and special animal habitats) known to occur in all North Carolina counties and USGS 7.5-minute quadrangles. The information on which these lists is based comes from a variety of sources, including field surveys, museums, herbaria, scientific literature, and personal communications. These lists are dynamic, with new records continually being added and old records being revised as new information is received. As a result, a list cannot be considered a definitive record of the elements of natural diversity present in a given county or quad and should not be used as a substitute for field surveys.

STATE STATUS

CODE	STATUS	CODE	STATUS
E	Endangered	SR	Significantly Rare
T	Threatened	EX	Extirpated
SC	Special Concern	P_	Proposed (used only as a qualifier of the ranks above)
C	Candidate		

NOTE: the definitions of state statuses of plants and animals differ. Below are summaries of the statuses for each group.

Plant statuses are determined by the Plant Conservation Program (NC Department of Agriculture) and the Natural Heritage Program (NC Department of Environment and Natural Resources). Endangered, Threatened, and Special Concern species are protected by state law (Plant Protection and Conservation Act, 1979). Candidate and Significantly Rare designations indicate rarity and the need for population monitoring and conservation action. Note that plants can have a double status, e.g., E-SC, indicates that while the plant is endangered, it is collected or sold under regulation.

CODE	STATUS	DEFINITION
E	Endangered	"Any species or higher taxon of plant whose continued existence as a viable component of the State's flora is determined to be in jeopardy" (GS 19B 106: 202.12). (Endangered species may not be removed from the wild except when a permit is obtained for research, propagation, or rescue which will enhance the survival of the species.)
T	Threatened	"Any resident species of plant which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range" (GS 19B 106:202.12). (Regulations are the same as for Endangered species.)
SC	Special Concern	"Any species of plant in North Carolina which requires monitoring but which may be collected and sold under regulations adopted under the provisions of [the Plant Protection and Conservation Act]" (GS 19B 106:202.12). (Special Concern species which are not also listed as Endangered or Threatened may be collected from the wild and sold under specific regulations. Propagated material only of Special Concern species which are also listed as Endangered or Threatened may be traded or sold under specific regulations.)
C	Candidate	Species which are very rare in North Carolina, generally with 1-20 populations in the state, generally substantially reduced in numbers by habitat destruction (and sometimes also by direct exploitation or disease). These species are also either rare throughout their ranges (fewer than 100 populations total) or disjunct in North Carolina from a main range in a different part of the country or world. Also included are species which may have 20-50 populations in North Carolina, but fewer than 50 populations rangewide. These are species which have the preponderance of their distribution in North Carolina and whose fate depends largely on their conservation here. Also included are many species known to have once occurred in North Carolina but with no known extant occurrences in the state (historical or extirpated species); if these species are relocated in the state, they are likely to be listed as Endangered or Threatened. If present land use trends continue, candidate species are likely to merit listing as Endangered or Threatened.

SR	Significantly Rare	Species which are very rare in North Carolina, generally with 1-20 populations in the state, generally substantially reduced in numbers by habitat destruction (and sometimes also by direct exploitation or disease). These species are generally more common somewhere else in their ranges, occurring in North Carolina peripherally to their main ranges, mostly in habitats which are unusual in North Carolina. Also included are some species with 20-100 populations in North Carolina, if they also have only 50-100 populations rangewide and are declining.
-L	Limited	The range of the species is limited to North Carolina and adjacent states (endemic or near endemic). These are species which may have 20-50 populations in North Carolina, but fewer than 50 populations rangewide. The preponderance of their distribution is in North Carolina and their fate depends largely on conservation here. Also included are some species with 20-100 populations in North Carolina, if they also have only 50-100 populations rangewide and declining.
-T	Throughout	These species are rare throughout their ranges (fewer than 100 populations total)
-D	Disjunct	The species is disjunct to NC from a main range in a different part of the country or world.
-P	Peripheral	The species is at the periphery of its range in NC. These species are generally more common somewhere else in their ranges, occurring in North Carolina peripherally to their main ranges, mostly in habitats which are unusual in North Carolina.
-O	Other	The range of the species is sporadic or cannot be described by the other Significantly Rare categories
P_	Proposed	A species which has been formally proposed for listing as Endangered, Threatened, or Special Concern, but has not yet completed the legally mandated listing process.

Animal statuses are determined by the Wildlife Resources Commission and the Natural Heritage Program. Endangered, Threatened, and Special Concern species of mammals, birds, reptiles, amphibians, freshwater fishes, and freshwater and terrestrial mollusks have legal protection status in North Carolina (Wildlife Resources Commission). The Significantly Rare designation indicates rarity and the need for population monitoring and conservation action.

CODE	STATUS	DEFINITION
E	Endangered	"Any native or once-native species of wild animal whose continued existence as a viable component of the State's fauna is determined by the Wildlife Resources Commission to be in jeopardy or any species of wild animal determined to be an 'endangered species' pursuant to the Endangered Species Act." (Article 25 of Chapter 113 of the General Statutes; 1987).
T	Threatened	"Any native or once-native species of wild animal which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range, or one that is designated as a threatened species pursuant to the Endangered Species Act." (Article 25 of Chapter 113 of the General Statutes; 1987).
SC	Special Concern	"Any species of wild animal native or once-native to North Carolina which is determined by the Wildlife Resources Commission to require monitoring but which may be taken under regulations adopted under the provisions of this Article." (Article 25 of Chapter 113 of the General Statutes; 1987).
SR	Significantly Rare	Any species which has not been listed by the N.C. Wildlife Resources Commission as an Endangered, Threatened, or Special Concern species, but which exists in the state in small numbers and has been determined by the N.C. Natural Heritage Program to need monitoring. (This is a N.C. Natural Heritage Program designation.) Significantly Rare species include "peripheral" species, whereby North Carolina lies at the periphery of the species' range (such as Hermit Thrush). The designation also includes marine and estuarine fishes identified as "Vulnerable" by the N.C. State Museum of Biological Sciences (Ross et al., 1988, <u>Endangered, Threatened, and Rare Fauna of North Carolina. Part II. A Reevaluation of the Marine and Estuarine Fishes</u>).
EX	Extirpated	A species which is no longer believed to occur in the state.
P_	Proposed	Species has been proposed by a Scientific Council as a status (Endangered, Threatened, Special Concern, Watch List, or for De-listing) that is different from the current status, but the status has not yet been adopted by the Wildlife Resources Commission and by the General Assembly as law. In the lists of rare species in this book, these proposed statuses are listed in parentheses below the current status. Only those proposed statuses that are different from the current statuses are listed.

FEDERAL STATUS

These statuses are designated by the US Fish and Wildlife Service. Federally listed Endangered and Threatened species are protected under the provisions of the Endangered Species Act of 1973, as amended through the 100th Congress. Unless otherwise noted, definitions are taken from the *Federal Register*, Vol. 56, No. 225, November 21, 1991 (50 CFR Part 17).

CODE	STATUS	DEFINITION
E	Endangered	A taxon "in danger of extinction throughout all or a significant portion of its range."
T	Threatened	A taxon "likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range."
EXN	Endangered, nonessential experimental population.	The Endangered Species Act permits the reintroduction of endangered animals as "nonessential experimental" populations. Such populations, considered nonessential to the survival of the species, are managed with fewer restrictions than populations listed as endangered.
T(S/A)	Threatened due to Similarity of Appearance.	The Endangered Species Act authorizes the treatment of a species (subspecies or population segment) as threatened even though it is not otherwise listed as threatened if: (a) The species so closely resembles in appearance a threatened species that enforcement personnel would have substantial difficulty in differentiating between the listed and unlisted species; (b) the effect of this substantial difficulty is an additional threat to a threatened species; and (c) such treatment of an unlisted species will substantially facilitate the enforcement and further the policy of the Act. The American Alligator has this designation due to similarity of appearance to other rare crocodilians. The Bog Turtle (southern population) has this designation due to similarity of appearance to Bog Turtles in the threatened northern population.
C	Candidate.	A taxon under consideration for which there is sufficient information to support listing. This category was formerly designated as a Candidate 1 (C1) species.

FSC	Federal "Species of Concern"	(Also called "Species at Risk"). Formerly defined as a taxon under consideration for which there is insufficient information to support listing; formerly designated as a Candidate 2 (C2) species.
PE	Proposed Endangered	Species has been proposed for listing as endangered.
PD	Proposed De-listed	Species has been proposed for de-listing.

GLOBAL AND STATE RANKS

These ranks are determined by The Nature Conservancy's system of measuring rarity and threat status. "Global" refers to worldwide ranks and "State" to statewide ranks.

STATE RANK	DEFINITIONS
S1	Critically imperiled in North Carolina because of extreme rarity or otherwise very vulnerable to extirpation in the state.
S2	Imperiled in North Carolina because of rarity or otherwise vulnerable to extirpation in the state.
S3	Rare or uncommon in North Carolina.
S4	Apparently secure in North Carolina, with many occurrences.
S5	Demonstrably secure in North Carolina and essentially ineradicable under present conditions.
SA	Accidental or casual; one to several records for North Carolina, but the state is outside the normal range of the species.

SH	Historic record: the element is either extirpated from the county or quad, or there have not been any recent surveys to verify its continued existence.
SR	Reported from North Carolina, but without persuasive documentation for either accepting or rejecting the report.
SX	Believed to be extirpated from North Carolina.
SU	Possibly in peril in North Carolina, but status uncertain; more information is needed.
S?	Unranked, or rank uncertain.
S_B	Rank of breeding population in the state. Used for migratory species only.
S_N	Rank of non-breeding population in the state. Used for migratory species only.
SZ_	Population is not of significant conservation concern; applies to transitory, migratory species.
GLOBAL RANK	DEFINITIONS
G1	Critically imperiled globally because of extreme rarity or otherwise very vulnerable to extinction throughout its range.
G2	Imperiled globally because of rarity or otherwise vulnerable to extinction throughout its range.
G3	Either very rare and local throughout its range, or found locally in a restricted area.
G4	Apparently secure globally, although it may be quite rare in parts of its range (especially at the periphery).
G5	Demonstrably secure globally, although it may be quite rare in parts of its range (especially at the periphery).
GH	Of historical occurrence throughout its range.
GX	Believed to be extinct throughout its range.
GU	Possibly in peril, but status uncertain; more information is needed.

G?	Unranked, or rank uncertain.
G_Q	Of questionable taxonomic status.
G_T_	Status of subspecies or variety; the G-rank refers to the species as a whole, the T-rank to the subspecies.

ADDITIONAL DEFINITIONS

Elements within a county or quad are subdivided into "Current", "Historic", "Obscure" or "Potential" records.

Current record: the element has been observed in the county or quad recently. Historic record: the element is either extirpated from the county or quad, or there have not been any recent surveys to verify its continued existence. Obscure record: the date the element was last observed in the county or quad is uncertain. Potential record: the element has the potential to be found in the county or quad.