Wetlands Inventory for the George Washington Memorial Parkway

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Wetlands Inventory for the George Washington Memorial Parkway

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Introduction

The U.S. Fish and Wildlife Service is the lead federal agency for mapping wetlands in the United States. The Service's National Wetlands Inventory Program (NWI) has been mapping wetlands since 1977 and to date, has completed maps for 90 percent of the coterminous United States and 35 percent of Alaska. Maps have been digitized for 45 percent of the lower 48 states and 16 percent of Alaska. In 1996, the NWI initiated an updated mapping project for the George Washington Memorial Parkway with funds from the National Park Service. The inventory was completed in 1998. This report summarizes the findings of this inventory project.

Study Area

The George Washington Memorial Parkway is located in Fairfax County, Virginia in the vicinity of Washington, D.C. It extends from Great Falls National Park along the Potomac River (just south of the Aqueduct Dam) to Mount Vernon. The Potomac River is tidal from its mouth at Chesapeake Bay to the "head-of-tides" in the vicinity of the Chain Bridge (Glenn 1988). The Memorial Parkway includes Theodore Roosevelt Island (between the Key Bridge and Memorial Bridge) and Dyke Marsh (between Belle View Boulevard and Alexandria Avenue). The Parkway is located on seven 1:24,000 U.S. Geological Survey topographic maps: Rockville, Seneca, Vienna, Falls Church, Washington West, Alexandria, and Mount Vernon. Figure 1 shows the general location of the Parkway in the Washington, D.C. area.

Figure 1. George Washington Memorial Parkway and vicinity locus map.

Methods

The NWI relies on conventional aerial photointerpretation techniques to identify, classify, and delineate wetlands. The original NWI maps produced for the study area were based on early 1980s 1:58,000 color infrared aerial photography. These maps were updated for this project through photointerpretation of 1994 1:40,000 color infrared aerial photography. With this imagery, a target minimum mapping unit of 1 acre was established. Smaller wetlands were also identified where they were conspicuous features (e.g., ponds). Wetlands were initially classified according to the Service's official wetlands classification system (Cowardin et al. 1979) which is the federal standard for reporting on wetland status and trends. Interpretation was reviewed by staff at the Service's National Wetlands Inventory Center for national consistency and quality assurance. Draft maps were produced and distributed to the National Park Service for review and comment. Field review of draft maps was performed from November 24-25, 1997. Final maps were published and the maps were digitized for geographic information system (GIS) processing. The digital wetland database was then used to produce summary statistics for this report. In addition, this database was expanded to include information on hydrogeomorphic features of wetlands (i.e., landscape position, landform, and water flow path) according to Tiner (2000) and information on potential wetland restoration sites.

Collateral data sources that aiding in the wetlands inventory included U.S. Geological Survey topographic maps and a Virginia Natural Heritage Program report on groundwater invertebrates (Hobson 1997). The latter was used to locate small seepage wetlands that were vital for rare invertebrates. These areas were mapped as dot-sized wetlands on the NWI maps.

To evaluate potential wetland restoration on the Parkway property, we assembled historic maps from the National Archives (College Park, MD). We digitized pertinent information to create a time series of wetland changes in the Washington, D.C. area. The data were used to show the location of former wetlands to aid in photointerpreting sites that today may be suitable for wetland restoration.

Results

Wetland Plant Communities

Although the purpose of this work was not to produce a description of the plant communities for the variety of wetlands on Parkway lands, we did collect some information for a few sites. These sites were palustrine wetlands. The results are summarized in Table 1 (see Table 3 for common names).

The largest wetland complex within the Parkway property is the Dyke Marsh in Alexandria. Several reports have been written about this marsh (Uhler 1963; Thomas 1974, 1976; Haug 1991; Xu 1991; Lindholm 1992; Van Alstine et al. 1992; Kelso et al. 1993; Virginia Department of Conservation and Recreation 1994). In particular, Thomas (1976) listed seven wetland communities: Nuphar Zone, Nuphar-Peltandra Mixture, Peltandra Zone, Acorus Zone, Typha Zone, Swamp Zone, and Flood Plain Zone. The first three zones represent Riverine tidal emergent wetlands (nonpersistent) regularly flooded. The remaining zones are palustrine wetlands. The Acorus and Typha Zones are palustrine emergent wetlands, wheres the Swamp and the Flood Plain Zones are palustrine forested wetlands (seasonally flooded-tidal and temporarily flooded-tidal, respectively). Table 2 summarizes the vegetation in six of these zones. Figures 2 and 3 show examples of wetland communities on Parkway lands.

Over 140 plant species have been observed in the Parkway's wetlands: 24 trees, 21 shrubs, 84 herbs, and 14 vines (Table 3). Nearly 80 species were observed during the two-day field trip in November.

Table 1. Examples of palustrine wetland plant communities within the George Washington Memorial Parkway (including Great Falls National Park). See Table 2 for Dyke Marsh examples.

Wetland Type (Mapping Code)	**Dominant Species**	**Associated Plants**
Palustrine Forested Wetland broad-leaved deciduous, seasonally flooded/saturated (PFO1E)	Acer rubrum	Common: Leucothoe racemosa, Vaccinium corymbosum, Cinna arundinacea, Boehmeria cylindrica, Nyssa sylvatica, Symplocarpus foetidus Less Common: Osmunda regalis, Osmunda cinnamomea, Rhododendron viscosum, Viburnum dentatum, Smilax rotundifolia, Lindera benzoin
	Fraxinus pennsylvanica/ Acer rubrum	Common: Lindera benzoin, Smilax rotundifolia, Impatiens capensis, Betula nigra, Platanus occidentalis Less Common: Quercus phellos, Lonicera japonica, Carpinus caroliniana, Leersia oryzoides, Vitis sp., Viburnum prunifolium
Palustrine Forested Wetland broad-leaved deciduous, seasonally flooded (PFO1C)	Liriodendron tulipifera	Common: Fraxinus pennsylvanica, Acer rubrum, Toxicodendron radicans, Carpinus caroliniana, Boehmeria cylindrica, Geum sp., Lindera benzoin, Carex sp., Lonicera japonica Less Common: Viburnum prunifolium, Rubus flagellaris, Osmunda cinnamomea, Viburnum dentatum, Dryopteris cristata, Ligustrum sp., Cinna arundinacea, Smilax rotundifolia, Osmunda regalis, Arisaema triphyllum, Solidago sp., Symplocarpus foetidus, Berberis thunbergii, Polystichum acrostichoides, Parthenocissus quinquefolia, Vitis sp., Ilex verticillata
Palustrine Forested Wetland broad-leaved deciduous, temporarily flooded (PFO1A)	Liriodendron tulipifera/ Fraxinus pennsylvanica/ Acer rubrum	Common: Lindera benzoin, Asimina triloba, Viburnum dentatum, Thelypteris novaboracensis Less Common: Dryopteris cristata, Platanus occidentalis, Smilax rotundifolia, Prunus serotina, Lonicera japonica, Toxicodendron radicans, Allium vineale, Ilex opaca
	Platanus occidentalis	Common: Fraxinus pennsylvanica, Lindera benzoin, Lonicera japonica Less Common: Ilex opaca, Ulmus sp., Smilax rotundifolia, Rosa multiflora
Palustrine Forested Wetland broad-leaved deciduous seasonally flooded-tidal (PFO1R)	Fraxinus pennsylvanica	Common: Cornus amomum, Acer negundo Less Common: Ulmus sp., Salix nigra, Sambucus canadensis, Toxicodendron radicans, Acer saccharinum, Viburnum dentatum, Lysimachia ciliata, Lonicera sp.

	Fraxinus pennsylvanica	Common: Polygonum punctatum, Cornus amomum, Boehmeria cylindrica, Rosa multiflora, Mikania scandens, Alnus serrulata, Carex sp., Liquidambar styraciflua Less Common: Bidens sp., Parthenocissus quinquefolia, Sambucus canadensis, Acer rubrum, Salix nigra, Platanus occidentalis, Juncus effusus, Vitis sp., Rosa palustris, Onoclea sensibilis
	Fraxinus pennsylvanica/ Liquidambar styraciflua	Common: Ilex verticillata, Boehmeria cylindrica, Toxicodendron radicans Less Common: Viburnum dentatum, Sambucus canadensis, Lonicera japonica, Aster sp., Polygonum arifolium, Viola sp., Osmunda regalis, Lycopus sp., Campsis radicans, Onoclea sensibilis, Rhododendron viscosum, Alnus serrulata, Smilax rotundifolia
	Acer rubrum/Salix nigra/ Fraxinus pennsylvanica	Common: Polygonum arifolium, Cinna arundinacea, Iris pseudacorus, Leersia oryzoides, Peltandra virginica Less Common: Taxodium distichum, Alisma sp., Hibiscus moscheutos, Cicuta maculata, Lonicera japonica, Bidens sp., Clematis sp., Solidago sp., Toxicodendron radicans, Chelone glabra, Aster vimineus, Elymus virginicus, Campsis radicans, Vitis sp.
Palustrine Forested Wetland broad-leaved deciduous, temporarily flooded-tidal (PFO1S)	Acer negundo/Acer saccharinum	Common: Lindera benzoin Less Common: Fraxinus pennsylvanica, unidentified shrub (incomplete listing)
Palustrine Emergent Wetland persistent, seasonally flooded, ditched (PEM1Cd)	Polygonum sagittatum	Less Common: Rubus sp., Bidens sp., Ampelopsis brevipedunculata
Palustrine Emergent Wetland persistent, seasonally flooded-tidal (PEM1R)	Typha angustifolia	Common: Phalaris arundinacea, Polygonum sagittatum Less Common: Scirpus fluviatilis, Polygonum sp., Iris pseudacorus, Bidens connata/laevis?, Hibiscus moscheutos, unidentified Asteracea, Solidago sp., Carex sp., unidentified grass, Aster simplex?, Taxodium distichum, Peltandra virginica, Liquidambar styraciflua, Salix nigra

Table 2. Wetland plant communities of Dyke Marsh based on observations of Thomas (1976). Wetland type is likely type according to Cowardin et al. (1979) with NWI map code.

Community (Wetland Type)	**Dominant Plants**	**Associated Species**
Nuphar Zone (Riverine emergent wetland, nonpersistent, regularly flooded; R1EM2N)	Nuphar luteum	Pontederia cordata
Peltandra Zone (Riverine emergent wetland, nonpersistent, regularly flooded; R1EM2N)	Peltandra virginica and Polygonum punctatum	Zizania aquatica, Amaranthus (Acnida) cannabinus, Echinochloa walterii, Cyperus erythrorhizos, Cyperus odoratus, Iris pseudacorus, Aneilema keisak, Polygonum arifolium, Polygonum sagittatum, Rorippa islandica, Vernonia sp., Bidens laevis
Acorus Zone (Palustrine emergent wetland, persistent, regularly flooded; PEM1R)	Acorus calamus	Leersia oryzoides, Scirpus pungens (americanus), Scirpus fluviatilis, Hibiscus moscheutos, Sagittaria latifolia, Helenium autumnale, Amaranthus (Acnida) cannabinus
Typha Zone (Palustrine emergent wetland, persistent, regularly flooded; PEM1R)	Typha angustifolia	Impatiens capensis, Rosa palustris, Cephalanthus occidentalis, Hibiscus moscheutos, Amaranthus (Acnida) cannabinus, Typha latifolia
Swamp Zone (Palustrine forested wetland, broad-leaved deciduous, seasonally flooded-tidal; PFO1R)	Fraxinus tomentosa, Fraxinus pennsylvanica, and Salix nigra	Lindera benzoin, Viburnum dentatum, Sambucus canadensis, Cornus amomum, Saururus cernuus, Chionanthus virginicus, Iris versicolor, Apios americana, Mikania scandens, Amorpha fruitcosa, Ilex verticillata, Viburnum nudum, Nyssa sylvatica, Gentiana sp.
Flood Plain Zone (Palustrine forested wetland, broad-leaved deciduous, temporarily flooded; PFO1A)	None listed	Lysimachia ciliata, Calystegia (Convolvulus) sepium, Cuscuta sp., Sicyos angulatus, Actinomeris alternifolia, Ampelopsis brevipedunculata, Ulmus americana, Morus alba, Populus deltoides, Liquidambar styraciflua, Lonicera japonica, Toxicodendron (Rhus) radicans, Prunus serotina, Viburnum recognitum, Quercus phellos, Sassafras albidum, Acer rubrum, Smilax rotundifolia, Acer saccharinum, Gleditsia triacanthos, Pinus virginiana, Campsis radicans, Vitis spp., Fagus grandifolia, Cornus stolonifera

Figure 2. Emergent wetlands dominated by spatterdock (Nuphar luteum) and narrow-leaved cattail (Typha angustifolia) in summer (a) and in winter (b).

Figure 3. Wetland along trail at Theodore Roosevelt Island.

Table 3. List of plants observed in wetlands of the George Washington Memorial Parkway. Plants are listed alphabetically by scientific name and arranged by life form (tree, shrub, herbaceous plant, or vine). Species marked by an asterisk (*) were observed by others. Plants reported in flood plain by Thomas (1976) may or not be associated with wetlands; these are designated by (F). Rare species were noted as (R); some may be extirpated (Van Alstine et al. 1992).

Life Form	**Scientific Name**	**Common Name**
Tree	Acer negundo	Box Elder
	Acer rubrum	Red Maple
	Acer saccharinum	Silver Maple
	Betula nigra	River Birch
	Carpinus carolinana	Ironwood
	Chionanthus virginicus*	Fringe Tree
	Fagus grandifolia*(F)	American Beech
	Fraxinus pennsylvanica	Green Ash
	Fraxinus tomentosa*	Pumpkin Ash
	Gleditsia triacanthos*(F)	Black Locust
	Ilex opaca	American Holly
	Liquidambar styraciflua	Sweet Gum
	Liriodendron tulipifera	Tulip or Yellow Poplar
	Morus alba*(F)	White Mulberry
	Nyssa sylvatica*	Black Gum
	Pinus virginiana* (F)	Virginia Pine
	Platanus occidentalis	Sycamore
	Populus deltoides*(F)	Eastern Cottonwood
	Prunus serotina	Black Cherry
	Quercus phellos	Willow Oak
	Salix nigra	Black Willow
	Taxodium distichum	Bald Cypress
	Ulmus americana	American Elm
	Ulmus rubra*	Slippery Elm
Shrub	Alnus serrulata	Smooth Alder
	Amorpha fruticosa*	False Indigo
	Asimina triloba	Pawpaw
	Berberis thunbergii	Japanese Barberry
	Cephalanthus occidentalis*	Buttonbush
	Cornus amomum	Silky Dogwood
	Cornus stolonifera*(R)	Red Osier Dogwood
	Ilex verticillata	Common Winterberry
	Leucothoe racemosa	Fetterbush
	Ligustrum sp.	Privet
	Lindera benzoin	Spicebush
	Rhododendron viscosum	Swamp Azalea
	Rosa multiflora	Multiflora Rose
	Rosa palustris	Swamp Rose
	Rubus sp.	Blackberry
	Sambucus canadensis	Common Elderberry
	Vaccinium corymbosum	Highbush Blueberry
	Viburnum dentatum	Southern Arrowwood

Table 3 (cont'd). List of plants observed in wetlands of the George Washington Memorial Parkway.

	Viburnum nudum*	Southern Wild Raisin
	Viburnum prunifolium	Black Haw
	Viburnum recognitum*(F)	Northern Arrowwood
Herb	Acorus calamus*	Sweet Flag
	Actinomeris alternifolia*(F)	Wingstem
	Alisma sp.	Water Plantain
	Allium vineale	Field Garlic
	Amaranthus cannabinus*	Water Hemp
	Aneilema keisak*	Asiatic Dayflower
	Arisaema triphyllum	Jack-in-the-Pulpit
	Asclepias incarnata*	Swamp Milkweed
	Aster simplex?	Panicled White Aster
	Aster sp.	Aster
	Aster vimineus	Small White Aster
	Bidens cernua*	Nodding Beggar-ticks
	Bidens connata?	Swamp Beggar-ticks
	Bidens laevis*	Bur-marigold
	Bidens sp.	Beggar-ticks
	Boehmeria cylindrica	False Nettle
	Cabomba caroliniana*(R)	Fanwort
	Calystegia sepium*	Hedge Bindweed
	Carex sp.	Sedge
	Carex crinita	Fringed Sedge
	Carex decomposita*(R)	Epiphytic Sedge
	Carex interior*(R)	Inland Sedge
	Carex lacustris*(R)	Lakebank Sedge
	Chelone glabra	Turtlehead
	Cicuta maculata	Water Hemlock
	Cinna arundinacea	Wood Reed
	Cyperus aristatus*(R)	Awned Flatsedge
	Cyperus erythrorhizos*	Red-root Flatsedge
	Cyperus odoratus*	Fragrant Flatsedge
	Dryopteris cristata	Crested Fern
	Echinochloa walterii*	Walter Millet
	Elymus virginicus	Virginia Rye Grass
	Eriocaulon parkerii*(R)	Parker’s Pipewort
	Gentiana sp.*	Gentian
	Geum allepicum*(R)	Yellow Avens
	Geum lacinatum*(R)	Rough Avens
	Geum sp.	Avens
	Helenium autumnale*	Sneezeweed
	Hibiscus moscheutos	Rose Mallow
	Impatiens capensis	Jewelweed
	Iris pseudacorus	Yellow Flag
	Iris versicolor*(R)	Blue Flag
	Juncus effusus	Soft Rush
	Leersia oryzoides	Rice Cutgrass
	Leersia virginica*	White Grass

Table 3 (cont’d). List of plants observed in wetlands of the George Washington Memorial Parkway.

	Lobelia cardenalis*	Cardinal Flower
	Lycopus sp.	Bugleweed
	Lysimachia ciliata	Fringed Loosestrife
	Hemianthus micranthemoides*(R)	Delaware River Mudflower
	Nuphar luteum*	Spatterdock
	Onoclea sensibilis	Sensitive Fern
	Osmunda cinnamomea	Cinnamon Fern
	Osmunda regalis	Royal Fern
	Peltandra virginica	Arrow Arum
	Phalaris arundinacea	Reed Canary Grass
	Phragmites australis*	Common Reed
	Plantago cordata*(R)	Heart-leaf Plantain
	Polygonum sp.	Smartweed
	Polygonum arifolium	Halberd-leaved Tearthumb
	Polygonum punctatum	Dotted Smartweed
	Polygonum sagittatum	Arrow-leaved Tearthumb
	Polytrichum acrostichoides	Christmas Fern
	Pontederia cordata*	Pickerelweed
	Potamogeton amplifolius*(R)	Large-leaf Pondweed
	Potamogeton robbinsii*(R)	Flat-leaf Pondweed
	Potamogeton zosteriformis*(R)	Flat-stem Pondweed
	Rorippa islandica*	Water Cress
	Rumex altissimus*(R)	Tall Dock
	Rumex sp.	Dock
	Sagittaria latifolia*	Broad-leaved Arrowhead
	Saururus cernuus*	Lizard's Tail
	Scirpus fluviatilis (R)	River Bulrush
	Scirpus pungens*	Common Three-square
	Solidago sp.	Goldenrod
	Sparganium americanum*	Eastern Bur-reed
	Spiranthes odorata*(R)	Fragrant Ladies'-tresses
	Symplocarpus foetidus	Skunk Cabbage
	Thalictrum polygamum*	Tall Meadow-rue
	Thelypteris novaboracensis	New York or Tapering Fern
	Typha angustifolia	Narrow-leaved Cattail
	Typha latifolia*	Broad-leaved Cattail
	Utricularia macrorhiza*(R)	Common Bladderwort
	Vernonia sp.*	Ironweed
	Viola sp.	Violet
	Xyris caroliniana*(R)	Carolina Yellow-eyed Grass
	Zizania aquatica*	Wild Rice
Vines	Ampelopsis brevipedunculata	Asiatic Pepper Vine
	Apios americana*	American Potato Bean
	Calystegia sepium*	Hedge Bindweed
	Campsis radicans	Trumpet Creeper
	Clematis sp.	Clematis
	Cuscuta gronovii	Dodder

Table 3 (cont'd). List of plants observed in wetlands of the George Washington Memorial Parkway.

	Lonicera japonica	Japanese Honeysuckle
	Mikania scandens	Climbing Hempweed

Parthenocissus quinquefolia	Virginia Creeper
Rubus flagellaris	Dewberry
Sicyos angulatus*(F)	Bur-cucumber
Smilax rotundifolia	Common Greenbrier
Toxicodendron radicans	Poison Ivy
Vitis sp.	Grape

Wetland Acreage Summary

NWI Types. Based on NWI mapping, the George Washington Memorial Parkway had approximately 431 acres of wetland, 237 acres of deepwater habitat, and 3,539 acres of upland. Wetlands, therefore, made up roughly 11 percent of the Parkway lands. The composition of the wetlands is discussed below. The 200+ acres of deepwater habitat were mostly riverine tidal waters (131.3 acres) which accounted for 55 percent of this habitat. The rest of the Parkway's deepwater habitats consisted of 74.2 acres of lacustrine waters and 32.0 acres of other river waters. Figure 4 shows wetlands in the Parkway and vicinity, classified according to NWI types.

An acreage summary of the major wetland types according to the U.S. Fish and Wildlife Service's classification system is given below. See Appendix for acreage summaries for more detailed classifications.

Wetland Type	Acreage
Palustrine Wetlands	
Emergent/Shrub-tidal	6.3
Emergent-nontidal	6.5
Emergent-tidal	130.3
Forested-tidal	159.0
Forested-nontidal	72.2
Shrub-tidal	2.9
Shrub-nontidal	0.3
Unconsolidated Bottom (pond)	2.6
Subtotal Palustrine	380.1
Riverine Wetlands	
Emergent-tidal	24.3
Unconsolidated Shore-tidal	18.2
Rocky Shore-nontidal	3.2
Subtotal Riverine	45.7
Lacustrine Wetlands	
Emergent-tidal	2.8
Rocky Shore-nontidal	2.1
Subtotal Lacustrine	4.9
GRAND TOTAL - ALL WETLANDS	**430.7**

Eighty percent of the Parkway’s wetlands are tidal wetlands, with forested wetlands and emergent wetlands in nearly equal amounts. These two types accounted for 92 percent of the tidal wetlands. Nontidal wetlands represented just 20 percent of the Parkway’s wetlands. Overall, forested wetlands predominated, making up about 54 percent of all the wetland acreage, while emergent wetlands comprise 38 percent.

Nonvegetated wetlands (including ponds) occupied only 26.1 acres. Seventy percent of these wetlands are tidal flats (riverine unconsolidated shores) along the Potomac River.

Figure 4. Distribution of wetlands in the George Washington Memorial Parkway and vicinity, mapped according to NWI types (Cowardin et al. 1979).

Hydrogeomorphic Types. The Parkway's wetlands were also classified by landscape position, landform and water flow path following Tiner (2000). Lentic wetlands are associated with lakes and reservoirs, lotic wetlands with rivers and streams, and terrene wetlands are isolated or headwater wetlands (sources of streams). The totals below are for vegetated wetlands, with ponds being reported separately.

Landscape Position	Landform (Water Flow Path)	Acreage
Lentic		
	Basin (Bidirectional-nontidal)	0.3
	Floodplain (Bidirectional-nontidal)	5.6
	Fringe (Bidirectional-tidal)	10.1
	--	------
	Subtotal	16.0
Lotic River		
Low Gradient		
	Floodplain (Throughflow)	24.5
	Fringe (Throughflow)	3.2
	Island (Throughflow)	0.3
	---	------
	Subtotal	28.0
Tidal Gradient		
	Floodplain	171.9
	Fringe	168.7
	--------------------------	--------
	Subtotal	340.6
Dammed Gradient	Floodplain	8.3
	Fringe	2.1
	Island	0.2
	-----------------	------
	Subtotal	10.6
Lotic Stream		
Low Gradient		
	Basin	8.7 (=headwater)
	Flat	16.8 (14.3 a.=headwater)
	----------------	--------
	Subtotal	25.5
Terrene		
	Basin (Isolated)	5.5
	Basin (Outflow)	1.0 (=headwater)
	Flat (Isolated)	1.0
	---------------------	-------
	Subtotal	7.5

The vegetated wetlands were mostly lotic wetlands associated with the Potomac River.   Fringe wetlands are likely to be important fish nursery grounds and waterfowl/waterbird feeding areas. Floodplain wetlands temporarily store water during high runoff periods (during and after heavy rains; after snowmelt from higher elevations in the Potomac River watershed in western Maryland, northern Virginia, and eastern West Virginia). Lotic stream wetlands store water from local runoff, with basin wetlands holding the water longer than flat wetlands. Terrene basins also store water from surrounding areas (very localized areas). Headwater wetlands include wetlands that are sources of streams as well as wetlands along first-order streams. They should be important for streamflow maintenance.   Figure 5 shows the locations of various wetland types classified by landscape position.

Only 2.6 acres of ponds were classified: 2.2 were isolated (terrene types) and 0.4 were throughflow (lotic types). The latter represent ponds created by impounding streams.

Figure 5. Distribution of wetland types of the George Washington Memorial Parkway and vicinity, classified by landscape position (Tiner 2000).

Historical Wetland Trends

To determine potential wetland restoration sites on the Parkway grounds, a cursory assessment of former wetlands in the Washington, D.C. area was performed by reviewing historic maps. Information from this analysis is shown in Figure 6. Many wetlands and shallow river bottoms have been filled since the mid-1800s. Note that three prominent Washington landmarks (the Lincoln Memorial, the Jefferson Memorial, and the White House) were built on former wetlands or river bottoms. The series of five maps presented as Figure 6 show general trends from 1863 through 1994. Due to differences in survey methods, the boundaries of designated wetlands should be considered approximate, especially for the years 1863 through 1924.

Figure 6. General trends in wetlands and Potomac River alterations in the Washington, D.C. area: a) 1863, b) 1885, c) 1915, d) 1924, and e) 1994. Data for the first four years came from historic maps on file at the National Archives.

Wetland Restoration Opportunities

Many wetlands and shallow river bottoms have been filled in the Washington, D.C. area in the past (Figure 6). Due to their current condition (e.g., permanent structures, including Ronald Reagan National Airport), opportunities for wetland restoration in the George Washington Memorial Parkway are extremely limited.

Only two Type 1 potential wetland restoration sites (former wetlands that may be restorable) were identified (Figure 7). These sites are now upland forests on Daingerfield Island, but according to historical maps they were once wetlands. The sites are 11 acres and 10 acres in size. Examination of soil beneath suspected fill at these sites is necessary to confirm their former wetland condition (presence of buried hydric soils). Four Type 2 potential wetland restoration sites were identified: three ditched sites (totaling 4.7 acres; Figure 7) and one impounded site (totaling only 0.7 acres; Figure 8). The ditched wetlands were palustrine emergent wetland (1.7 acres), palustrine deciduous scrub-shrub wetland (1.7 acres), and palustrine deciduous forested wetland (1.3 acres). If the hydrology is significantly altered due to the ditching, one might consider plugging the ditches to restore pre-disturbance hydrology. Restoration for the impounded wetland would require removing the dikes or at least breaching the dikes, so that they are more freely connected to local hydrology. An evaluation of the benefits of restoration at each of these sites must be done to determine whether such efforts would be worthwhile given changes in the surrounding areas (e.g., current fish and wildlife use vs. projected usage; potential for increased flood water storage, etc.).

Figure 7. Location of potential wetland restoration sites at Daingerfield Island. Base map is the U.S. Geological Survey topographic map for Alexandria.

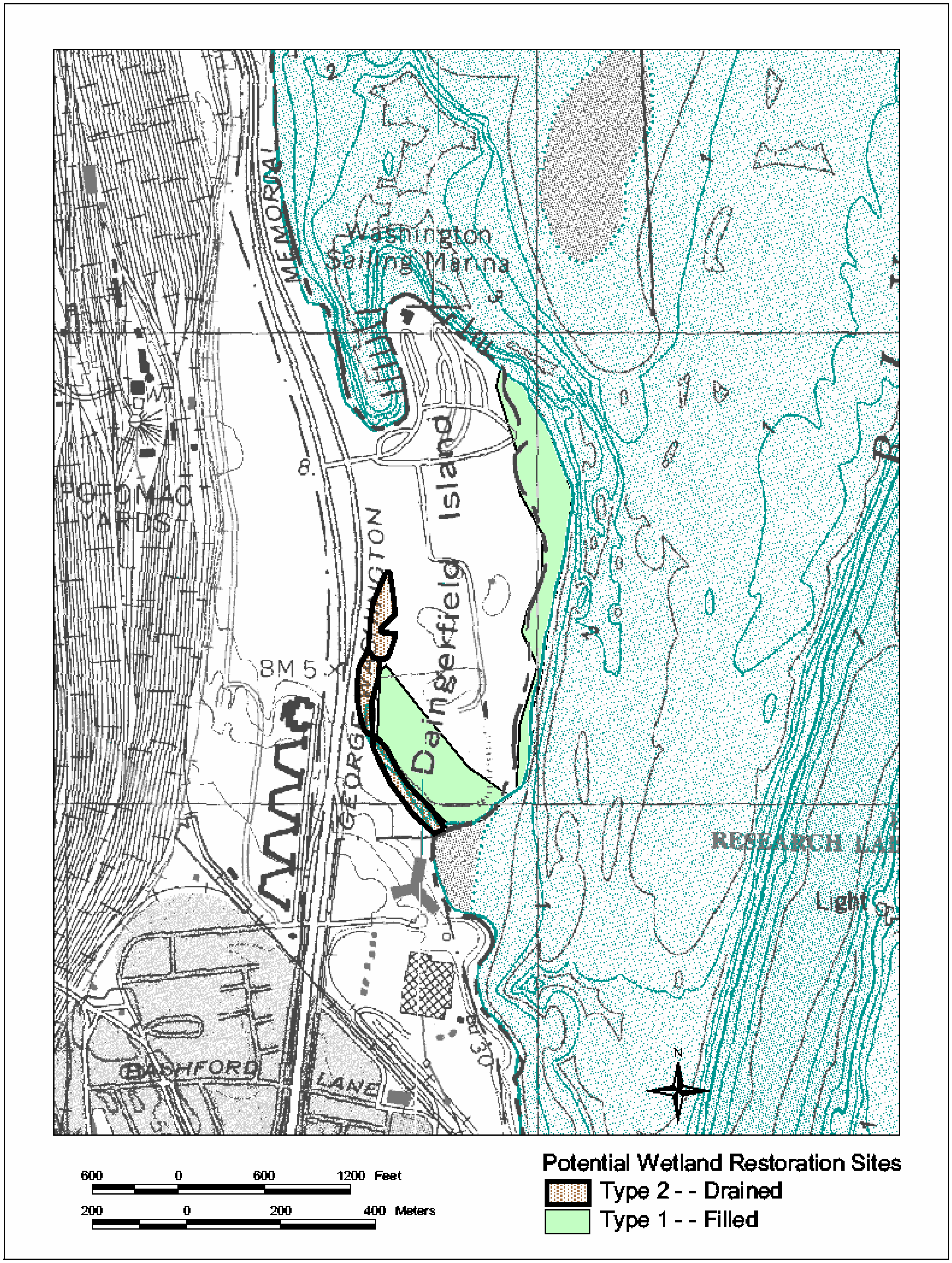
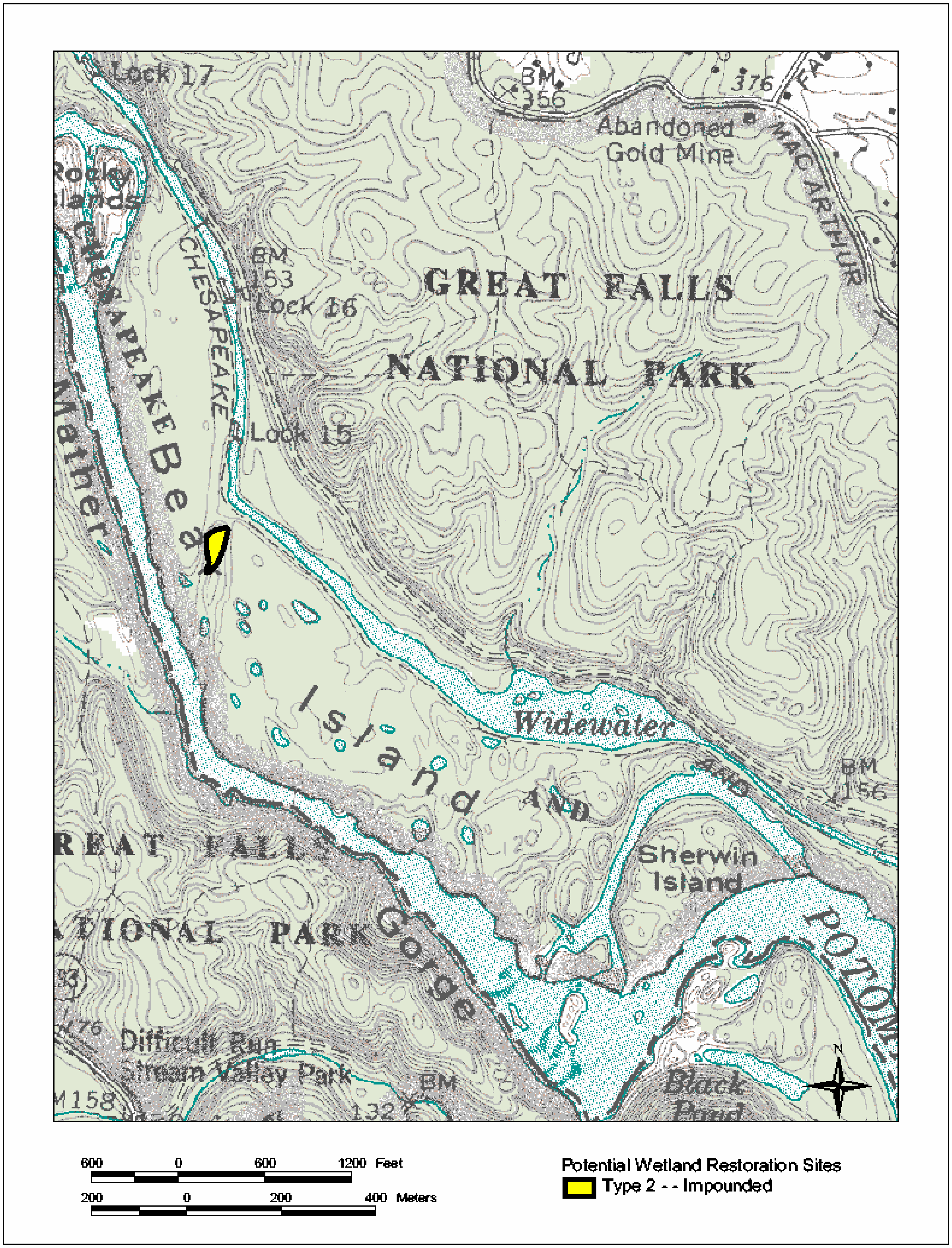


Figure 8. Location of impounded former wetland on Bear Island that may be suitable for restoration. Base map is the U.S. Geological Survey topographic map for Falls Church.

Acknowledgments



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