the Tillery Development during May 2000 (Table F-38). Visual surveys and additional searches indicated this species was rare at this location.

- **Alewife floater (*Anodonta implicata*)** - The alewife floater is listed as a state Threatened species in North Carolina. The NCWRC, NCDOT, and NCDWQ studies documented this species at the U.S. Highway 74 Bridge during February 2001 (Table F-39). The estimate of abundance of this species was not given for this location. LeGrand et al. (2001) reported the inhabitation range for this species was the Chowan, Meherrin, and lower Roanoke Rivers in northeastern North Carolina. Collection of this specimen represents a new record and range extension of the species based on this information.

- **Yellow lampmussel (*Lampsilis cariosa*)** - This species is listed as a state Endangered species in North Carolina. Three specimens were collected below the Mill Creek confluence during January and May 2001 by the NCWRC. Progress Energy also collected this species from the Pee Dee River in the Coastal Plain region of South Carolina during August 2001. The species has no state-listed status in South Carolina.

4.5 Botanical Resources

This section presents a characterization of the botanical resources within the Project area. This includes discussions on terrestrial as well as wetland communities and identifies significant natural communities as well as rare, threatened, or endangered species found or with the potential to be found in the Project area.

Progress Energy has performed surveys and reviewed records at the North Carolina Natural Heritage Program (NCNHP) to characterize these resources associated with the Project. Methodology for the surveys are included in Appendix D. Progress Energy is proposing to establish an RWG for terrestrial resources with stakeholders in the spring of 2003 to review these data together. The RWG will discuss and as appropriate, identify areas where additional surveys by Progress Energy may be required to address specific Project operational effects on botanical resources provided there is reasonable evidence of a Project impact.

General Description

- **Terrestrial Vegetation and Communities** - In general, the majority of the natural communities along the Yadkin-Pee Dee River shoreline in proximity to the Project consist of hardwood and pine woodland. These deciduous areas can range from dry to mesic hardwood forest to rather extensive piedmont bottomland forest (Schafale and Weakley 1990). Planted pine stands are also scattered throughout and adjacent to the shoreline areas.

  Representative tree species in these deciduous areas include red maple (*Acer rubrum*), boxelder (*A. negundo*), sycamore (*Platanus occidentalis*), sweetgum (*Liquidambar styraciflua*), white ash (*Fraxinus americana*), red oak (*Quercus rubra*), southern red oak (*Q. falcata*), willow oak (*Q. phellos*), white oak (*Q. alba*), and chestnut oak (*Q. montana*). Loblolly pine (*Pinus taeda*), Virginia pine (*P. virginiana*), shortleaf pine (*P. echinata*), and longleaf pine (*P. palustris*) are also scattered throughout this community (Bates 2002; EA 2000).

  Typical shrubs and vines include mountain laurel (*Kalmia latifolia*), deerberry (*Vaccinium stamineum*), dangleberry (*Gaylussacia frondosa*), common serviceberry (*Amelanchier arborea*), St. John's wort (*Hypericum hypericoides*), fetter-bush (*Leucothoe racemosa*), poison ivy (*Toxicodendron radicans*), Virginia creeper (*Parthenocissus quinquefolia*), greenbrier (*Smilax* spp.), and muscadine grape (*Vitis rotundifolia*) (Bates 2002; EA 2000).

  The representative and rather diverse herbaceous plant community typically consists of bottlebush grass (*Elymus hystrix*), poverty oatgrass (*Danthonia spicata*), tick trefoil (*Desmodium rotundifolium*), white avens (*Geum canadense*), perfoliate bellwort (*Uvularia perfoliata*), upright yellow woodsorrel (*Oxalis stricta*), woodland sunflower (*Helianthus divaricatus*), white wood aster (*Aster divaricatus*), whorled coreopsis (*Coreopsis verticillata*), halberd-leaved yellow violet (*Viola hastata*), black bugbane (*Cimicifuga racemosa*), Virginia dayflower (*Commelina virginica*), Carolina elephantfeet (*Elephantopus carolinianus*), downy rattlesnake-plantain (Goodyera pubescens), ebony spleenwort (*Asplenium platyneuron*), Christmas fern (*Polystichium acrosticoides*), and broom-sedge (*Andropogon virginicus*) (Bates 2002).

Larger stands of monotypic pine plantation are also found within some of the Progress Energy landholdings. Most of these areas are managed for timber production. The common pine species include loblolly and shortleaf pine. The relatively sparse understory, due to the closed canopy, typically consists of Japanese honeysuckle (*Lonicera japonica*), and poison ivy.

Terrestrial natural communities that are classified by the NCNHP and found within the project area include the following types.[6] A brief discussion of representative species for each comminuty is presented in below.

- Dry Oak-Hickory Forest - This common community is typically found on ridgetops, upper slopes, steep south-facing slopes, and other dry areas on acidic soils (Schafale and Weakley 1990). This community is found throughout the Piedmont and Coastal Plain areas of North Carolina. Representatives of this community are found on the east shoreline of Lake Tillery in association with the Morrow Mountain area, north of Tillery Dam, and along the slopes of the Little River north of Blewett Falls Lake.

  Species representative of the canopy include water oak, white oak, southern red oak, blackjack oak (*Q. marilandia*), red maple, sweet gum, and Virginia pine. Representative understory and shrub species include American hornbeam (*Carpinus caroliniana*), flowering dogwood, persimmon (*Diospyros virginiana*), American holly (*Ilex opaca*), sourwood (*Oxydendrum arboreum*), sparkleberry, and Virginia creeper. The typical herb species include ebony spleenwort, spotted wintergreen (*Chimaphila maculata*), rattlesnake hawkweed (*Hieracium venosum*), arrowleaf heartleaf (*Hexastylis arifolia*), northern oatgrass, and creeping bushclover (*Lespedeza repens*) (Bates 2002; Schafale and Weakley 1990).

- Dry-Mesic Oak-Hickory Forest - This community is typically located on mid slopes, low ridges, and flats on acidic soils (Schafale and Weakley 1990). A representative

[6] According to Schafale and Weakley (1990), a natural community is a distinct and reoccurring assemblage of populations of plants, animals, bacteria, and fungi naturally associated with each other and their physical environment. A natural community is characterized by vegetation composition and physiognomy, animal assemblages, topography, soils, hydrology, and other abiotic factors (Schafale and Weakley 1990).

community is found along the east shore of Lake Tillery on the slopes adjacent to the Rocky Creek arm.

The canopy of this community consists of chestnut oak (Q. montana), water oak, white oak, willow oak, bitternut hickory (*Carya cordiformis*), American beech (*Fagus grandifolia*), and shortleaf pine (*P. echinata*). The understory layer includes American hornbeam, black locust (*Robinia pseudoacacia*), American basswood (*Tilia americana*), flowering dogwood, spicebush (*Lindera benzoin*), bigleaf snowball *(Styrax grandifolius*), sparkleberry, Japanese honeysuckle, common greenbrier (*Smilax rotundifolia*), and poison ivy. Herbs typical of this community include ebony spleenwort, southern lady fern (*Athyrium asplenoides*), rattlesnake fern (Botrychium *virgianianum*), spotted wintergreen, plume grass (*Erianthus contortus*), may apple (*Podophyllum peltatum*), Christmas fern, false Soloman's Seal (*Smilacina racemosa*), and little sweet trillium (*Trillium cuneatum*) (Bates 2002).

– Basic Oak-Hickory Forest - This community is found on slopes, ridges, upland flats, and other dry areas associated with basic or circumneutral soils (Schafale and Weakley 1990). Locations of this community are scattered throughout the Piedmont. A representative of this community is found along the east shore of Lake Tillery near Morgan Mountain and Cedar Creek.

  The species found in this community are indicative of basic soils and include canopy and shrub species such as chalk maple (*Acer leucoderme*), downy serviceberry *(Amelanchier arborea*), Georgia hackberry (*Celtis tenuifolia*), eastern redbud (*Cercis canadensis*), flowering dogwood, American beech, smooth blackhaw (*Viburnum prunifolium*), painted buckeye (*Aesculus sylvatica*), and sweetshrub (*Calycanthus floridus*). Herbs include thick-pod white wild indigo (*Baptisia alba*), dwarf iris (*Iris verna*), downy false indigo (*Aureolaria virginica*), and bracken fern (*Pteridium aquilinum*) (Bates 2002).

– Piedmont Monadnock Forest - This community is found on monadnocks and dry ridges, generally over quartzite, ryolite or other highly resistant rock with very acidic

soils (Schafale and Weakley 1990). The canopy of this community is dominated by chestnut oak. Sparkleberry and dangleberry were the typical shrub species found in this community. The herb layer is sparse and consists of needle grass (*Stipa avenacea*) and bracken. This community is found in the area of Morrow Mountain State Park on Lake Tillery.

– Piedmont Mafic Cliff - This community consists of very steep to vertical slopes on rocky substrates, especially along stream and river bluffs (Schafale and Weakley 1990). A mafic rock outcrop is located at the Falls Hydroelectric Dam in Stanly County. Scattered canopy trees include post oak, sweet pignut hickory (*Carya glabra*), and chestnut oak. A rare shrub, Piedmont indigo-bush (*Amorpha schwerinii*) and a rare herb Yadkin River goldenrod (*Solidago plumosa*) were documented at this site located upstream of the project (Bates 2002).

– Pine Plantation - This community consists of managed pine plantation consisting of loblolly and shortleaf pine. Due to the pine density, the shrub and herb layer is typically sparse. Japanese honeysuckle and poison ivy can be common in certain locations. This community can be found along Lake Tillery and Blewett Falls Lake.

– Early Successional Communities - The early successional communities include existing maintained utility right-of-ways and recent timber harvesting areas. The existing utility corridors are maintained in an early successional stage ranging from herbaceous- to shrub-dominated habitats depending upon maintenance schedules and native vegetation.

Timber harvesting is common throughout the area and clearcutting is one of the dominant harvest techniques. Vegetation composition and structure associated with these areas gradually change over time through natural successional processes. Blackberries and raspberries (*Rubus* spp.) and herbaceous plants typically dominate these areas in the first few years following the harvest. Fast growing tree species such as cherries (*Prunus* spp.), sweetgum, red maple, and pines gradually shade the herb species and quickly dominate the clearcuts. These early successional habitats

generally remain thick and shrubby for up to 20 years following harvest unless they are replanted in the first few years.

– Agricultural Areas - Agricultural cover types along the Yadkin-Pee Dee River include cropland, pastures, hayfields, and fallow fields. The most common croplands include cotton, soybeans, and corn. Agricultural areas are common along the Pee Dee River between Lake Tillery and the upper reaches of Blewett Falls Lake.

■ **Wetland Vegetation and Communities** - Palustrine or freshwater wetlands are relatively common within and adjacent to the waterbodies associated with the Project area. The majority of the wetlands within the Project area are associated with islands and the surrounding shoreline floodplains of Blewett Falls Lake. The area known as the Grassy Islands are representative of these wetlands. These islands are found in the upper reaches of Blewett Falls Lake (see Figure 4-2). Emergent and scrub/shrub wetlands are also associated with several of the larger protected coves distributed in the upper portion of Blewett Falls Lake and Lake Tillery (CP&L 2001a). Wetlands are considered present when observations of vegetation, hydrology, and soil indicated that the current criteria for wetland jurisdictional determination was met (Environmental Laboratory 1987). Wetland natural communities that are classified by the North Carolina Natural Heritage Program and found within the project area include the following types. A brief discussion of typical species found in these communities is presented below.

– Piedmont Alluvial Forest - This seasonally or intermittently flooded forested wetland community is located along river and stream floodplains within the project area. Associated with this community, as well as the other bottomlands, are scattered ephemeral or vernal pool depressional areas. These pools are subject to seasonal fluctuation and provide important breeding areas for several amphibian species such as mole salamanders. Emergent hydrophytes such as lizard's-tail (*Saururus cernuus*), sedges (*Carex* spp.), and rare Coastal Plain species such as water purslane (*Didiplis diandra*) are found in this community.

In the Project area the typical canopy species include the sycamore, red maple, river birch, and willow oak. The understory species include red maple, spicebush, box elder (*Acer negundo*), ironwood, and American holly. Shrubs and vines include brook-side alder, swamp rose, common elderberry, southern arrowwood (*Viburnum dentatum*), poison ivy, and Virginia creeper. Representative herbs include cane, southern lady fern, rattlesnake fern, fringed sedge (*Carex crinita*), shallow sedge (*C. lurida*), Indian sea-oats (*Chasmanthium latifolium*), Virginia dayflower (*Commelina virginica*), spotted jewelweed (*Impatiens capensis*), fowl manna grass (*Glyceria striata*), Japanese grass (*Microstegium vimeneum*), early meadowrue (*Thalictrum dioicum*), green dragon (*Arisaema triphyllum*), and perfoliate bellwort (Bates 2002; Schafale and Weakley 1990). The invasive Chinese privet (*Ligustrum sinense*) and Japanese honeysuckle can be prevalent in several areas along the Yadkin-Pee Dee River.

– Piedmont Bottomland Forest - The bottomland forests consist of floodplain ridges and second and third terraces adjacent to the river channel or at least open water. The hydrology in this system is typically seasonally flooded (i.e., surface water present for extended periods at certain times of the year) to temporarily flooded. Although depending on the terrace location, semi-permanently and intermittently flooded areas are also found within this community. The bottomland hardwood community consists of a high quality wetland and mature forest community. This community is diverse in vegetative structure and species richness and is relatively undisturbed. Most of the bottomland forest areas are associated with the Grassy Islands and surrounding floodplains of Blewett Falls Lake. These islands and floodplains are found in the upper reaches of the impoundment and support some of the best remaining bottomland forests in the piedmont of North Carolina (Sorrie 2001). There are several areas where swamp chestnut oaks, willow oaks, and loblolly pines are estimated to be at least 150 to 200+ years old and have a diameter at breast height from three to four feet. This area is an area of relatively undisturbed Piedmont bottomland community, which has been classified as Rare (S3) in North Carolina (Schafale and Weakley 1990).

The vegetation associated with the bottomlands forests consist of a mature canopy of various trees such as sycamore, green ash (*Fraxinus pennsylvanica*), American elm

(*Ulmus americana*), red maple, lowland hackberry (*Celtis laevigata*), swamp chestnut oak, water oak, willow oak, loblolly pine, and cottonwood (*Populus deltoides*). These mature canopy trees were at least 80 to 100 years in age. In most of the bottomlands, the shrub and vine layer consisted of muscadine (*Vitis rotundifolia*), poison ivy, greenbrier, cross vine (*Bignonia capreolata*), black willow (*Salix nigra*), Chinese privet, and pawpaw. This shrub and vine layer varied in density depending on the local hydrologic conditions. The typical herb layer consisted of false nettle (*Boehmeria cylindrica*), Indian wild oats, fleabane species (*Erigeron* spp.), violet species (*Viola* spp.), sedge species (*Carex* spp.), giant cane, Pennsylvania smartweed (*Polygonum pensylvanicum*), and marshpepper smartweed (*P. hydropiper*). The herb layer can be nonexistent to quite dense depending on the duration of standing water and the extent of canopy closure.

In several areas, including some channel fringe and cove areas, dense, monotypic stands of southern wild rice or giant cutgrass (*Zizaniaopsis miliacea*) are evident. Black willow and crimson-eyed mallow (*Hibiscus moscheutos*) are also found in the higher portions of these coves. These large, permanently to semi-permanently flooded areas are found in the vicinity of Mountain Island Creek confluence and several large coves on the Anson County side of Blewett Falls Lake.

– Piedmont Levee Forest - This natural community is associated with natural levee and point bar deposits on large floodplains, especially within Blewett Falls Lake (Schafale and Weakley 1990). The community is typically bordered by the river channel and grades into and is closely associated with the bottomland hardwood community. The Grassy Islands associated with Blewett Falls Lake exhibit some of the best remaining levee communities in the piedmont of North Carolina (Sorrie 2001).

The canopy is dominated by a mixture of large trees including sycamore, river birch, sugarberry (*Celtis laevigata*), boxelder, sweetgum, American elm, and cottonwood (*Populus deltoides*). These mature canopy trees are typically at least 80 to 100 years in age. The shrub and vine layer consisted of muscadine, poison ivy, greenbriar, cross vine (*Bignonia capreolata*), black willow, spicebush, and pawpaw. This shrub and

vine layer varies in density depending on the local hydrologic conditions. The typical herb layer consists of false nettle (*Boehmeria cylindrica*), wild oats, fleabane species, violet species (*Viola* spp.), sedge species (*Carex* spp.), giant cane (*Arundinaria gigantea*), and smartweed species (*Polygonum* spp).

– Oxbow Lake - This natural community is associated with abandoned river channel meanders with permanent hydrology (Schafale and Weakley 1990). Within Blewett Falls Lake, this community is associated with an old oxbow/slough(s) of the Little River. These oxbows and sloughs are old historical channels believed to have formed as the Little River migrated north to its present location. A unique black gum (*Nyssa aquatica*) swamp community has been documented within the oxbow lake associated with Blewett Falls.

Sorrie (2001) and the North Carolina Natural Heritage Program believe that this specific Oxbow Lake community occurs nowhere else in the Piedmont region of North Carolina and is listed as being of Statewide Significance. This community, including several of the representative plant species, is usually found only in the Coastal Plain physiographic region. The community is located approximately 2,000 ft upstream of the confluence of the Pee Dee River and the old oxbow.

The identified gum swamp community is found on the first terrace adjacent to the oxbow open-water channel. This terrace is approximately one to two feet above the normal water level of the channel. Within this first terrace, and northeast to the man-made impoundment Smith Lake (at the headwaters of the swamp), the gum swamp can be found in a relatively discontinuous but locally dense band along the west side of the oxbow. The first terrace is bisected by a series of several parallel, meander sloughs that also are included within this community. These sloughs may be hydrologically connected to the main oxbow channel or they may be isolated by silt plugs (i.e., naturally occurring sediment blockages). Ephemeral or vernal pools are also common in this community.

Inundation frequency is influenced by the local climate including natural flooding from high rainfall events and daily/weekly operations of the Blewett and Tillery hydroelectric plants. The hydrology or water regime associated with this community is typically intermittently exposed to higher flows with semi-permanent inundation and permanent soil saturation.

The community is also characterized by the dominant presence of water tupelo (i.e., black gum), with some red maple (*Acer rubrum*) and water hickory (*Carya aquatica*) present. It is estimated that there are approximately 300 water tupelos within the Progress Energy landholdings. The majority of the trees are approximately 100+ years. However, the range is estimated at 10 to 250+ years of age. The most common herb species included lizard-tail, clearweed, inflated sedge (*Carex folliculata*), and pennywort (*Hydrocotyle verticillata*). Two State Rare and disjunct, Coastal Plain plant species have been found in this natural community including prickly hornwort (*Ceratophyllum echinatum*) and water purslane (Sorrie 2001).

– Other Wetland Communities - Several other wetland communities are found throughout the project area. One of the more common emergent wetlands, especially on Lake Tillery, includes those areas consisting of water willow (*Justicia americana*). The water willow beds found on Lake Tillery are the most frequently mapped habitat types on the lake (CP&L 2001a). These semi-permanently flooded areas can be found at the mouth of the Uwharrie River, the Cedar Creek complex, and the Richmond Creek confluence.

Submergent and aquatic bed wetlands can also be found throughout the project area, especially in protected coves. These permanently to semi-permanently flooded wetlands include aquatic species such as pondweed (*Potomogeton* spp.), muskgrass (*Chara* spp.), coontail (*Ceratophyllum* sp.), and brittle naiad (*Najas minor*).

Significant Natural Communities

Each natural area or community in North Carolina is assigned a significance level such as national, state, regional, or county (Sorrie 2001). There are several significant natural communities or natural communities of concern in the Project area. Nationally significant areas consist of outstanding ecological values and rank with the best of their kind within the U.S. Areas of statewide significance have high ecological value and are among the best in the state of North Carolina. Regionally significant areas are the best of their kind in a multi-county area. Areas of countywide significance generally contain common habitat types that are not especially exemplary (Sorrie 2001). Communities of significance in the Project area are located on figures located in Appendix G and include the following areas:

- **Badin Mafic Macrosite** - The Uwharrie River flows through the Uwharrie National Forest in the Badin area to the confluence with the Yadkin area. The dominant rock in this area is argillite, which is a metasedimentary rock (Bates 2001). However, interspersed with this formation are pockets of mafic volcanic, felsic volcanic and diabase. The neutral to basic soil pH found in the mafic and diabase formations supports several rare natural communities and plant species (Bates 2001). The sites in this complex are described below.

  - Falls Dam Slope - This State Significant, Montgomery County site is located on U.S. Forest Service (USFS) lands directly downstream of Badin Lake and Falls Dam on the Yadkin River. This area is located adjacent to the upper reaches of Lake Tillery. The site supports numerous rare plant populations and exemplary natural communities (Bates 2001). The site consists of Piedmont Monadnock Forest, Piedmont Heath Bluff, Basic Oak-Hickory Forest, and Piedmont Mafic Cliff (Bates 2001). The rare plant species found onsite include piedmont indigo-bush (*Amorpha schwerinii*), Carolina thistle (*Cirsium carolinanum*), littleleaf sneezeweed (*Helenium brevifolium*), Schweinitz's sunflower (*Helianthus schweinitzii*), and eastern agave (*Manfreda virginica*). A historic record of Yadkin River goldenrod was also documented at this site.

- Dutch John Creek Area - This Montgomery County site is listed as Regional Significant (Bates 2001). The site is located on USFS and private land and is approximately 6,000 ft downstream of the Falls Dam. This site consists of large unfragmented, Dry Oak-Hickory Forest and Piedmont Heath Bluff (Bates 2001). Several rare plants including Carolina thistle and piedmont indigo-bush have been documented within this site.

- Gold Mine Branch Longleaf Pine Forest - This State Significant site in Montgomery County occurs in a large block of USFS property (Bates 2001). The site supports a remnant Piedmont Longleaf Pine Forest that is uncommon within the county.

■ **Pee Dee River Megasite** - The Pee Dee River megasite comprises nearly the entire western boundary of Richmond County, from the Pee Dee National Wildlife Refuge down to the South Carolina border and a portion of Anson County (Sorrie 2001). Part of this megasite includes Blewett Falls Lake, with the remaining being free-flowing river. Overall, this statewide significant area contains some of the best remaining representatives of riverine communities on the North Carolina reach of the Pee Dee River (Sorrie 2001). Within this megasite are seven natural communities of significance. Five of which are within proximity to the Project.

- Lower Little River - This Richmond County site contains high quality bottomland hardwood forests along the Little River. This area supports the largest remaining bottomland on the Pee Dee River (Sorrie 2001). This regional significant area has been recognized as one of the 13 Significant Aquatic Biodiversity Areas in North Carolina (Sorrie 2001). This area, which is located between the Tillery Dam and Blewett Falls Lake supports the state's only population of mossy valvata snail (*Valvata sincera*) and one of the largest populations of southern nodding trillium (*Trillium rugelii*).

- Pee Dee River Grassy Islands/Oxbow Site - According to Sorrie (2001), this is the most important natural area within the piedmont of Richmond County and includes a mix of habitats found nowhere else in the piedmont (i.e., oxbow lake with water tupelo

or blackgum). This area supports a variety of floodplain and slope forests, extensive marshes, and an oxbow lake. The site also supports the largest expanse of levee forest and bottomland hardwood forest along the Pee Dee River (Sorrie 2001). Piedmont and coastal plain species are found together in this community. There are six state rare plant species also found in this area (Sorrie 2001).

– Pee Dee River Gabbro Slopes Significant Natural Heritage Area - This community is located east of the Pee Dee River in Rockingham County, just north of U.S. Highway 74 (i.e., downstream of Blewett Falls Lake). The area is approximately 102 acres in size and is owned in part by Progress Energy (EA 2000). This area is regionally significant and represents a quality climax mixed hardwood community that has developed over high-base soil and gabbro intrusion (EA 2000; Sorrie 2001). The slopes support areas of Basic Mesic Forest in rich soil. However, the majority of the site consists of drier forest such as Basic Oak-Hickory Forest (Sorrie 2001). This site is notable for its mixture of piedmont and coastal plain species, which are distinct many miles from their next known occurrence in North Carolina (Sorrie 2001). Several rare plants such as piedmont aster (*Aster mirablis*), Cumberland spurge (*Euphorbia mercurialina*), and glade milkvine (*Matelea decipiens*) are found in this community (Sorrie 2001).

– Hitchcock Creek/Pee Dee River Slopes - This Richmond County site occurs in part on a rare gabbro rock formation that yields relatively high pH soils and indicative communities such as the Mesic Basic Forest and the Basic Oak-Hickory Forest (Sorrie 2001). This site includes rocky slopes, a steep ravine, floodplain forest, and the Pee Dee River (Sorrie 2001). This site is only one of four significant communities that originates in the coastal plain and terminates in the piedmont. This regionally significant site supports four state-listed rare plant species and a number of other species rare in Richmond County including the piedmont aster, Cumberland spurge, and glade milkvine (Sorrie 2001).

Rare, Threatened and Endangered Species

Progress Energy has contacted the NCNHP and the USFWS concerning RTE plant species in the Project area. The majority of the listed plants are associated with the significant natural communities mentioned above. Figures showing locations of any known RTE plant species within the Project area are presented in Appendix G. Table 4-4 provides a summary of the 24 listed plants that have been documented or potentially occur in the project area.

TABLE 4-4
RARE, THREATENED, AND ENDANGERED PLANT SPECIES KNOWN TO OCCUR OR POTENTIALLY PRESENT WITHIN THE PROJECT AREA

Common Name (Species Name)	Status	Distribution	Habitat	Notes
Smooth Coneflower (*Echinacea laevigata*)	FE, NCE	Restricted to VA, NC, SC, GA. Six populations in NC	Open woods, cedar barrens, clearcuts, powerline corridors, roadsides, and dry basic soils	Potentially present due to available habitat in thePproject. Perennial blooms from May-July
Canby's Dropwort (*Oxypolis canbyi*)	FE,NCE	One population in NC	Coastal plain habitats of organic-rich wet meadows, wetland pine savannas, cypress ponds	Potentially (unlikely) present due to available habitat in the periphery of Project area. Perennial blooms from May-August
Rough-leaved Loosestrife (*Lysimachia asperulaefolia*)	FE,NCE	Coastal plain of NC and SC	Longleaf pine ecotones and pond pine pocosins. Seasonally saturated soils	Potentially present due to available habitat in the periphery of Project area. Perennial blooms from mid May-June
Schweinitz's Sunflower (*Helianthus schweinitzii*)	FE,NCE	Piedmont of NC and SC only	Prairie-like areas such as clearings, roadsides, and utility right-of-ways. Moist to dry clays and clay-loams	Documented in Stanly and Montgomery counties (Falls Dam Slope area). Perennial blooms from September to frost
Yadkin River Goldenrod (*Solidago plumosa*)	FSC, NCE	Stanly and Montgomery counties, NC	Open thin woods with sandy soils	Documented project area in Montgomery County- along shoreline of Lake Tillery and Morrow Mountain State Park. Blooms from July-October
Bog Spicebush (*Lindera subcoriacea*)	FSC, NCE	Southeastern U.S (NC to FL)	Swamp edges and moist pinelands, savannas, and bogs	Documented in Richmond and Montgomery counties. Historic record in Anson County. Peripheral of Project area. Blooms in March-June

TABLE 4-4 (Continued)

Common Name (Species Name)	Status	Distribution	Habitat	Notes
Piedmont Indigo-bush (*Amorpha schwerinii*)	FSC, NCSR-T	Piedmont of NC, GA, and AL	Rocky river bluffs, rock outcrops, and woods	Documented project area within Montgomery County near Lake Tillery Dam (Falls Dam Slope) and other locations along Lake Tillery
Butternut (*Juglans cinerea*)	FSC, NCWL	Canada south to Georgia and Arkansas	Rich bottomlands mostly in mountains	Potentially occurs in Project area
Riverbank Vervain (*Verbena riparia*)	FSC, SR-T	NC to FL and TX	Roadsides and riverbanks with sandy soils	Documented in Stanly County. Blooms June through September. Potentially occurs in Project area
Littleleaf Sneezeweed (*Helenium brevifolium*)	NCE	NC, FL, AL, and MS	Streambanks and bogs	Potentially occurring in Montgomery County. Historic record just below Falls Dam
Piedmont Aster (*Aster mirablis*)	NCSR-T	Piedmont of Carolinas, GA, FL and south LA	Wooded slopes and alluvial woods with basic or circumneutral soils	Documented in Stanly and Richmond counties. Found along shoreline of Blewett Falls Lake (Gabbro Slopes) and downstream of lake. Blooms in late summer
Cypress-knee Sedge (*Carex decomposita*)	NCSR-T	Southeastern U.S.	Marshes and swamp forests	Documented in Richmond County along tributaries to Pee Dee River
Carolina Thistle (*Cirsium carolinianum*)	NCSR-P	NC, SC, GA, TN, and KY	Roadsides and woodland openings. Requires sunlight for germination	Documented in Montgomery County within Uwharrie National Forest and adjacent to Lake Tillery
Cumberland Spurge (*Euphorbia mercurialina*)	NCSR-P	VA to FL	Open thin woods with sandy soils	Documented in Montgomery and Richmond counties along both Lake Tillery and Blewett Falls Lake. Blooms from April-September
Glade Milkvine (*Matelea decipiens*)	NCSR-P	Scattered locations in NC, SC and TN piedmont /coastal plain	Woodland margins and clearings	Documented in Richmond County along Pee Dee River south of Blewett Falls Dam
Thick-pod White Indigo (*Baptisia alba*)	NCSR-P	Piedmont Carolinas, VA, GA, FL, TN	Open woodlands and clearings	Documented in Stanly and Montgomery counties within Lake Tillery Project area (Basic Oak-hickory forest)

TABLE 4-4 (Continued)				
Common Name (Species Name)	**Status**	**Distribution**	**Habitat**	**Notes**
Heller's Rabbit Tobacco (*Gnaphalium helleri var helleri*)	NCSR-P	Eastern U.S. (piedmont), IN, AK, TX	Dry sandy woods over mafic rocks	Documented in Montgomery County. Historic record in Anson County. Blooms September - October
Dissected Toothwort (*Cardamine dissecta*)	NCSR-P	Carolinas, VA, FL, TN, KY	Rich woods and bottomlands	Documented in Anson and Montgomery counties (Lake Tillery alluvial forests).
Water Purslane (*Didiplis diandra*)	NCSR-P	Coastal plain NC, VA, GA, FL, and MS	Vernal and ephemeral pools, ponds within bottomlands	Documented in project area within Richmond County. Found in oxbow lake of Blewett Falls Lake (vernal pools)
Bluff Oak (*Quercus austrina*)	NCSR-P	NC, GA, FL, AL, MS	Rich soils along bluffs and bottomlands	Documented in Anson, Montgomery and Richmond counties. Located in bottomlands of Blewett Falls Lake
Pink Thoroughwort (*Eupatorium incarnatum*)	NCSR-P	Mountains, coastal plain, and piedmont of NC and SC. Also FL, and WV	Basic and circumneutral soils in deciduous woods and thickets	Documented in Richmond County. Located along Blewett Falls Lake
Huger's Carrion-Flower (*Smilax hugeri*)	NCSR-P	Coastal plain and piedmont of Carolinas. Also GA, FL, AL	Deciduous woods	Documented in Anson and Richmond counties (bottomlands of Blewett Falls Lake)
Eastern Agave (*Manfreda virginica*)	NCWL	Piedmont and mountains of SC and NC and other southeastern states	Upland woods usually near granite outcrops	Documented in Montgomery County along Lake Tillery (Basic Oak-Hickory Forest near Cedar Creek
Large Yellow Lady-slipper (*Cypripedium pubescens*)	NCWL	Mountains and piedmont of NC, SC and other southeastern states	Rich and moist wooded slopes	Documented in Montgomery County along Lake Tillery (Uwharrie River area)

Note: FE=Federal Endangered; FT=Federal Threatened; FSC=Federal Species of Concern; NCE=North Carolina Endangered; NCT=North Carolina Threatened; NCSC=North Carolina Species of Concern; NCR=North Carolina Significantly Rare; NCWL=North Carolina Watch List (LeGrand et al. 2001).

4.6 Wildlife Resources

This section presents a characterization of the wildlife resources within and adjacent to the Project. Progress Energy has performed surveys to characterize these resources. Methodologies for wildlife surveys have been included in Appendix D. Progress Energy is proposing to establish an RWG for terrestrial resources with stakeholders in the spring of 2003 to review these