Assessment and Mapping of Current And Historical Wetlands in a Portion of the Saluda-Reedy Watershed

Report prepared by
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Project Background, Objectives, and Methods

Statistics from the Environmental Protection Agency indicate that between 1986 and 1997 approximately 58,500 acres of wetlands were lost each year in the conterminous United States. This number was lower than for previous periods, due primarily to implementation and enforcement of wetland protection measures and elimination of some incentives for wetland drainage. Public education and outreach about the value and functions of wetlands, private land initiatives, coastal monitoring and protection programs, and wetland restoration and creation actions have also helped reduce overall wetland losses.

By the mid-1980's, South Carolina had lost approximately 1.75 million acres, or 27% of its estimated original wetlands acreage (Lily, 1993).

The study area watershed was located in Greenville County, South Carolina and encompassed approximately 69,295 acres (Figure 1). North Wind was tasked by the Saluda-Reedy Watershed Consortium with preparing Geographic Information System (GIS) spatial data map layers to document, based on available data, the extent and condition of current and historic wetlands in the study area watershed.

GIS DATA REVIEW

The following data were reviewed to assess their suitability and usefulness for determining wetland changes:

- The Soil Survey of Greenville County, South Carolina (Camp, 1975);
- 1994 National Wetlands Inventory (NWI) wetland locations;
- Topographic data;
- 2003 Greenville County waterbodies data;
- 1985 and 2000 land cover data produced by the Strom Thurmond Institute; and
- 1999 NAPP infrared aerial photography.

The Soil Survey of Greenville County, South Carolina (Camp, 1975), describes conditions in the county in 1972. The soil survey identified Wehadkee soils as the only soil in which 100% of the unit is hydric. These soils occur in poorly drained flood plains of streams and rivers. Cartecay and Toccoa Soils also occur along flood plains, but are typically better drained. Wehadkee inclusions make up approximately 10% of Cartecay and Toccoa Soils.

The NWI data identifies wetlands on a topographic quadrangle scale (1:24,000) using aerial photography from 1994.

The Greenville County waterbodies data included lakes, ponds, streams, rivers, and marshes greater than 2.5 acres. These data were gathered from 1997 and 2003 aerial photography.

The Strom Thurmond Institute land cover data identified wetlands based on a computerized model utilizing LandSat imagery at a pixel size of 30X30 meters.

USEFULNESS OF THE DATA

The data layers described above were overlaid on the 1999 NAPP infrared aerial photography. This allowed for comparison of extent and location of wetlands over time and indicators of wetlands (such as hydric soils) shown on the different sources.

The primary limitation of the data was the fact that existing historic data has not generally been converted to digital format (especially historic aerial photography). The

Soil Survey of Greenville County proved to be the only historic data that that was reliable based on ground-truthing and inspection of hard copy aerial photography contained within the soil survey.

The Soil Survey data was overlaid on the 1999 NAPP infrared aerial photography, and wetland loss was visually assessed. Some impounded areas were included as historic wetland where evidence existed that the underlying souls were hydric prior to impoundment. They were treated as such even though in some cases the impoundment or development occurred prior to the 1973 Soil Survey because it was apparent by examining truncated soil survey lines that the impounded areas had likely been wetland prior to dam construction.

Synthesis and Effect

EXTENT OF WETLANDS

Based on the data available for use in this study, wetland acreage in the study watershed area was reduced from 1,647 historic wetland acres to 1,479 acres in 1999. This represents a loss of 168 acres, or 10.2 percent. Within the Reedy River Falls watershed (which terminates in downtown Greenville and is a subwatershed of the main watershed studied in this report,) wetland acreage was reduced from 886 historic wetland acres to 792 acres in 1999. This represents a loss of 94 acres, or 10.6 percent. Below the Reedy River Falls watershed but still within the original study area watershed, wetland acres were reduced from 761 historic wetland acres to 687 acres in 1999. This represents a loss of 74 acres or 9.7 percent.

The major causes of wetland loss in the study area appeared to be impoundment and development, although stream incision may have resulted in some loss due to drainage (the areas where this was observed had been subsequently developed).

HISTORIC CONDITION OF WETLANDS

Because there has been no appreciable change in the conditions of wetlands within the study area during the time periods for which digital mapping data was available, the discussion here will briefly describe likely wetland conditions prior to European settlement. Since no data was found describing historic wetland conditions within the study area, the following is generalized for the piedmont of the southeast United States.

Due to the relatively steep topography and small stream and river channels, it is highly unlikely that wetlands have ever constituted a significant portion of the acreage within the study watershed.

Most wetlands within the study area can be classified as Piedmont/Low Mountain Alluvial Forest (Schafale and Weakley, 1990) or Piedmont Alluvial River and Swamp System (Wharton, 1975), although Wharton's descriptions better fit larger piedmont rivers. Typical overstory dominants in these community types include tulip poplar (*Liriodendron tulipifera),* sycamore (*Platanus occidentalis*), red maple (*Acer rubrum*), river birch (*Betula nigra*), American elm (*Ulmus americana*), green ash (*Fraxinus pennsylvanica*), water oak (*Quercus nigra*), and sugarberry (*Celtis laevigata*).

Typical understory species include boxelder (*Acer negundo*), red maple, pawpaw (*Asimina triloba*), and American hornbeam (*Carpinus caroliniana*). Dominant shrubs would include silky dogwood (*Cornus ammomum*), painted buckeye (*Aesculus sylvatica*), and alder (*Alnus serrulata*).

Vines would typically include poison –ivy (*Toxicodendron radicans*), Virginia creeper

(*Parthenocissus quinquefolia*), crossvine (*Bignonia capreolata*), grapes (*Vitis* spp.), moonseed (*Menispermum canadense*), and cat briar (*Smilax* spp.).

The herbaceous layer could be very diverse, with likely components including goldenrod (Solidago spp.), false-nettle (*Boehmeria cylindrica*), sedges (*Carex* spp.), and spikegrass (*Chasmanthium laxum*).

One other noteworthy historic wetland that would have historically occurred in the study area is the beaver pond/marsh. These communities occurred within floodplains upstream of beaver dams. These wetlands were dominated by shrubs along the fringes (primarily alder and silky dogwood), and a wide diversity of herbaceous plants nearer the pond (i.e. sedges, various grasses, pickerelweed (*Pontederia cordata*), tear thumb (*Polygonum sagittatum*) and a wide diversity of plants in the aster family.

Current wetlands are similar to likely historic conditions. Overstory dominants are generally the same, although many of the forested wetlands in the study area are apparently regularly logged.

Box elder seems to be very dominant in some of the more urban wetlands than was likely historically.

Introduced invasive species have become dominant in some wetlands within the study area. The shrub layer of many forested wetlands is now dominated by privet (*Ligustrum sinense*) in the drier portions. Japanese honeysuckle (*Lonicera japonica*) is the dominant vine/herb in many wetland/upland border areas. Nepal grass (*Microstegium vimineum*) has become the dominant herb in many areas.

Contact Information

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