

**THE VASCULAR FLORA
OF LOCH RAVEN WATERSHED
BALTIMORE COUNTY, MARYLAND**



December 2004



Martin O'Malley, Mayor

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**The Vascular Flora
of Loch Raven Watershed,
Baltimore County, Maryland**

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**City of Baltimore
Department of Public Works
Bureau of Water and Wastewater
Environmental Services Division
Reservoir Natural Resources Section**

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INTRODUCTION

In 1980, as part of my Master of Science degree fulfillment at Towson State University (now Towson University), I completed a thesis entitled "The Vascular Flora of Loch Raven Watershed, Baltimore County, Maryland." Since that time, I have added sections on animal and disease impacts on vegetation; exotic vegetation; and agency-listed rare and/or protected species. I have updated the original checklist by adding newly-found species, adding submerged aquatic vegetation (SAV) species, annotating species which no longer occur within the watershed, and incorporating recent nomenclatural and/or taxonomic changes. I also have added an appendix of watershed photographs. The three City of Baltimore Reservoir Watersheds (Loch Raven, Prettyboy, and Liberty) have been reviewed regarding future forestry operations and public usage (Watershed Management Task Force 1992). A number of persons have suggested that a revision of this botanical study would be useful as an environmental baseline for Loch Raven Watershed.

The 2400 acre (971 hectare) reservoir and surrounding 5600 acre (2266 hectare) watershed known as Loch Raven is located in central Baltimore County, Maryland, approximately 7 miles (11 kilometers) north of the Baltimore (city)/Baltimore County boundary line. The reservoir, the watershed, and all rights to the surface waters of the surrounding Gunpowder Falls drainage are owned by the City of Baltimore. The term watershed is used here to refer to the City of Baltimore properties surrounding the three reservoirs, and does not reflect the much larger region-wide drainage. Loch Raven Watershed is in the lower Piedmont physiographic region and lies northwest of the Fall Line. Much of the water supply for the reservoir comes from the Gunpowder Falls, with lesser amounts from Western Run, Beaverdam Run, and a number of small springs and streams draining 303 square miles (785 square kilometers) primarily in Baltimore County (O'Bryan and McAvoy 1966).

Loch Raven Reservoir is a storage basin of high quality water for metropolitan Baltimore and surrounding suburbs. An average of 264 million gallons (999.2 million liters) of water per day flow into the reservoir which originally contained 23.7 billion gallons (89.7 billion liters) at crest (O'Bryan and McAvoy 1966). However due to sediment loading over the years, it is estimated that the current storage capacity of the reservoir is 19.1 billion gallons (72.3 billion liters) (Ortt et al. 2000). Surrounding forests, pine plantations, fields, turfs, and wetlands comprise the watershed.

The purpose of this study is to compile a list of the vascular plant species of Loch Raven Watershed, to analyze and present a picture of the plant communities, and to compare floristic affinities with areas to the north (N), south (S), east (E), west (W), and alien to North America (A).

Initial studies were conducted from 1973 through 1975. Additional studies were conducted in 1978 and 1979 and presented in a thesis, which was accepted (Redman 1980). Additional field work was conducted from the spring of 1995 into the summer of 2003 for this revision. During the initial survey, the watershed was divided into 33 study areas to simplify the tasks of collection and species compilation.

Subsequent trips into each study area allowed plants to be observed in various growth stages and additional species to be recorded for each area. Study areas were set off by such boundaries as roads, fire trails, power line rights of way, streams, and the reservoir shoreline. Study areas were not selected for homogeneity of vegetation type, and in fact, most areas contained several types.

A name was assigned to each watershed study area to simplify discussion of the distribution of the various species within the watershed. Study area names were derived from five sources: common usage by watershed visitors, usage in The Baltimore Trail Book (Mittenthal 1983), nearby communities, names of former landowners, and names of natural features. These study areas are mapped in Figure 2 and described in Table 1. Additional watershed locations are mapped in Figure 3. A series of black and white photographs of various parts of the watershed are included in the Appendix.

HISTORY OF THE WATERSHED

Prior to the development of the reservoir, the Gunpowder Valley contained many small communities, mills, and estates (Mittenthal 1983). Vestiges of these may still be seen in the forests of the watershed and along the shoreline during times of low water levels. The smaller of the two present dams across Gunpowder Falls was completed in 1881 and formed a 500 million gallon (1.9 billion liter) reservoir to supply water to the City of Baltimore. By 1922, a second dam was completed which increased reservoir capacity to 23.7 billion gallons (89.7 billion liters) (O'Bryan and McAvoy 1966).

A program of reforestation has been practiced in the watershed since it was acquired. The forestry maintenance program has included cutting and removal of aged and damaged timber, fire trail clearance, and planting of coniferous and deciduous tree species. Previous coniferous species utilized for reforestation included, in order of importance: *Pinus strobus* (eastern white pine), *P. sylvestris* (Scots pine), *P. taeda* (loblolly pine), *Picea abies* (Norway spruce), *Pinus resinosa* (red pine), *Picea glauca* (white spruce), and *Pseudotsuga menziesii* (Douglas fir) (Maslen 1991). The last two species have apparently died out in the watershed, and *Pinus sylvestris* (Scots pine) and *P. resinosa* (red pine) have been removed, except for a few scattered specimens, due to disease and insect damage. The hardwoods which have been utilized, in order of importance, are *Liriodendron tulipifera* (yellow poplar), *Robinia pseudoacacia* (black locust), *Quercus rubra* (northern red oak), *Acer saccharum* (sugar maple), *Fraxinus americana* (white ash), *F. pennsylvanica* (green ash), *Prunus serotina* (black cherry), *Carya ovata* (shagbark hickory), *Juglans nigra* (walnut), *Catalpa speciosa* (northern catalpa), and *Fagus grandifolia* (American beech) (Maslen 1991). Timber harvesting, as historically practiced at Loch Raven, leaves the root mass intact and preserves the soil integrity and the understory vegetation. This allows for a quick establishment of replacement trees. The species which have most recently been utilized for reforestation include *Pinus strobus* (eastern white pine), *Liriodendron tulipifera* (yellow poplar), *Fraxinus americana* (white ash), and *F. pennsylvanica* (green ash) (Maslen 1991).

Although the watershed lies in close proximity to four colleges and universities which have long used the watershed for biological field studies, little is mentioned in the literature concerning plant species which are known specifically from within the watershed boundaries. Reed has published a paper (1947) and a book (1953) on the ferns of the area. In one publication (1953), Reed suggested that a locality for *Dennstaedtia punctilobula* forma *nana*, a rare dwarf form of hayscented fern, and the only Maryland locality outside of Garrett County for *Lycopodium annotinum* (mountain club-moss) were extirpated by the creation of the reservoir. Additionally, Reed maps and/or reports (1947, 1953) *Dryopteris goldiana* (Goldie's wood fern), *Diplazium* (= *Athyrium*) *pyncocarpon* (narrow gladefern), *Botrychium matricariaefolium* (matricary grapefern), *Equisetum sylvaticum* var. *pauciramosum* forma *multiramosum* (wood horsetail), *Cheilanthes lanosa* (hairy lipfern), *Asplenium x ebenoides* (Scott's spleenwort), and *Woodwardia areolata* (net-veined chainfern) for the area, but all of these species are believed to no longer occur in the watershed. Shreve et al. (1910) includes a general geographic distribution of plants for the Piedmont region of Maryland, but he did not address the watershed specifically and he did not assign a list of plants to the watershed proper.

Considerable change has taken place in the past few years because of the rapidly developing suburban area surrounding the watershed. During the course of this study several areas have been altered by construction, resulting in the destruction of vegetation by clearing or filling, with the resultant impacts to several species which are or were rare in the watershed. Herbarium specimens were collected before this occurred, and such species are noted in the checklist as having been impacted by construction.

Historically, hunting has not been permitted at Loch Raven Watershed. For that reason, signs stating "WILDLIFE SANCTUARY/NO HUNTING/VISITORS WELCOME" may be found on trees bordering roads within the watershed. These signs were provided to the City by the Maryland Department of Natural Resources (MDNR) (Scarpulla 2003).

During the field studies, wildlife was found to be abundant within the watershed. Three surveys have been conducted relating to wildlife impacts on the watershed (Scarpulla 2003). The surveys involved an aerial infrared census of white-tailed deer (*Odocoileus virginianus*) populations by MDNR for the City of Baltimore Department of Public

Works during 1994, 1996, and 1999. The surveys have shown an increasing deer population in the watershed as well as high numbers of deer in central sections of the watershed. Based on observations during my study the deer population within the watershed is large, and there are areas where the understory vegetation is sparse or nonexistent due to deer browse. An excellent example of this may be seen on the peninsula east of Pine Ridge Golf Course, in the area of a former City tree nursery, where the understory vegetation is sparse due to browsing by the omnipresent deer population. The author has seen as many as 24 deer on the greens at the golf course at a given time and has made hundreds of sightings during this study. Canada geese (*Branta canadensis*) present a problem on the golf course greens adjacent to several reservoir coves by depositing droppings which interfere with strolling golfers. They do not appear to significantly damage native vegetation, but do cause some damage to planted turfs.

Several insects are known to have impacted the vegetation of the watershed. The most serious insect pests are the gypsy moth (*Lymantria dispar*) and the European pine shoot moth (*Rhyacionia buoliana*). The gypsy moth was introduced into the United States near Boston in 1869 by a merchant who hoped to use it as the basis for an American silk producing industry (Baker 1972). It now ranges throughout the New England states, the Mid-Atlantic states, Michigan, and Quebec, Canada (Liebhold et al. 1997). Although Loch Raven Watershed has many oaks and other deciduous species favored by the gypsy moth, little damage has occurred. A sister watershed, Prettyboy, has several areas of severe damage, primarily to *Quercus montana* (chestnut oak).

The European pine shoot moth (*Rhyacionia buoliana*) was introduced into the United States on Long Island, New York in 1914 and is now widely distributed in the northeastern states and southern Canada (Baker 1972). There were formerly several plantations of *Pinus sylvestris* (Scots pine) and *P. resinosa* (red pine) in the Dulaney Valley Road areas east of Dulaney Valley Road Bridge. The moth severely damaged these plantations and they have been removed except for a few scattered individuals.

Chestnut blight (*Cryphonectria parasitica*), white pine blister rust (*Cronartium rubicola*), and Dutch elm disease (*Ceratostemella ulmi*) are caused by the fungal organisms shown in parentheses. Chestnut blight, introduced into America from China in 1904, is the only plant pathogen known to have virtually eliminated its host (Hepting 1971). It has killed massive stands of *Castanea dentata* (American chestnut) throughout their range. The only remaining stands are root sprouts which continue to cycle in our eastern forests, a few heavily blighted specimens at high elevations in the southern Appalachians, and a few isolated planted orchards in the western United States. Evidence suggests that the oak-chestnut community has been replaced by an oak association complex (Stephenson 1974). However, within Loch Raven Watershed, *Liriodendron tulipifera* (yellow poplar) probably occupies some former oak-chestnut forest areas because of reforestation efforts. *Castanea pumila* (chinquapin) and *Quercus stellata* (post oak) are also impacted by this disease. *Castanea dentata* (American chestnut) sprouts are occasional in the forests of Loch Raven, but no specimens were noted in fruit. There are occasional *Quercus stellata* (post oak) at Loch Raven. *Castanea pumila* (chinquapin) are very rare within the watershed.

White pine blister rust, caused by the fungus *Cronartium rubicola*, is a serious disease in the northeastern U.S. (Castello et al. 1995). For this disease to seriously threaten *Pinus strobus* (eastern white pine), the shrubs gooseberry and currant (*Ribes* spp.) must be present within approximately 1000 feet (305 meters) of the pines, as they are alternate pathogen hosts (Hepting 1971). The disease also requires relatively long periods of cool, wet fall weather. Since neither of these conditions is true of Loch Raven Watershed, this disease does not present a serious threat.

There is no American tree with a wider natural range than *Ulmus americana* (American elm) which is native to the entire area east of the Great Plains except for the southernmost third of Florida (Hepting 1971). A number of virus diseases affect *U. americana* including Dutch elm disease. Many of the larger *U. americana* in the eastern and mid-western U.S. have been seriously weakened or killed outright by this disease. Although *U. americana* is occasional within the watershed, no large old specimens were noted. *Ulmus rubra* (slippery elm), a native species less susceptible to the disease, and *U. parvifolia* (Chinese elm), a non-native species resistant to the blight, also occur within Loch Raven Watershed. Where *U. americana* (American elm) and *U. rubra* (slippery elm) have been impacted by Dutch elm disease they are most commonly replaced by *Fraxinus americana* (white ash) (Castello et al. 1995).

Butternut canker disease is caused by the fungus *Sirococcus juglandacerum* (Anderson and LaMadaleine 1978). This disease causes massive cankering of branches and eventually death of the tree. The decimation of *Juglans cinerea* (butternut) populations has resulted in the U.S. Fish and Wildlife Service listing it as a "species of Federal concern". *Juglans cinerea* is rare in alluvial forests at Loch Raven and a few infected trees were noted during this study.

The fungus *Ceratocystis fagacearum* is the causal agent of the serious oak-wilt disease. This disease is most serious in the loss of *Quercus rubra* (northern red oak) and *Q. velutina* (black oak). Their loss is usually replaced, depending upon the ecosystem, by *Q. alba* (white oak), *Prunus serotina* (black cherry), and *Acer saccharum* (sugar maple) (Menges and Loucks 1984). This disease is most serious in the northeastern states north of central Pennsylvania and New Jersey. Within the Loch Raven Watershed, there are a few small areas which appear to be impacted by this disease. Most notable, there are a few *Q. rubra* (northern red oak) in decline or dead near the north end of the Warren Road Bridge.

Ash yellows, a bacterial disease of *Fraxinus americana* (white ash), results in decline and/or mortality in young ash in old fields, but diminishes as the trees approach maturity (Matteoni and Sinclair 1985). If there is any effect on sapling plantation stands which have replaced diseased pines, it was not noted during this study.

Beech bark disease, caused by an interaction between a scale insect (*Cryptococcus fagisuga*), and a fungus (*Nectria coccinea*), had produced serious impacts, primarily within the same areas impacted by oak-wilt disease (Castello 1995). No *Fagus grandifolia* (American beech) were noted as declining or dead during the course of this study.

There are hundreds of other insects and plant diseases present within the watershed. Most of these are of minor consequence to the overall health of the vegetation within the watershed. However, an accurate assessment of their impacts was not within the scope of this study.

A recent concern within the reservoir involves the zebra mussel (*Dreissena polymorpha*) and possible impacts to the water supply system. The closest documented populations of this European species are known from the Susquehanna River near Binghamton, New York, approximately 190 miles (306 kilometers) from Loch Raven; the Monongahela River near Hildebrand, West Virginia, approximately 170 miles (274 kilometers) from Loch Raven; Dutch Springs Quarry near Bethlehem, Pennsylvania, approximately 120 miles (193 kilometers) from Loch Raven; and Millbrook Quarry near Haymarket, Virginia, approximately 75 miles (120 kilometers) from Loch Raven (Scarpulla 2003). This concern is being closely monitored by the Department of Public Works and a zebra mussel control facility has been constructed near the large dam.

Among the most serious threats to the watershed are the impacts from runoff, pollution, acid rain, erosion, etc. which are the result of development and human population.

Although the primary function of the watershed is to supply a source of abundant, high quality water to Baltimore and the surrounding counties, there are secondary benefits from the watershed. The general public has been given the privilege to hike, fish, picnic, mountain bike, and use small boats within the watershed. Building fires, ice skating, swimming, hunting, sailboats, inflatable or collapsible boats, and the use of gasoline-powered motors are prohibited (City of Baltimore 2000). Available facilities include the Loch Raven Fishing Center, the Loch Raven Skeet and Trap Center, Pine Ridge Golf Course, an overlook at the large dam, and the Baltimore County Police Pistol Range (off-limits to the general public). The North Central Railroad Trail (hereafter referred to as the North Central Trail) is located at the north end of the watershed. It is a part of Gunpowder Falls State Park. This linear strip of land, averaging 33.5 feet (10.2 meters) in width, is not watershed property, but is a state park hiking/biking trail. It was formerly an unused private railroad right-of-way (Maryland and Pennsylvania Railroad). This strip of land was included in this study because the area is small, bisects the watershed, and blends naturally into the watershed.

CLIMATE

Loch Raven Watershed lies in a mid-latitude, temperate climatic zone with four distinct seasons. Mean temperatures range from 78.5°F (25.8°C) in July to 36.6°F (2.6°C) in January. The average yearly temperature is 55.5°F (13.1°C) degrees, with an average daily range of 16.1°F (8.9°C). The watershed receives an average of 41.31 inches (104.93 centimeters) of precipitation per year with the lowest monthly average of 2.95 inches (7.49 centimeters) in December and the highest monthly average of 4.38 inches (11.13 centimeters) in August (Vokes and Edwards, 1974). These reports are from the Custom House in Baltimore, the nearest weather station. Winds have affected the watershed during infrequent severe storms, a few of which have uprooted or severely damaged individual large trees or local stands of trees, particularly *Pinus strobus* (eastern white pine).

The watershed receives ample moisture and warmth to allow lush vegetation to grow during the frost-free months. Droughts occur occasionally, but when they do, the humus-rich soil and the large storage capacity of the reservoir serves as a reserve to carry the vegetation through the dry period. In rare times of flooding, the abundant vegetation protects the watershed by holding the soil in place and reducing erosion. It has been estimated that the present rate of siltation from surrounding lands will give Loch Raven Reservoir a useful life in excess of 1000 years (O'Bryan and McAvoy 1966). However, this is only an estimate and may be considered highly speculative at best. Rapid changes brought about by urbanization could substantially shorten the useful life of Loch Raven Reservoir.

GEOLOGY AND SOILS

Loch Raven Watershed sits on three geologic formations and borders a fourth. Figure 1 maps these geologic formations. The watershed also contains a small area of unconsolidated Coastal Plain sediments. The largest formation in the watershed is the Cockeysville Marble Formation which underlays slightly more than 50% of the study area (Vokes and Edwards, 1974). It consists of a re-crystallized limestone which drains readily and weathers to form small valleys and level areas. Cockeysville Marble has been used in the construction of buildings and structures such as the Washington Monument in downtown Baltimore. The white and gray-colored marble weathers to yield reddish-brown to orange-colored soils. The soils are circumneutral, high in calcium content and range from loams to silt-loams in texture in the surface horizon. This formation occurs in twenty of the study areas including south of the small dam, in the mid section between the Loch Raven Drive Bridge and the Dulaney Valley Road Bridge, from the northern part of the Merryman's Woods area to Warren Road, and north of Paper Mill Road to the northern boundary of the watershed.

The second largest formation is composed of Loch Raven Schist which underlays about 48% of the watershed (Vokes and Edwards, 1974). This rock type is composed of feldspars, chlorites, muscovites, and biotites. Wherever this formation outcrops, a dark gray mottled rock with shiny micaceous surfaces will be noted. Schist is used to produce commercial flagstone. Upon weathering, this rock type yields a dark brown acid soil which is typically loamy in texture and contains large amounts of mica. Loch Raven Schist is highly resistant to weathering and occupies the highest elevations in the watershed. This formation occurs in twelve of the study areas located from the Dulaney Valley Road Bridge to the large dam, and on both sides of the reservoir from the Dulaney Valley Road Bridge north to the power line right of way through the watershed.

Textures of soils vary widely throughout the watershed. The finest-textured soils are silts derived from the Cockeysville Marble Formation, but away from outcrop areas the soils tend to be silt-loams or sandy loams. Soils derived from schistose and gneiss formations are commonly loamy, but near outcrops they may be somewhat gravelly. The heaviest-textured soils are the gravelly soils found along reservoir banks abutting the Cockeysville Marble Formation. Reservoir bank soils have a wide range of textures from silty-clay to stony-gravel. Texture influences the presence of a given plant species only when it creates a drainage situation unfavorable to that species. Field observations suggest that the pH of a given soil combined with slope drainage and the amount of sunlight is far more important than the soil texture in determining the presence or absence of a given plant species.

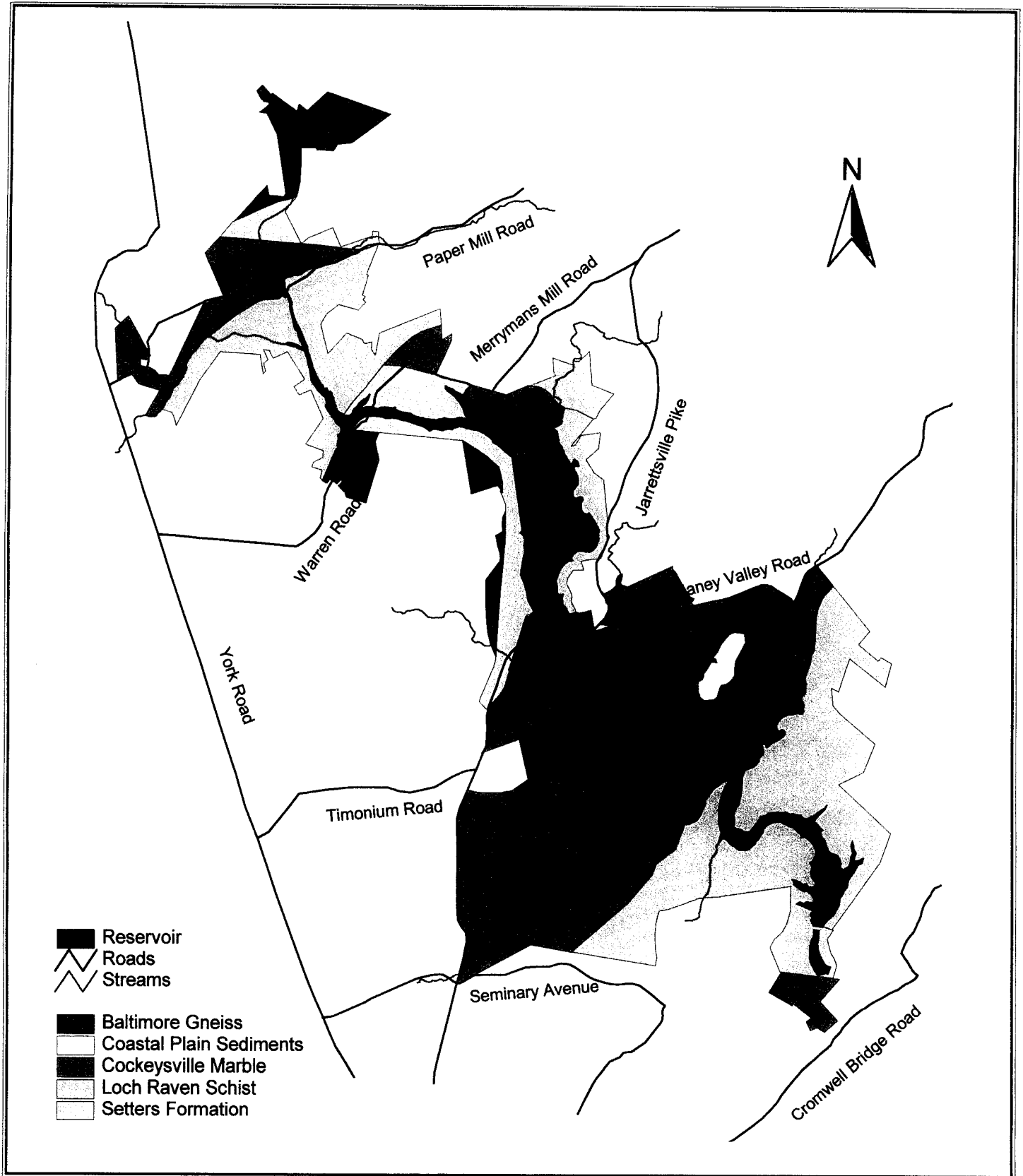


Figure 1. Geology of Loch Raven Watershed, Baltimore County, Maryland. Adapted from geologic map of Baltimore County and Baltimore City (Maryland Geologic Survey 1976) and geologic map of Maryland (Maryland Geologic Survey 1968).

HABITATS

Loch Raven Watershed is located in the vegetational zone known as the oak-hickory-pine forest (Vokes and Edwards, 1974). The present watershed vegetation resembles the original forest association in only a few small areas, and has been greatly altered by man. In fact, *Pinus* spp. (pines) have been planted where deciduous trees naturally occurred and deciduous trees have been planted where *Pinus* spp. naturally occurred (Maslen 1991). Planting of both native and alien conifer species, the extirpation (except sprouts) of the once common *Castanea dentata* (American chestnut) by chestnut blight disease, and the spreading of alien plant species by man and by natural elements such as birds and wind, have left a major imprint on the original landscape within the watershed.

Many habitats and stages of plant succession occur in the watershed, ranging from scattered herbs on recently disturbed soils to old *Quercus* spp. (oaks) and *Liriodendron tulipifera* (yellow poplar) in small stands of 100 year-old forests. Some of these old forests resemble the original forests, except for the absence of *Castanea dentata* (American chestnut).

Open areas are scattered throughout the watershed and are usually on disturbed soils. Characteristic growth in these areas is best referred to as "weedy". The seeds of many herbs can lie deep in the soil for years and will germinate when exposed to sunlight by soil disturbance. Typical species on disturbed soils in the watershed include *Plantago rugellii* (Rugel's plantain), *Artemisia vulgaris* (mugwort), *Polygonum* spp. (smartweeds), *Carex* spp. (sedges), *Aster pilosus* (white heath aster), *Pilea pumila* (clearweed), and many grass species. It was interesting to note that when the pool between the large and small dams was drained for construction purposes during 1973, a large number of weedy herbs germinated and grew to maturity in the drying mud of the pool bottom. From the density of vegetation that occurred, it was evident that many of the seeds were under water for considerable lengths of time before germinating. Plants found growing in the dry pool bottom in abundance included *Solidago juncea* (early goldenrod), *Mimulus ringens* (square-stemmed monkey flower), *Helianthus decapetalus* (thin-leaved sunflower), *Aster pilosus* (white heath aster), *A. lateriflorus* (calico aster), *A. puniceus* (swamp aster), *Bidens* spp. (beggar's-ticks), *Juncus tenuis* (pathrush), *Artemisia vulgaris* (mugwort), *Ambrosia artemisiifolia* (common ragweed), *Impatiens capensis* (spotted touch-me-not), *Carex* spp. (sedges), *Cyperus* spp. (sedges), and many grass species. Areas which are disturbed for construction are frequently planted or seeded to control erosion. Species used for erosion control include *Festuca* sp. (fescue), *Coronilla varia* (crown vetch.), and *Lolium* spp. (rye grasses). The majority of plants which are rare in open areas are mostly recently introduced non-native species and horticultural escapes.

Trails trampled by man and animals (e.g. deer) have compacted soils which can damage plant roots. These open compacted soils are often colonized by plants which out-compete other plants under compacted soil conditions. Along sunny trails, *Juncus tenuis* (pathrush) is often abundant. Other species which occur along paths, fire trails, in power line rights of way, and old logging roads include: *Elephantopus carolinianus* (elephant's foot), *Leucanthemum vulgare* (ox-eye daisy), *Viola sororia* (common blue violet), *Plantago lanceolata* (English plantain), *Rudbeckia hirta* (black-eyed Susan), *Cichorium intybus* (chicory), *Lepedeza cuneata* (bush clover), *Parthenocissus quinquefolia* (Virginia creeper), and a number of grass species. One non-native grass species which occurs along shaded trails, *Microstegium vimineum* (stilt grass), is the most abundant herbaceous species in the watershed. No species are rare in this habitat.

Fields and meadows are dominated by herbaceous vegetation, but scattered trees and shrubs may also occur. Meadows are moist, usually low-lying fields. The plant species which populate fields include: *Solidago canadensis* var. *scabra* (tall goldenrod), *S. juncea* (early goldenrod), *S. nemoralis* (gray-stemmed goldenrod), *S. rugosa* (wrinkle-leaf goldenrod), *Hypericum punctatum* (spotted St. John's-wort), *H. perforatum* (common St. John's-wort), *Euphorbia corollata* (flowering spurge), *Lonicera japonica* (Japanese honeysuckle), *Apocynum* spp. (dogbanes), *Rumex* spp. (docks), *Daucus carota* (Queen Anne's lace), *Rudbeckia hirta* (black-eyed Susan), *Erigeron annuus* (daisy fleabane), *Conyza canadensis* (horseweed), *Cirsium arvense* (field thistle), *Asclepias syriaca* (common milkweed), *Ambrosia artemisiifolia* (common ragweed), *Plantago lanceolata* (English plantain), *P. rugellii* (Rugel's plantain), *Gnaphalium obtusifolium* (cudweed), *Aster pilosus* (white heath aster), *A. lateriflorus* (calico aster), *Barbarea vulgaris* (yellow rocket), *Toxicodendron radicans* (poison-ivy), *Rosa multiflora* (multiflora rose), and many grass species. Meadows contain some of the same species as fields, but with additional moisture the following species often occur: *Vernonia*

noveboracensis (New York ironweed), *Eupatorium fistulosum* (hollow Joe-pye-weed), *E. purpureum* (sweet Joe-pye-weed), *Sambucus canadensis* (elderberry), *Carex* spp. (sedges), *Cyperus* spp. (sedges), *Podophyllum peltatum* (mayapple), and various grass species. *Eupatorium coelestinum* (mistflower), a meadow species, is rare in the watershed.

Where two habitats meet, particularly where a field meets a woodland, a transitional flora occurs. This is referred to as an ecotone or an interface and most commonly occurs as a hedgerow or thicket. The interface may include plants from neighboring habitats, but often contains its own particular species. The ecotone is frequented by birds whose excrement contains the seeds of fruits which they have eaten. Hence, many species of the ecotone produce fruits favored by birds and include: *Morus* spp. (mulberries), *Phytolacca americana* (poke), *Prunus serotina* (black cherry), *Lonicera japonica* (Japanese honeysuckle), *L. morrowi* (Morrow's honeysuckle), *Rhus typhina* (staghorn sumac), *R. glabra* (smooth sumac), *Toxicodendron radicans* (poison-ivy), *Vitis* spp. (grapes), *Rosa multiflora* (multiflora rose), and *Juniperus virginiana* (red cedar). Other plants commonly found in ecotones are those whose seeds are windblown such as *Solidago* spp. (goldenrods), *Ambrosia trifida* (great ragweed), *Aster* spp. (asters), *Eupatorium* spp. (thoroughworts), and various *Poacea* (grass) species. The amount of light and moisture plays a role in the presence or absence of a given species within the ecotone. Plants which are rare in this habitat are mostly horticultural escapes such as *Pyracantha coccinea* var. *lelandi* (firethorn), *Spiraea japonica* (Japanese spiraea), and *Ampelopsis brevipedunculata* (porcelainberry).

Marshes are wet sunny areas which occur around springs, along streams, and in low poorly drained areas of the watershed. Dominant plants of marshes include *Typha latifolia* (common cattail), *Symplocarpus foetidus* (skunk cabbage), *Onoclea sensibilis* (sensitive fern), *Bidens* spp. (beggar's-ticks), *Ludwigia* spp. (ludwigias), *Scirpus* spp. (wool-grasses), *Carex* spp. (sedges), *Cyperus* spp. (sedges), *Eleocharis obtusa* (blunt spikerush), and many grass species. One of these marshes, Seminary Marsh, has been filled for a Baltimore County wastewater pumping station project, resulting in the extirpation of a stand of *Salix caprea* (goat willow), a small colony of *Helenium autumnale* (sneezeweed), a large colony of *Solidago patula* (rough goldenrod), and a large colony of *Thelypteris palustris* var. *pubescens* (marsh fern). These species are still extant, but are rare or infrequent elsewhere in the watershed.

Phoenix Pond, located at the intersection of Carroll Road and Phoenix Road, is a small water-filled abandoned quarry pit. This pond contains abundant water life including common fishes and the introduced eastern mosquitofish (*Gambusia holbrooki*) (Redman 1994), which also occurs in the reservoir proper, several species of turtles, and abundant invertebrates. The edge of the pond is marshy in some places and is surrounded by shrubs and trees in other places. Much of the vegetation is found elsewhere in the watershed, but the floating-leaved aquatic *Nuphar advena* (spatterdock) is unique for the watershed at this locality and covers a large area of the eastern half of the pond. *Lemna minor* (smaller duckweed) is infrequent in the pond and rare elsewhere. *Wolffia columbiana* (water-meal) and *Ceratophyllum demersum* (hornwort) are abundant, while *Egeria densa* (elodea) is infrequent, but restricted to the pond. A colony of *Eichornia crassipes* (water hyacinth) was found in Phoenix Pond during the summer of 2003.

About 80% of the watershed ecotypes are wooded. They vary in type from dry *Quercus montana* (chestnut oak) forests to swamps (wooded wetlands) and alluvial forests. *Liriodendron tulipifera* (yellow poplar), which occurs in moist forests, is the most abundant tree species in the watershed.

Alluvial woodlands occur on the flood plains of waterways and are present along the larger streams of the watershed. The soil is characteristically sandy and loose, and may be covered by water for periods of time, particularly in winter and early spring. Species diversity is often small and a few species dominate. These include *Acer rubrum* (red maple), *A. negundo* (boxelder), *Platanus occidentalis* (sycamore), *Salix nigra* (black willow), *Fraxinus pennsylvanica* (green ash), and locally along Western Run, an open stand of *Juglans nigra* (walnut). A few species of herbs are able to survive in the soils beneath the *Juglans nigra* despite the allelopathic substances which this tree produces. These herbs include *Alliaria petiolata* (garlic-mustard), *Podophyllum peltatum* (mayapple), *Hemerocallis fulva* (tawny daylily), and grasses of the genera *Festuca* (fescues), *Elymus* (rye grasses), and *Eragrostis* (love grasses). Dominant shrub species include *Lindera benzoin* (spice bush), *Viburnum dentatum* (southern arrow-wood), *Rosa multiflora* (multiflora rose), and *Sambucus canadensis* (elderberry). Other herbaceous plant species include *Symplocarpus foetidus* (skunk cabbage), *Rudbeckia laciniata* (green-headed coneflower), *Impatiens* spp. (touch-me-nots), *Phalaris arundinacea* (reed canary grass), *Cyperus* spp. (sedges), *Carex* spp. (sedges), *Onoclea sensibilis* (sensitive fern), *Hesperis matronalis* (dame's

rocket), and locally, *Equisetum hyemale* var. *affine* (tall horsetail). Where the alluvial woodlands are open the following species are found: *Eupatorium* spp. (thoroughworts), *Bidens* spp. (beggar's-ticks), *Viola* spp. (violets), *Onoclea sensibilis* (sensitive fern), *Rorippa palustris* (marsh cress), *Polygonum* spp. (smartweeds), and *Juncus effusus* (soft rush). Several rare Maryland plants occur in this habitat. The "state rare" species *Matteuccia struthiopteris* (ostrich fern) is limited to one small colony on an alluvial island in the Gunpowder Falls, the state "Watch List" species *Arisaema dracontium* (green dragon) is limited to one flood plain, and a few specimens of the state "Watch List" species *Monarda clinopodia* (pale bergamot) occurred in the flood plain woodlands of Western Run (extirpated by sewer line construction), but are extant in a thicket of a power line cut in the Merryman's Woods area.

Moist deciduous forest and dry deciduous forest, the two largest habitats in the watershed, grade into each other, and therefore, have some species common to both forest types. The original moist deciduous forest was characterized by an oak-yellow poplar-chestnut canopy, but after the *Castanea dentata* (American chestnut) were killed by chestnut blight disease, they were replaced by an oak-yellow poplar canopy. Common trees of the moist deciduous forest include *Quercus alba* (white oak), *Q. rubra* (northern red oak), *Liriodendron tulipifera* (yellow poplar), *Cornus florida* (white flowering dogwood), *Fraxinus americana* (white ash), *Carya glabra* (pignut hickory), *Acer rubrum* (red maple), *Carpinus caroliniana* (ironwood), and *Nyssa sylvatica* (black gum). Among the rarer trees species, and often shrubby in size, is *Asimina triloba* (paw-paw) and the state "Watch List" species *Magnolia tripetala* (umbrella magnolia). *Fagus grandifolia* (American beech) is scattered throughout the moist deciduous forest, but becomes locally abundant, forming almost pure stands on hillsides of valleys bordering reservoir and stream coves. This is known as "cove forest", and is characterized by the open understory which results from the large mass of surface roots of the beech trees. *Epifagus virginiana* (beech-drops), a parasite on the roots of *Fagus grandifolia* (American beech), is common in the cove forest. Under other tree species understory plants are more common and include: *Toxicodendron radicans* (poison-ivy), *Gaylussacia baccata* (black huckleberry), *Vaccinium* spp. (blueberries), *Viburnum* spp. (viburnums), *Podophyllum peltatum* (mayapple), *Arisaema triphyllum* (Jack-in-the-pulpit), *Circaea quadrisulcata* var. *canadensis*, *Perilla frutescens* (beefsteak plant), *Thelypteris noveboracensis* (New York fern), and *Polystichum acrostichoides* (Christmas fern). The most common understory shrub is *Lindera benzoin* (spice bush). Among the rarest herbs in moist deciduous forests are *Obolaria virginica* (pennywort), and *Cypripedium calceolus* var. *pubescens* (yellow lady's-slipper).

The moist deciduous forest changes, at higher elevations, into dry deciduous forest. Some species such as the shrub *Kalmia latifolia* (mountain-laurel) are common to both forests. Whereas *Liriodendron tulipifera* (yellow poplar), *Quercus alba* (white oak), and *Q. rubra* (northern red oak) dominate the moist forest; *Q. montana* (chestnut oak) and/or *Q. velutina* (black oak) dominate the drier forest. The acidity of the soils in these two forest types is reflected in the presence of numerous acid-soil plants including: *Kalmia latifolia* (mountain-laurel), *Vaccinium pallidum* (lowbush blueberry), *Rhododendron periclymenoides* (pinxter flower), *Epigaea repens* (trailing arbutus), *Goodyera pubescens* (downy rattlesnake plantain), and *Chimaphila maculata* (spotted wintergreen). Other common species of these forests include *Carya glabra* (pignut hickory), *C. tomentosa* (mockernut hickory), *Quercus coccinea* (scarlet oak), and *Dennstaedtia punctilobula* (hayscented fern). Various orchid species are occasional to very rare in both moist and dry deciduous forests within the watershed.

Successional forest is composed of primary species which are later replaced by secondary, and then climax species. Some successional trees such as *Acer rubrum* (red maple), may also be secondary and climax species under certain ecological circumstances. Typical species include: *Acer negundo* (boxelder), *Ailanthus altissima* (tree-of-heaven), *Rhus typhina* (staghorn sumac), *Sassafras albidum* (sassafras), *Ulmus rubra* (slippery elm), *Acer rubrum* (red maple), *Robinia pseudoacacia* (black locust), *Juniperus virginiana* (red cedar), and *Pinus virginiana* (Virginia pine). Such "weedy" tree species are often mixed with sapling *Quercus alba* (white oak), *Q. velutina* (black oak), *Fraxinus* spp. (ashes), *Liriodendron tulipifera* (yellow poplar), and *Cornus florida* (white flowering dogwood). Understory shrubs of this habitat include *Rosa multiflora* (multiflora rose), *Lonicera morrowi* (Morrow's honeysuckle), *Ligustrum* spp. (privets), and *Lindera benzoin* (spice bush). Typical understory herbs include *Toxicodendron radicans* (poison-ivy), *Vinca minor* (periwinkle), *Duchesnea indica* (indian strawberry), *Rubus phoenicolasius* (wineberry), *Parthenocissus quinquefolia* (Virginia creeper), and *Celastrus orbiculatus* (oriental bittersweet). Plants which are rare within this habitat type are primarily horticultural escapes.

One of the most striking features of the watershed are the pine plantations. *Pinus strobus* (eastern white pine) has long been used as a reforestation species because of its rapid growth, ease of transplanting, and excellent soil retention characteristics (Rex 1973). Several other conifers, notably *Pinus sylvestris* (Scots pine), *P. resinosa* (red pine), *P. echinata* (shortleaf pine), *P. taeda* (loblolly pine), and *Picea pungens* (Colorado blue spruce) are no longer used for reforestation. Plantings of *Picea glauca* (white spruce) and *Pseudotsuga menziesii* (Douglas fir) were unsuccessful and have died out. One stand of conifers planted on White Pine Point as *Pinus nigra* (Austrian pine) is actually *P. taeda* (loblolly pine). This bias toward planting conifer species was principally the result of the Euro-German heritage of the first watershed forester, Wolodymyr Sushko, who still resides in Baltimore. *Pinus sylvestris* (Scots pine) and *P. resinosa* (red pine) are subject to disease and insects in our area, and *Picea abies* (Norway spruce) ages poorly. As a result, *Pinus strobus* (eastern white pine) is the only conifer currently considered acceptable for reforestation in the watershed. Most of the conifers were planted on level to gently sloping soils of the Cockeysville Marble Formation, which are naturally suited to deciduous species rather than conifers. On the other hand, deciduous species occupy the rolling or steep sites of the schistose formations where the conifer *Pinus strobus* (eastern white pine) historically occurred. In addition, large specimen conifers occur as remnants of former estates at various watershed localities. Along Paper Mill Road, west of the Paper Mill Road Bridge, the following specimens occur: a 50-foot (15-meter) *Pinus nigra* (Austrian pine), a 75-foot (23-meter) *Larix decidua* (European larch), a 40-foot (12-meter) *Picea pungens* (Colorado blue spruce), and several 25-foot (8-meter) *Thuja occidentalis* (arborvitae). In a low forest on the northwest side of the Warren Road Bridge and in a field near the community of Phoenix, several large *Tsuga canadensis* (hemlock) occur near old homesteads. Other small groups of this species in the Western Run, Upper Gunpowder, and Goetz's Woods areas are native stands. Wherever conifers heavily shade the soil, few plants occur in the understory, with *Toxicodendron radicans* (poison-ivy) being the most common understory species. From deep shade to full sun and from rocky reservoir banks to swamp borders, *Toxicodendron radicans* occupies more ecological niches than any other plant species in the watershed. Other species found in the understory of pine plantations include *Vinca minor* (periwinkle), *Phytolacca americana* (poke), *Asplenium platyneuron* (ebony spleenwort), *Dryopteris intermedia* (evergreen wood fern), *Dryopteris carthusiana* (spinulose wood fern), *Viola sororia* (common blue violet), *Parthenocissus quinquefolia* (Virginia creeper), and *Duchesnea indica* (indian strawberry). Three very rare watershed species were found under conifers: *Viola conspersa* (dog violet) under *Larix decidua* (European larch), and *Asplenium trichomanes* (maidenhair spleenwort) and *A. rhizophyllum* (walking fern) in rock crevices under *Tsuga canadensis* (hemlock).

Mixed coniferous-deciduous forest is mostly planted in the watershed. The dominant deciduous species in these stands are *Acer rubrum* (red maple), *Liriodendron tulipifera* (yellow poplar), and *Fraxinus americana* (white ash). Other common deciduous species include *Quercus alba* (white oak), *Q. velutina* (black oak), *Fraxinus pennsylvanica* (green ash), *Populus grandidentata* (big-tooth aspen), *Prunus serotina* (black cherry), and *Carya* spp. (hickories). The mixed forest conifers include *Pinus strobus* (eastern white pine), *P. taeda* (loblolly pine), *P. echinata* (shortleaf pine), *P. virginiana* (Virginia pine), and *Picea abies* (Norway spruce). The few *Pinus sylvestris* (Scots pine) and *P. resinosa* (red pine) left in the watershed occur as scattered trees in deciduous forests. This mixed forest is less shaded in the understory than the pine plantations, which allows a more luxuriant understory vegetation, including abundant *Lonicera japonica* (Japanese honeysuckle), *Parthenocissus quinquefolia* (Virginia creeper), *Celastrus orbiculatus* (oriental bittersweet), *Rubus* spp. (raspberries), *Lindera benzoin* (spice bush), *Viburnum* spp. (viburnum), *Toxicodendron radicans* (poison-ivy), and various seedling tree species. No plants rare to the watershed were noted within this habitat.

Juniperus virginiana (red cedar) and *Pinus virginiana* (Virginia pine) occur as scattered small trees and shrubs in dry rocky open areas and scrubby mixed woodlands, and also occur as an assemblage known as the red cedar-scrub pine Association. This association occurs only on the Cockeysville Marble Formation. The soil is well-drained and dry. Common species in this association include *Erophila verna* (whitlow grass), *Solidago canadensis* var. *scabra* (tall goldenrod), *S. nemoralis* (gray-stemmed goldenrod), *Andropogon virginicus* (broom sedge), *Danthonia spicata* (oat poverty grass), *Aster pilosus* (white heath aster), *Lepidium* spp. (peppergrasses), *Celastrus orbiculatus* (oriental bittersweet), *Lonicera japonica* (Japanese honeysuckle), *Toxicodendron radicans* (poison-ivy), *Antennaria plantaginifolia* (plantain-leaved pussytoes), and *Euphorbia* spp. (spurges). *Diospyros virginiana* (persimmon), infrequent in the watershed, is predominantly found in this habitat.

Surveys of the submerged aquatic vegetation (SAV) of the reservoir and adjacent Gunpowder Falls were conducted as an adjunct to this study during 1993. As a result of these surveys eight (8) species of submerged aquatic plants were found including: the state "Watch List" species *Najas guadalupensis* (southern naiad), *Najas guadalupensis* (southern naiad), *N. minor* (small naiad), *Potamogeton crispus* (curly pondweed), *P. diversifolius* (variable pondweed), and *P. pectinatus* (sago pondweed) were also located during an unpublished survey conducted in 1986 by Eugene J. Scarpulla, Watershed Manager, (Scarpulla 2003). *Myriophyllum spicatum* (Eurasian water-milfoil) was found to be restricted to Gunpowder Falls south of the small dam, and *Ceratophyllum demersum* (hornwort) and *Egeria densa* (Elodea) were found to be restricted to Phoenix Pond. An additional SAV, *Hydrilla verticillata* (hydrilla), was found during 2003 by Michael Naylor, Environmental Specialist with the Maryland Department of Natural Resources.

Within the watershed there are a number of micro-habitats. These include old walls, rock cliffs, springs, and waterfalls. Several manmade walls occur within the watershed, but most have only algae, lichens, and mosses growing on them. One large wall-ruin of an old factory that historically produced cotton duck (army tent canvas) can be seen in the low woodlands west of Ashland (Mittenthal 1983). *Asplenium platyneuron* (ebony spleenwort), *Cystopteris tenuis* (upland brittle fern), *Cardamine pennsylvanica* (Pennsylvania bitter cress), *Parthenocissus quinquefolia* (Virginia creeper), *Toxicodendron radicans* (poison-ivy), and several grasses were found growing in this wall. Crevices in the north-facing wall of the abandoned railroad bridge that carries the North Central Trail across the Gunpowder Falls support *Woodsia obtusa* (blunt-lobed woodsia), *Asplenium platyneuron* (ebony spleenwort), *Heuchera americana* (common alumroot), and several species of grasses.

Cliffs and bluffs occur predominantly along large streams and as cuts along roads. Common plants found in these habitats include *Dennstaedtia punctilobula* (hayscented fern), *Antennaria plantaginifolia* var. *ambigens* (plantain-leaved pussytoes), *Dryopteris marginalis* (marginal wood fern), *Aquilegia canadensis* (wild columbine), *Lonicera japonica* (Japanese honeysuckle), *Juniperus virginiana* (red cedar), *Saxifraga virginiana* (early saxifrage), and a number of grass species. Two species rare to the watershed, *Pellaea x atropurpurea* (purple cliffbrake) and *Silene caroliniana* ssp. *pennsylvanica* (wild pink), are found in this habitat. *Hedera helix* (English ivy) locally covers a large area of forested rocky cliffs and a low wall near the small dam.

A number of springheads occur within the watershed. One spring in a low woodland on the northwest side of Warren Road Bridge is surrounded by an old springhouse foundation from an abandoned homestead, and is one of two stations in the watershed where *Cystopteris tenuis* (upland brittle fern) occurs.

Several low waterfalls occur along streams within the watershed. Liverworts, algae, and mosses were the predominant vegetation on these waterfalls, and no unusual vascular plants were found to occur on these waterfalls. However, the cool moist soil just below the waterfall in an unnamed seep in the Laurel Woodlands area supports a colony of *Viola incognita* (sweet white violet), which is infrequent in the watershed.

An unusual area occurs near the community of Phoenix along the North Central Trail. Many species found to occur, or that formerly occurred, along the abandoned railroad right of way have not been found or are very rare elsewhere in the watershed. The soils overlay part of the Cockeysville Marble Formation and formerly consisted of well-drained sands mixed with railroad track-bed ballast. These soils have now been covered with crusher-run stone of Cockeysville Marble. Due to the depth and compactness of the stone, no plants grow on the trail proper. Tests indicated that the soils in the immediate railroad right of way had the highest pH levels within the watershed, ranging from 7.0 to 7.8. The plants which occur adjacent to the trail are generally those of poor dry soils and include *Robinia pseudacacia* (black locust), *Pteridium aquilinum* var. *latiusculum* (eastern bracken), *Silene antirrhina* (sleepy catchfly), *Tradescantia virginica* (spiderwort), *Krigia virginica* (dwarf dandelion), *Froelichia gracilis* (cottonweed) (the last two have been extirpated in the watershed by North Central Trail construction), *Ceanothus americanus* (New Jersey tea), and *Polygonum perfoliatum* (perfoliate smartweed). The Asian adventive *Polygonum perfoliatum* (perfoliate smartweed) is being spread rapidly by birds, which relish its blue fruits, throughout the watershed and Maryland in thickets, in open woodlands, and on flood plains. This species was introduced into a southern Pennsylvania nursery approximately 48 years ago. Although this species is only included as a footnote in Gray's Manual of Botany (Fernald 1950), the first flora to mention this species, it has become a more pernicious weed species than *Lonicera japonica* (Japanese honeysuckle).

in many areas of the watershed. There is a garden planting at the trail parking lot. The horticultural specimens within the garden are listed under "Phoenix (Area #31)" and are not included in the "ANNOTATED CHECKLIST OF THE FLORA". The trail construction has substantially altered the right of way and extirpated some plant species from the watershed. These changes will be covered under "SYNOPSIS OF THE STUDY AREAS" that follows, which details the vegetation types of each of the 33 watershed study areas. For specific habitat and distribution notes for each plant species in the watershed, the reader is referred to the section "ANNOTATED CHECKLIST OF THE FLORA".

SYNOPSIS OF THE STUDY AREAS

During this study, Loch Raven Watershed was divided into 33 study areas as a convenience for the field surveys (refer to Figure 2 and Table 1). Specific locations within the study areas are identified in Figure 3. The following is a synopsis of these areas.

Western Run (Area #01) consists of forested stream, alluvial woodlands, meadows, marshes, and rocky woodlands which overlie the Cockeysville Marble Formation. Common species include *Juglans nigra* (walnut), *Tilia americana* (American linden or basswood), *Acer rubrum* (red maple), *A. negundo* (boxelder), *Platanus occidentalis* (sycamore), *Cornus florida* (white flowering dogwood), *Lindera benzoin* (spice bush), *Rosa multiflora* (multiflora rose), *Hemerocallis fulva* (tawny daylily), *Hesperis matronalis* (dame's rocket), *Alliaria petiolata* (garlic-mustard), *Elymus virginicus* (Virginia wild-rye), and several other grass species. Species rare in this area include *Tsuga canadensis* (hemlock), *Crataegus punctata* (punctate hawthorn), *Equisetum hyemale* var. *affine* (tall horsetail), *Aralia nudicaulis* (wild sarsaparilla), *Asplenium trichomanes* (maidenhair spleenwort), *A. rhizophyllum* (walking fern), *Aquilegia canadensis* (wild columbine), *Pastinaca sativa* (wild parsnip), the state "Watch List" species *Monarda clinopodia* (pale bergamot), and the state "highly rare" species *Carex cephaloidea* (thin-leaf sedge).

Jessops (Area #02) consists of forested stream, oak-hickory-pine forest with marshes, swamp, alluvial woodlands and the ruins of an old factory wall in a low forest. Approximately 50% of this area overlies the Cockeysville Marble Formation and 50% overlies the Loch Raven Schist Formation. Common species include *Acer rubrum* (red maple), *Fraxinus americana* (white ash), *Quercus alba* (white oak), *Cornus florida* (white flowering dogwood), *Juniperus virginiana* (red cedar), *Carya tomentosa* (mockernut hickory), *Pinus virginiana* (Virginia pine), *P. strobus* (eastern white pine), *Kalmia latifolia* (mountain-laurel), *Lonicera japonica* (Japanese honeysuckle), *L. morrowi* (Morrow's honeysuckle), *Lindera benzoin* (spice bush), *Viburnum recognitum* (northern arrow-wood), *Impatiens capensis* (spotted touch-me-not), *Toxicodendron radicans* (poison-ivy), *Celastrus orbiculatus* (oriental bittersweet), and *Microstegium vimineum* (stilt grass). Species rare in this area include *Picea abies* (Norway spruce), *Larix decidua* (European larch), *Aesculus hippocastanum* (horsechestnut), *Salix humilis* (prairie willow), *Viola conspersa* (dog violet), *Hesperis matronalis* (dame's rocket), and *Penstemon digitalis* (pale beard-tongue).

Gunpowder Highlands (Area #03) consists of forested stream, oak-beech forest with some *Tsuga canadensis* (hemlock) and *Pinus strobus* (eastern white pine), and small areas of marsh. Geologically, this area overlies 80% Loch Raven Schist and 20% Cockeysville Marble. Common species here include *Quercus velutina* (black oak), *Q. montana* (chestnut oak), *Q. alba* (white oak), *Liriodendron tulipifera* (yellow poplar), *Fagus grandifolia* (American beech), *Kalmia latifolia* (mountain-laurel), *Hydrangea arborescens* (wild hydrangea), *Polystichum acrostichoides* (Christmas fern), *Mitchella repens* (partridge berry), and *Thelypteris noveboracensis* (New York fern). Species rare in this area include *Paulownia tomentosa* (empress tree), *Asplenium trichomanes* (maidenhair spleenwort), *A. rhizophyllum* (walking fern), *Cypripedium calceolus* var. *pubescens* (yellow lady's-slipper), *Galearis spectabilis* (showy orchis), *Nasturtium officinale* (watercress), and *Magnolia tripetala* (umbrella magnolia).

Summer Hill (Area #04) overlies the Cockeysville Marble Formation and consists of a small forested stream, and an extensive scrub pine-juniper association with some deciduous woodlands. Common species include *Juniperus virginiana* (red cedar), *Pinus virginiana* (Virginia pine), *Liriodendron tulipifera* (yellow poplar), *Nyssa sylvatica* (black gum), *Quercus rubra* (northern red oak), *Acer rubrum* (red maple), *Cornus florida* (white flowering dogwood), *Lindera benzoin* (spice bush), *Polystichum acrostichoides* (Christmas fern), *Thelypteris noveboracensis* (New York fern), *Toxicodendron radicans* (poison-ivy), *Microstegium vimineum* (stilt grass), and *Solidago* spp. (goldenrods). Species rare in this area include *Physalis subglabrata* (ground-cherry), *Pyrus communis* (pear), *Strophostyles umbellata* (pink wild bean), *Osmunda regalis* var. *spectabilis* (royal fern), and *Asparagus officinalis* (asparagus).

Poplar Hill (Area #05) overlies the Loch Raven Schist Formation and consists of forested reservoir bank and beech-yellow poplar-oak forest. There are also the remnants of an old homestead on the northwest side of the Warren Road Bridge. Dominant species include *Liriodendron tulipifera* (yellow poplar), *Acer saccharinum* (silver maple), *A. platanoides* (Norway maple), *Quercus rubra* (northern red oak), *Q. montana* (chestnut oak), *Lonicera japonica* (Japanese

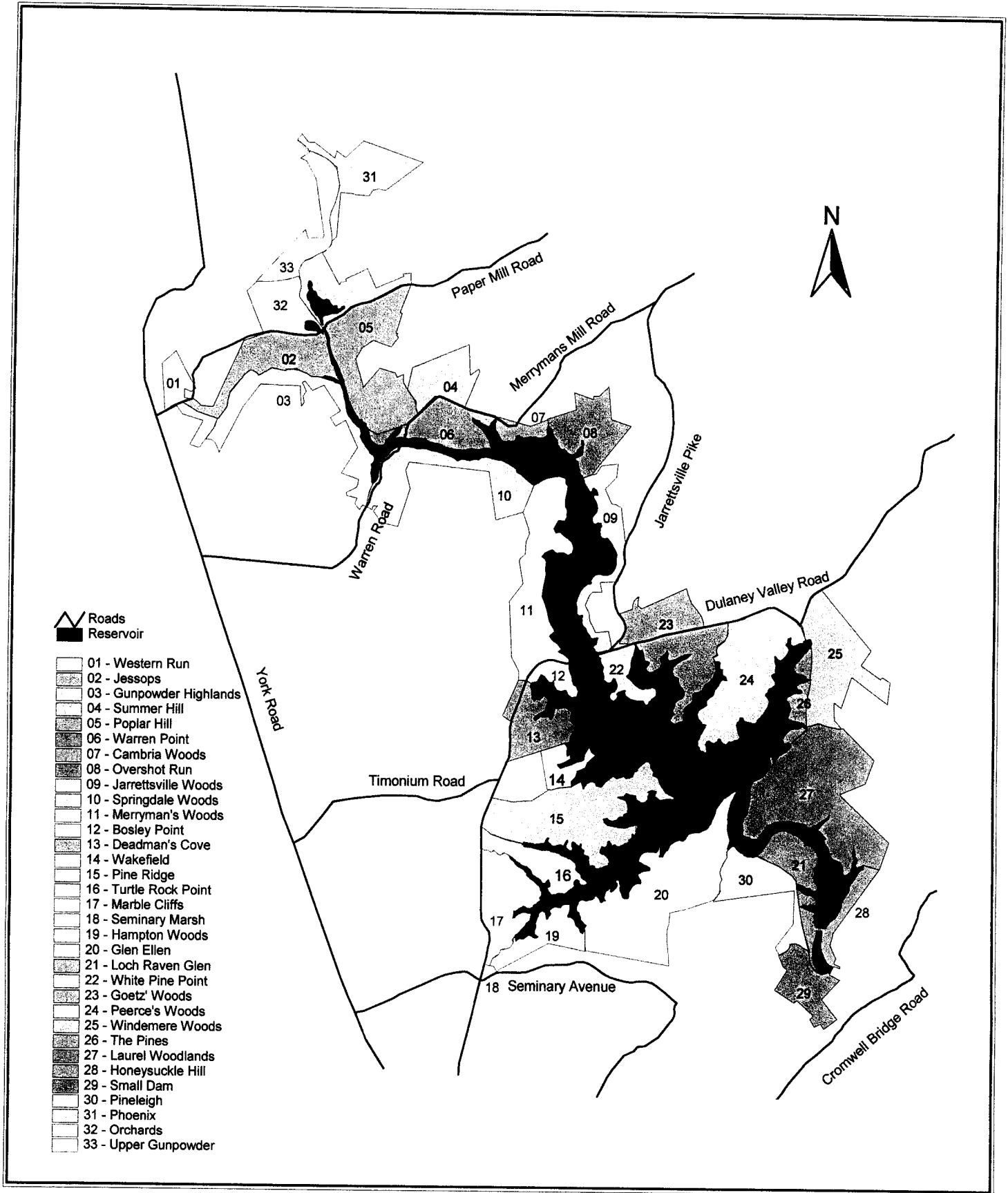


Figure 2. Watershed study areas identified in text.

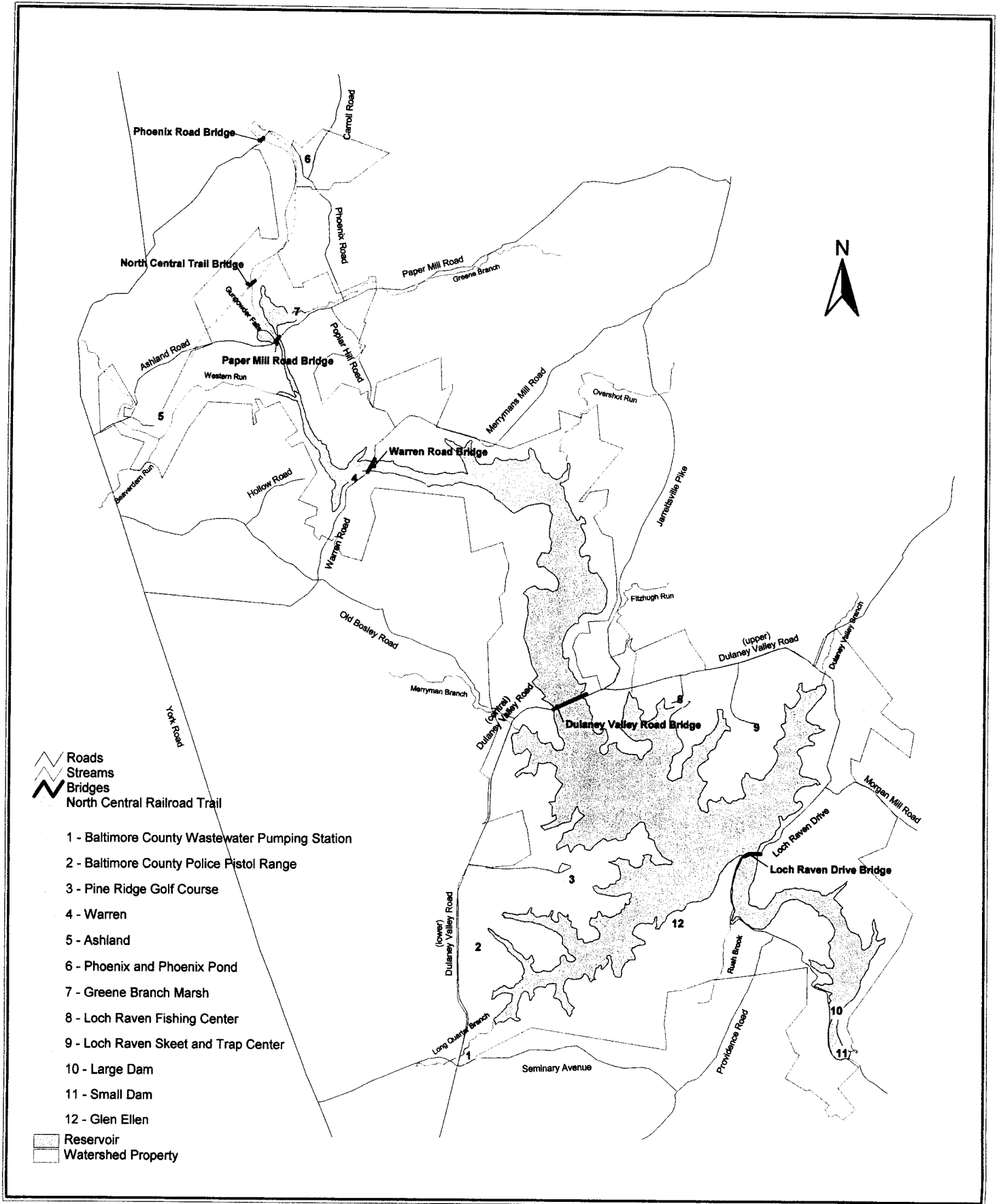


Figure 3. Watershed locations identified in text.

Table 1. Watershed Study Areas Identified in Text

AREA #	AREA NAME	NAME SOURCE	GEOLOGY	PLANT ASSOCIATIONS
01	Western Run	Stream	Marble	Rocky Forest/Marsh/Alluvial Woodlands/Meadow
02	Jessops	Former Land Owners	Marble/Schist	Pine Plantation/Alluvial Woodlands/Marsh/Swamp
03	Gunpowder Highlands	Stream/Topography	Schist/Marble	Deciduous Forest/Scattered Conifers/Marsh
04	Summer Hill	Nearby Community	Marble	Deciduous Forest/Scrub Pine Woods
05	Poplar Hill	Ecology (trees)/Topography	Schist	Deciduous Forest
06	Warren Point	Nearby Community/Geography	Marble	Deciduous Forest/Marsh
07	Cambria Woods	Nearby Community/Ecology	Schist	Mixed Scrub Woodlands/Thickets/Fields
08	Overshot Run	Stream	Marble/Schist	Deciduous Forest
09	Jarrettsville Woods	Nearby Road/Ecology	Schist	Deciduous Forest/Scattered Conifers
10	Springdale Woods	Nearby Community/Ecology	Schist/Marble	Deciduous Forest/Field/Marsh
11	Merryman's Woods	Former Land Owners/Ecology	Schist/Schist-quartzite	Deciduous Forest/Swamp/Field
12	Bosley Point	Stream/Geography	Marble	Deciduous Forest/Fields/Open Ground
13	Deadman's Cove	Local Name	Marble	Deciduous Forest/Mixed Forest/Swamp
14	Wakefield	Nearby Community	Marble	Mixed Forest
15	Pine Ridge	Ecology (trees)/Topography	Marble	Deciduous Forest/Pine Plantation/Marsh/Field
16	Turtle Rock Point	Local Name	Marble	Scrub Woodlands/Pine Plantations/Scrub Thickets/Field/Marsh
17	Marble Cliffs	Geology/Topography	Marble	Mixed Forest/Pine Plantation/Thickets/Field
18	Seminary Marsh	Nearby Road/Ecology	Marble	Flood Plain Woodlands/Former Marsh

Table 1. Watershed Study Areas Identified in Text (Continued)

19	Hampton Woods	Nearby Community/Ecology	Marble	Deciduous Forest/Mixed Forest/Pine Plantation /Marsh/Thickets
20	Glen Ellen	Former Homestead	Schist/Marble	Mixed Forest/Marsh/Thickets
21	Loch Raven Glen	Area/Topography	Schist	Deciduous Forest/Swamp/Turf
22	White Pine Point	Ecology/Geography	Marble	Deciduous Forest/Pine Plantation/Marsh
23	Goetz's Woods	Former Land Owners/Ecology	Marble	Pine Plantations/Deciduous Forest/Marsh/Turf
24	Peerce's Woods	Former Land Owners/Ecology	Marble /Coastal Plain Inclusion	Deciduous Forest/Pine Plantation/Field/Marsh
25	Windemere Woods	Nearby Community/Ecology	Marble	Deciduous Forest/Mixed Forest/Turf/Marsh
26	The Pines	Ecology (trees)	Schist	Deciduous Forest/Conifer Plantation /Field/Marsh/Turf
27	Laurel Woodlands	Ecology (shrubs and trees)	Schist	Deciduous Forest/Pine Plantation/Marsh/Field
28	Honeysuckle Hill	Ecology (vines)/Topography	Schist	Deciduous Forest
29	Small Dam	Dam Structure	Marble	Deciduous Forest/Field/Marsh/Turf
30	Pineleigh	Nearby Community	Schist	Deciduous Forest/Scattered Pines/Turf
31	Phoenix	Nearby Community	Marble	Deciduous Forest/Swamp/Marsh/Open Grounds
32	Orchards	Former Land Use	Marble	Deciduous Forest/Pine Plantation/Field
33	Upper Gunpowder	Stream	Schist/Gneiss	Deciduous Forest/Marsh

honeysuckle), *Lindera benzoin* (spice bush), *Viburnum recognitum* (northern arrow-wood), *Polystichum acrostichoides* (Christmas fern), and *Thelypteris noveboracensis* (New York fern). *Akebia quinata* (five-fingered akebia) and *Hedera helix* (English ivy) are locally abundant on the northwest side of the Warren Road Bridge. Species rare in this area include *Tsuga canadensis* (hemlock), *Picea abies* (Norway spruce), *Yucca filamentosa* (yucca), *Cystopteris tenuis* (upland brittle fern), *Viola pedata* (birdfoot violet), and *Phlox paniculata* (perennial phlox).

Warren Point (Area #06) overlies the Loch Raven Schist Formation and consists of forested stream banks, reservoir banks, and mixed deciduous forest with some marsh area. Dominant species include *Liriodendron tulipifera* (yellow poplar), *Quercus montana* (chestnut oak), *Q. alba* (white oak), *Q. rubra* (northern red oak), *Acer rubrum* (red maple), *Fagus grandifolia* (American beech), *Lindera benzoin* (spice bush), *Kalmia latifolia* (mountain-laurel), *Polystichum acrostichoides* (Christmas fern), *Lonicera japonica* (Japanese honeysuckle), and *Perilla frutescens* (beefsteak plant). Species rare in this area include *Salix babylonica* (weeping willow), *Juniperus virginiana* (red cedar), *Celtis occidentalis* (hackberry), *Corylus americana* (hazel nut), and *Aster divaricatus* (white wood aster).

Cambria Woods (Area #07) overlies the Loch Raven Schist Formation and consists of stream banks, reservoir banks, thickets, fields, and mixed deciduous-scrub pine-red cedar association. Dominant species include *Cercis canadensis* (redbud), *Liriodendron tulipifera* (yellow poplar), *Prunus serotina* (black cherry), *Cornus florida* (white flowering dogwood), *Quercus montana* (chestnut oak), *Fraxinus americana* (white ash), *Pinus virginiana* (Virginia pine), *Juniperus virginiana* (red cedar), and *Lonicera morrowi* (Morrow's honeysuckle). Species rare in this area include *Triosteum aurantiacum* (wild coffee), *Calystegia sepium* (hedge bindweed), *Lonicera japonica* var. *chinensis* (Chinese honeysuckle), and *Asparagus officinalis* (asparagus).

Overshot Run (Area #08) partially overlies the Cockeysville Marble Formation and partially overlies the Loch Raven Schist Formation and is predominantly deciduous forest, with some reservoir and stream banks. Dominant species include *Liriodendron tulipifera* (yellow poplar), *Quercus alba* (white oak), *Q. montana* (chestnut oak), *Fagus grandifolia* (American beech), *Lindera benzoin* (spice bush), and *Polystichum acrostichoides* (Christmas fern). Species rare in this area include *Veratrum viride* (white hellebore) and the state "Watch List" species *Magnolia tripetala* (umbrella magnolia).

Jarrettsville Woods (Area #09) overlies the Loch Raven Schist Formation and is primarily oak-beech forest with some *Picea abies* (Norway spruce) plantings, a stream, and reservoir banks. Dominant species include *Quercus rubra* (northern red oak), *Q. montana* (chestnut oak), *Fagus grandifolia* (American beech), *Tilia americana* (American linden or basswood), *Liriodendron tulipifera* (yellow poplar), *Cornus florida* (white flowering dogwood), *Kalmia latifolia* (mountain-laurel), *Gaylussacia baccata* (black huckleberry), *Lindera benzoin* (spice bush), *Impatiens capensis* (spotted touch-me-not), and *Polystichum acrostichoides* (Christmas fern). Species rare in this area include *Osmunda claytoniana* (interrupted fern), *Cimicifuga racemosa* (black cohosh), and *Comptonia peregrina* (sweetfern).

Springdale (Area #10) overlies the Loch Raven Schist Formation with a small area of Cockeysville Marble along the shoreline. This area is primarily deciduous forest, reservoir banks, with a small field and marsh area along Warren Road. Dominant species include *Liriodendron tulipifera* (yellow poplar), *Quercus velutina* (black oak), *Q. montana* (chestnut oak), *Cornus florida* (white flowering dogwood), *Hamamelis virginiana* (witch-hazel), *Lindera benzoin* (spice bush), *Microstegium vimineum* (stilt grass), *Polystichum acrostichoides* (Christmas fern), and *Dennstaedtia punctilobula* (hayscented fern). Species rare in this area include *Quercus falcata* var. *triloba* (tri-lobed southern red oak) and *Cypripedium acaule* (pink lady's-slipper).

Merryman's Woods (Area #11) overlies the Loch Raven Schist Formation with a small part of the western portion overlaying the Setters Formation. Habitats consist of reservoir banks, stream banks, deciduous forest, swamp, and fields. Common species include *Quercus alba* (white oak), *Q. rubra* (northern red oak), *Q. montana* (chestnut oak), *Q. velutina* (black oak), *Liriodendron tulipifera* (yellow poplar), *Acer rubrum* (red maple), *Fagus grandifolia* (American beech), *Cornus florida* (white flowering dogwood), *Lindera benzoin* (spice bush), *Vaccinium pallidum* (lowbush blueberry), *Kalmia latifolia* (mountain-laurel), *Gaylussacia baccata* (black huckleberry), *Lonicera japonica* (Japanese honeysuckle), *Polystichum acrostichoides* (Christmas fern), *Podophyllum peltatum* (mayapple), *Dennstaedtia*

punctilobula (hayscented fern), and *Microstegium vimineum* (stilt grass). Species rare in this area include *Quercus falcata* (southern red oak), *Viburnum* spp. (viburnums), *Magnolia tripetala* (umbrella magnolia), *Pyrus calleryana* (Callery pear), *Eragrostis curvula* (weeping love grass), *Salix humilis* (prairie willow), *Epigaea repens* (trailing arbutus), *Actaea pachypoda* (white baneberry), *Dryopteris x boottii* (Boott's wood fern), *D. cristata* (crested wood fern), the state "Watch List" species *Monarda clinopodia* (pale bergamot) and *Chrysopsis mariana* (Maryland golden aster), and the state "threatened" species *Dryopteris celsa* (log fern).

Bosley Point (Area #12) overlies the Cockeysville Marble Formation and consists of rocky reservoir banks, stream banks, mixed deciduous forest, fields, and open soils. Dominant species include *Acer rubrum* (red maple), *Acer negundo* (boxelder), *Fraxinus pennsylvanica* (green ash), *Salix nigra* (black willow), *Quercus rubra* (northern red oak), *Q. velutina* (black oak), *Lonicera japonica* (Japanese honeysuckle), *L. morrowi* (Morrow's honeysuckle), *Rosa multiflora* (multiflora rose), *Alliaria petiolata* (garlic-mustard), *Impatiens capensis* (spotted touch-me-not), and *Festuca arundinacea* (tall fescue). Species rare in this area include *Diospyros virginiana* (persimmon), *Pinus resinosa* (red pine), *Dryopteris intermedia* (evergreen wood fern), and *Cypripedium acaule* (pink lady's-slipper).

Deadman's Cove (Area #13) overlies the Cockeysville Marble Formation. This area consists of reservoir and stream banks, deciduous forest, some mixed hardwood-pine forest, rocky bluffs, and swamp. Common species include *Acer negundo* (boxelder), *A. rubrum* (red maple), *Quercus alba* (white oak), *Fraxinus pennsylvanica* (green ash), *Juglans nigra* (walnut), *Platanus occidentalis* (sycamore), *Pinus virginiana* (Virginia pine), *Juniperus virginiana* (red cedar), *Ligustrum ovalifolium* (California privet), *Lindera benzoin* (spice bush), *Alliaria petiolata* (garlic-mustard), *Podophyllum peltatum* (mayapple), and *Viburnum recognitum* (northern arrow-wood). Species rare in this area include *Lonicera standishii* (Standish's honeysuckle), *Pellaea x atropurpurea* (purple cliffbrake), and the state "Watch List" species *Rudbeckia triloba* (three-lobed coneflower).

Wakefield (Area #14) is located east of the residential community of Wakefield and consists of areas of *Pinus strobus* (eastern white pine) mixed with scrub woodlands which overlie the Cockeysville Marble Formation. Dominant species include *Pinus strobus* (eastern white pine), *P. virginiana* (Virginia pine), *Juglans nigra* (walnut), *Juniperus virginiana* (red cedar), *Liriodendron tulipifera* (yellow poplar), *Pinus taeda* (loblolly pine), *Quercus rubra* (northern red oak), *Celtis occidentalis* (hackberry), *Cornus florida* (white flowering dogwood), *Rosa multiflora* (multiflora rose), *Lonicera morrowi* (Morrow's honeysuckle), *Rubus phoenicolasius* (wineberry), and *Glechoma hederacea* (ground-ivy). Species rare in this area include *Narcissus poeticus* (poet's narcissus), *Buddleja davidii* (butterfly-bush), *Paulownia tomentosa* (empress tree), *Crataegus phaenopyrum* (Washington thorn), and *Lysimachia nummularia* (moneywort).

Pine Ridge (Area #15) overlies the Cockeysville Marble Formation. The area consists of golf course turf, hardwood forests, mixed hardwood-pine forests, marsh, fields, reservoir banks, and stream banks. Common species include *Liriodendron tulipifera* (yellow poplar), *Acer rubrum* (red maple), *Fraxinus americana* (white ash), *Prunus serotina* (black cherry), *Pinus virginiana* (Virginia pine), *P. strobus* (eastern white pine), *Juniperus virginiana* (red cedar), *Cornus florida* (white flowering dogwood), *Lindera benzoin* (spice bush), *Lonicera morrowi* (Morrow's honeysuckle), *L. japonica* (Japanese honeysuckle), *Toxicodendron radicans* (poison-ivy), *Agrostis palustris* (creeping bent grass), *Poa pratensis* (Kentucky bluegrass), *Lolium perenne* (perennial rye grass), *Festuca* spp. (fescues), and *Solidago canadensis* var. *scabra* (tall goldenrod). Species rare in this area include *Salix babylonica* (weeping willow), *Maclura pomifera* (osage orange), *Cornus florida* var. *rubra* (pink flowering dogwood), *Cladrasia kentukea* (yellowwood), *Phalaris arundinacea* (reed canary grass), *Pellaea x atropurpurea* (purple cliffbrake), and the state "rare" species *Bouteloua curtipendula* (side-oats grama) and *Pycnanthemum virginianum* (Virginia mountain-mint). A variety of horticultural specimens have been planted around and on Pine Ridge Golf Course and are included in the floral checklist. Historically, a tree nursery once existed on the point due east of the golf course. Remnants of this nursery are seen as the following mature species within the forest: *Liriodendron tulipifera* (yellow poplar), *Acer saccharum* (sugar maple), *Prunus serotina* (black cherry), *P. avium* (sweet cherry), *Fraxinus americana* (white ash), *Pinus strobus* (eastern white pine), *P. resinosa* (red pine), and *Tsuga canadensis* (hemlock).

Turtle Rock Point (Area #16) consists of fields, mixed scrub woodlands, pine stands, shrub thickets, marsh, reservoir banks, and stream banks which overlie the Cockeysville Marble Formation. Common species include *Pinus*

strobus (eastern white pine), *P. virginiana* (Virginia pine), *Prunus serotina* (black cherry), *Robinia pseudoacacia* (black locust), *Cornus florida* (white flowering dogwood), *Quercus rubra* (northern red oak), *Lonicera japonica* (Japanese honeysuckle), *Tridens flavus* (purpletop), *Ambrosia trifida* (great ragweed), *Solidago* spp. (goldenrods), *Toxicodendron radicans* (poison-ivy), and *Celastrus orbiculatus* (oriental bittersweet). Species rare in this area include *Acer platanoides* (Norway maple), *Quercus palustris* (pin oak), *Penstemon digitalis* (pale beard-tongue), *Datura stramonium* var. *atata* (jimson-weed), *Pyracantha coccinea* var. *lelandi* (firethorn), and the state "uncertain status" species *Potentilla arguta* (tall cinquefoil).

Marble Cliffs (Area #17) consists of mixed coniferous-deciduous woodlands, stream banks, reservoir banks, fields, thickets, and pine stands. Geologically, this area overlies the Cockeysville Marble Formation. Common species include *Pinus strobus* (eastern white pine), *P. virginiana* (Virginia pine), *Prunus serotina* (black cherry), *Cornus florida* (white flowering dogwood), *Platanus occidentalis* (sycamore), *Quercus rubra* (northern red oak), *Lonicera morrowi* (Morrow's honeysuckle), *Toxicodendron radicans* (poison-ivy), *Lindera benzoin* (spice bush), *Festuca elatior* (meadow fescue), and *Setaria glauca* (yellow foxtail). Species rare in this area include *Magnolia tripetala* (umbrella magnolia), *Pinus resinosa* (red pine), *Crataegus punctata* (punctate hawthorn), *Viburnum prunifolium* (black haw), *Stachys tenuifolia* (hedge nettle), and *Magnolia tripetala* (umbrella magnolia).

Seminary Marsh (Area #18) consists of a low open wooded flood plain with a stream running through it, and several marshes. One marsh has now been filled and is currently occupied by a Baltimore County wastewater pumping station. Geologically, this area overlies the Cockeysville Marble Formation. The fill has resulted in making rare species even rarer within the watershed, including *Salix caprea* (goat willow), *Solidago patula* (rough goldenrod), *Thelypteris palustris* var. *pubescens* (marsh fern), and *Helenium autumnale* (sneezeweed). Common species include *Platanus occidentalis* (sycamore), *Salix nigra* (black willow), *Lonicera x bella* (Zabel's honeysuckle), *L. morrowi* (Morrow's honeysuckle), *Lindera benzoin* (spice bush), and *Equisetum hyemale* var. *affine* (tall horsetail). Species rare in this area include *Dentaria laciniata* (cut-leaved toothwort), *Geranium columbinum* (long stalked cranesbill), *Cleome hassleriana* (spider flower), *Iris pseudacorus* (yellow iris), and *Chelone glabra* (white turtlehead).

Hampton Woods (Area #19) consists of deciduous forest, mixed pine-deciduous forest, thickets, stream banks, reservoir banks, and marshes overlying the Cockeysville Marble Formation. Common species include *Pinus taeda* (loblolly pine), *Quercus rubra* (northern red oak), *Prunus serotina* (black cherry), *Cornus florida* (white flowering dogwood), *Lonicera morrowi* (Morrow's honeysuckle), *Rubus allegheniensis* (upland blackberry), *Viburnum acerifolium* (maple-leaved viburnum), *Duchesnea indica* (indian strawberry), *Microstegium vimineum* (stilt grass), *Alliaria petiolata* (garlic-mustard), and *Celastrus orbiculatus* (oriental bittersweet). Species rare in this area include *Hesperis matronalis* (dame's rocket), *Dryopteris carthusiana* (spinulose wood fern), *Ampelopsis brevipedunculata* (porcelainberry), and *Maclura pomifera* (osage orange).

Glen Ellen (Area #20) consists of deciduous forest, mixed deciduous forest, stream banks, reservoir banks, marshes, and thickets overlying the Loch Raven Schist Formation and a small area of the Cockeysville Marble Formation. Common species include *Quercus rubra* (northern red oak), *Q. montana* (chestnut oak), *Q. velutina* (black oak), *Pinus echinata* (shortleaf pine), *P. strobus* (eastern white pine), *Prunus serotina* (black cherry), *Liriodendron tulipifera* (yellow poplar), *Acer rubrum* (red maple), *Cornus florida* (white flowering dogwood), *Rhus typhina* (staghorn sumac), *Lindera benzoin* (spice bush), *Rosa multiflora* (multiflora rose), *Solidago juncea* (early goldenrod), *Thelypteris noveboracensis* (New York fern), and *Polystichum acrostichoides* (Christmas fern). Species rare in this area include *Acer platanoides* (Norway maple), *Picea abies* (Norway spruce), *Impatiens pallida* (pale touch-me-not), *Diphasiastrum digitatum* (fan club-moss), *Carex normalis* (larger straw sedge), and *Hystrix patula* (bottle-brush grass).

Loch Raven Glen (Area # 21) consists of deciduous forest, a spring-fed swamp, reservoir banks, and turfs. Geologically, this area overlies the Loch Raven Schist Formation. Common plants in this area include *Liriodendron tulipifera* (yellow poplar), *Quercus rubra* (northern red oak), *Carpinus caroliniana* (ironwood), *Cornus florida* (white flowering dogwood), *Hydrangea arborescens* (wild hydrangea), *Parthenocissus quinquefolia* (Virginia creeper), and *Festuca arundinacea* (tall fescue). Species rare in this area include *Osmunda cinnamomea* (cinnamon fern), *Ilex opaca*

(American holly), *Cypripedium acaule* (pink lady's-slipper), *C. calceolus* var. *pubescens* (yellow lady's slipper), and *Cenchrus longispinus* (field sandbur).

White Pine Point (Area #22) overlies the Cockeysville Marble Formation and consists of pine stands, deciduous forest, stream banks, reservoir banks, and marsh. Common species include *Pinus strobus* (eastern white pine), *P. taeda* (loblolly pine), *Fraxinus americana* (white ash), *Lonicera japonica* (Japanese honeysuckle), *Phytolacca americana* (poke), and *Robinia pseudoacacia* (black locust). Species rare in this area include *Picea abies* (Norway spruce), *Capsella bursa-pastoris* (shepherd's purse), and the state "Watch List" species *Quercus muhlenbergii* (chinquapin oak).

Goetz's Woods (Area #23) overlies the Cockeysville Marble Formation and consists of pine plantations, deciduous forest, a small hemlock grove, stream banks, reservoir banks, and marshes. Common species include *Pinus strobus* (eastern white pine), *Liriodendron tulipifera* (yellow poplar), *Fraxinus americana* (white ash), *Quercus rubra* (northern red oak), *Q. alba* (white oak), *Cornus florida* (white flowering dogwood), *Nyssa sylvatica* (black gum), *Solidago canadensis* var. *scabra* (tall goldenrod), *Salix nigra* (black willow), *Polygonum sagittatum* (arrow-leaved tearthumb), and locally, *Phalaris arundinacea* (reed canary grass). Species rare in this area include *Alnus serrulata* (hazel alder), *Tsuga canadensis* (hemlock), *Trillium grandiflorum* (white trillium), *Cypripedium calceolus* var. *pubescens* (yellow lady's-slipper), and *Chelone glabra* (white turtlehead).

Pierce's Woods (Area #24) overlies the Cockeysville Marble Formation and also contains a small area of unconsolidated Coastal Plain sediments. This area formerly contained a *Pinus sylvestris* (Scots pine) plantation which has been replaced with plantings of *Pinus strobus* (eastern white pine) and *Fraxinus americana* (white ash). The area also contains other pine species plantations, deciduous forests, fields, stream banks, reservoir banks, and marsh. Dominant species include *Pinus strobus* (eastern white pine), *Fraxinus americana* (white ash), *Prunus serotina* (black cherry), *Carya tomentosa* (mockernut hickory), *Acer rubrum* (red maple), *Rhus typhina* (staghorn sumac), *Solidago canadensis* var. *scabra* (tall goldenrod), *S. juncea* (early goldenrod), *Salix nigra* (black willow), and *Festuca* spp. (fescues). Dominant species in the Coastal Plain sediments include *Solidago rugosa* (wrinkle-leaf goldenrod), *Rhus glabra* (smooth sumac), and *R. typhina* (staghorn sumac). Species rare in this area include *Hesperis matronalis* (dame's rocket), *Juniperus virginiana* (red cedar), and *Pinus virginiana* (Virginia pine).

Windemere Woods (Area #25) overlies the Cockeysville Marble Formation and consists of deciduous forest, mixed coniferous/deciduous forest, marsh, stream banks, and turf. Common species include *Pinus strobus* (eastern white pine), *Quercus velutina* (black oak), *Q. montana* (chestnut oak), *Q. rubra* (northern red oak), *Liriodendron tulipifera* (yellow poplar), *Picea abies* (Norway spruce), *Festuca* spp. (fescues), *Lindera benzoin* (spice bush), *Viburnum acerifolium* (maple-leaved viburnum), *Hemerocallis fulva* (tawny daylily), and *Perilla frutescens* (beefsteak plant). Species rare in this area include *Cimicifuga racemosa* (black cohosh), *Eupatorium sessilifolium* (upland boneset), *Ornithogalum umbellatum* (star of Bethlehem), and *Dryopteris intermedia* (evergreen wood fern).

The Pines (Area #26) consists of pine-spruce plantation, deciduous forest, stream banks, reservoir banks, field, turfs, and marsh. Geologically, this area overlies the Loch Raven Schist Formation. Common species include *Pinus strobus* (eastern white pine), *Picea abies* (Norway spruce), *Quercus rubra* (northern red oak), *Fraxinus americana* (white ash), *Lindera benzoin* (spice bush), *Eleusine indica* (goose grass), *Festuca elatior* (meadow fescue), and *Parthenocissus quinquefolia* (Virginia creeper). Species rare in this area include *Mimulus ringens* (square-stemmed monkey flower), *Yucca filamentosa* (yucca), *Sagittaria latifolia* (arrow-head), and *Lobelia cardinalis* (cardinal flower).

Laurel Woodlands (Area #27) overlies the Loch Raven Schist Formation and consists of deciduous forest, swamp, marsh, stream bank, fields, and a small grove of pines and spruces along Loch Raven Drive. Common species include *Liriodendron tulipifera* (yellow poplar), *Quercus alba* (white oak), *Q. velutina* (black oak), *Fagus grandifolia* (American beech), *Carpinus caroliniana* (ironwood), *Carya ovalis* (sweet pignut hickory), *Cornus florida* (white flowering dogwood), *Lindera benzoin* (spice bush), *Viburnum recognitum* (northern arrow-wood), *Hydrangea arborescens* (wild hydrangea), *Podophyllum peltatum* (mayapple), *Microstegium vimineum* (stilt grass), *Polystichum acrostichoides* (Christmas fern), and *Lonicera japonica* (Japanese honeysuckle). Species rare in this area include *Salix caprea* (goat willow), *Ilex opaca* (American holly), *I. verticillata* (winterberry), *Viola incognita* (sweet white violet),

Dryopteris cristata (crested wood fern), *Sabatia angularis* (rose-pink), *Obolaria virginica* (pennywort), and *Osmunda regalis* var. *spectabilis* (royal fern).

Honeysuckle Hill (Area #28) overlies the Loch Raven Schist Formation and consists of deciduous forest and reservoir banks. Common species include *Quercus alba* (white oak), *Q. rubra* (northern red oak), *Q. montana* (chestnut oak), *Liriodendron tulipifera* (yellow poplar), *Kalmia latifolia* (mountain-laurel), and *Hydrangea arborescens* (wild hydrangea). Species rare in this area include *Amelanchier arborea* (serviceberry), *Pycnanthemum flexuosum* (narrow-leaved mountain-mint), *Epigaea repens* (trailing arbutus), and *Cercis canadensis* (redbud).

The Small Dam (Area #29) overlies the Cockeysville Marble Formation and consists of deciduous woodlands, field, turfs, river banks, and stream banks. Common species include *Quercus alba* (white oak), *Q. rubra* (northern red oak), *Q. montana* (chestnut oak), *Sassafras albidum* (sassafras), *Tilia americana* (American linden or basswood), *Celtis tenuifolia* (Dwarf hackberry), *Hedera helix* (English ivy), *Vinca minor* (periwinkle), and *Festuca arundinacea* (tall fescue). Species rare in this area include *Quercus stellata* (post oak), *Campanula americana* (tall bellflower), *Pteridium aquilinum* var. *latiusculum* (eastern bracken), *Pellaea x atropurpurea* (purple cliffbrake), *Asplenium rhizophyllum* (walking fern), and *Cystopteris tenuis* (upland brittle fern).

Pineleigh (Area #30) overlies the Loch Raven Schist Formation and consists predominantly of deciduous forest, with some roadside turf, reservoir banks, and *Pinus strobus* (white pine) near the large dam. Common species include *Quercus alba* (white oak), *Q. rubra* (northern red oak), *Q. velutina* (black oak), *Q. montana* (chestnut oak), *Liriodendron tulipifera* (yellow poplar), *Fagus grandifolia* (American beech), *Kalmia latifolia* (mountain-laurel), *Lindera benzoin* (spice bush), *Perilla frutescens* (beefsteak plant), and *Festuca elatior* (meadow fescue). Species rare in this area include *Berberis thunbergii* (Japanese barberry), and *Viola sororia* forma *priciana* (Confederate violet).

Phoenix (Area #31) overlies the Cockeysville Marble Formation and a small strip of the Loch Raven Schist Formation along Phoenix Road. Habitats present here include deciduous forest, river banks, stream banks, marsh, swamp, a pond, and open soils. The North Central Trail (formerly abandoned railroad right-of-way) is included in this area. Common species include *Platanus occidentalis* (sycamore), *Robinia pseudoacacia* (black locust), *Celtis occidentalis* (hackberry), *Liriodendron tulipifera* (yellow poplar), *Acer negundo* (boxelder), *Hamamelis virginiana* (witch-hazel), *Lindera benzoin* (spice bush), *Dennstaedtia punctilobula* (hayscented fern), *Phalaris arundinacea* (reed canary grass), *Rudbeckia laciniata* (green-headed coneflower), *Polygonum perfoliatum* (perfoliate smartweed), *Lonicera japonica* (Japanese honeysuckle), and *Toxicodendron radicans* (poison-ivy). Species rare in this area include *Asimina triloba* (paw-paw), *Ulmus parvifolia* (Chinese elm), *Catalpa bignonioides* (southern catalpa), *Elaeagnus umbellata* (oleaster), *Rosa multiflora* var. *cathyensis* (crimson rambler rose), *Osmunda claytoniana* (interrupted fern), *Woodsia obtusa* (blunt-lobed woodsia), *Strophostyles helvola* (hairy pink wild bean), and the state "rare" species *Matteuccia struthiopteris* (ostrich fern). *Carex trichocarpa* (hairy-fruited sedge), a State "rare" species, occurs in Greene Branch Marsh, a Nontidal Wetland of Special State Concern. A few specimens of *Rudbeckia fulgida* var. *sullivantii* cultv. Goldsturm (perennial black-eyed Susan), of which the type is a state "Watch List" species, occurred in this area, but were extirpated due to the construction of the North Central Trail. There is a garden planting (Manor Garden Club) at the trail parking lot. Some of the specimens within this planting are capable of spreading into the watershed, and some of the native and some non-native species in the garden are currently elements of the watershed flora. Plants within the garden include *Miscanthus sinensis* (eulalia), *Hemerocallis fulva* (tawny daylilly), *Phlox subulata* (moss phlox), *Viburnum opulus* (cranberry-tree), *Rudbeckia fulgida* var. *sullivantii* cultv. Goldsturm (perennial black-eyed Susan), *Rudbeckia trilobum* (three-lobed coneflower), *Aster novae-angliae* (New England aster), *Eupatorium coelestinum* (mistflower), *Ajuga reptans* (carpet bugleweed), *Berberis thunbergii* (Japanese barberry), *Hamamelis virginiana* (witch-hazel), *Liatris spicata* (blazing star), *Malva sylvestris* (high mallow), *Cercis canadensis* (redbud), *Helianthus decapetalous* (thin-leaved sunflower), *Hydrangea quercifolia* (oak-leaved hydrangea), *Coreopsis rosea* (pink tickseed), *Rudbeckia triloba* (three-lobed coneflower), *Solidago speciosa* (showy goldenrod), *Oxydendrum arboreum* (sourwood), *Yucca filamentosa* (yucca), *Malus x floribunda* (showy crabapple), *Cornus florida* (white flowering dogwood), *Euonymus elatus* cultv. Compactus (burning bush), *Monarda fistulosa* (bergamot), *Clematis maximowitzi* (Japanese clematis), *Leucanthemum vulgare* (ox-eyed daisy), *Monarda didyma* (Oswego tea), *Eupatorium sessilifolium* (upland boneset), and *Viola obliqua* 'hybrid' (hybrid violet).

Orchards (Area #32) overlies the Cocksylvia Marble Formation and consists of a small *Pinus strobus* (eastern white pine) plantation, reservoir banks, deciduous forest, thickets, fields, and open soils. There is also an old cemetery (Jessop family) within this area. Common species include *Pinus strobus* (eastern white pine), *Malus coronaria* (American crabapple), *Acer rubrum* (red maple), *A. negundo* (boxelder), *Robinia pseudoacacia* (black locust), *Rhus glabra* (smooth sumac), *Lonicera morrowi* (Morrow's honeysuckle), *L. japonica* (Japanese honeysuckle), *Rosa multiflora* (multiflora rose), *Vinca minor* (periwinkle), *Celastrus orbiculatus* (oriental bittersweet), and *Polygonum perfoliatum* (perfoliate smartweed). *Tragopogon dubius* (goat's-beard) was rare in this area (this species has been extirpated at this station by construction of the North Central Trail, but is very rare elsewhere in the watershed). Other rare species in this area include *Acer platanoides* var. *schwedlerii* (crimson king maple), *Pinus nigra* (Austrian pine), and a variegated form of *Vinca minor* (periwinkle).

Upper Gunpowder (Area #33) overlies upon the Loch Raven Schist Formation with the Baltimore Gneiss Formation touching the upper edge of this area. This area consists of deciduous forest, stream banks, and marshes along the Gunpowder Falls. Common species include *Quercus alba* (white oak), *Q. montana* (chestnut oak), *Q. rubra* (northern red oak), *Fagus grandifolia* (American beech), *Liriodendron tulipifera* (yellow poplar), *Cornus florida* (white flowering dogwood), *Lonicera morrowi* (Morrow's honeysuckle), *L. tatarica* (tartarian honeysuckle), *Viburnum acerifolium* (maple-leaved viburnum), and *Polygonum perfoliatum* (perfoliate smartweed). Species rare in this area include *Betula lenta* (sweet birch), *Lonicera sempervirens* (trumpet honeysuckle), and *Humulus lupulus* (hops) (this species has been extirpated by construction of the North Central Trail).

VOUCHER SPECIMENS

Reference specimens collected during this study for each species found within the watershed have been deposited as vouchers in the herbarium of Towson University (BALT), and duplicates of early collections have been sent to the University of North Carolina (NCU).

ANNOTATED CHECKLIST OF THE FLORA

This checklist includes the scientific name, the common name, frequency of occurrence, habitat, distribution, abundance, the author's collection number, and where applicable, the time of flowering or spore production. In addition, a code is given for each species' geographical floral affinity: "A" stands for non-native to North America, "N" stands for northern (north of Pennsylvania), "S" stands for southern (south of North Carolina), "W" stands for western (west of the Appalachian Mountain range), and "E" stands for eastern (our area, including Maryland, Pennsylvania, West Virginia, Virginia, Delaware, the District of Columbia, and North Carolina). Nomenclature follows Kartesz and Kartesz (1994), except for horticultural species (if they are not listed by Kartesz and Kartesz) which follow Bailey (1949), and the Pteridophytes which follow Gleason and Cronquist (1991). Common names follow Gleason and Cronquist (1991) and have been modified to comply with Kartesz and Thieret (1991). The definition of the abundance terms used in the floral checklist is described in Table 2. Where a taxa is local, such as in a pond or on rocks, it may be combined with a modifier, e.g. "locally" infrequent on rock outcrops. Plants are grouped as fern allies, ferns, gymnosperms, monocots, and dicots and names are alphabetical.

Species listed by the Maryland Wildlife and Heritage Division (MWHD 2001) of the Maryland Department of Natural Resources as of concern due to rarity are denoted by the following: S1 symbolizes a Maryland "highly rare" species; S2 symbolizes a Maryland "rare" species; S3 symbolizes a Maryland "watch list/not actively tracked" species; S3.1 symbolizes a Maryland "watch list/actively tracked" species; SH symbolizes "historically known", but not verified for 20 or more years; SU symbolizes a Maryland "status uncertain" species; S3S4 symbolizes a Maryland "watch list/actively tracked/apparently secure species; T symbolizes a Maryland "threatened and protected" species; and E symbolizes a Maryland "endangered and protected" species. One plant species was found to occur in the watershed during this study which is listed as FSC, a "Federal species of concern" (a species under consideration for Federal listing).

Table 2. Abundance Scale

Density	Description
Abundant	Dominant or co-dominant in 51% to 100% of habitats within the watershed
Common	Dominant or co-dominant in 1% to 50% of habitats within the watershed
Frequent	Not dominant, but easily found in a majority of habitats within the watershed
Occasional	Scattered in habitats, but not difficult to find within the watershed
Infrequent	Difficult to find, but at least 13 separate locations within the watershed
Rare	Very difficult to find, 5 to 12 locations within the watershed
Very Rare	Extremely difficult to find, less than 5 locations within the watershed

PTERIDOPHYTES (Ferns and Fern Allies): FERN ALLIES

Equisetaceae (Horsetail Family)

Equisetum arvense L. Common horsetail. Occasional on open soils, in open woodlands, in turfs, and in thickets, usually in sandy soils. #640. Spores ripe in April. N,S,E,W.

Equisetum hyemale var. *affine* (Englem.) A. A. Eaton. Tall horsetail. Very rare in colonies in woodlands northwest of Ashland Bridge at Western Run and on sandy flood plains bordering Long Quarter Branch, and in a thicket south of the small dam. #534. Spores ripe in June. N,S,E,W.

Lycopodiaceae (Club-moss Family)

Diphasiastrum digitatum (A. Braun) Holub. Fan club-moss. Occasional in dry *Pinus virginiana* (Virginia pine) woodlands and infrequent in dry deciduous forests. #895. Spores ripe in July. N,S,E,W.

Huperzia lucidula (Michx.) Trevisan. Shining club-moss. Infrequent bordering forested streambanks and in seepage swamps, and one station on a shaded schist outcrop in the Laurel Woodlands area. #739. Spores ripe in July. N,E,W.

Lycopodium dendroideum Michx. Round-branch ground-pine. Very rare in a dry woodland southeast of Ashland Road. #1015. Spores ripe in July. N,E,W.

Lycopodium obscurum L. Flat-branch ground-pine. Occasional in moist forests. #2379. Spores ripe in July. N,E,W.

Selaginellaceae (Spike-moss Family)

Selaginella apoda (L.) Fern. Meadow spike-moss. Occasional in damp woodlands, in meadows, and rare on rotting logs. #557. Spores ripe in June. N,S,E,W.

Selaginella rupestris (L.) Spring. Rock spike-moss. Very rare, one station on schistose rocks on an open slope in the northern part of the watershed. #2053. Spores ripe in June. N,S,E,W.

PTERIDOPHYTES (Ferns and Fern Allies): FERNS

Adiantaceae (Maidenhair Fern Family)

Adiantum pedatum L. Northern maidenhair. Occasional on moist rocky forested slopes. #808. Spores ripe in August. N,S,E,W.

Pellaea x atropurpurea (L.) Link. Purple cliffbrake. Very rare in rock crevices of the Cockeysville Marble Formation south of the small dam, northeast of Pine Ridge Golf Course, and in the Hampton Woods area. #2458. Spores abortive (sterile hybrid), reproduces apogamously by megaspores. N,S,E,W.

Aspleniaceae (Spleenwort Family)

Asplenium platyneuron (L.) Oakes ex D.C. Eat. Ebony spleenwort. Common in woodlands, in thickets, and in rock crevices and very rare in mesic fields and in crevices of the small dam gatehouse. #737. Spores ripe July-September. N,S,E,W.

Asplenium rhizophyllum L. Walking fern. Rare and local in horizontal crevices of forested marble outcrops near Ashland and near the small dam, and in horizontal crevices of schist outcrops near the community of Warren. #667. Spores ripe June-September. N,S,E,W.

Asplenium trichomanes ssp. *quadivalens* D.E. Meyer amend. Lovis. Maidenhair spleenwort (tetraploid). Very rare in crevices of forested marble outcrops near Ashland. #668. Spores ripe July-September. N,E,W. Note: *A. trichomanes* is divided into two subspecies based on Moran (1982).

Asplenium trichomanes ssp. *trichomanes* L. Maidenhair spleenwort (diploid). Vary rare, in horizontal crevices of forested schist outcrops in the Gunpowder Highlands and Springdale Woods areas. #6312. Spores ripe July-September. N,S,E,W.

Dryopteridaceae (Wood Fern Family)

Athyrium filix-femina var. *angustum* (Willd.) Lawson. Northern lady fern. Frequent in low woodlands and on moist forested slopes. #2170. Spores ripe July. N,S,E,W.

Athyrium filix-femina var. *asplenioides* (Michx.) Farw. Southern lady fern. Infrequent in low wet thickets. #666. Spores ripe July. N,S,E,W.

Cystopteris protrusa (Weatherby) Blasdell. Lowland brittle fern. Infrequent in forested flood plains. #664. Spores ripe June-July. N,E,W.

Cystopteris tenuis (Michx.) Desv. Upland brittle fern. Very rare at three stations: a rocky slope south of the small dam, an old foundation of a springhouse in the forest on the northwest side of the Warren Road Bridge, and in crevices of an old wall in the forest near Ashland. #654. Spores ripe June. N,E,W.

Deparia acrostichoides (Sw.) M. Kato in ed. Silvery gladefern. Frequent in moist rich forests, usually near streams. #266. Spores ripe July-September. N,E,W.

Dryopteris x boottii (Tuckerm.) Underw. (*D. Cristata x intermedia*). Boott's wood fern. Very rare, two specimens at one station on a wooded bank of a seep in the Merryman's Woods area. #4146. Spores abortive (sterile hybrid), reproduces by megaspores. N,E,W.

Dryopteris carthusiana (Villars) H. P. Fuchs. Spinulose wood fern. Frequent in *Pinus strobus* (white pine) woodlands, low deciduous forests, and swamps. #881. Spores ripe June-July. N,E,W.

Dryopteris celsa (Wm. Palmer) Knowlt. et al. ex Small. Log fern. S3.1\T. Very rare, four specimens at one station on a forested stream bank in the Merryman's Woods area. #2811. Spores ripe June-July. N,S,E.

Dryopteris cristata (L.) Gray. Crested wood fern. Very rare in a marsh in the Laurel Woodlands area., and on a stream bank in the Merryman's Woods area (extirpated at this station). #461. Spores ripe June-September. N,E,W.

Dryopteris intermedia (Muhl. ex Willd.) A. Gray. Evergreen wood fern. Occasional on stream banks, in *Pinus* spp. (pine) woodlands, and on rocky forested slopes. #2300. Spores ripe July-September. N,E,W.

Dryopteris marginalis (L.) Gray. Marginal wood fern. Frequent in rocky woodlands and on talus slopes of schistose formations; infrequent in same habitats on the Cockeysville Marble Formation. #785. Spores ripe June-October. N,E,W.

Dryopteris x triploidea Wherry (*D. carthusiana* x *intermedia*). Triploid wood fern. Occasional in moist forests. #707. N,E,W.

Matteuccia struthiopteris (L.) Todaro. Ostrich fern. S2. Fifteen specimens at one station in a wooded flood plain along the Gunpowder Falls in the Phoenix area. #713. Spores ripe June-August. N,E.

Onoclea sensibilis L. Sensitive fern. Abundant in marshes, moist woodlands, meadows, and thickets. #807. Spores ripe September-October. N,E.

Polystichum acrostichoides (Michx.) Schott. Christmas fern. Abundant in forests and in thickets, and rare in fields (the most abundant fern in the watershed). #638. Spores ripe June-September. N,S,E,W.

Woodsia obtusa (Spreng.) Torr. Blunt-lobed woodsia. Very rare and local in mortar crevices on the north side of the North Central Trail Bridge, in rocky woodlands near Ashland, and in crevices of the west abutment of the small dam. #1400. Spores ripe June. N,S,E,W.

Dennstaedtiaceae (Hayscented Fern Family)

Dennstaedtia punctilobula (Michx.) T. Moore. Hayscented fern. Common in rocky forests and on slopes bordering forests. #809. Spores ripe in July. N,E,W.

Pteridium aquilinum var. *latiusculum* (Desv.) Underwood ex Heller. Eastern bracken. Rare, several stations in thickets on sandy soils along the North Central Trail near the community of Phoenix and in dry thickets near the small dam. #714. Spores ripe in July. N,S,E,W.

Ophioglossaceae (Adder's Tongue Family)

Botrychium dissectum Spreng. Lace-frond grapefern. [Includes *B. dissectum* forma *obliquum* (Muhl.) Fern. and *B. dissectum* forma *typicum* Clausen]. Occasional in low moist woodlands and flood plains throughout. #2060. Spores ripe in September. N,S,E,W.

Botrychium virginianum (L.) Sw. Rattlesnake fern. Frequent in woodlands throughout. #684. Spores ripe in April. N,E,W.

Osmundaceae (Flowering-fern Family)

Osmunda cinnamomea L. Cinnamon fern. Occasional in swamps, on shaded stream banks, and in damp woodlands. #786. Spores ripe in April-May. N,S,E,W.

Osmunda claytoniana L. Interrupted fern. Frequent in moist humus-rich forests. #787. Spores ripe in early June. N,E,W.

Osmunda regalis var. *spectabilis* (Willd.) Gray. Royal fern. Very rare and widely scattered in swamps. #2045. Spores ripe in mid May-June. N,S,E,W.

Polypodiaceae (Polypody Family)

Polypodium virginianum L. Common rock polypody. Infrequent and local on schistose rock outcrops near the community of Warren, in the Springdale Wood, Upper Gunpowder, Jessops, and Laurel Woodlands areas, and at several other stations. #567. Spores ripe in May. N,S,E,W.

Thelypteridaceae (Beech Fern Family)

Thelypteris hexagonoptera (Michx.) Weatherby. Broad beech fern. Frequent in deciduous forests, usually on slopes. #2040. Spores ripe in May. N,S,E,W.

Thelypteris noveboracensis (L.) Nieuwl. New York fern. Common and locally abundant in moist forests and swamps. #784. Spores ripe in June. N,S,E,W.

Thelypteris palustris var. *pubescens* (Lawson) Fern. Marsh fern. Rare in low open woodlands, on seepage slopes, and in marshes. #705. Spores ripe in August. N,S,E,W.

GYMNOSPERMS (Conifers)

Cupressaceae (Cypress Family)

Chamaecyparis pisifera (Sieb. & Zucc.) Endl. Sawara cypress. Very rare, one specimen planted at Pine Ridge Golf Course. #7380. Not fruiting. A.

Juniperus chinensis L. Chinese juniper. Very rare, forty specimens planted as a hedge at Pine Ridge Golf Course. #5023. With fruiting cones. A.

Juniperus chinensis L. cultv. Sargentii. Sargent juniper. Very rare, planted at Pine Ridge Golf Course and formerly on the traffic island (State property) at Dulaney Valley Road and Jarrettsville Pike (extirpated and replaced by new plantings). #8900. Not fruiting. A.

Juniperus scopulorum Sarg. Blue heaven juniper. Very rare, three specimens planted at Pine Ridge Golf Course. #5145. #5163. Not fruiting. A.

Juniperus virginiana L. Red cedar. Locally abundant in dry, open scrub woodlands and thickets of the Cockeysville Marble Formation, and occasional along woodland edges on schistose formations. #550. With fruiting cones. N,S,E,W.

Thuja occidentalis L. Arborvitae. S1/T. Very rare, several large shrubs bordering Paper Mill Road in the Orchards area and planted at the entrance to Pine Ridge Golf Course. Not fruiting. #5020. N,E,W. This is a Maryland "rare/threatened" species, but it occurs naturally only in western Maryland and these specimens represent horticultural remnants.

Pinaceae (Pine Family)

Larix decidua P. Miller. European larch. Very rare, one mature specimen bordering Paper Mill Road in the Jessops area, and three immature specimens planted at Pine Ridge Golf Course. #644. Cones present. A.

Metasequoia glyptostroboides H. H. Hu & Cheng. Dawn redwood. Very rare, five immature specimens planted at Pine Ridge Golf Course. #5128. Cones not present. A.

Picea abies (L.) Karst. Norway spruce. Common with *Pinus strobus* (eastern white pine) in plantations and as planted in deciduous woodlands along the eastern side of the reservoir from the Loch Raven Drive Bridge to Jarrettsville Pike, and occasional as old homestead or tree nursery remnants elsewhere. #644. Cones present. A.

Picea pungens Englem. Colorado blue spruce. Very rare, one large specimen bordering Paper Mill Road in the Orchards area. #594. Cones not present. W.

Pinus echinata P. Mill. Shortleaf pine. Very rare and local, approximately 150 specimens in a grove among deciduous trees and some nearby saplings in the Glen Ellen area 1.75 miles (2.8 kilometers) east-northeast of Seminary Avenue and Dulaney Valley Road, and rare in woodlands east of Pine Ridge Golf Course. #5130. Cones present. N,S,E,W.

Pinus nigra Arnold. Austrian pine. Very rare, one specimen near Paper Mill Road in the Orchards area, and six specimens on a wooded point east of Pine Ridge Golf Course. #5207. Cones present. A.

Pinus resinosa Ait. Red pine. Formerly in several planted stands southwest of Dulaney Valley Road Bridge, but removed due to decline from age and insects, and now very rare as scattered specimens in the Deadman's Cove, Bosley Point, and Marble Cliffs areas. #624. Cones present. N,S.

Pinus rigida P. Mill. Pitch pine. Very rare in areas along lower Dulaney Valley Road. #5434. Cones present. N,E,W.

Pinus strobus L. Eastern white pine. Abundant in the southern half of the watershed and common in the northern half of the watershed in pure plantations and mixed forests, and a few old specimens in the northern part of the watershed that are remnants of early homesteads. #618. Cones present. N,E,W.

Pinus sylvestris L. Scots pine. Several large plantations along Dulaney Valley Road east of Jarrettsville Pike have been removed due to decline from insects and disease, but a very few trees remain scattered throughout the area. #528. Cones present. A.

Pinus taeda L. Loblolly pine. Locally frequent as small plantations and in mixed conifer/hardwood stands in areas along Dulaney Valley Road and the Hampton Woods, Glen Ellen, and White Pine Point areas. #4190. Cones present. S,E,W.

Pinus virginiana P. Miller. Virginia pine. Frequent on dry open or rocky soils of the Cockeysville Marble Formation; infrequent in sandy or rocky soils of schistose formations. #703. Cones present. N,E,W.

Tsuga canadensis (L.) Carr. Hemlock. Rare and local in scattered small stands in the Gunpowder Highlands, Goetz's Woods, Windemere Woods, Jessops, and White Pine Point areas and several large specimens at Pine Ridge Golf Course and in nearby forests. #2417. Cones present. N,E.

Taxaceae (Yew Family)

Taxus baccata L. English yew. Very rare, one large specimen planted at Pine Ridge Golf Course and a few seedlings along woodland borders. #2224. Not seen in fruit nor flower. A.

ANGIOSPERMS (Flowering Plants): MONOCOTYLEDONS

Agavaceae (Agave Family)

Yucca filamentosa L. Yucca. Very rare, formerly occurred at two stations, site of an old dwelling on the northwest side of Warren Road Bridge (extirpated) and bordering a roadside in The Pines area (extirpated). #582. June. S,E,W.

Alismataceae (Water Plantain Family)

Alisma plantago-aquatica L. Water plantain. Occasional in marshes and in temporary pools throughout. #1006. July. N,E,W.

Sagittaria latifolia Willd. Arrow-head. Frequent in flood plains and marshes. #1007. July. N,S,E,W.

Araceae (Arum Family)

Arisaema dracontium (L.) Schott. Green dragon. S3. Very rare in open woodlands of the flood plain bordering Greene Branch. #5141. May-June. N,E,W.

Arisaema triphyllum (L.) Schott. Jack-in-the-pulpit. Common in moist forests. #564. April-May. N,S,E,W.

Symplocarpus foetidus (L.) Nutt. Skunk cabbage. Common in swamps, alluvial woodlands, along shaded stream banks, in marshes and in wet open thickets. #578. February-April. N,E,W.

Commelinaceae (Dayflower Family)

Commelina communis L. Asiatic dayflower. Occasional along roadsides, in fields, along woodland borders, and on open grounds. #2179. July-September. A.

Tradescantia virginica L. Spiderwort. Very rare on sandy open soils and grassy areas bordering the railroad right-of-way near the community of Phoenix (extirpated by construction of the North Central Trail) and rare in a dry sandy forest near Phoenix Pond. #721. Late May-June. N,S,E,W.

Cyperaceae (Sedge Family)

Bulbostylis capillaris var. *crebra* Fern. Bulbostylis. Very rare and local in dry sandy soils near the community of Phoenix (extirpated by North Central Trail construction). #2084. September. N,S,E,W.

Carex albursina Sheldon. White bear sedge. S3. Rare in rich soils in forests. #8903. June-July. N,E,W.

Carex annectens Bicknell. Yellow-fruited sedge. Infrequent on open clay soils. #1300. June-July. N,E,W.

Carex blanda Dewey. Charming sedge. Occasional in open woodlands, fields, and on open soils along the North Central Trail. #6110. May-July. N,E,W.

Carex cephaloidea Dewey. Thin-leaf sedge. S1. Rare in alluvial woodlands. #1274. May-early June. N,S,E,W.

Carex comosa Boott. Bearded sedge. Frequent in marshes in the northern part of watershed. #6299. June-August. N,S,E,W.

- Carex convoluta* Mackenz. Convuluted sedge. Infrequent in dry woodlands. #9223. May-June. N,S,E,W.
- Carex crinita* Lam. Fringed sedge. Occasional in wet thickets, damp forests, and marshes. #5165. June-August. N,S,E,W.
- Carex digitalis* Willd. Slender wood sedge. Infrequent in dry forests. #7836. May-July. N,S,E,W.
- Carex emmonsii* Dewey. Emmon's sedge. Locally occasional in dry thickets and woodlands of the Phoenix area. #4316. April-July. N,S,E,W.
- Carex flaccosperma* var. *glaucoidea* (Tuckerm) Kukenth. Gray-green sedge. Occasional in forests. #5290. June-July. N,E,W.
- Carex frankii* Kunth. Frank's sedge. Occasional in marshes, meadows, and low damp open depressions. #890. June-September. N,E,W.
- Carex gracillima* Schwein. Graceful sedge. Occasional in rich forests. #5290. May-July. N,S,E,W.
- Carex granularis* Muhl. Meadow sedge. S3. Very rare on an edge of the Merryman's Woods area. #9604. May-July. N,S,E.
- Carex gynandra* Schwein. Gynandrous sedge. Very rare in the marsh at Phoenix Pond. #5171. June-August. N,S,E,W.
- Carex hirsutella* Mackenz. Hirsute sedge. Infrequent on woodland edges and in fields on sandy soils, mostly in the northern part of the watershed. #6489. June-early July. N,S,E,W.
- Carex hystericina* Muhl. Porcupine sedge. S1/E. Very rare on a stream bank in The Pines area. #714. June-August. N,S,E,W.
- Carex interior* Bailey. Inland sedge. S3. Occasional on damp open soils and in marshes. #5167. May-July. N,S,E,W.
- Carex laxiculmis* Schwein. Drooping sedge. Infrequent in woodlands on the Cockeysville Marble Formation. #5180. May-June. N,E,W.
- Carex laxiflora* Lam. Loose-flowered sedge. Occasional in rich woodlands throughout. #5168. May-July. N,S,E,W.
- Carex lupulina* Willd. Hop sedge. Frequent in marshes and swampy woodlands. #1004. July-September. N,S,E,W.
- Carex lurida* Wahl. Lurid sedge. Common throughout in wet ditches, swamps, marshes. #1237. June-August. N,S,E,W.
- Carex normalis* Mackenz. Larger straw sedge. Rare on wet or dry clay soils in fields and open woodlands of areas along Dulaney Valley Road. #913. May-July. N,E,W.
- Carex pennsylvanica* Lam. Pennsylvania sedge. Occasional in dry sandy open soils and rocky forests. #5391. May. N,E,W.
- Carex platyphylla* Carey. Broad-leaved sedge. Occasional in rich woodlands. #8906. May-June. N,E,W.
- Carex radiata* (wahl.) Dewey. Radiant sedge, S1/E. Infrequent in dry woodlands. #8916. July-August. N,S,E,W.
- Carex rosea* Schk. Stellate sedge. Infrequent in dry woodlands. #9212. May-July. N,S,E,W.

- Carex scoparia* Schkuhr. ex Willd. Pointed broom sedge. Common in marshes and other non-wooded wetlands. #5181. July-September. N,S,E,W.
- Carex sparganioides* Willd. Bur-reed sedge. Very rare and local on open grounds and along woodland edges in the Small Dam area. #1227. June. N,E,W.
- Carex stipata* Muhl. ex Willd. Crowded-head sedge. Frequent in marshes and alluvial soils. #1268. May-June. N,S,E,W.
- Carex stricta* Lam. Erect sedge. Common in Greene Branch Marsh and infrequent in swamps, marshes and along reservoir banks elsewhere. #5173. July-August. N,S,E,W.
- Carex swanii* (Fern.) Mackenz. Swan's sedge. Occasional in dry forests and thickets. #5179. June-July. N,E,W.
- Carex trichocarpa* Muhl. Hairy-fruited sedge. S2. Very rare, several colonies in Greene Branch Marsh. #9109. June-August. N,S,E,W.
- Carex tribuloides* Wahl. Blunt broom sedge. Common in marshes and swamps throughout. #5173. July-August. N,S,E,W.
- Carex virescens* Muhl. ex Willd. Ribbed sedge. Occasional in forests. #8905. June-August. N,S,E,W.
- Carex vulpinoidea* Muhl. Fox sedge. Common in marshes and swamps throughout. #5178. June-August. N,S,E,W.
- Cyperus diandrus* Torr. Low cyperus. S3. Occasional in colonies along reservoir banks in areas along Dulaney Valley Road. #5065. August-October. N,S,E,W.
- Cyperus erythrorhizos* Muhl. Red-root sedge. S3. Abundant along reservoir banks and common in marshes, alluvial swamps, and wet ditches. #2084. August-early October. N,S,E,W.
- Cyperus esculentus* L. Yellow nut-grass. Common on moist sandy open grounds bordering the reservoir and occasional in moist disturbed grassy areas. #1011. July-August. N,S,E,W.
- Cyperus filiculmis* Vahl. Slender sedge. Occasional on sandy open grounds. #1285. June-September. N,S,E,W.
- Cyperus flavescens* L. Yellow galingale. Common on low wet sandy or gravelly open grounds; abundant south of the small dam and along the reservoir shore in The Pines area. #1307. August-September. N,S,E,W.
- Cyperus rivularis* Kunth. Shining cyperus. Occasional on wet sandy soils along streams, infrequent on sandy wet soils elsewhere. #5180. August-October. N,S,E,W.
- Cyperus strigosus* L. Straw sedge. Common and locally abundant in marshes, wet ditches, and low meadows. #1012. July-September. N,S,E,W.
- Cyperus tenuifolius* (Steud.) Dandy. Low kyllinga. Infrequent on reservoir banks and sand bars north of Warren Road Bridge. #7903. July-August. N,S,E,W.
- Eleocharis acicularis* (L.) R.&S. Least spikerush. Occasional in open muddy areas, mostly on the Cockeysville Marble Formation. #5174. July-August. N,E,W.
- Eleocharis intermedia* (Muhl.) Schultes. Intermediate spikerush. S1/E. Infrequent in silty mud of reservoir coves in the Pine Ridge area. #4492. June-July. N,E,W.

Eleocharis obtusa (Willd.) Schultes. Blunt spikerush. Common in open flood plains, in shallow water, and in marshes throughout. #1002. July-September. N,S,E,W.

Fimbristylis autumnalis (L.) R.&S. Slender fimbry. Abundant in moist sandy soils bordering reservoir banks and occasional in marshes. #1313. August-October. N,S,E,W.

Schoenoplectus tabernaemontani (K.C. Gmel.) Palla. Soft-stem bulrush. Occasional in open wetlands. #5284. June-August. N,S,E,W.

Scirpus atrovirens Willd. Green bulrush. Frequent in marshes, swamps, and wet depressions. #907. June-August. N,S,E,W.

Scirpus cyperinus (L.) Kunth. Wool-grass. Common in swamps, alluvial woodlands, damp swales, and marshes. #1025. August-September. N,S,E,W.

Scirpus cyperinus var. *rubricosus* (Fern.) Gilley. Red wool-grass. Occasional with *S. cyperinus* (wool grass) in the same habitats. #5283. August-September. N,S,E,W.

Scirpus verecundus Fern. Bashful bulrush. S2. Very rare, a few specimens on the forested west-facing slope under the *Quercus* spp. (oak) canopy approximately 1000 feet (305 meters) southeast of the intersection of Loch Raven Drive and the east side of Loch Raven Drive Bridge. #9100. June. N,E,W.

Dioscoriaceae (Yam Family)

Dioscorea quaternata (Walt.) J.F. Gmel. Four-leaved wild yam. Occasional in rich forests. #7372. May. N,S,E,W.

Dioscorea villosa L. Wild yam. Common in moist woodlands and thickets. #750. June. N,S,E,W.

Hydrocharitaceae (Frog's-bit Family)

Egeria densa Planch. Elodea. Infrequent in Phoenix Pond. #7385. Staminate flowers only in July-August. A.

Hydrilla verticillata (L. f.) Royle. Hydrilla. Occasional in several colonies in the cove at the mouth of Dulaney Valley Branch. #11,115. Not in fruit nor flower. A.

Iridaceae (Iris Family)

Belamcanda chinensis (L.) DC. Blackberry-lily. Very rare, two colonies on open soils in the Wakefield area. #5194. June-July. A.

Iris x germanica L. German iris. Very rare at one station, a grassy slope at the large dam (station extirpated by dam overlook restoration). #1996. May-early June. A.

Iris pseudacorus L. Yellow iris. Occasional in swamps, on reservoir banks, and on stream banks. #939. Late May-June. A.

Iris siberica L. Siberian iris. Very rare, planted at one station at Pine Ridge Golf Course. #5056. June. A.

Sisyrinchium angustifolium P. Miller. Blue-eyed grass. Frequent in meadows, in marshes, on moist open grounds, and along stream banks in full sun. #1240. June. N,S,E,W.

Juncaceae (Rush Family)

Juncus acuminatus Michx. Acuminate rush. Occasional on damp clay soils and in marshes. #5195. May-August. N,S,E,W.

Juncus effusus L. Soft rush. Frequent in alluvial soils and marshes north of Paper Mill Road Bridge, and frequent in open wetlands elsewhere. #758. June-July. N,S,E,W.

Juncus scirpoides Lam. Needle-pod rush. Infrequent in open wetlands. #5286. June-October. N,S,E,W.

Juncus tenuis Willd. Pathrush. Common along trails and frequent on low grounds, usually where the soil has been disturbed or compacted. #693. June-early July. N,S,E,W.

Luzula echinata (Small) F. J. Herman. Wood rush. Occasional in mesic woodlands and meadows. #638. April-May. N,S,E,W.

Lemnaceae (Duckweed Family)

Lemna minor L. Smaller duckweed. Locally infrequent floating on Phoenix Pond, on the Gunpowder Falls at the North Central Trail Bridge, and on protected backwater coves, and very rare south of the small dam. #5292. Not seen in fruit nor flower. N,S,E,W.

Wolffia columbiana Karst. Water-meal. S3. Locally abundant floating on Phoenix Pond. #9611. N,S,E,W. June-July.

Liliaceae (Lily Family)

Allium canadense L. Wild garlic. Rare in open flood plain woodlands. #5201. June-July. N,S,E,W.

Allium vineale L. Field garlic. Abundant in fields, on open grounds, and in flood plains. #738. June-July. A.

Asparagus officinalis L. Asparagus. Very rare in thickets and on open soils, primarily near roads. #697. May-June. A.

Convallaria majalis L. Lily of the valley. Very rare near an old homestead in the Jarrettsville Woods area. #4156. May. A.

Erythronium americanum Ker-Gawl. Trout lily. Common in low moist woodlands, along stream banks, and on flood plains, usually in sandy soils. #569. April. N,S,E,W.

Hemerocallis fulva L. Tawny daylily. Abundant in alluvial woodlands, on marsh borders, on stream banks, in ditches, along woodland edges, and along road banks. #901. June-early July. A.

Hemerocallis fulva var. *kwanso* Regel. Double tawny daylily. Locally abundant along Western Run, several reservoir coves, and in the flood plain along Greene Branch. #997. Late June-July. A.

Hemerocallis x. sp. L. Hybrid daylily. Very rare, yellow-flowered hybrids planted adjacent to the zebra mussel control facility at the large dam. #9859. Early July. A.

Hosta ventricosa (Salisb.) Stearn. Hosta. Locally frequent in woodlands east-southeast of Morgan Mill Road and Loch Raven Drive; infrequent in low woodlands, in glens, and along trail banks elsewhere. #882. July. A.

Hypoxis hirsuta (L.) Coville. Yellow stargrass. Very rare on grassy road banks. #4476. May-August. N,S,E,W.

Leucojum aestivum L. Vernal snowflake. Very rare, one station in a wet depression on the northwest side of Warren Road near the community of Warren. #4152. May. A.

Liriope muscari var. *variegatum* Bailey. Variegated liriop. Very rare, a few specimens planted at Pine Ridge Golf Course. #5057. September-October. A.

Medeola virginiana L. Cucumber root. Frequent in moist rich forest. #975. June. N,S,E,W.

Narcissus x incomparabilis P. Mill. Daffodil. Very rare, one small colony in woodlands along Dulaney Valley Road in the Merryman's Woods area. #508. April. A.

Narcissus poeticus L. Poet's narcissus. Very rare, sandy flood plain bordering Long Quarter Branch, in low woodlands near Fitzhugh Run, and planted on the traffic island (State property) at Dulaney Valley Road and Jarrettsville Pike. #549. April. A.

Narcissus pseudonarcissus L. False narcissus. Very rare in the sandy flood plain bordering Long Quarter Branch. #547. April. A.

Narcissus telemonius L. cultv. *plenus*. Van Sion daffodil. Very rare, near former homestead sites in forests of the Jarrettsville Woods area and on the northwest side of Warren Road Bridge. #4221. April. A.

Ornithogalum umbellatum L. Star of Bethlehem. Frequent in turfs, open shade under *Pinus* spp. (pines), and in meadows. #666. May. A.

Polygonatum biflorum (L.) Ell. Solomon's-seal. Frequent in moist forests throughout. #712. May-early June. N,S,E,W.

Polygonatum canaliculatum (Muhl.) Pursh. Giant Solomon's-seal. Very rare along the Gunpowder Falls near the community of Phoenix. #5202. May-early June. N,S,E,W.

Polygonatum pubescens (Willd.) Pursh. Downy Solomon's-seal. Infrequent in moist woodlands throughout. #5205. May-early June. N,S,E,W.

Smilacina racemosa L. (Desv.) False Solomon's-seal. Very rare in cool moist forests in the northern end of the watershed. #682. Mid May-early June. N,S,E,W.

Smilacina racemosa var. *cylindrica* Fern. False Solomon's-seal. Common in moist thickets and moist forests throughout. #893. June. N,S,E,W.

Trillium grandiflorum (Michx.) Salisb. White trillium. Very rare in the deciduous forest bordering Fitzhugh Run. #1401. April. N,S,E,W.

Tulipa sp. L. Tulip. Very rare in a sandy flood plain of Long Quarter Branch and planted at the entrance to the Loch Raven Fishing Center. #1271. April. A.

Uvularia perfoliata L. Bellwort. Occasional in moist forests throughout. #606. May. N,S,E,W.

Veratrum viride Ait. White hellebore. Very rare along shaded stream banks in *Symplocarpus foetidus* (skunk cabbage) swamps. #5203. May-July. N,S,E,W.

Najadaceae (Naiad Family)

Najas gracillima (A. Braun) Magn. Thread-like naiad. SH/X. Rare in reservoir coves along Dulaney Valley Road. #7808. July-September. N,E,W.

Najas guadalupensis (Spreng.) Magnus. Southern naiad. S3. Occasional in shallow waters of the reservoir predominantly in the areas located along Dulaney Valley Road. #6785. July-September. N,S,E,W.

Najas minor All. Small naiad. Abundant in shallow waters with a silt bottom. #6789. July-September. A.

Orchidaceae (Orchid Family)

Aplectrum hyemale (Muhl. ex Willd.) Nutt. Putty-root. Very rare in rich terrace forests. #5205. May-June. N,S,E,W.

Cypripedium acaule Ait. Pink lady's-slipper. Very rare in dry *Quercus* spp. (oak) woodlands and dry *Pinus* spp. (pine) woodlands. #796. May. N,E.

Cypripedium calceolus var. *pubescens* L. Yellow lady's-slipper. Very rare at three stations in rich moist deciduous forests of the Goetz's Woods, Gunpowder Highlands, and Pineleigh areas. #5390. May. N,E,W.

Galearis spectabilis (L.) Raf. Showy orchis. Rare in rich moist forests. #5206. April-June. N,S,E,W.

Goodyera pubescens (Willd.) R. Br. Downy rattlesnake plantain. Occasional in dry *Quercus* spp. (oak) woodlands, particularly on rocky slopes, and infrequent in *Pinus* spp. (pine) woodlands. #973. Late July-mid August. N,E,W.

Isotria verticillata (Willd. ex Willd.) Raf. Whorled pogonia. Very rare in forests of the Laurel Woodlands area. #7275. May-June. N,S,E,W.

Tipularia discolor (Pursh.) Nutt. Crane-fly orchid. Occasional in deciduous forests. #5210. July-August. N,S,E,W.

Poaceae (Grass Family)

Agropyron repens (L.) Beauv. Quack grass. Frequent along roadsides, on open grounds, and in fields. #2290. August-September. A.

Agrostis gigantea Roth L. Creeping bent grass. Frequent in damp open soils, turfs and meadows. #961. June-August. A. This species is considered a variety of *A. stolonifera* (creeping bent grass) by some botanists.

Agrostis palustris Huds. Creeping bent grass. Restricted to putting greens at Pine Ridge Golf Course. #5155. Not seen in fruit nor flower. A.

Agrostis perennans (Walt.) Tuckerman. Upland bent grass. Infrequent in thickets and fields. #5287. August-September. N,E,W.

Agrostis scabra Walt. BSP. Tickle grass. Occasional in fields and open woodlands. #5212. July. N,S,E,W.

Agrostis stolonifera var. *major* (Gaudin) Farw. Creeping bent grass. Frequent on open flood plains and in turfs, and abundant in turfs at Pine Ridge Golf Course. #5405. June-August. N,S,E,W.

Agrostis tenuis Sibth. Colonial bent grass. Frequent in fields. #8908. May-July. A.

- Andropogon gerardi* Vitman. Bluestem. Rare on dry open soils of the Cockeysville Marble Formation. #2290. August-September. N,S,E,W.
- Andropogon virginicus* L. Broom sedge. Abundant on dry open grounds and in fields. #2204. Mid August-mid October. N,S,E,W.
- Anthoxanthum odoratum* L. Sweet vernal grass. Abundant in fields, along roadsides, and in turfs. #1992. April-June. A.
- Arthraxon hispidus* var. *cryptanthus* (Thunb.) Makino. Arthraxon. Occasional in turfs, on open wetland borders, and in open flood plain woodlands. #5026. September-October. A.
- Avena sativa* L. Oats. A few plants on a woodland edge southwest of the small dam as an adventive from an adjacent cultivated field. #6267. May-June. A.
- Bouteloua curtipendula* (Michx.) Torr. Side-oats grama. S2. Very rare on open bluffs of the Cockeysville Marble Formation in the Pine Ridge area. #4322. July. N,S,E,W.
- Brachyletrum erectum* (Schreb.) Beauv. Brachyletrum. Occasional in rocky forests. #5219. July-August. N,S,E,W.
- Bromus inermis* Leyss. Common brome grass. Infrequent in fields. #9197. June-July. A.
- Bromus japonicus* Thun. ex Murr. Japanese chess. Frequent along roadsides and in fields. #752. May-June. A.
- Bromus secalinus* L. Chess. Infrequent in fields. #5213. June-August. A.
- Calamagrostis acutiflora* Roth. Feather reed grass. Very rare, planted on the traffic island (State property) on the east side of the Dulaney Valley Road Bridge. #8911. June-September. A.
- Calamagrostis cinnoides* (Muhl.) Bart. Small woodreed. Frequent in damp or wet woodlands, particularly in flood plains. #1318. Late June-September. N,S,E.
- Cenchrus longispinus* (Hack.) Fern. Field sandbur. Very rare in a turf bordering Loch Raven Drive near the large dam. #2022. July-September. N,S,E,W.
- Cinna arundinacea* L. Stout woodreed. Common in flood plains, other moist forests, and damp thickets. #2883. August-September. N,S,E,W.
- Cynodon dactylon* (L.) Pers. Bermuda grass. Very rare on a turf/forest interface at Pine Ridge Golf Course and on road banks. #6653. July. A.
- Dactylus glomerata* L. Orchard grass. Abundant in fields, and on open soils. #761. Mid April-June. N,S,E,W.
- Danthonia spicata* (L.) Beauv. ex Roemer. & Schultes. Oat poverty grass. Frequent on poor dry open soils and in open pine woodlands. #1315. May-mid August. N,S,E,W.
- Dichanthelium acuminatum* var. *villosum* (Gray) Gould and Clark. Hairy panic grass. Occasional along field edges and in open woodlands. #5219. June-August. N,S,E,W.
- Dichanthelium boscii* (Poir.) Gould & Clark. Bosc's panic grass. Occasional in terrace forests and in field/forest ecotones. #5214. June-August. N,S,E,W.

- Dichanthelium clandestinum* (L.) Gould. Deer-tongue. Common throughout in fields, hedgerows, on open grounds, and in open terrace forests. #5221. June-July. N,S,E,W.
- Dichanthelium commutatum* (Schultes) Gould. Variable panic grass. Occasional in rocky woodlands. #5215. June-August. N,S,E,W.
- Dichanthelium depauperatum* (Muhl.) Gould. Starved panic grass. Occasional in fields and along woodland borders. #5216. June-September. N,S,E,W.
- Dichanthelium dichotomum* (L.) Gould. Bushy panic grass. Common in dry open forests and along field edges. #5222. May-August. N,S,E,W.
- Dichanthelium latifolium* (L.) Gould & Clark. Broad-leaved panic grass. Infrequent in open woodlands. #902. July. N,E,W.
- Dichanthelium linearifolium* (Scribn.) Gould. Low panic grass. Very rare in dry woodlands in areas along Dulaney Valley Road. #1290. June-July. N,S,E,W.
- Dichanthelium scoparium* (Lam.) Gould. Velvety panic grass. Frequent in open wetlands and damp fields. #5217. June-August. N,S,E,W.
- Dichanthelium sphaerocarpon* (Ell.) Gould. Round-fruited panic grass. Frequent on open soils and in fields. #924. June-July. N,S,E,W.
- Digitaria ischaemum* (Schreb. ex Schweig.) Schreb. ex Muhl. Smooth crabgrass. Common and often abundant in turfs. #5223. July-September. A.
- Digitaria filiformis* (L.) Koel. Sand crabgrass. Locally frequent on sandy soils near the community of Phoenix. #2098. August-September. N,S,E,W.
- Digitaria sanguinalis* (L.) Scop. Hairy crabgrass. Frequent in turfs and on open soils. #2151. August-September. A.
- Echinochloa crusgalli* (L.) Beauv. Barnyard grass. Frequent in wet open sandy or gravelly soils on stream and reservoir banks, and rare along road banks where water ponds for periods of time. #994. July-mid September. A.
- Eleusine indica* (L.) Gaertn. Goose grass. Locally frequent on dry open grounds, usually in areas where the soil is compacted (primarily due to foot-traffic). #2023. June-October. A.
- Elymus canadensis* L. Nodding wild-rye. Very rare on flood plain terraces of Gunpowder Falls in the northern part of the watershed. #5226. July-August. N,E,W.
- Elymus riparius* Weig. Riparian wild-rye. Infrequent in alluvial woodlands and on stream banks. #996. July-October. N,E,W.
- Elymus villosus* Muhl. ex Willd. Slender wild-rye. Infrequent on low moist open soils and in low woodlands of the Cockeysville Marble Formation. #5224. June-August. N,S,E,W.
- Elymus virginicus* L. Virginia wild-rye. Occasional along low woodland borders and on reservoir banks. #865. July-September. N,S,E,W.
- Eragrostis curvula* (Schrad.) Nees. Weeping love grass. Very rare on a grassy road bank near the west end of the Dulaney Valley Road Bridge. #7369. July-October. A.

- Eragrostis hypnoides* (Lam.) B.S.P. Creeping love grass. Rare in open wetlands. #6303. August-September. N,S,E,W.
- Eragrostis pilosa* (L.) Beauv. Love grass. Frequent in thickets, fields, and on open grounds. #2057. July-September. A.
- Eragrostis spectabilis* (Pursh.) Steud. Purple love grass. Frequent on open soils and in fields. #2155. July-September. N,S,E,W.
- Festuca arundinacea* Schreb. Tall fescue. Abundant on road banks and in some fields where seeded as turfs, and occasional in fields and on open grounds where not seeded. #5228. June-July. A.
- Festuca elatior* L. Meadow fescue. Common in fields and on open grounds throughout. #1261. June-July. A.
- Festuca rubra* L. Creeping fescue. Occasional on shaded moist soils. #2498. May-July. N,S,E,W.
- Glyceria striata* (Lam.) A.S. Hitchc. Fowl manna grass. Common in shaded wetlands, on shaded stream banks, and on flood plains. #5230. June-August. N,S,E,W.
- Holcus lanatus* L. Velvet grass. Common in fields, along grassy road banks, and on open soils throughout. #958. June. A.
- Hordeum vulgare* L. Barley. Very rare in recently-seeded turfs along Ashland Road at Western Run, and Dulaney Valley Road at Jarrettsville Pike (plants ephemeral and now extirpated). #1213. May-June. A.
- Hystrix patula* Moench. Bottle-brush grass. Infrequent in rocky *Quercus* spp. (oak) woodlands of the Cockeyville Marble Formation. #927. July-August. N,S,E,W.
- Leersia oryzoides* (L.) Sw. Rice cut-grass. Frequent in open wetlands, usually in shallow water. #5231. August-September. N,S,E,W.
- Leersia virginica* Willd. White grass. Frequent on moist wooded trail banks and on moist open soils. #1320. August-September. N,S,E,W.
- Lolium multiflorum* Lam. Italian rye grass. Rare on disturbed open soils. #1278. June. A.
- Lolium perenne* L. Perennial rye grass. Infrequent on disturbed open grounds and in dry fields. #5232. July-August. A.
- Microstegium vimineum* (Trin.) A. Camus. Stilt grass. Abundant along shaded trail banks, in terrace forests, on shaded flood plains and along moist shaded edges throughout. #5032. October. A.
- Miscanthus sinensis* Anderss. Eulalia. Infrequent and widely scattered on open grounds, in thickets, in fields of the Dulaney Valley Road areas, and planted at Pine Ridge Golf Course. A single specimen of *M. sinensis* var. *zebrinus* (striped maidengrass) was noted in the Turtle Rock Point area.. #2316. September-November. A.
- Muhlenbergia schreberi* Gmel. Nimblewill. Frequent in fields, in turfs, and on open grounds. #5233. August-September. N,S,E,W.
- Panicum anceps* Michx. Flat-stem panic grass. Common in fields, in meadows, and along roadsides, particularly on sandy soils. #955. July-September. S,E,W.

- Panicum dichotomiflorum* Michx. Spreading witch grass. Abundant in fields, along wetland edges, and in thickets. #2427. August-October. N,S,E,W.
- Panicum virgatum* L. Switchgrass. Rare in fields of power line rights of way on both sides of the reservoir. #7378. July-September. N,S,E,W.
- Paspalum laeve* Michx. Smooth paspalum. Rare in turfs. #5233. July-September. S,E,W.
- Paspalum setaceum* var. *muhlenbergii* (Nash) D. Banks. Hairy paspalum. Infrequent in fields and grassy areas. #1317. July-September. N,S,E,W.
- Pennisetum alopecuroides* (L.) Spreng. Fountain grass. Very rare, planted at Pine Ridge Golf Course. #7476. July-September. A.
- Phalaris arundinacea* L. Reed canary grass. Abundant in alluvial marshes along Western Run, Beaverdam Run, Gunpowder Falls, Greene Branch Marsh; in the low field bordering Dulaney Valley Branch; and occasional in marshes, ditches, and along shorelines elsewhere. #1261. May-July. N,E,W.
- Phleum pratense* L. Timothy. Common in fields, in roadside turfs, and on open soils. #835. June-October. A.
- Phragmites australis* (Cav.) Trin. ex Steud. Common reed. Infrequent in small clonal colonies: a ditch 820 feet (250 meters) west of Loch Raven Drive and Providence Road, Greene Branch Marsh, in an open flood plain south of the small dam, in the flood plain of Long Quarter Branch, at the Loch Raven Fishing Center cove, and in the flood plain of Dulaney Valley Branch. #2034. August-October. N,S,E,W.
- Phyllostachys aureosulcata* (Sieb. & Zucc.) Riv. Yellow-groove bamboo. Very rare, one small grove along the woodland border just northwest of Old Bosley and Dulaney Valley Roads. #4217. Not seen in flower nor fruit. A.
- Phyllostachys muda* Riv. Naked-bristle bamboo. Very rare, one small grove on the trail bank about 0.8 mile (1.2 kilometers) northeast of Dulaney Valley Road and Seminary Avenue in the Hampton Woods area. #5324. Not seen in flower nor fruit. A.
- Poa annua* L. Annual bluegrass. Occasional on footpaths and on compacted open soils. #4225. May-June. A.
- Poa compressa* L. Canadian bluegrass. Occasional in dry soils of fields, and along roadsides. #608. April-May. S,E,W.
- Poa pratensis* L. Kentucky bluegrass. Common and locally abundant in fields, meadows, along road banks, and in open woodland borders. #1267. May-June. A.
- Poa trivialis* L. Rough-stalked bluegrass. Infrequent in damp bottomland forests and along shaded stream banks on schistose soils. #5234. June-August. A.
- Sasa veitchii* Rehd. Kuma bamboo. One very large colony in a field bordering the North Central Trail in the Upper Gunpowder area and covering approximately 0.5 acre (1.2 hectares) but only a small part of the colony is within the watershed. #5067. Not seen in flower nor fruit. A.
- Schizachyrium scoparium* (Michx.) Nash. Little bluestem. Occasional in dry fields, usually near open *Pinus virginiana* (Virginia pine) stands. #2352. August-October. N,S,E,W.
- Setaria faberii* Herrm. Nodding foxtail. Frequent in disturbed soils in non-forested areas. #5240. July-September. A.

Setaria glauca (Poir.) Schultes. Yellow foxtail. Common in fields, turfs, and on open grounds throughout. #1172. July-September. A.

Setaria viridis (L.) Beauv. Green foxtail. Common in fields and on open grounds. #5235. June-October. A.

Sorghum halepense (L.) Pers. Johnson grass. Very rare, a few plants on the watershed boundary bordering a fallow field on the north side of Dulaney Valley Road halfway between the Loch Raven Fishing Center and the Loch Raven Skeet and Trap Center. #7367. July-September. A.

Sporobolus vaginiflorus (Torr. ex A. Gray) A. Wood. Dropseed. Infrequent on sandy soils near the community of Phoenix and bordering woodland edges elsewhere. #2498. September-October. N,S,E,W.

Tridens flavus (L.) A.S. Hitchc. Purpletop. Abundant in fields and in roadside grassy areas. #2158. September-October. N,S,E,W.

Pontederiaceae (Pickerelweed Family)

Eichornia crassipes (Mart.) Sohms. Water hyacinth. Very rare, approximately 50 specimens, an ephemeral introduced in Phoenix Pond in the summer of 2003. #11,120. Not seen in flower nor fruit. A.

Potamogetonaceae (Pondweed Family)

Potamogeton crispus L. Curly pondweed. Infrequent in coves, stream mouths, and the Gunpowder Falls south of the small dam. #6786. June-July. A.

Potamogeton diversifolius Raf. Variable pondweed. Occasional in the Loch Raven Fishing Center cove and a few nearby coves. #6790. July-September. N,S,E,W.

Potamogeton pectinatus L. Sago pondweed. Common in coves of the Dulaney Valley Road areas. #6793. July-August. N,S,E,W.

Smilacaceae (Greenbriar Family)

Smilax glauca Walt. Glauous greenbriar. Frequent in woodlands and on dry open sandy soils. #2101. May-June. N,S,E,W.

Smilax herbacea L. Carrion flower. Infrequent in moist woodlands and thickets. #5262. April-June. N,S,E,W.

Smilax rotundifolia L. Greenbriar. Common in thickets and along woodland borders. #2055. May-June. N,S,E,W.

Sparganiaceae (Bur-reed Family)

Sparganium eurycarpum Englem. Large bur-reed. S3. Very rare, in shallow water of Phoenix Pond. #5263. July-August. N,S,E,W.

Typhaceae (Cattail Family)

Typha latifolia L. Common cattail. Frequent in marshes and wet ditches. #988. May. N,S,E,W.

ANGIOSPERMS (Flowering Plants): DICOTYLEDONS

Aceraceae (Maple Family)

Acer campestre L. Hedge maple. Very rare, one specimen in a woodland in The Pines area. #7477. Not seen in flower nor fruit. A.

Acer negundo L. Boxelder. Common in low woodlands and on flood plains throughout. #2346. April. N,S,E,W.

Acer palmatum Thunb. Japanese maple. Very rare, one mature specimen and several seedlings in the forest east of Pine Ridge Golf Course. #5136. June. A.

Acer platanoides L. Norway maple. Infrequent, in woodlands near Warren Road Bridge, in Dulaney Valley Road areas, and in the northern part of the watershed; rare and widely scattered elsewhere. #583. April. A.

Acer platanoides var. *schwedlerii* (L.) Nichols. Crimson king maple. Very rare, one large specimen and several saplings near the parent tree along Paper Mill Road in the Orchards area. #708. April. A.

Acer rubrum L. Red maple. Abundant throughout in moist low forests and occasionally in higher forests. #662. March. N,S,E,W.

Acer rubrum var. *trilobum* Torr. & Gray ex K. Koch. Trident red maple. Locally infrequent along banks of the reservoir in areas along central Dulaney Valley Road. #5015. March. N,S,E,W.

Acer saccharinum L. Silver maple. Frequent in low woods east of Dulaney Valley Road and in flood plains north of Warren Road, infrequent elsewhere. #509. April. N,S,E,W.

Acer saccharum Marsh. Sugar maple. Rare and local, east of the Loch Raven Skeet and Trap Center, in woodlands east of Pine Ridge Golf Course, along woodland borders in the northern part of watershed and two trees planted on the golf course. #5071. April. N,E,W.

Aizoaceae (Carpet-weed Family)

Mollugo verticillata L. Carpet-weed. Very rare on disturbed open clay soils. #2411. July-October. A.

Amaranthaceae (Amaranth Family)

Amaranthus hybridus L. Pigweed. Infrequent on open disturbed soils. #5037. August-October. A.

Froelichia gracilis (Hook.) Moq. Cottonweed. Locally infrequent in dry sandy-cinder soils of the abandoned railroad track bed near the community of Phoenix (extirpated by North Central Trail construction). #1102. July-August. N,S,E,W.

Anacardiaceae (Cashew Family)

Rhus copallina var. *latifolia* Engl. Dwarf sumac. Frequent on dry open slopes and in old fields. #912. July- September. N,S,E,W.

Rhus glabra L. Smooth sumac. Common in old fields, on open slopes, and on open grounds. #853. June-early July. N,S,E,W.

Rhus typhina L. Staghorn sumac. Common throughout in low fields, in thickets, and on open grounds. #868. Mid May-June. N,E,W.

Toxicodendron radicans L. Poison-ivy. Abundant in all habitats except permanently wet soils throughout. #1192. May. N,S,E,W.

Anonaceae (Custard-apple Family)

Asimina triloba (L.) Dunal. Paw-paw. Very rare in the forest of the Merryman's Woods area, in the low forest near the community of Phoenix, and locally common in a forest near Rush Brook approximately 0.3 mile (0.5 kilometer) south of Loch Raven Drive. #1245. May. N,S,E,W.

Apiaceae (Parsley Family)

Cicuta maculata L. Water hemlock. Occasional in marshes. #892. June-August. N,E,W.

Cryptotaenia canadensis (L.) DC. Honewort. Abundant in low woodlands and thickets throughout. #852. June-July. N,S,E,W.

Daucus carota L. Queen Anne's lace. Abundant in fields, on open grounds, and on grassy road banks (includes *Daucus carota* forma *roseus* Millsp. which is very rare in fields). #971. May-October. A.

Hydrocotyle americana L. American water pennywort. Rare along edges of wetlands. #4319. June-September. N,E.

Osmorhiza claytoni (Michx.) C.B. Clarke. Sweet cicely. Common in moist rocky forests. #674. May-June. N,E,W.

Osmorhiza longistylis (Torr.) DC. Anise root. Infrequent in rich deciduous forests. #5158. May-June. N,E,W.

Pastinaca sativa L. Wild parsnip. Infrequent in meadows. #1260. May-October. A.

Pimpinella saxifraga L. Burnet saxifrage. Very rare in a marsh in The Pines area and on dry soils bordering the North Central Trail. #7356. July-August. A.

Sanicula canadensis L. Snakeroot. Common in low woodlands. #849. Mid May-June. N,S,E,W.

Sanicula gregaria Bicknell. Snakeroot. Frequent in open woodlands and thickets. #2009. May-early June. N,S,E,W.

Sanicula marilandica L. Maryland sanicle. Infrequent in fields and open woodlands. #5138. May-June. N,S,E,W.

Sium suave Walt. Water parsnip. Very rare in marshes along the Gunpowder Falls near the community of Phoenix. #5139. July-September. N,S,E,W.

Thaspium barbinode (Michx.) Nutt. Meadow parsnip. Infrequent in open alluvial woodlands in the northern part of the watershed. #675. May-June. N,S,E,W.

Apocynaceae (Dogbane Family)

Apocynum androsaemifolium L. Spreading dogbane. Occasional in thickets and fields of the Cockeysville Marble Formation. #5040. June-August. N,S,E,W.

Apocynum cannabinum L. Indian hemp. Frequent in fields, along woodland borders, and in thickets. #1211. June. N,S,E,W.

Vinca minor L. Periwinkle. Common and locally abundant in moist woodlands, on shaded banks, and on moist open grounds. A variegated-leaf form is very rare in *Pinus* spp.(pine) woodlands in the Orchards area. #534. March-June. A.

Aquifoliaceae (Holly Family)

Ilex opaca Ait. American holly. Locally common as shrubs in low woodlands south of Paper Mill Road bordering the North Central Trail in the Jessops area. Infrequent elsewhere as widely scattered shrubs, mostly in the Laurel Woodlands and Merryman's Woods areas, and a few tree-sized specimens in woodlands of Dulaney Valley Road areas. #538. June. N,S,E,W.

Ilex verticillata (L.) Gray. Winterberry. Rare in swamps, low woodlands, and along reservoir banks. #5069. June. N,S,E,W.

Araliaceae (Ginseng Family)

Acanthopanax sieboldiana Makino. Acanthopanax. Very rare, several specimens on the edge of the forest bordering the west side of Providence Road approximately 0.4 mile (0.6 kilometer) south of Loch Raven Drive. #8912. Not seen in fruit nor flower (rarely flowering in horticulture). A.

Aralia nudicaulis L. Wild sarsaparilla. Occasional in dry rocky woodlands, frequently under *Quercus montana* (chestnut oak) canopy. #679. June-August. N,E.

Aralia spinosa L. Devil's walking-stick. Infrequent in moist forests and thickets. #778. August-September. N,S,E,W.

Hedera helix L. English ivy. Locally common in low woodlands in the Dulaney Valley Road areas, on the northwest side of Warren Road Bridge, on shaded cliffs in the Small Dam area, and rare in woodlands elsewhere. #2015. August. A.

Panax quinquefolius L. Ginseng. S3. Very rare, two plants in a rich upland forest of the Laurel Woodlands area. #7989. July-August. N,S,E,W.

Panax trifolius L. Dwarf ginseng. Infrequent in low rich forests and very rare in a marsh of the Laurel Woodlands area #578. May. N,E.

Aristolochiaceae (Birthwort Family)

Asarum canadense L. Wild ginger. Frequent on shaded slopes and in rocky woodlands, and occasional in alluvial forests of the Cockeysville Marble Formation; infrequent in the same habitats on schistose derived soils. #845. April-May. N,E.

Asclepiadaceae (Milkweed Family)

Asclepias exaltata L. Poke-leaved milkweed. Very rare in rich forests. #9200. July-August. N,S,E,W.

Asclepias incarnata L. Swamp milkweed. Frequent in swamps and marshes. Includes *A. incarnata* ssp. *pulchra* (Willd) Woods. #1028. June-August. N,S,E,W.

Asclepias purpurascens L. Purple milkweed. S3. Very rare in fields. #5041. June-July. N,S,E,W. .

Asclepias syriaca L. Common milkweed. Common in fields and along roadsides. #888. June-July. N,S,E,W.

Asclepias viridiflora Raf. Green milkweed. Very rare in fields. #978. July-August. N,S,E,W.

Cynanchrum nigrum (L.) Pers. Black swallow-wort. Very rare in woodlands of The Pines area. #7428. June-July. A.

Asteraceae (Aster Family)

Achillea millefolium L. Common yarrow. Common in fields and along road banks. #762. June-August. N,S,E,W.

Ambrosia artemisiifolia L. Common ragweed. Abundant in fields, on road banks, and on disturbed soils. #1026. August-September. N,S,E,W.

Ambrosia trifida L. Great ragweed. Common in fields, on flood plains, along interfaces, and in low moist thickets. #1168. August-Mid September. N,S,E,W.

Antennaria neglecta Greene. Field pussytoes. Infrequent along woodland edges. #5141. April-May. N,S,E,W.

Antennaria plantaginifolia var. *ambigens* (Greene) Cronq. Plantain-leaved pussytoes. Occasional on open rocky or grassy slopes, and occasional in dry woodlands and fields. #648. April-May. N,S,E,W.

Anthemis arvensis L. Corn chamomile. Very rare in fields. #8901. May-July. A.

Anthemis cotula L. Mayweed. Rare on open grounds and in fields. #748. May-July. A.

Arctium minus Bernh. Burdock. Frequent on open grounds, and along road banks. #1253. July-October. A.

Artemisia vulgaris L. Mugwort. Frequent in disturbed sandy soils of fields, flood plains, and road banks. #5035. July-August. A.

Aster cordifolius L. Heart-leaved aster. Frequent in forests. #2386. September-October. N,E,W.

Aster divaricatus L. White wood aster. Common in forests and in thickets. #2230. September-October. N,E,W.

Aster laevis L. Smooth aster. Occasional on dry open soils and along woodland borders. #5142. August-September. N,S,E,W.

Aster lateriflorus (L.) Britt. Calico aster. Frequent in thickets and moist fields. #2360. August-October. N,S,E,W.

Aster novae-angliae L. New England aster. Occasional on moist open grounds and in thickets. #1988. September-October. N,E.

Aster patens Ait. Late purple aster. Occasional along edges of dry rocky woodlands and infrequent in fields. #2342. September-mid October. N,E,W.

Aster paternus Cronq. White-topped aster. Occasional in dry rocky woodlands. #977. June-July. N,S,E,W.

Aster pilosus Willd. White heath aster. Abundant in fields, in thickets, and on woodland borders. #2327. Mid September-mid October. N,S,E,W.

Aster prenanthoides Muhl. Crooked-stem aster. Infrequent in moist forests. #2253. September. N,E,W.

- Aster puniceus* L. Swamp aster. Occasional in sunny or shaded wetlands. #2285. September-October. N,E,W.
- Aster schreberi* Nees. Schrebers' aster. Very rare on rocky slopes near the small dam. #2010. August. N,E,W.
- Aster undulatus* L. Wavy-leaved aster. Infrequent in dry woodlands, mostly in northern part of watershed. #2319. September. N,S,E,W.
- Aster vimineus* Lam. Small white aster. Infrequent in meadows and marshes. #2365. Mid August-October. N,S,E,W.
- Bidens bipinnata* L. Spanish needles. Frequent on moist open grounds and along shaded road banks along wood edges of Dulaney Valley Road. (Now extirpated). #1197. Mid August-mid October. N,S,E,W.
- Bidens cernua* L. Nodding bur-marigold. Abundant in marshes and along reservoir shores as a "drawdown species" on sandy and gravelly soils. #2393. August-mid October. N,E,W.
- Bidens frondosa* L. Beggar's-ticks. Common on low open soils and in marshes. #2259. September-mid October. N,S,E,W.
- Bidens laevis* (L.) BSP. Sunflower tickseed. Frequent on wet open soils and in marshes. #5143. August-October. A.
- Bidens tripartita* L. Leafy-bracted beggar's-ticks. Occasional on low open soils and in marshes. #5144. August-October. A.
- Centaurea maculosa* Lam. Spotted knapweed. Common in fields and on open grounds throughout, and abundant in the Dulaney Valley Road areas. #829. June-July. A.
- Centaurea nigra* L. Knapweed. Very rare, a few specimens on open soils in the lower Dulaney Valley Road areas. #7549. July-September. N,E,W.
- Chrysopsis mariana* (L.) Ell. Maryland golden aster. Very rare in dry fields in power line cut of the Merryman's Woods and Windemere Woods areas. #1986. September. S,E,W.
- Cichorium intybus* L. Chicory. Common along roadsides and on sunny trails near roads; infrequent on open grounds and in fields of the interior; usually occurring on compacted soils. *C. intybus* forma *album* Neum. (with white flowers) occurs locally on open grounds in The Pines area. #817. July-October. A.
- Cirsium arvense* (L.) Scop. Canada thistle. Abundant in old fields and on grassy roadside banks. #819. Mid July-September. A.
- Cirsium discolor* (Muhl. ex Willd.) Spreng. Field thistle. Frequent in fields and thickets. #1177. Mid August-September. N,S,E,W.
- Cirsium vulgare* (Savi) Tenore. Bull thistle. Occasional on road banks and on dry open soils. #5402. July-September. A.
- Coryza canadensis* (L.) Cronq. Horseweed. Common on open grounds and in fields throughout. #1198. June-September. N,S,E,W.
- Crepis pulchra* L. Small-flowered hawkweed. Very rare on sandy open soils near the community of Phoenix. #7358. June-July. A.
- Eclipta prostrata* (L.) L. Yerba-de-tajo. Very rare on disturbed moist soils. #4114. July-October. A.

- Elephantopus carolinianus* Raeusch. Elephant's foot. Occasional in open forests, along woodland edges, and in fields. #2194. August-September. N,S,E,W.
- Erechtites hieracifolia* (L.) Raf. ex DC. Fireweed. Occasional in clearings, open swales, and fields on the Cocksவில் Marble Formation. #7522. July-September. N,S,E,W.
- Erigeron annuus* (L.) Pers. Daisy fleabane. Abundant on open grounds and in fields throughout. #782. June-July. N,S,E,W.
- Erigeron philadelphicus* L. Philadelphia fleabane. Frequent in fields, thickets and in open woodlands. #658. June. N,S,E,W.
- Erigeron pulchellus* Michx. Robin's plantain. Frequent on woodland edges and in moist grassy areas. #611. May-early June. N,E,W.
- Erigeron strigosus* Muhl. ex Willd. White-top. Frequent in fields. #5147. May-September. N,S,E,W.
- Eupatorium album* var. *vaseyi* (Porter) Cronq.. Monarda-leaved white thoroughwort. Occasional in fields of the Cocksவில் Marble Formation. #2020. July-August. N,S,E,W.
- Eupatorium altissimum* L. Tall thoroughwort. S3. Frequent in fields and thickets on the Cocksவில் Marble Formation, infrequent on schistose soils. #2066. July-September. N,E,W.
- Eupatorium coelestinum* L. Mistflower. Very rare on moist sandy stream banks. #5050. August-early October. S,E,W.
- Eupatorium fistulosum* Barratt. Hollow Joe-pye-weed. Common in marshes, in moist thickets, and on moist open soils. #1177. August-September. N,S,E,W.
- Eupatorium perfoliatum* L. Boneset. Occasional on moist open soils and in marshes. #2103. July-September. N,S,E,W.
- Eupatorium purpureum* L. Sweet Joe-pye-weed. Occasional in thickets, usually in richer and drier soils than the preceding taxa. #2009. August-September. N,S,E,W.
- Eupatorium rugosum* Houtt. White snakeroot. Frequent in woodlands and thickets, predominantly on the Cocksவில் Marble Formation soils. #992. August-October. N,S,E,W.
- Eupatorium serotinum* Michx. Late-flowering thoroughwort. Infrequent and local in fields and turfs in the central Dulaney Valley Road areas. #7365. September-October. N,S,E,W.
- Eupatorium sessilifolium* L. Upland boneset. Infrequent in thickets and in woodland clearings on the Cocksவில் Marble Formation. #954. August-October. N,E,W.
- Euthamia graminifolia* (L.) Nutt. ex Cass. Flat-top goldenrod. Occasional on sandy soils in fields and open areas. #2138. Late August-early October. N,E,W.
- Galinsoga quadriradiata* Ruaz & Pavon. Galinsoga. Occasional on sunny or lightly-shaded disturbed open soils. #862. September-mid October. A.
- Gnaphalium obtusifolium* L. Cudweed. Frequent in fields. #2193. Mid August-October. N,E,W.
- Helenium autumnale* L. Sneezeweed. Very rare in marshes. #2216. August-October. N,S,E,W.

- Helianthus decapetalus* L. Thin-leaved sunflower. Common along woodland borders, on flood plains, and in sunny thickets. #1008. August-October. N,S,E,W.
- Helianthus divaricatus* L. Woodland sunflower. Occasional in dry open woodlands. #5148. July-September. N,S,E,W.
- Helianthus tuberosus* L. Jerusalem artichoke. Very rare in thickets near the community of Phoenix. #2105. September-October. W.
- Heliopsis helianthoides* (L.) Sweet. Ox-eye. Occasional on dry soils along woodland edges. #1277. July-early September. N,S,E,W.
- Hieracium caespitosum* Dumart. Field hawkweed. Occasional in sparse fields and on open soils, mostly in the northern part of the watershed. #5403. May-September. A.
- Hieracium gronovii* L. Hairy hawkweed. Frequent in dry woodlands and on rocky slopes. #1231. August-mid October. N,S,E,W.
- Hieracium paniculatum* L. Panicked hawkweed. Infrequent in rocky forests. #2328. Mid July-mid September. N,S,E,W.
- Hieracium pratense* Tausch. Kingdevil. Infrequent in dry sandy fields. #5403. July-September. A.
- Hieracium venosum* L. Rattlesnake-weed. Occasional on dry wooded, usually *Quercus* (oak), slopes. #771. Mid August-mid October. N,S,E,W.
- Krigia virginica* (L.) Willd. Dwarf dandelion. Very rare in dry sandy soils near the community of Phoenix (extirpated by construction of the North Central Trail). #715. May-June. N,S,E,W.
- Lactuca canadensis* L. Wild lettuce. Common in fields and thickets. #934. June-July. N,S,E,W.
- Lactuca floridana* (L.) Gaertn. Blue lettuce. Infrequent in half-shaded thickets on moist soils of the Cockeysville Marble Formation. #5150. July-October. N,S,E,W.
- Lactuca hirsuta* Muhl. Hairy lettuce. Infrequent in open woodlands and fields. #5149. July-October. N,S,E,W.
- Lactuca serriola* L. Prickly lettuce. Occasional on dry open soils and in fields. #2018. July-August. A.
- Leucanthemum vulgare* Lam. Ox-eye daisy. Common in meadows, fields, thickets, and on open grounds. #687. June, scattered flowering July-October. A.
- Mikania scandens* (L.) Willd. Climbing hempweed. Very rare in a low thicket at Phoenix Pond. #11,126. July-October. N,E,S.
- Prenanthes alba* L. White lettuce. Rare in open woodlands. #7411. August-September. N,S,E,W.
- Prenanthes serpentaria* Pursh. Lion's-foot. Infrequent in open forests. #5033. September-October. N,S,E,W.
- Rudbeckia fulgida* var. *sullivantii* (C. L. Boynt. & Beadle) Cronq. cultv. Goldsturm Perennial Black-eyed Susan. S3. Very rare along the railroad right of way near the community of Phoenix (extirpated by construction of the North Central Trail), planted on the traffic island (State property) on the east side of the Dulaney Valley Road Bridge and on the bank of Phoenix Pond. #4136. July. E,S,W.

- Rudbeckia hirta* L. Black-eyed Susan. Common on open soils, along road banks, and in fields. #793. Mid June-July, sporadically till frost. W.
- Rudbeckia laciniata* L. Green-headed coneflower. Common in marshes and wet thickets, and abundant on sandy open or lightly wooded flood plains. #1005. Late July-mid September. N,S,E,W.
- Rudbeckia laciniata* var. *hortensis* (L.) Bailey. Golden glow. Very rare, planted on the traffic island (State property) at Dulaney Valley Road and Jarrettsville Pike. #8915. Late July-mid September. A.
- Rudbeckia triloba* L. Three-lobed coneflower. S3. Very rare in one thicket of the Deadman's Cove area woodlands, adjacent to Phoenix Pond and east of the Loch Raven Fishing Center. #5149. June-October. N,S,E,W.
- Santolina chamaecyperissus* L. Lavender cotton. Very rare, one specimen planted at Pine Ridge Golf Course. #5019. September-October. A.
- Senecio anomymus* Wood. Small's ragwort. S3 Very rare along road banks and on rocky slopes in the Dulaney Valley Road areas. #689. June. S,E,W.
- Silphium astericus* ssp. *trifoliatum* (Ell.) Weber & T.E. Fisher. Whorled rosinweed. S3. Very rare in thickets along the North Central Trail and in the Laurel Woodlands area. #6655. July-August. N,E,W.
- Solidago arguta* Ait. Sharp-leaved goldenrod. Infrequent on dry rocky slopes bordering thin woodlands. #2258. September-October. N,E,W.
- Solidago bicolor* L. Silver-rod. Occasional on dry slopes along woodland borders and rare in fields. #2079. September-October. N,E,W.
- Solidago caesia* L. Blue-stem goldenrod. Common in deciduous forests and adjacent rocky slopes. #2228. September-October. N,S,E,W.
- Solidago canadensis* L. Canada goldenrod. Very rare in moist thickets in the northern part of the watershed. #2069. September. N,E,W.
- Solidago canadensis* var. *scabra* (Muhl.) Torr. & Gray. Tall goldenrod. Abundant in fields, thickets, and on open grounds. #2083. September-mid October. N,S,E,W.
- Solidago flexicaulis* L. Zigzag goldenrod. Rare in rocky forests of the Cockeysville Marble Formation; rare in alluvial forests of schistose formations near the reservoir or the Gunpowder Falls. #2263. September-mid October. N,E,W.
- Solidago gigantea* Ait. Giant goldenrod. Infrequent on moist open grounds. #2106. August-September. N,S,E,W.
- Solidago juncea* Ait. Early goldenrod. Abundant in moist thickets, meadows, and fields. #2052. July-August. N,E,W.
- Solidago nemoralis* Ait. Gray-stemmed goldenrod. Common in open woodlands and old fields on poor dry soils. #2166. July-November. N,S,E,W.
- Solidago odora* Ait. Anise-scented goldenrod. Very rare on open sandy soils along the North Central Trail east of the Gunpowder Falls near the North Central Trail Bridge. #6972. August-September. N,S,E,W.
- Solidago patula* Muhl. ex Willd. Rough goldenrod. S3. Rare in wet woodlands and near springs. #2218. August. N,S,E,W.

Solidago puberula Nut. Downy goldenrod. S3. Rare in dry soils in thickets and along woodland borders. #5150. August-October. N,E,S.

Solidago rugosa Ait.. Wrinkle-leaf goldenrod. Common in marshes, thickets, fields, and along low woodland edges. #2185. Late August-September. N,S,E,W.

Solidago ulmifolia Muhl. Elm-leaved goldenrod. Infrequent along woodland borders and in thickets. #2136. August-September. N,S,E,W.

Sonchus asper (L.) Hill. Spiny-leaved sow-thistle. Frequent in fields and on open soils. #2392. May-July. A.

Sonchus oleraceus L. Common sow-thistle. Infrequent in fields on roadsides. #5408. June-early July. A.

Taraxacum officinale Weber. Dandelion. Common in turfs near roads, and less frequent on open grounds and in fields of the interior. #568. April-May and sporadically till frost, except during hot weather. A.

Tragopogon dubius Scop. Goat's-beard. Very rare, on dry sandy soils along railroad tracks of the Orchards area (station extirpated by construction of the North Central Trail) and in a thicket in the Bosley Point area. #910. June-July. A.

Tussilago farfara L. Coltsfoot. Very rare on a reservoir bank at Pine Ridge Golf Course, on other shaded open soils of Dulaney Valley Road areas, and along a trail bank in the Glen Ellen area. #5151. March-April. A.

Verbesina alternifolia (L.) Britt. Wingstem. Frequent in thickets, and locally abundant in small woods east of the small dam. #2089. August-October. N,S,E,W.

Vernonia noveboracensis (L.) Michx. New York ironweed. Occasional in wet meadows, along stream banks, and on marsh borders. #2038. August-October. N,S,E.

Xanthium strumarium L. Cocklebur. Common on open grounds and on reservoir edges (drawdown areas), and infrequent elsewhere. #2249. August-September. N,S,E,W.

Balsaminaceae (Jewelweed Family)

Impatiens capensis Meerb. Spotted touch-me-not. Abundant on moist or wet, usually shaded, soils throughout. #940. July-early September. N,S,E,W.

Impatiens pallida Nutt. Pale touch-me-not. Common on shaded road banks, shaded thickets, and alluvial woodlands of the Cockeysville Marble Formation. #1000. July-early September. N,E,W.

Berberidaceae (Barberry Family)

Berberis julianae Schneid. Wintergreen barberry. Very rare, two specimens planted at Pine Ridge Golf Course. #5016. May. A.

Berberis thunbergii DC. Japanese barberry. Occasional in woodlands, thickets, and in open areas. #563. April-May. A.

Podophyllum peltatum L. Mayapple. Abundant in moist forests, flood plains, and meadows. #641. May. N,S,E,W.

Betulaceae (Birch Family)

Alnus serrulata (Ait.) Willd. Hazel alder. Occasional on reservoir banks, in marshes, and locally common bordering Phoenix Pond. #827. March. N,S,E,W.

Betula lenta L. Sweet birch. Very rare in a terrace forest along Gunpowder Falls in the northern part of the watershed. #957. May. N,E,W.

Betula nigra L. River birch. Very rare, one tree at the head of a reservoir cove in the Merryman's Woods area approximately 4600 feet (1400 meters) north of the Dulaney Valley Road Bridge. #9857. April. N,S,E,W.

Carpinus caroliniana Walt. Ironwood. Common in moist deciduous forests. #1957. Late April-May. N,S,E,W.

Corylus americana Walt. Hazel nut. Infrequent in forests and in thickets. #878. April-May. N,S,E,W.

Ostrya virginiana (Mill.) K. Koch. Hop hornbeam. Occasional on rocky forested slopes and along woodland borders. #5152. April. N,S,E,W.

Bignoniaceae (Bignonia Family)

Campsis radicans (L.) Seeman ex Bureau. Trumpet creeper. Very rare and widely scattered on dry open banks, roadside thickets, and at Phoenix Pond. #2154. July-September. S,E,W.

Catalpa bignonioides Walt. Southern catalpa. Very rare in thickets near the community of Phoenix and on the east side of the large dam. #820. May. W.

Catalpa speciosa (Warder ex Barney) Englem. Northern catalpa. Rare in open woodlands in the Dulaney Valley Road areas. #5152. May. S.

Boraginaceae (Borage Family)

Buglossoides arvensis (L.) I.M. Johnston. Corn gromwell. Occasional on open soils or fields, mostly near Dulaney Valley Road. #6305. May-June. A.

Echium vulgare L. Viper's bugloss. Frequent on dry open soils of the Cockeyville Marble Formation. #804. June. A.

Hackelia virginiana (L.) I.M. Johnston. Beggar's lice. Infrequent in dry woodlands on the Cockeyville Marble Formation. #1176. July. N,S,E,W.

Myosotis laxa Lehm. Smaller forget-me-not. Frequent in marshes, and along stream banks throughout. #916. May-June. N,E,W.

Brassicaceae (Mustard Family)

Alliaria petiolata (Bieb.) Cav. & Grande. Garlic-mustard. Abundant in low woodlands, along low road banks, and on flood plains. #585. April-June. A.

Arabis laevigata (Muhl.) Poir. Smooth rock cress. Very rare in rich woodlands of the Laurel Woodlands area. #639. Mid April-June. N,E,W.

- Arabis lyrata* L. Lyre-leaved rock cress. Infrequent on dry rocky slopes and sandy open grounds. #616. Mid April-June. N,E,W.
- Barbarea vulgaris* R. Brown. Yellow rocket. Common on moist open soils of fields, meadows, and open grounds. #566. May, sporadically into June. A.
- Brassica napus* L. Turnip. Occasional along Dulaney Valley Road and infrequent elsewhere, in fields and in grassy areas. #4221. April-June. A.
- Brassica rapa* L. Field mustard. Infrequent in fields and on open grounds, mostly along Dulaney Valley Road. #1216. June-September. A.
- Camelina microcarpa* Andr. ex DC. False flax. Infrequent on open grounds and in fields in the northern part of the watershed. #1219. May. N,S,E,W.
- Capsella bursa-pastoris* (L.) Medic. Shepherd's purse. Frequent on open grounds and in roadside turfs. #2472. April-May. A.
- Cardamine bulbosa* (Schreber) B.S.P. Spring cress. Occasional on low wet forested soils, usually near springs. #573. Late April-May. N,S,E,W.
- Cardamine douglassi* (Torr.) Britt. Purple cress. Occasional in forested or open wetlands. #5154. March-May. N,S,E,W.
- Cardamine hirsuta* L. Hairy bitter-cress. Frequent on open soils, in turfs, and on sandy stream banks. #5155. January-April. A.
- Cardamine pennsylvanica* Muhl. ex Willd. Pennsylvania bitter cress. Infrequent in wet meadows and damp woodlands. #540. Late April-June. N,S,E,W.
- Dentaria heterophylla* Nutt. Slender toothwort. Occasional south of the small dam and near the community of Phoenix in woodlands, infrequent elsewhere. #4157. May. N,S,E,W.
- Dentaria laciniata* Muhl. ex Willd. Cut-leaved toothwort. Common in moist forests of the Laurel Woodlands and Merryman's Woods areas, and occasional elsewhere. #464. April-early May. N,E,W.
- Erophila verna* (L.) Chev. Whitlow grass. Occasional dry clay soils of the Cockeysville Marble Formation; infrequent on schist-derived soils. #557. March-early April. A.
- Hesperis matronalis* L. Dame's rocket. Infrequent in sandy alluvial woodlands along Long Quarter Branch, Western Run, Beaverdam Run, Dulaney Valley Branch, and rare in woodlands, thickets, and flood plains elsewhere. #660. April-May. A.
- Lepidium campestre* (L.) R. Brown. Field cress. Common on open grounds and in fields. #656. May-June. A.
- Lepidium ruderales* L. Narrow-leaved peppergrass. Infrequent and local on dry open grounds of the Orchards area. #2479. May, and intermittently into September. N,S,E,W.
- Lepidium virginicum* L. Peppergrass. Common in fields and on dry open grounds. #872. May, and intermittently until frost. N,S,E,W.

Nasturtium officinale R. Brown. Watercress. Infrequent in colonies in spring runs and along edges of other wetlands on the Cocksylvia Marble Formation; rare in the same habitats on schistose-derived soils. #554. June. N,S,E,W.

Raphanus raphanistrum L. Wild radish. Infrequent in fields and on open grounds. #5156. April and sporadically into summer. A.

Rorippa palustris (L.) Bess. Marsh cress. Locally frequent along the Gunpowder Falls north of Paper Mill Road, occasional along Western Run in alluvial flood plains, and infrequent in wetlands elsewhere. #775. May-November. N,S,E,W.

Rorippa sylvestris (L.) Bess. Creeping yellow-cress. Very rare, one colony in the turf at the northwest corner of the intersection of Paper Mill Road and Phoenix Road. #7383. June-September. A.

Sinapsis arvensis L. Charlock. Very rare on open disturbed soils south of the small dam. #1235. June. A.

Thlaspi arvense L. Field pennycress. Rare on grassy road banks of Dulaney Valley Road just north of Seminary Avenue and near the west end of the Dulaney Valley Road Bridge. #7369. April-July. A.

Campanulaceae (Bluebell Family)

Campanula americana L. Tall bellflower. Very rare along borders of rich, usually rocky, forests of the Cocksylvia Marble Formation. #1195. July-August. N,S,E,W.

Lobelia cardinalis L. Cardinal flower. Rare along borders of swamps, marshes, and stream banks. #2148. Mid August-early September. N,S,E,W.

Lobelia inflata L. Indian tobacco. Common in open woodlands and fields. #964. Mid July-early September. N,S,E,W.

Lobelia siphilitica L. Great blue lobelia. Occasional in moist thickets, woodland openings, and along stream banks, with a tendency to be local and colonial. #2049. August-September. N,E,W.

Triodanus perfoliata (L.) Nieuwl. Venus' looking-glass. Frequent in fields and on open soils. #763. June. N,S,E,W.

Capparidaceae (Caper Family)

Cleome hassleriana Chod. Spider flower. Very rare along sandy stream bank of Long Quarter Branch. #5038. July-September. A.

Caprifoliaceae (Honeysuckle Family)

Abelia grandiflora Rehd. Glossy abelia. Very rare, one specimen planted in landscaping at Pine Ridge Golf Course. #5018. July-frost. A.

Kolkwitzia amabilis Graebn. Beauty-bush. Very rare, two specimens in open woodlands near the community of Phoenix. #5393. June. A.

Lonicera x bella Zabel. Zabel's honeysuckle. Occasional in thickets and open woodlands of Dulaney Valley Road areas; infrequent elsewhere. #609. May-June. A.

Lonicera fragrantissima Lindl. & Pax. Sweet breath of spring. Rare, in rocky woodlands on the west bank of Western Run at Ashland, in the Deadman's Cove area, and in The Pines area. #5324. February-March. A.

- Lonicera japonica* Thunb. Japanese honeysuckle. Abundant in thickets, woodlands, on banks, and in fields. #691. May-July, and sporadically in fall. A.
- Lonicera japonica* var. *chinensis* (P. W. Wats.) Baker. Chinese honeysuckle. Very rare, one station in the Cambria Woods area. #690. May-June. A.
- Lonicera maackii* (Rupr.) Maxim. Red rem honeysuckle. Rare on woodland edges of the Dulaney Valley Road areas and in the north portion of the watershed. #5157. May-June. A.
- Lonicera morrowi* Gray. Morrow's honeysuckle. Abundant in the areas along Dulaney Valley Road and in areas along the upper Gunpowder Falls, forming impenetrable thickets; common in thickets and along interfaces elsewhere (the most abundant non-native shrub in the watershed). #532. May-June. A.
- Lonicera sempervirens* L. Trumpet honeysuckle. Very rare in dry sandy soils of the Upper Gunpowder area (extirpated by North Central Trail construction). #2471. May-July. N,S,E,W.
- Lonicera standishii* Jacq. Standish's honeysuckle. Very rare, one specimen on a shaded reservoir bank at Deadman's Cove. #559. April. A.
- Lonicera tatarica* L. Tartarian honeysuckle. Frequent in thickets, mostly on soils of the Cockeysville Marble Formation. #4229. May-June. A.
- Sambucus canadensis* L. Elderberry. Frequent in damp thickets, on low open grounds, and in marshes. #769. June-July. N,S,E,W.
- Triosteum angustifolium* L. Narrow-leaved horse-gentian. S1\E. Very rare in thickets of areas along lower Dulaney Valley Road. #6858. May-June. N,S,E,W.
- Triosteum aurantiacum* Bickn. Wild coffee. Rare in dry thickets near Dulaney Valley Road. #1164. June-July. N,S,E,W.
- Triosteum perfoliatum* L. Horse-gentian. Very rare in dry thickets of the Cambria Woods area. #681. June. N,S,E,W.
- Viburnum acerifolium* L. Maple-leaved viburnum. Common in forests, usually under *Quercus* spp. (oak) or *Quercus* spp./*Liriodendron tulipifera* (oak/yellow poplar) canopies. #710. June. N,S,E,W.
- Viburnum dentatum* L. Southern arrow-wood. Rare on sandy woodland edges along Dulaney Valley Road. #7523. June-July. S,E,W.
- Viburnum dilatatum* Thunb. Linden viburnum. Very rare, two specimens in a woodland bordering Pine Ridge Golf Course and about a dozen specimens in The Pines area. #5013. June. A.
- Viburnum plicatum* var. *tomentosum* (Thunb.) Rehd. Doublefile viburnum. Very rare, one specimen planted at Pine Ridge Golf Course. #5159. June. A.
- Viburnum prunifolium* L. Black haw. Frequent in thickets, along woodland borders, and scattered in fields. #600. May-early June. N,S,E,W.
- Viburnum recognitum* Fern. Northern arrow-wood. Common in moist woodlands and wet thickets throughout. #866. June-July. N,S,E,W.

Viburnum rhytidophyllum Hemsl. Leatherleaf viburnum. Very rare, one seedling in an open woodland of the Marble Cliffs area. #4189. Not seen in fruit nor flower. A.

Viburnum setigerum Hance. Tea viburnum. Very rare, one specimen in a woodland bordering Pine Ridge Golf Course. #5014. June. A.

Viburnum sieboldi Miq. Siebold viburnum. Very rare, one specimen in a thicket south of the small dam. #9611. June. A.

Caryophyllaceae (Pink Family)

Arenaria serpyllifolia L. Thyme-leaved sandwort. Very rare, locally abundant in dry open soils bordering the North Central Trail. #5397. May-August. A.

Cerastium arvense L. Field chickweed. Frequent in fields. #5160. April-June. N,S,E,W.

Cerastium fontanum ssp. *triviale* (Link) Jalas. Mouse-ear chickweed. Frequent on open grounds, in turfs, and in fields. #4235. May-June and sporadically to September. N,S,E,W.

Dianthus armeria L. Deptford pink. Frequent in fields and on open slopes. #765. June-July. A.

Lychnis alba Miller. White campion. Infrequent on open grounds and in fields. #716. May-Early June. A.

Myosoton aquaticum (L.) Moench. Giant chickweed. Occasional on open alluvial soils and ditches bordering the Gunpowder Falls north of Paper Mill Road Bridge, infrequent on open moist soils south of the bridge. #5400. June-October. A.

Sagina decumbens (Ell.) Torr.&Gray. Pearlwort. S3. Rare on dry sandy open soils along the North Central Trail. #700. June. N,S,E,W.

Saponaria officinalis L. Bouncing bet. Rare, locally common on dry open sandy soils of the Phoenix area and south of the small dam, and in unmowed grassy areas elsewhere. #814. July. A.

Silene antirrhina L. Sleepy catchfly. Rare and widely scattered on open soils. #726. June. A.

Silene caroliniana ssp. *pennsylvanica* (Michx.) Clausen. Wild pink. Very rare on rock outcrops in the vicinity of Warren Road Bridge and Paper Mill Road Bridge, and the Small Dam area. #610. May-June. N,S,E,W.

Silene cucubalus (Moench.) Garcke. Bladder campion. Infrequent along roadsides and on open grounds. #1019. June-July. A.

Silene noctiflora L. Night-flowering catchfly. Infrequent on open grounds and in grassy areas. #1217. May-June. A.

Silene stellata (L.) Ait. F. Starry campion. Infrequent in deciduous forests. #2360. June-July. N,S,E,W.

Stellaria longifolia Muhl. Long-leaf chickweed. Occasional in meadows near water. #7808. May-July. A.

Stellaria media (L.) Ville. Common chickweed. Abundant throughout on open grounds and in turfs, particularly on moist clay soils and sandy alluvial soils. #543. March-April. A.

Stellaria pubera Michx. Star chickweed. Frequent on moist rocky slopes and in low woodlands. #542. April. N,S,E,W.

Celastraceae (Staff-tree Family)

Celastrus orbiculatus Thunb. Oriental bittersweet. Abundant in open woodlands, in thickets, and in fields. #1165. June. A.

Celastrus scandens L. American bittersweet. Rare in hedgerows near Dulaney Valley Road. #4181. Late May-June. N,S,E.

Euonymus alatus (Thunb.) Regel. Burning bush. Very rare, in a forest of the Gunpowder Highlands area near Phoenix Road, in a forest northeast of the intersection of Poplar Hill and Merrymans Mill Roads, and on a forest border on the west side of Morgan Mill Road. #7698. May-June. A.

Euonymus americanus L. American strawberry bush. Occasional in rich moist forests. This species is often browsed and dwarfed by deer. #1238. June. N,S,E,W.

Euonymus fortunei (Turcz.) Hand.-Maz. Creeping euonymus. Rare in alluvial woodlands and on alluvial terraces along Western Run near Ashland Road, in the Upper Gunpowder area, and in woodlands at Pine Ridge Golf Course. #4223. Not seen in fruit nor flower. A.

Euonymus japonicus L. Japanese euonymus. Very rare, one specimen planted in landscaping at Pine Ridge Golf Course. #5061. Not seen in fruit nor flower. A.

Ceratophyllaceae (Hornwort Family)

Ceratophyllum demersum L. Hornwort. Abundant in Phoenix Pond. #7384. July-September. N,S,E,W.

Chenopodiaceae (Goosefoot Family)

Chenopodium album L. Lamb's quarters. Occasional on open grounds and in fields. #5161. June-July. A.

Chenopodium ambrosioides L. Mexican tea. Occasional on recently disturbed soils of construction areas and on open soils elsewhere. #2233. Mid August-September. A.

Cistaceae (Rockrose Family)

Lechea leggettii Britt. & Hollick. Pinweed. Very rare in rocky areas of the field in the power line cut in the Windemere Woods area. #7838. July-September. N,S,E,W.

Clusiaceae (St. John's-wort Family)

Hypericum mutilum L. Dwarf St. John's-wort. Frequent in wetlands, particularly in marshes. #969. July-August. N,S,E,W.

Hypericum perforatum L. Common St. John's-wort. Common in dry fields. #834. June-July. N,S,E,W.

Hypericum punctatum Lam. Spotted St. John's-wort. Frequent in fields and thickets. #898. July. N,S,E,W.

Convolvulaceae (Morning-glory Family)

Calystegia sepium (L.) R. Brown. Hedge bindweed. Common in fields and on open grounds. #688. June-September. N,S,E,W.

Convolvulus arvensis L. Field bindweed. Common on open grounds, in fields, and in thickets. #813. July-October. A.

Cuscuta campestris Yuncker. Dodder. Infrequent as a parasite on plants in low wet grounds, usually on *Impatiens capensis* (spotted touch-me-not). #2217. August-September. N,S,E,W.

Cuscuta gronovii Willd. Dodder. Frequent as a parasite on various herbs and shrubs, predominantly in open wetlands. #5162. July-August. N,S,E,W.

Ipomoea hederifolia L. Ivy-leaved morning-glory. Occasional on open grounds and in thickets. #2003. August-October. A.

Ipomoea pandurata (L.) G.F.W. Meyer. Wild sweet-potato. Infrequent in fields and thickets. #5031. July-early September. N,S,E,W.

Ipomoea purpurea (L.) Roth. Common morning-glory. Infrequent on open sandy soils near the community of Phoenix and in Dulaney Valley. #1020. July-early September. N,S,E,W.

Cornaceae (Dogwood Family)

Cornus alternifolia L. f. Pagoda dogwood. Very rare in alluvial woodlands near Ashland, and in a moist forest near Providence Road. #661. Late May-early June. N,S,E,W.

Cornus amomum P. Miller. Silky dogwood. Frequent on stream banks, on reservoir banks, in low woodlands, and in marshes; locally abundant on banks of Phoenix Pond. #697. June. N,S,E,W.

Cornus kousa Hance. Chinese dogwood. Very rare, one specimen planted at Pine Ridge Golf Course. #5058. May-June. A.

Cornus florida L. White flowering dogwood. Common throughout in open woodlands and particularly along woodland edges; trees in shade are subject to the disease dogwood blight (*Discula* spp.). #637. Late April-May. N,S,E,W.

Cornus florida var. *rubra* (L.) Andrz. Pink flowering dogwood. Very rare on a grassy road bank bordering Dulaney Valley Road near the community of Wakefield. #634. Late April-May. N,S,E,W.

Crassulaceae (Orpine Family)

Sedum spectabile Boreau. Stonecrop. Very rare, planted on the traffic island (State property) at Dulaney Valley Road and Jarrettsville Pike. #8412. August-frost. A.

Cucurbitaceae (Gourd Family)

Cucumis melo L. Muskmelon. Very rare, one waif specimen on a sandy road bank of Ashland Road. #7502. July-October. A.

Cucurbita pepo L. Pumpkin. Very rare, as an adventive, in the power line cut of the Windemere Woods area. #6210. August-October. A.

Sicyos angulatus L. Bur cucumber. Frequent in alluvial soils and in moist thickets near streams, usually in sun. #5162. July-August. N,S,E,W.

Dipsacaceae (Teasel Family)

Dipsacus fullonum L. Teasel. Infrequent and widely scattered in small colonies in thickets, fields, and on road banks, predominately in the areas along central Dulaney Valley Road. #2032. July. A.

Ebenaceae (Ebony Family)

Diospyros virginiana L. Persimmon. Infrequent in scrub woodlands of the Cockeysville Marble Formation, predominantly near Dulaney Valley Road and one tree planted at Pine Ridge Golf Course. #5181. May-June. N,S,E,W.

Elaeagnaceae (Oleaster Family)

Elaeagnus angustifolia L. Russian autumn-olive. Very rare in thickets along lower Morgan Mill Road and one specimen in a thicket bordering the North Central Trail. #4487. May-June. A.

Elaeagnus umbellata Thunb. Oleaster. Rare in hedgerow bordering lower Morgan Mill Road near Loch Raven Drive, in thickets near the community of Phoenix, in a field approximately 0.3 mile (0.5 kilometers) west of the intersection of Loch Raven Drive and Dulaney Valley Road, and widely scattered elsewhere. #4231. May-June. A.

Ericaceae (Heath Family)

Chimaphila maculata (L.) Pursh. Spotted wintergreen. Frequent in dry *Quercus* spp. (oak) or *Pinus* spp. (pine) woodlands. #1016. June. N,S,E,W.

Conopholis americana (L.) Wallr. Squaw-root. Rare in *Quercus* spp. (oak) woodlands in the Merryman's Woods area. #6229. April-August. N,S,E,W.

Epigaea repens L. Trailing arbutus. Infrequent in dry, rocky or sandy soils in *Quercus* spp. (oak) or *Pinus virginiana* (Virginia pine) woodlands. #572. April-May. N,S,E,W.

Gaylussacia baccata (Wang.) K. Koch. Black huckleberry. Common in dry or moist forests throughout. #1236. June. N,S,E,W.

Gaylussacia frondosa (L.) T.&G. ex Torr. Blue tangle. Infrequent in dry or moist forests, particularly under a *Quercus* spp. (oak) canopy. #1246. June. N,S,E,W.

Kalmia latifolia L. Mountain-laurel. Common in forests and on slopes bordering forests, usually under a *Quercus* spp. (oak) canopy. #747. Late May-June. N,S,E,W.

Monotropa hypopithys L. Pinesap. Rare in leaf litter of deciduous forests. #5176. June-September. N,S,E,W.

Monotropa uniflora L. Indian pipes. Infrequent in leaf litter of deciduous forests. #799. June-September. N,S,E,W.

Pyrola americana Sweet. Wild lily-of-the-valley. Rare in a moist forest of the Merryman's Woods and Laurel Woodlands areas. #7374. June-July. N,S,E,W.

Rhododendron obtusum Planch. Kurume azalea. Very rare, a few specimens planted at Pine Ridge Golf Course. #5053. April. A.

Rhododendron periclymenoides (Michx.) Shinn. Pinxter flower. Frequent in dry forests, particularly along edges of *Quercus* spp. (oak) stands. #598. May. N,S,E,W.

Vaccinium angustifolium Ait. Low sweet blueberry. Infrequent in dry forests. #2117. May. N,S,E,W.

Vaccinium corymbosum L. Highbush blueberry. Frequent in moist forests and damp thickets throughout. #2381. Mid April-mid May. N,S,E,W.

Vaccinium pallidum Ait.. Lowbush blueberry. Common in dry forests. #744. May. N,S,E,W.

Vaccinium stamineum L. Deerberry. Occasional in upland *Quercus* spp. (oak) forests. #5371. May. N,S,E,W.

Euphorbiaceae (Spurge Family)

Acalypha rhomboidea Raf. Common three-seeded mercury. Frequent along low roadsides and in fields. #5404. July-October. N,S,E,W.

Euphorbia corollata L. Flowering spurge. Common in fields and on open soils. #919. June-August. N,S,E,W.

Euphorbia esula L. Leafy spurge. Very rare, one small colony along a woodland edge at Pine Ridge Golf Course. #5132. April-June. A.

Chamaesyce maculata (L.) Small. Wartweed. Occasional on dry sunny open soils. #1186. August-October. N,S,E,W.

Fabaceae (Legume Family)

Albizia julibrissin Durz. Mimosa. Rare along roadsides in thickets. A few fruiting specimens, but mostly seedlings or juvenile plants. #5066. June-July. A.

Amphicarpa bracteata (L.) Fern. Hog peanut. Frequent in moist forests, and infrequent in fields. #5030. August. N,S,E,W.

Baptisia tinctoria (L.) R. Brown. Wild indigo. Occasional in fields and along woodland borders. #1250. June-July. N,E,W.

Cassia fasciculata Michx. Partridge pea. Frequent on open sandy soils throughout. #2070. July-September. N,S,E,W.

Cassia hebecarpa Fern. Wild senna. Very rare in moist sunny thickets. #4294. July. N,S,E,W.

Cassia nictitans L. Wild sensitive plant. Common on dry open grounds and in sparse turfs throughout. #1027. Late July-August. N,S,E,W.

Cercis canadensis L. Redbud. Occasional south of the Loch Raven Drive Bridge and in the Cambria Woods area on marble-derived soils, infrequent on marble-derived soils elsewhere; and rare on schistose-derived soils. #537. April-mid May. N,S,E,W.

Cercis chinensis Bunge. Chinese redbud. Very rare, two specimens planted at Pine Ridge Golf Course. #5017. May. A.

Cladrastis kentukea (Dum.-Course.) Rudd. Yellowwood. Very rare, one specimen on a woodland edge at Pine Ridge Golf Course. #6304. Mid May. W,S.

Coronilla varia L. Crown vetch. Infrequent, planted on slopes for erosion control near recent bridge replacement projects, on roadsides elsewhere, and on sandy stream banks. #4027. July. A.

- Desmodium canescans* (L.) DC. Hoary tick-trefoil. Frequent in thickets and in open woodlands throughout. #2027. Mid July-August. N,S,E,W.
- Desmodium glabellum* (Michx.) DC. Smooth tick-trefoil. Occasional in dry woodlands. #5185. July-September. N,S,E,W.
- Desmodium glutinosum* (Muhl. ex Willd.) Wood. Pointed-leaved tick-trefoil. S3. Infrequent in rocky woodlands. #5190. July-September. N,S,E,W.
- Desmodium nudiflorum* (L.) DC. Naked-flowered tick-trefoil. Common in woodlands throughout. #968. July-September. N,S,E,W.
- Desmodium paniculatum* (L.) DC. Panicked tick-trefoil. Common in fields, thickets, and dry open woodlands throughout. #1162. Late July-early September. N,S,E,W.
- Gleditsia triacanthos* L. Honey locust. Rare in dry woodlands of the Dulaney Valley Road areas and several trees near the small dam. #1174. May. N,W.
- Gymnocladus dioica* (L.) Koch. Kentucky coffee tree. S1. Very rare, a few trees local in a field in the Orchards area and in a forest along Morgan Mill Road in the Windemere Woods area. #1251. May. N,E,W. This is a Maryland "highly rare" species, but it is believed to be native only to Garrett County, with the watershed specimens representing horticultural remnants.
- Kummerowia striata* (Thunb.) Schindler. Japanese clover. Frequent in fields and on dry road banks. #7366. August-October. A.
- Lespedeza cuneata* (Dum.-Cours.) G. Don. Bush clover. Common throughout and often abundant in fields, thickets, on open grounds, and along trail banks. #2110. Late August-September. A.
- Lotus corniculatus* L. Birdsfoot-trefoil. Very rare in fields of the power line right of way in the Laurel Woodlands area and in the central Dulaney Valley Road areas. #7377. June-September. A.
- Medicago lupulina* L. Black medic. Common on open grounds and in roadside grassy areas. #818. April-October. A.
- Melilotus alba* Medic. White sweet clover. Common on open grounds and fields on marble-derived soils and infrequent on schist-derived soils. #837. May-October. A.
- Melilotus officinalis* (L.) Pallas. Yellow sweet clover. Common on open grounds, in fields, and in thickets on marble-derived soils and infrequent on schist-derived soils. #722. June-August. A.
- Robinia pseudoacacia* L. Black locust. Abundant in open woodlands, on rocky slopes, in hedgerows, and in fields on dry soils. #779. May-June. N,S,E,W.
- Strophostyles helvola* (L.) Ell. Hairy pink wild bean. Very rare on sandy soils near the community of Phoenix. #5025. July-October. N,S,E,W.
- Strophostyles umbellata* (Muhl. ex Willd.) Britt. Pink wild bean. Infrequent on open grounds along reservoir banks. #5183. July-September. N,S,E,W.
- Tephrosia virginiana* (L.) Pers. Goat's Rue. Infrequent in fields and on open slopes. #793. June. N,S,E,W.

Trifolium arvense L. Rabbit-foot clover. Occasional in dry fields. #5184. May-September. A.

Trifolium aureum Pollich. Yellow hop-clover. Frequent along roadsides, in sparse turfs, and on open grounds throughout. #900. June-September. A.

Trifolium campestre Schreb. Low hop-clover. Common on dry open soils. #5407. May-September. A.

Trifolium dubium Sibthorp. Least hop-clover. Locally frequent on disturbed open soils south of the small dam. #2018. May-October. A.

Trifolium hybridum L. Alsike clover. Common in fields and on open grounds. #5166. May-July. N,S,E,W.

Trifolium pratense L. Red clover. Common on open grounds, in fields, and in grassy areas. #839. June-July. A.

Trifolium repens L. White clover. Common in fields, along roadsides, and in grassy areas. #788. May-September. A.

Vicia cracca L. Cow vetch. Infrequent in turfs on sandy soils. #1224. May-July. A.

Fagaceae (Oak Family)

Castanea dentata (Marsh.) Borkh. American chestnut. S2S3. Occasional as sprouts, up to 19.7 feet (6 meters) in height, from old stumps of trees destroyed by chestnut blight. #743. Not seen flowering nor fruiting, but any fruiting specimens should be reported to the MDNR Natural Heritage Program. N,S,E,W.

Castanea mollissima Blume. Chinese chestnut. Rare, twenty specimens planted at Pine Ridge Golf Course and one seedling on open soils along the North Central Trail. #5191. May-June. A.

Castanea pumila (L.) P. Mill. Chinquapin. S3. Very rare in thickets on dry rocky slopes. #5187. July. N,S,E,W.

Fagus grandifolia Ehrh. American beech. Common in moist forests, forming almost pure stands in coves bordering the reservoir. #2130. Late April-Early-May. N,S,E,W.

Fagus grandifolia var. *caroliniana* forma *mollis* Fern. and Reid. American beech. Infrequent in low moist forests. #296. Late April-Early May. N,S,E,W.

Quercus alba L. White oak. Abundant in forests. #746. May. N,S,E,W.

Quercus bicolor Willd. Swamp white oak. Very rare and widely scattered in low forests bordering the reservoir. #5070. May. N,S,E,W.

Quercus coccinea Muenchh. Scarlet oak. Frequent in dry upland forests. #729. May. N,S,E,W.

Quercus falcata Michx. Southern red oak. Rare and local in forests of the Springdale Woods and Merryman's Woods areas. #2179. May. S,E,W.

Quercus falcata var. *triloba* (Michx.) Nutt. Tri-lobed southern red oak. Rare and local in forests in the Springdale Woods, Cambria Woods, and Merryman's Woods areas. #736. May. S,E,W.

Quercus imbricaria Michx. S3. Shingle oak. Very rare in a low forest bordering the west bank of Gunpowder Falls north of the North Central Trail Bridge. #7380. April-May. E,W.

Quercus marilandica Muenchh. Blackjack oak. Rare in open woodlands on the Cockeysville Marble Formation near Dulaney Valley Road. #4173. Early May. S,E,W.

Quercus michauxii Nutt. Basket oak. Very rare, several specimens in the Cambria Woods area. #4173. May. S,E,W.

Quercus montana Willd.. Chestnut oak. Abundant in dry upland forests, often in pure stands. #805. May. N,E,W.

Quercus muhlenbergii Englem. Chinquapin oak. S3. Infrequent in the Cambria Woods, White Pine Point, Pine Ridge, and Overshot Run areas on soils derived from the Cockeysville Marble Formation. #867. May. N,E,W.

Quercus palustris Muenchh. Pin oak. Occasional in open woodlands of the Dulaney Valley Road areas and the Glen Ellen, Ashland, and Phoenix areas on the Cockeysville Marble Formation. #5188. May. N,S,E,W.

Quercus rubra L. Northern red oak. Abundant in moist forests throughout. #741. May. N,E,W.

Quercus stellata Wang. Post oak. Infrequent along Dulaney Valley Road south of the Wakefield area, and on dry soils derived from marble elsewhere. #2013. May. N,S,E,W.

Quercus velutina Lam. Black oak. Frequent in dry and moist forests throughout, often in pure stands. #728. May. N,S,E,W.

Quercus x willdenowiana (Dippel) Zabel. (*Q. falcata* x *velutina*). Hybrid oak. Very rare, one large specimen located approximately 0.2 mile (0.4 kilometer) west of Dulaney Valley Road in the Merryman's Woods area. #6314. Not seen in flower nor fruit. S,E,W.

Gentianaceae (Gentian Family)

Obolaria virginica L. Pennywort. Rare in leaf litter of moist rich forests of the Laurel Woodlands and Merryman's Woods areas. #580. May. N,S,E,W.

Sabatia angularis (L.) Pursh. Rose-pink. Rare on rocky open slopes and in dry fields. #899. July-August. N,S,E,W.

Geraniaceae (Geranium Family)

Erodium cicutarium (L.) L'her. Stork's-bill. Very rare, six specimens at one station in a field in the power line right of way approximately 0.4 mile (0.6 kilometer) northeast of the intersection of Loch Raven Drive and Morgan Mill Road. #9610. November-April. A.

Geranium carolinianum L. Carolina cranesbill. Common in fields and on open grounds. #1223. Late May-June. N,S,E,W.

Geranium columbinum L. Long stalked cranesbill. Infrequent along roadsides and on open grounds. #4150. July. N,E,W.

Geranium maculatum L. Wild geranium. Frequent in rocky woodlands, on slopes, and in clearings. #706. May. N,S,E,W.

Geranium nepalense Sweet. Nepal geranium. Very rare in turf near the intersection of Dulaney Valley Road and Loch Raven Drive and near the Jessop family cemetery. #7360. July-September. A.

Haloragidaceae (Water-milfoil Family)

Myriophyllum spicatum L. Eurasian water-milfoil. One location, locally common in the Gunpowder Falls south of the small dam. #7359. July-September. A.

Hamamelidaceae (Witch-hazel Family)

Hamamelis virginiana L. Witch-hazel. Frequent in moist woodlands and thickets. #760. November. N,S,E,W.

Liquidambar styraciflua L. Sweetgum. Very rare, two specimens planted at Pine Ridge Golf Course. #5193. May-early June. N,S,E,W.

Hippocastanaceae (Horsechestnut Family)

Aesculus flava Soland. Ohio buckeye. Very rare, one specimen in a forest of the Jessops area north of Paper Mill Road Bridge. #4148. May-June. N,S,W.

Aesculus hippocastanum L. Horsechestnut. Very rare, a few trees on the east bank of the reservoir near the large dam. #4324. May-June. A.

Hydrophyllaceae (Waterleaf Family)

Hydrophyllum virginianum L. Virginia waterleaf. Occasional in moist rocky forests and on forested flood plains of the Cockeysville Marble Formation. #601. Late April-May. N,E,W.

Juglandaceae (Walnut Family)

Carya cordiformis (Wang.) K. Koch. Bitternut hickory. Frequent in low forests near the reservoir or Gunpowder Falls. #767. May. N,S,E,W.

Carya glabra (P. Mill.) Sweet. Pignut hickory. Frequent on dry forested slopes. #3788. May. N,S,E,W.

Carya ovalis (Wang.) Sarg. Sweet pignut hickory. Infrequent on dry forested slopes. #1289. May. N,S,E,W.

Carya ovata (P. Mill.) K. Koch. Shagbark hickory. Occasional in forests near the Loch Raven Skeet and Trap Center, in the Paper Mill Road area, and along the northern section of Loch Raven Drive. #4216. May. N,S,E,W.

Carya tomentosa (Poir.) Nutt. Mockernut hickory. Common in forests throughout. #742. May. N,S,E,W.

Juglans cinerea L. Butternut. S1, FSC. This species is listed by the U.S. Fish and Wildlife Service as a "species of Federal concern". Rare in alluvial forests. #854. May. N,S,E,W.

Juglans nigra L. Walnut. Frequent in open woodlands, at Pine Ridge Golf Course, and in hedgerows. #957. May. N,S,E,W.

Lamiaceae (Mint Family)

Agastache nepetoides (L.) Kuntze. Yellow giant hyssop. Infrequent along woodland edges on dry marble-derived soils of the Dulaney Valley Road areas. #1190. August. N,S,E,W.

Clinopodium vulgare L. Wild basil. Common on the Cockeysville Marble Formation and infrequent on schistose-derived soils along woodland borders, on road banks, and in thickets. #923. July-September. A.

- Collinsonia canadensis* L. Horse balm. Frequent in rich forests. #2196. July-September. N,S,E,W.
- Cunila originoides* (L.) Britt. Dittany. Occasional in dry soils on slopes bordering *Quercus* spp. (oak) woodlands. #2028. August-October. N,S,E,W.
- Glechoma hederacea* L. Ground-ivy. Abundant in turfs, in sandy alluvial woodlands, and on moist open soils. #650. May-July. A.
- Hedeoma pulegioides* (L.) Pers. American pennyroyal. Occasional in fields. #7376. July-August. N,S,E,W.
- Lamium amplexicaule* L. Henbit. Common on open grounds, particularly along roadsides. #4222. March-October. A.
- Lamium purpureum* L. Purple dead nettle. Common on open grounds and in fields. #586. April-May and September-October. A.
- Leonurus cardiaca* L. Motherwort. Occasional in fields and thickets. #991. July. A.
- Lycopus americanus* Muhl. ex Bart. Cut-leaved water-horehound. Occasional in damp open woodlands and open wetlands. #5196. July-September. N,S,E,W.
- Lycopus virginicus* L. Bugleweed. Frequent in wetlands or close to wetlands, more commonly in shade. #2345. August-September. N,S,E,W.
- Mentha x gentilis* L. (*M. arvensis* x *spicata*). Small-leaved mint. Rare along banks of the reservoir and in marshes. #7380. July-October. A.
- Mentha x piperita* L. (*M. aquatica* x *spicata*). Peppermint. Frequent in open or lightly shaded wetlands and bordering stream banks. #2164. July-September. A.
- Mentha spicata* L. Spearmint. Occasional bordering spring banks. #2020. July. A.
- Monarda clinopodia* L. Pale bergamot. S3. Very rare in alluvial woodlands along Western Run (extirpated by sewer-line construction) and in a damp thicket of the power line right of way in the Merryman's Woods area. #999. July. N,E,W.
- Perilla frutescens* (L.) Britt. Beefsteak plant. Common in moist soils in sun or shade, particularly along woodland openings and on banks of fire trails. #2212. August-September. A.
- Perovskia atriplicifolia* Benth. Russian sage. Very rare, one specimen planted at Pine Ridge Golf Course. #5021. Sept. A.
- Prunella vulgaris* L. Self-heal. Common throughout in open woodlands, in fields, and along road banks. #885. June-early October. A.
- Pycnanthemum flexuosum* (Walt.) B.S.P. Narrow-leaved mountain-mint. Common in fields and in dry woodlands of the Cockeysville Marble Formation. #2226. June-September. N,S,E,W.
- Pycnanthemum incanum* (L.) Michx. Hoary mountain-mint. Frequent in fields. #981. July. N,S,E,W.
- Pycnanthemum virginianum* (L.) Durand & Jackson. Virginia mountain-mint. S2. Very rare on partially shaded banks over the Cockeysville Marble Formation near Pine Ridge Golf Course. #1204. July-September. N,S,E,W.

Salvia lyrata L. Lyre-leaved sage. Rare on rocky slopes and in turfs bordering woodlands. #5198. April-June. N,S,E,W.

Scutellaria elliptica Muhl. Hairy skullcap. Occasional in dry *Quercus* spp. (oak) woodlands and clearings. #793. Mid June-mid July. N,S,E.

Scutellaria integrifolia L. Larger skullcap. Occasional in fields and woodlands. #2144. June-mid July. N,S,E,W.

Scutellaria lateriflora L. Mad-dog skullcap. Frequent in moist open woodlands, thickets, meadows, and shaded reservoir banks throughout. #2306. May-June. N,S,E,W.

Stachys palustris L. Woundwort. Rare in thickets of the Dulaney Valley Road areas. #5199. July-August. N,E.

Stachys tenuifolia Willd. Hedge nettle. Occasional in low moist thickets and along stream banks. #4154. July. N,S,E,W.

Teucrium canadense L. Germander. Frequent in woodlands, thickets, and on flood plains. #911. July. N,S,E,W.

Trichostema dichotomum L. Blue-curls. Infrequent on sandy soils near the community of Phoenix (extirpated by North Central Trail construction). #2090. September. N,S,E,W.

Lardizabalaceae (Akebia Family)

Akebia quinata (Houtt.) Dcne. Five-fingered akebia. Locally abundant in open woodlands and in forests west and south of the intersection of Poplar Hill and Merrymans Mill Roads. #591. April-May. A.

Lauraceae (Laurel Family)

Lindera benzoin (L.) Blume. Spice bush. Abundant in moist forests (the most common native shrub in the watershed). #530. April. N,S,E,W.

Sassafras albidum (Nutt.) Nees. Sassafras. Abundant in open woodlands, along interfaces, and scattered in fields. #571. April. N,S,E,W.

Loganiaceae (Jessamine Family)

Buddleja davidii Franch. Butterfly-bush. Very rare, one specimen growing in crevice of rocky bluff approximately 0.5 mile (0.8 kilometers) east of the community of Wakefield and one specimen in the Laurel Woodlands area. #5072. Mid July-frost. A.

Lythraceae (Lythrum Family)

Cuphea viscosissima Jacq. Clammy cuphea. Infrequent in fields and along woodland borders. #1989. August-September. N,S,E,W.

Lythrum salicaria L. Purple loosestrife. Very rare in Greene Branch Marsh and in the marsh south of the small dam. #5204. June-September. A.

Rotala ramosior (L.) Koehne. Tooth-cup. S3S4. Very rare, one colony in sandy soils of Greene Branch Marsh. #7530. July-August. N,S,E,W.

Magnoliaceae (Magnolia Family)

Liriodendron tulipifera L. Yellow poplar. Abundant in moist forests. #698. Late May-early June. N,S,E,W.

Magnolia macrophyllum Michx. Bigleaf magnolia. Very rare, one specimen on a woodland edge in the power line cut in the Windemere Woods area. #7837. Not seen in fruit nor flower. S,W.

Magnolia tripetala L. Umbrella magnolia. S3. Infrequent as small stands or single trees on stream terraces along Merryman Branch, along Overshot Run, near the community of Warren, in the Merryman's Woods area, and in a thicket in the Turtle Rock Point area; and occasional in a terrace forest of the Windemere Woods area. #1017. May-early June. N,S,E,W.

Malvaceae (Mallow Family)

Abutilon theophrasti Medicus. Velvet-leaf. Infrequent in fields, and on disturbed soils. #1178. August-September. A.

Alcea rosea L. Single-flowered hollyhock. Very rare, three red-flowered specimens as waifs along the abandoned railroad right of way near the community of Phoenix (extirpated by construction of the North Central Trail). #4026. July-August. A.

Hibiscus syriacus L. Rose-of-Sharon. Very rare, several specimens in a roadside thicket bordering Dulaney Valley Road in the Turtle Rock Point area, and one specimen on a bank of Long Quarter Branch. #1308. July-August. A.

Menispermaceae (Moonseed Family)

Menispermum canadense L. Moonseed. Occasional in thickets, rocky shaded forests, and along shaded stream banks, predominantly on the Cockeysville Marble Formation. #1341. June-July. N,E,W.

Moraceae (Mulberry Family)

Broussonetia papyrifera (L.) Vent. Paper-mulberry. Very rare in open woodlands on the northwest side of Warren Road Bridge, in the Merryman's Woods area, on the east side of the small dam, and in the Orchards area. #1269. May. A.

Humulus japonicus Sieb. & Zucc. Japanese hops. Very rare in sandy alluvium along Long Quarter Branch and Greene Branch. #6804. July-August. A.

Humulus lupulus L. Hops. Very rare, one specimen along a trail bank in the Upper Gunpowder area (extirpated by North Central Trail construction). #1275. July-August. N,S,E,W.

Maclura pomifera (Raf.) Sneid. Osage orange. Occasional in hedgerows and in woodlands of the Dulaney Valley Road areas, several trees at the Glen Ellen ruins, and along Warren Road north of Warren Road Bridge. #2342. Early June. W.

Morus alba L. White mulberry. Occasional along woodland borders and in open woodlands. #1417. May. A.

Morus rubra L. Red mulberry. Infrequent in open woodlands. #2196. May. N,S,E,W.

Myricaceae (Bayberry Family)

Comptonia peregrina (L.) Coult. Sweetfern. Very rare on dry rocky open slopes. #2121. April-May. N,E,W.

Nymphaeaceae (Water-lily Family)

Nuphar advena (Ait.) F. Spatterdock. Locally abundant in Phoenix Pond. #5210. August-October. N,S,E,W.

Nyssaceae (Tupelo Family)

Nyssa sylvatica Marsh. Black gum. Common in moist forests throughout. #772. June. S,E,W.

Oleaceae (Olive Family)

Chionanthus virginicus L. Fringe-tree. Very rare in moist open woodlands, mostly along stream banks. #2311. May. S,E,W.

Forsythia suspensa (Thunb.) Vahl. Forsythia. Very rare, one specimen bordering a woodland edge near the community of Phoenix, four specimens in the Windemere Woods area, three specimens bordering Long Quarter Branch, one specimen along Providence Road, and one specimen planted at Pine Ridge Golf Course. #4028. April. A.

Fraxinus americana L. White ash. Common in moist forests and planted in fields for reforestation. #536. May. N,S,E,W.

Fraxinus pennsylvanica Marsh. Green ash. Occasional bordering streams, on reservoir banks, and on flood plains, usually near water. #4321. May. N,S,E,W.

Jasminum nudiflorum Lindl. Winter jasmine. Very rare, planted as a small hedge at the Pine Ridge Golf Course parking lot. #5127. March-early April. A.

Ligustrum obtusifolium Sieb. and Zucc. Privet. Occasional in thickets and low woodlands and planted at Pine Ridge Golf Course. #692. June. A.

Ligustrum ovalifolium Hassk. California privet. Infrequent in thickets. #692. June. A.

Ligustrum vulgare L. Privet. Frequent in thickets and low woodlands throughout, and planted at Pine Ridge Golf Course. #1022. June. A.

Syringa vulgaris L. Lilac. Very rare in open woodlands of the Wakefield area as remnants of horticulture. #5195. May. A.

Onagraceae (Evening Primrose Family)

Circaea lutetiana (L.) Aschers & Magnus. Enchanter's nightshade. Common in moist and dry woodlands throughout. #848. July. N,E,W.

Epilobium coloratum Biehler. Purple-leaved willow-herb. Occasional in marshes, ditches, and damp swales. #2225. July-August. N,S,E,W.

Gaura biennis L. Biennial gaura. Rare on open grounds and in weedy thickets on dry clay soils near the small dam and in the Dulaney Valley Road areas. #5024. June-September. N,E,W

Ludwigia alternifolia L. Seedbox. Frequent in open wetlands. #1029. July-August. N,S,E,W.

Ludwigia brevipes (Long) Eames. Creeping ludwigia. SU. Very rare on wet sand, as a drawdown plant, north of Warren Road Bridge. #8951. June-September. N,S,E,W.

Ludwigia palustris (L.) Ell. Marsh purslane. Occasional in marshes and on stream and pond edges, in shallow water. #2152. July-September. N,S,E,W.

Oenothera biennis ssp. *biennis* L. Evening primrose. Common in fields and on open grounds. #914. July-September. N,S,E,W.

Oenothera fruticosa ssp. *fruticosa* L. Sundrops. Very rare in low areas in fields and moist thickets, predominately on the Cocksylvia Marble Formation. #2135. June-August. N,S,E,W.

Orobanchaceae (Broom-rape Family)

Conophilus americana (L.) Wallr. Squaw-root. Very rare in mesic or damp forests as a parasite on *Quercus* spp. (oak) or *Fagus* spp. (beech) roots. #5450. May. N,S,E,W.

Epifagus virginiana (L.) Bart. Beech-drops. Common in mesic forests as a parasite on *Fagus* spp. (beech) roots. #479. September. N,S,E,W.

Orobanche uniflora L. One-flowered cancer-root. Infrequent in low damp forests as a parasite on the roots of large *Quercus* spp. (oaks) and *Fagus* spp. (beeches). #6316. May. N,S,E,W.

Oxalidaceae (Oxalis Family)

Oxalis stricta L. Upright wood-sorrel. Abundant in fields, on open grounds, in turfs, and along woodland borders. #717. May-October. N,S,E,W.

Papaveraceae (Poppy Family)

Chelidonium majus L. Greater celandine. Infrequent in small colonies along woodland borders and on shaded road banks. #581. April-May. A.

Corydalis flavula (Raf.) DC. Pale corydalis. Rare in moist forests on the Cocksylvia Marble Formation in the northern part of the watershed. #587. April-May. N,S,E,W.

Dicentra cucullaria (L.) Bernh. Dutchman's breeches. Frequent on moist forested slopes and flood plains of marble-derived soils, and rare in moist rocky forests on schistose-derived soils. #2457. April. N,E,W.

Sanguinaria canadensis L. Bloodroot. Common in rich forests throughout. #2451. April. N,S,E,W.

Phytolaccaceae (Poke Family)

Phytolacca americana L. Poke. Common in thickets, in woodlands, in meadows and in fields. #1015. June-August. N,S,E,W.

Plantaginaceae (Plantain Family)

Plantago aristata Michx. Bracted plantain. Infrequent in dry open soils of the Cocksylvia Marble Formation. #841. July-September. W.

Plantago lanceolata L. English plantain. Abundant in fields, on open grounds, and in turfs. #841. May-October. A.

Plantago rugelli Dcne. Rugel's plantain. Common on open grounds, in turfs, and in fields. #822. June-September. A.

Plantago virginica L. Dwarf plantain. Occasional in dry fields of the Cockeysville Marble Formation. #5220. Mid April-July. N,S,E,W.

Platanaceae (Plane-tree Family)

Platanus occidentalis L. Sycamore. Common along water edges, woodland borders, and in low open forests. #2064. May. N,S,E,W.

Polemoniaceae (Phlox Family)

Phlox paniculata L. Perennial phlox. Very rare along woodland borders on the northwest side of Warren Road Bridge, the community of Phoenix, and Morgan Mill Road. #2023. July-September. S,E,W.

Polygonaceae (Buckwheat Family)

Polygonum arifolium L. Halbard-leaved tearthumb. Frequent in wet ditches, marshes, along reservoir banks, and in swamps. #2169. July. N,S,E,W.

Polygonum aviculare L. Prostrate knotweed. Frequent on dry open sandy soils. #2085. June-November. A.

Polygonum caespitosum var. *longisetum* (de Bruyn) A.N. Stewart. Long-bristled smartweed. Common on damp open grounds and along roadsides. #776. June-October. A.

Polygonum coccinium Muhl. Water smartweed. Occasional in marshes and shallow water. #9612. July-September. N,S,E,W.

Polygonum cuspidatum Sieb. & Zucc. Japanese knotweed. Locally abundant in clonal colonies along roadside near the community of Warren, a roadside near Ashland, road banks along Old Bosley Road, a flood plain in open woodlands bordering Western Run and at several other localities in the northern section of the watershed. #1018. August-September. A.

Polygonum dubium Stein. Doubtful smartweed. Occasional in damp thickets near roads. #9032. June-August. A.

Polygonum erectum L. Erect knotweed. Occasional on dry open soils of paths and disturbed areas. #5239. N,E,W.

Polygonum hydropiperoides Michx. Mild water pepper. Occasional in wetlands and along stream banks, being less common in shaded areas. #5236. June-September. N,S,E,W.

Polygonum perfoliatum L. Perfoliate smartweed. Abundant in thickets, on slopes, on open grounds, and along wetland boundaries. An extremely invasive annual weed being rapidly spread by birds which relish the blue fruits. #2046. July-September. A.

Polygonum pennsylvanicum (L.) Small. Pennsylvania smartweed. Common on moist or wet open soils. #2005. June-October. N,E,W.

Polygonum persicaria L. Lady's-thumb. Common in meadows, wetlands, and on damp open grounds. #876. June-October. A.

Polygonum punctatum Ell. Dotted water pepper. Common in swamps, marshes, and along streambanks, being less common in shaded areas. #1001. June-September. N,S,E,W.

Polygonum sagittatum L. Arrow-leaved tearthumb. Common in marshes, in wet ditches, and locally abundant in open alluvial soils. #2089. June-October. N,S,E,W.

Polygonum scandens L. Climbing false buckwheat. Infrequent in sunny or lightly shaded thickets. #2092. August-September. N,S,E,W.

Polygonum virginianum L. Virginia knotweed. Occasional in moist forests. #1193. July-August. N,S,E,W.

Rumex acetosella L. Sheep sorrel. Common on open grounds, in fields, and in roadside turfs, usually in poor acidic soil. #724. June-July. A.

Rumex crispus L. Curled dock. Frequent on open grounds and in fields. #815. May-June. A.

Rumex obtusifolius L. Bitter dock. Frequent on open grounds and in fields. #1199. June-July. A.

Portulacaceae (Moss-rose Family)

Claytonia virginica L. Spring beauty. Frequent on moist soils of schistose origins and occasional on marble-derived soils and locally abundant on wooded alluvial soils. #574. April. N,S,E,W.

Portulaca oleracea L. Common purslane. Rare on disturbed open soils. #1303. July-August. A.

Primulaceae (Primrose Family)

Anagallis arvensis L. Scarlet pimpernel. Infrequent on open grounds, in fields, and in sparse turfs. #873. June-September. A.

Lysimachia ciliata L. Fringed loosestrife. Occasional in low damp thickets and in marshes. #1322. June-July. N,S,E,W.

Lysimachia nummularia L. Moneywort. Occasional in marshes, moist turfs, and open flood plain woodlands. #1295. June. A.

Lysimachia quadrifolia L. Whorled loosestrife. Occasional in woodland clearings and along interfaces. #751. June. N,S,E,W.

Ranunculaceae (Buttercup Family)

Actaea pachypoda Ell. White baneberry. Infrequent in rich deciduous forests. #2033. May-early June. N,E,W.

Anemone virginiana L. Tall anemone. Frequent in rocky woodlands. #920. June-July. N,S,E,W.

Aquilegia canadensis L. Wild columbine. Rare on rocky wooded slopes near the small dam, along Western Run, in the Gunpowder Highlands area, near Paper Mill Road Bridge, and at several other stations. #529. April-May. N,S,E,W.

Cimicifuga racemosa (L.) Nutt. Black cohosh. Occasional in rich deciduous forests. #850. July. N,S,E,W.

Clematis ternifolia DC. Japanese clematis. Very rare in thickets bordering Paper Mill Road in the Jessops area, on the north side of Loch Raven Drive 0.3 mile (0.48 kilometer) west of Morgan Mill Road and on the west bank of Phoenix Pond. #4129. August. A.

Clematis virginiana L. Virgin's-bower. Occasional in low thickets and alluvial woodlands. #5241. July-September. N,S,E,W.

Hepatica nobilis var. *obtusa* (Pursh) Steyermark. Round-lobed hepatica. Occasional on rocky wooded slopes of the Cocksylvia Marble Formation, infrequent in rocky woodlands on schistose formations, and very rare on gneiss formations (on mossy rock). #605. Late March-April. N,S,E,W.

Ranunculus abortivus L. Kidney-leaved buttercup. Common in low moist woodlands and thickets. #648. April-May. N,S,E,W.

Ranunculus acris L. Tall buttercup. Occasional in fields and on grassy woodland edges. #5237. May-July. A.

Ranunculus bulbosus L. Bulbous buttercup. Common in fields and in roadside turfs. #602. May-June. A.

Ranunculus ficaria L. Lesser celandine. Very rare in flood plain woodlands along upper Western Run, and one small colony in the forest near Loch Raven Drive and Morgan Mill Road. #4029. April-May. A.

Ranunculus scleratus L. Cursed buttercup. Infrequent in alluvial woodlands and marshes in the northern part of the watershed. #678. May. N,S,E,W.

Ranunculus septentrionalis Poir. Swamp buttercup. Rare in swamps and alluvial woodlands. #645. May-June. N,S,E,W.

Thalictrum dioicum L. Early meadow-rue. Frequent in woodlands throughout. #617. Late April-June. N,E,W.

Thalictrum pubescens Pursh. Tall meadow-rue. Occasional in meadows and in alluvial woodlands. #1323. June. N,S,E,W.

Thalictrum thalictroides (L.) Eames & Boivin. Rue anemone. Frequent in moist, usually rocky, forests and rare in a field of the power line right of way in the Windemere Woods area. #555. April-May, rarely in September. N,S,E,W.

Rhamnaceae (Buckthorn Family)

Ceanothus americanus L. New Jersey tea. Very rare on dry woodland edges in the northern part of the watershed. #1254. June-July. N,S,E,W.

Rosaceae (Rose Family)

Agrimonia parviflora Ait. Many-flowered agrimony. Common in meadows, fields, and thickets. #5242. July-September. N,S,E,W.

Agrimonia pubescens Wallr. Hairy agrimony. Infrequent in rich woodlands. #937. Late July-September. N,S,E,W.

Amelanchier arborea (Michx. f.) Fern. Serviceberry. Infrequent along woodland borders and in bottomland openings. #570. April. N,S,E,W.

Amygdalus persica L. Peach. Very rare, one specimen in a field in the Glen Ellen area and one specimen in the Small Dam area. #5243. April. A.

Chaenomeles lagenaria Koidz. Japanese flowering quince. Very rare, two specimens planted at Pine Ridge Golf Course. #6307. April. A.

- Crataegus crus-galli* L. Cockspur thorn. Rare on dry open clay soils of the Dulaney Valley Road areas and one specimen planted at Pine Ridge Golf Course. #2165. May. N,S,E,W.
- Crataegus phaenopyrum* (L. f.) Medic. Washington thorn. Infrequent, in fields near Ashland and dry thickets near Dulaney Valley Road, widely scattered on forest edges, and five specimens planted at Pine Ridge Golf Course. #5249. May. S,E.
- Crataegus punctata* Jacq. Punctate hawthorn. Very rare in a field near Ashland. #669. June. N,S,E,W.
- Duchesnea indica* (Andr.) Focke. Indian strawberry. Common on open grounds, in fields, and in grassy areas. #877. May-June. N,S,E,W.
- Fragaria virginiana* Duchesne. Wild strawberry. Frequent in sparse fields, on open soils and along woodland edges. #649. Late April-May. N,S,E,W.
- Geum canadense* Jacq. White avens. Common in low open woodlands and along interfaces. #844. July. N,S,E,W.
- Geum virginianum* L. Rough avens. Frequent in dry woodlands and along interfaces. #861. Late June-August. N,E,W.
- Malus coronaria* (L.) P. Miller. American crabapple. Occasional in open woodlands, and along woodland borders near the reservoir in the Dulaney Valley Road areas, and locally common in scrub woodlands of the Orchards area. #1170. May. N,S,E,W.
- Malus x floribunda* Sieb. ex Van Houtte. Showy crabapple. Locally common along the North Central Trail and in nearby open woodlands, one specimen planted at Pine Ridge Golf Course, several specimens planted on the east side of Dulaney Valley Road Bridge, and very rare along woodland edges elsewhere. #5052. May. A.
- Malus pumila* P. Miller. Apple. Rare and widely scattered along woodland edges and in open woodlands. #2024. May. A.
- Malus sieboldii* (Reg.) Rehd. Toringo crabapple. Locally frequent in open woodlands of the Jessops area. #4160. May. A.
- Malus x purpurea* (Barb.) Rehd. cultv. Lemoin. Lemoin crabapple. Very rare, four specimens planted at Pine Ridge Golf Course. #6305. Late April-early May. A.
- Malus x zumi* (Matsum.) Rehd. cultv. Calocarpa. Zumi crabapple. Very rare, one specimen at Pine Ridge Golf Course. #6306. Late April- Early May. A.
- Porteranthus trifoliatus* (L.) Britt. Bowman's root. Infrequent in rocky woodlands and on swamp borders. #4155. June. N,S,E.
- Potentilla arguta* Pursh. Tall cinquefoil. SU. Very rare in dry open woodlands of the Dulaney Valley Road areas. #5250. August. N,E,W.
- Potentilla canadensis* L. Common cinquefoil. Infrequent on dry rocky soils and sparsely vegetated grassy areas. #672. April-May. N,S,E,W.
- Potentilla norvegica* L. Rough cinquefoil. Frequent in fields, along interfaces, and on open grounds. #875. July. N,S,E,W.
- Potentilla recta* L. Rough-fruited cinquefoil. Occasional in fields and along interfaces. #757. June-early July. A.

- Potentilla simplex* Michx. Old-field cinquefoil. Common in fields and turfs throughout. #5255. April-June. N,S,E,W.
- Prunus avium* (L.) L. Sweet cherry. Infrequent and widely scattered along forest borders. #4170. April. A.
- Prunus cerasifera* Ehrh. cultv. Atropurpurea. Purple flowering plum. Very rare, several specimens planted at Pine Ridge Golf Course. #5071. April-May. A.
- Prunus mahaleb* L. Mahaleb cherry. Very rare, three trees on woods borders between Dulaney Valley Road Bridge and Warren Road in the Merryman's Woods area. #9858. April. A.
- Prunus serotina* Ehrh. Black cherry. Abundant in woodlands, along interfaces, and on open grounds. #651. Mid May-early June. N,S,E,W.
- Prunus serrulata* Lindl. cultv. Kwanzan. Japanese flowering cherry. Very rare, several trees planted on open grounds near the small dam and at Pine Ridge Golf Course, and one specimen on woodland edge near the community of Warren. #6311. April-early May. A.
- Prunus subhirtella* Miq. Japanese flowering cherry. Very rare along forest edges. #4220. April. A.
- Prunus subhirtella* var. *pendula* (Miq.) Tanaka. Weeping cherry. Very rare, several specimens planted at Pine Ridge Golf Course, and a few specimens widely scattered along woodland edges. #6310. April. A.
- Pyracantha coccinea* var. *lelandi* M. Roem. Firethorn. Very rare, one specimen in a shrub honeysuckle thicket in the Turtle Rock Point area. #2286. May. A.
- Pyrus calleryana* Dcne. Callery pear. Very rare, one specimen on a woodland edge bordering Dulaney Valley Road near the west end of Dulaney Valley Road Bridge. #7370. April. A.
- Pyrus calleryana* Dcne. cultv. Bradford. Bradford pear. Very rare, a few specimens planted at Pine Ridge Golf Course. #5063. April. A.
- Pyrus communis* L. Pear. Very rare, one specimen along the edge of Warren Road in the Summer Hill area and one specimen along the woodland border on the northwest side of Warren Road Bridge. #2063. May. A.
- Rhodotypos scandens* (Thunb.) Makino. Jetbead. Rare, several specimens on forest edges near Loch Raven Drive and Morgan Mill Road. #7470. May. A.
- Rosa canina* L. Dog rose. Very rare, one specimen in a field of the Deadman's Cove area and one specimen in a thicket bordering Phoenix Pond. #1273. May-June. A.
- Rosa carolina* forma *glandulosa* (Crepin.) Farw. Pasture rose. Infrequent in thickets and in fields of the Dulaney Valley Road areas. #825. June-July. N,S,E,W.
- Rosa eglanteria* L. Sweetbriar. Very rare and local as a small colony in a field of the Orchards area. #1273. May-June. A.
- Rosa multiflora* Thunb. ex Murr. Multiflora rose. Abundant in thickets, in open woodlands, on slopes, and in fields, with a pink-flowered form in open woodlands on the Cockeysville Marble Formations. #719. May. A.

Rosa multiflora var. *cathyensis* Reyd. & Wils. cultv. Crimson rambler. Crimson rambler rose. Very rare, several specimens on a steep open embankment and on open soils near the community of Phoenix (extirpated by construction of the North Central Trail and construction of the new Phoenix Road Bridge), and in a thicket on the south bank of Phoenix Pond. #806. Late May-mid June. A.

Rosa palustris Marsh. Swamp rose. Infrequent in marshes bordering the Gunpowder Falls near the community of Phoenix and marshes elsewhere. #718. June-July. N,S,E,W.

Rubus allegheniensis Porter ex Bailey. Upland blackberry. Common and locally abundant in thickets, along woodland borders, and in fields. #2366. May-July. N,E,S.

Rubus flagellaris Willd. Dewberry. Common on dry open grounds and in fields. #4227. N, S, E, W.

Rubus hispidus L. Swamp dewberry. Frequent on shaded wet soils. #5256. June-July. N,S,E,W.

Rubus occidentalis L. Black raspberry. Frequent along interfaces and in fields. #856. May. N,S,E,W.

Rubus pensilvanicus Poir. Sweet blackberry. Infrequent in low thickets in the northern part of the watershed. #720. June. N,E,W.

Rubus phoenicolasius Maxim. Wineberry. Common in thickets, woodlands, and on open grounds. #686. June-July. A.

Sorbus aria Crantz. White-beam tree. Very rare, two specimens planted near the clubhouse at Pine Ridge Golf Course. #7006. May. A.

Spiraea bulmalda Burv. cultv. Anthony Waterer. Anthony Waterer spiraea. Very rare, one specimen planted at Pine Ridge Golf Course. #5062. July. A.

Spiraea japonica L f.. Japanese spiraea. Very rare in forests near the community of Warren and in thickets bordering the North Central Trail near the community of Phoenix. #4080. June. A.

Spiraea prunifolia Sieb. & Zucc. Bridal-wreath spiraea. Very rare, one specimen along a woodland border at Warren Road Bridge, one specimen in a thicket near the community of Phoenix, one specimen in a thicket south of the small dam and a few specimens planted at Pine Ridge Golf Course. #653. April. A.

Rubiaceae (Madder Family)

Cephalanthus occidentalis L. Buttonbush. Infrequent in marshes, flood plains and on reservoir shores, mostly in the northern part of the watershed #5251. July-August. N,S,E,W.

Diodia teres Walt. Buttonweed. Occasional on dry open sandy soils along the North Central Trail and infrequent on dry open soils elsewhere. #2100. July-September. N,S,E,W.

Galium aparine L. Cleavers. Common and locally abundant in moist thickets, in low woodlands, and along stream banks. #725. June. N,S,E,W.

Galium asprellum Michx. Rough bedstraw. Occasional in damp or wet woodlands. #5252. July-August. N,E,W.

Galium circaezens Michx. Wild licorice. Frequent in rich, usually rocky, woodlands. #5257. June-July. N,S,E,W.

Galium concinnum Torr. & Gray. Shining bedstraw. Occasional in alluvial woodlands. #5254. June-August. N,E,W.

Galium lanceolatum Torr. Wild licorice. Infrequent in rich rocky woodlands. #5289. June-August. N,E,W.

Galium mollugo L. Wild madder. Infrequent in fields. #987. June-July. A.

Galium pilosum Ait. Hairy bedstraw. Occasional in dry sandy open woodlands. #5252. June-August. N,S,E,W.

Galium tinctorium L. Clayton's bedstraw. Occasional in swamps and wet thickets. #5258. June-July. N,S,E,W.

Galium triflorum Michx. Fragrant bedstraw. Common in bottomland forest. #886. July-October. N,S,E,W.

Hedyotis caerulea (L.) Hook. Bluets. Frequent on moist rocky slopes and moist open grounds on schistose soils; infrequent on Cockeysville Marble soils. #752. May-June. N,S,E,W.

Hedyotis purpurea (L.) Torr. & A. Gray. Large houstonia. Occasional in rocky woodlands and locally common in the power line cut through the Windemere Woods area, on schistose soils. #1243. June. S,E,W.

Mitchella repens L. Partridge berry. Common in woodlands on schistose soils and occasional in woodlands on marble-derived soils. #1241. June. N,S,E,W.

Salicaceae (Willow Family)

Populus alba L. White poplar. Rare on open clay soils of central Dulaney Valley Road areas. #870. Not seen in fruit nor flower. A.

Populus x canadensis var. *eugenei* (Moench.) Schelle. (*P. deltoides* x *nigra*). Carolina poplar. Very rare on open clay soils in the Deadman's Cove area. #930. A sterile hybrid. A.

Populus candicans Aiton. (*Populus balsamifera* x *deltoides*) Balm-of-Gilead. Very rare in a cutover field near the Wakefield area. #4176. Not seen in flower nor fruit. A.

Populus deltoides Bartram ex. Marsh. Cottonwood. Infrequent in low woodlands along the Gunpowder Falls near the community of Phoenix, in open woodlands at Ashland, and along reservoir and stream banks in the central Dulaney Valley Road areas. #770. April-May. N,S,E,W.

Populus grandidentata Michx. Big-tooth aspen. Common in the Laurel Woodlands area, and occasional in open woodlands and thickets elsewhere. #670. April. N,E,W.

Salix babylonica L. Weeping willow. Rare, two specimens along Warren Road north of Warren Road Bridge, and widely scattered along woodland edges and bordering reservoir banks elsewhere #2059. April. A.

Salix caprea L. Goat willow. Very rare, a small stand was destroyed when Seminary Marsh was filled and graded for a Baltimore County wastewater pumping station, and seven specimens in a thicket along Morgan Mill Road in the Laurel Woodlands area. #531. March. A.

Salix humilis Marsh. Prairie willow. Rare in thickets in the northern part of the watershed. #1269. May. N,E,W.

Salix nigra Marsh. Black willow. Abundant in marshes, along stream banks, and in low open woodlands. #656. March-April. N,S,E,W.

Salix rigida Muhl. Heart-leaved willow. Rare on wet open soils bordering streams, in marshes, and on the bank of Phoenix Pond. #5293. April-May. N,E,W.

Santalaceae (Sandalwood Family)

Comandra umbellata (L.) Nutt. Bastard toadflax. Infrequent on dry sandy soils along field/woodland interfaces. #5260. May. N,S,E,W.

Saxifragaceae (Saxifrage Family)

Chrysplenium americanum Schwein ex Hook.. Golden saxifrage. Very rare in cold seeps. #7373. March-June. N,E,W.

Deutzia scabra Thunb. cultv. Pride of Rochester. Rough-leaved deutzia. Very rare in the forest in the Gunpowder Highlands area and near Paper Mill Road Bridge, and locally frequent in the forest of the Poplar Hill area. #1031. June. A.

Heuchera americana L. Common alumroot. Infrequent in rocky forests and on rocky slopes of the Cockeysville Marble Formation, and twelve specimens in mortar crevices of the North Central Trail Bridge which spans the Gunpowder Falls near the community of Phoenix. #1230. May-early June. N,S,E,W.

Hydrangea arborescens L. Wild hydrangea. Frequent in rocky forests. #774. June-July. N,E,W.

Penthorum sedoides L. Ditch stonecrop. Frequent in marshes and wet ditches, and rare in wet woodlands. #993. July-August. N,S,E,W.

Philadelphus inodorus L. Scentless mock-orange. Locally infrequent near an old dwelling foundation in the forest on the northwest side of Warren Road Bridge and rare north of Paper Mill Road Bridge. #2221. April-May. A.

Saxifraga virginiana Michx. Early saxifrage. Occasional on dry rocky wooded slopes. #589. April. N,S,E,W.

Scrophulariaceae (Snapdragon Family)

Agalinis purpurea (L.) Pennell. Large purple agalinis. Very rare on open soils in the lower Dulaney Valley Road areas. #1211. August-October. N,S,E,W.

Chelone glabra L. White turtlehead. Occasional in marshes and along sunny stream banks. #2177. September. N,S,E,W.

Linaria vulgaris P. Mill. Butter and eggs. Infrequent on dry sandy open grounds. #2134. July. A.

Lindernia dubia (L.) Pennell. False pimpernel. Common along shores and in marshes. #2182. July-September. N,S,E,W.

Mimulus ringens L. Square-stemmed monkey flower. Frequent in open alluvial woodlands, in marshes, and bordering stream banks throughout. #928. Mid July-September. N,S,E,W.

Paulownia tomentosa (Thunb.) Sieb. & Zucc. ex Steud. Empress tree. Occasional along roadsides, in thickets, and in open woodlands. #823. May. A.

Pedicularis canadensis L. Common lousewort. Very rare in rocky forests. #6659. May. N,S,E,W.

Penstemon digitalis Nutt. Pale beard-tongue. Rare and widely scattered in fields and along woodland borders of the Cockeysville Marble Formation. #1229. June. N,E,W.

Penstemon hirsutus (L.) Willd. Hairy beard-tongue. Very rare in several colonies on open soils bordering the North Central Trail. #5394. Late May-June. N,S,E,W.

Scrophularia marilandica L. Figwort. Rare in moist rocky woodlands of the Cockeyville Marble Formation near the small dam and along Western Run. #1194. August-September. N,S,E,W.

Verbascum blattaria L. Moth mullein. Frequent in fields, along woodland borders, and on open grounds. #759. July-September. A.

Verbascum thapsis L. Great mullein. Common in fields, on slopes, and on open soils. #821. July-mid August. A.

Veronica arvensis L. Corn speedwell. Frequent on sandy open soils. #4230. April-August. A.

Veronica hederifolia L. Ivy-leaved speedwell. Common in roadside turfs and in alluvial woodlands. #4224. March-June. A.

Veronica officinalis L. Common speedwell. Frequent in fields, sparse grassy areas, and in open woodlands. #5261. May-June. N,E,W.

Veronica peregrina L. Purslane speedwell. Occasional on damp open soils. #5262. April-August. N,S,E,W.

Veronica polita Fries. Speedwell. Occasional on open grounds and in turfs. #5266. March-May. A.

Veronica serpyllifolia L. Thyme-leaved speedwell. Infrequent in damp turfs. #4228. April-July A.

Veronicastrum virginicum (L.) Farw. Culver's root. Rare in rich rocky woodlands of the Cockeyville Marble Formation. #2011. July-August. N,E,W.

Simaroubaceae (Quassia Family)

Ailanthus altissima (P. Mill.) Swingle. Tree-of-heaven. Locally abundant along the west side of Dulaney Valley Road north and south of Old Bosley Road; and occasional in woodlands and thickets elsewhere. #871. June. A.

Solanaceae (Nightshade Family)

Datura stramonium var. *tatula* (L.) Torr. Jimson-weed. Infrequent on open grounds and in fields of the central Dulaney Valley Road areas, and very rare in open alluvial woodlands along Western Run. #989. August-September. A.

Lycium barbarum L. Matrimony vine. Very rare and local in colonies in half-shaded thickets of Dulaney Valley Road south of Old Bosley Road. #1991. Sept. A.

Physalis heterophylla Nees. Ground-cherry. Occasional in fields and rare on rocky open grounds. #1253. June-July. N,S,E,W.

Physalis subglabrata Mackensie & Bush. Ground-cherry. Infrequent in fields and meadows. #2072. July. N,S,E,W.

Solanum americanum P. Mill. Common nightshade. Rare on open grounds bordering the reservoir. #1321. July-August. N,S,E,W.

Solanum carolinense L. Horse-nettle. Common and often abundant in fields and on open grounds throughout. #2189. July-August. A.

Solanum dulcamara L. Bittersweet nightshade. Infrequent in roadside thickets. #773. July-September. A.

Solanum nigrum L. Black nightshade. Rare and local on disturbed soils near the community of Phoenix and in power line rights of way. #5029. July-August. A.

Staphyleaceae (Bladder Nut Family)

Staphylea trifolia L. American bladder nut. Infrequent in rocky woodlands of the Cockeysville Marble Formation. #601. Late April-May. N,S,E,W.

Tiliaceae (Basswood Family)

Tilia americana L. American linden or basswood. Common on moist forested slopes and woodlands near the reservoir, mostly on the Cockeysville Marble Formation. #1169. June. N,E,W.

Ulmaceae (Elm Family)

Celtis occidentalis L. Hackberry. Common in dry woodlands in the northern part of the watershed and at Pine Ridge Golf Course; occasional in open woodlands and along interfaces elsewhere on the Cockeysville Marble Formation. #859. May. N,S,E,W.

Celtis tenuifolia Nutt. Dwarf hackberry. Rare and local on rocky slopes near the small dam and bordering dry rocky bluffs at Pine Ridge Golf Course. #5271. May. S,E,W.

Ulmus americana L. American elm. Occasional in flood plain forests and along low interfaces. #4236. April. N,S,E,W.

Ulmus parvifolia Jacq. Chinese elm. Very rare, two specimens in open woodlands, the community of Phoenix and Pine Ridge Golf Course. #5028. August-September. A.

Ulmus rubra Muhl. Slippery elm. Common in dry open or rocky woodlands of the Cockeysville Marble Formation, rare in woodlands on schistose soils. #696. Late April. N,S,E,W.

Urticaceae (Nettle Family)

Boehmeria cylindrica (L.) Sw. False-nettle. Common in moist woodlands and occasional on moist open soils. #929. July-August. N,S,E,W.

Laportea canadensis (L.) Weddell. Wood-nettle. Common in sandy flood plains. #998. August-September. N,S,E,W.

Pilea pumila (L.) Gray. Clearweed. Common in low thickets, open woodlands, and along trail banks. #1175. August-September. N,S,E,W.

Urtica dioica L. Stinging nettle. Infrequent in roadside thickets and in sandy alluvial soil. #1985. June-September. A.

Valerianaceae (Corn-salad Family)

Valerianella locustra (L.) Betscke. Corn-salad. Infrequent on low open clay soils. #5395. May-July. A.

Valerinella radiata (L.) Dufur. Beaked corn-salad. Infrequent in open woodlands and on woodland edges. #731. Mid May-mid June. N,S,E,W.

Verbenaceae (Vervain Family)

Phryma leptostachya L. Lopseed. Common in moist forests, particularly along trail banks. #847. July-August. N,S,E,W.

Verbena hastata L. Blue vervain. Frequent in marshes, thickets, meadows, and on reservoir shores. #2004. July-August. N,S,E,W.

Verbena simplex Lehm. Narrow-leaved vervain. Common in dry fields and on open grounds. #831. June-July. N,E,W.

Verbena urticifolia L. White vervain. Common in fields, in thickets, and on open grounds. #1010. July-August. N,S,E,W.

Violaceae (Violet Family)

Viola conspersa Reichenb. Dog violet. Rare in moist forests. #642. Late April-May. N,E,W.

Viola fimbriatula Sm. Northern downy violet. Infrequent in dry sandy open woodlands and in fields in the northern part of the watershed. #4233. April-May. N,S,E,W.

Viola hirsutella Brainerd. Southern wood violet. Very rare on wooded slopes of the Laurel Woodlands area. #5273. April-May. N,E,W.

Viola incognita Brainerd. Sweet white violet. Rare on banks of cold springs and in rocky or mossy woodlands. #577. April-mid May. N,S,E.

Viola lanceolata L. Lance-leaved violet. Rare in marshes. #5272. April-May. N,E,W.

Viola obliqua Hill. Blue marsh violet. Frequent in swamps and on shaded streambanks; infrequent in marshes. #5265. April-May. N,S,E.

Viola pedata L. Birdfoot violet. Very rare on unshaded schistose rock outcrops in the northern part of the watershed. #2482. April-May. N,S,E,W.

Viola primulifolia L. Primrose-leaved violet. Occasional in wet meadows. #5280. April-May. N,E,S.

Viola pubescens Ait. Downy yellow violet. Rare in rich forests. #6100. May-June N,S,E,W.

Viola pubescens var. *eriocarpa* (Schwein.) Russell. Smooth yellow violet. Infrequent in low moist forests. #4234. Mid April-May. N,S,E,W.

Viola rafinisquii Greene. Field pansy. Very rare on disturbed open soils near the small dam (extirpated by grass-seeding project). #2460. April-May. N,S,E,W.

Viola sagittata Ait. Arrow-leaved violet. Occasional in woodlands and meadows. #5275. April-May. N,S,E,W.

Viola sororia Willd. Common blue violet. Common in wooded glens, on moist open soils, in alluvial woodlands, and in meadows. #413. Late March-June. N,S,E,W.

Viola sororia forma *priciana* (Pollard.) Cooperrider. Confederate violet. Rare in moist forests near the large dam, and the Merryman's Woods, Hampton Woods, and Phoenix areas. #612. Late March-May. N,S,E,W.

Viola striata Ait. Pale violet. Very rare at one station, the edge of a marsh along Fitzhugh Run in the Jarrettsville Woods area. #4226. Late April-May. N,S,E,W.

Vitaceae (Grape Family)

Ampelopsis brevipedunculata (Maxim.) Trautv. Porcelainberry. Very rare in thickets of the Hampton Woods and Merryman's Woods areas. #5036. June-July. A.

Parthenocissus quinquefolia (L.) Planch. Virginia creeper. Abundant in fields, on open grounds, and in thickets throughout. #735. June-July. N,S,E,W.

Vitis aestivalis Michx. Summer grape. Frequent in thickets and open woodlands. #603. June. N,S,E,W.

Vitis aestivalis var. *argentifolia* (Munson) Fern. Summer grape. Infrequent in rocky forests. #800. June. N,E,W.

Vitis labrusca L. Fox grape. Frequent in bottomland forests and moist thickets. #2310. June. N,S,E,W.

Vitis riparia Michx. Riverbank grape. Rare in thickets and open woodlands along the Gunpowder Falls near the community of Phoenix. #903. June. N,E,W.

Vitis vulpina L. Chicken grape. Infrequent in low moist thickets. #838. June. N,S,E,W.

FLORAL STATISTICS

During the course of this study, a total of 938 taxa (species, hybrids, and variants) belonging to 120 vascular plant families were found to occur within the watershed. These plants have the following life forms: 8 are fern allies, 33 ferns, 10 submerged aquatic vegetation (SAV), 645 herbs, 21 woody vines, 99 shrubs, and 122 trees (see "Floristic Summary").

Table 3. Floristic Summary

Taxonomic Group	Families	Genera	Native Taxa**	Non-native Taxa**	Total Taxa**
Fern allies	3	5	8	0	8
Ferns	8	17	33	0	33
SAVs	5	5	5	5	10
Herbs	63	242	450	195	645
Woody vines	11	8	14	7	21
Coniferous shrubs	2	2	0	5	5
Non-coniferous shrubs	28	50	44	50	94
Coniferous trees	2	7	6	8	14
Non-coniferous trees	26	45	71	37	108
TOTAL	148*	381	631	307	938

*(There are actually 120 total vascular plant families represented in Loch Raven Watershed, but the total in the table is higher since some families occur in more than one "Taxonomic Group" category.)

** (Taxa include species, hybrids, and variants.)

There are 44 taxa, including 2 ferns, 2 submerged aquatic species, 1 floating aquatic species, 1 shrubs, 7 trees, and 31 terrestrial herbs, which occur within the watershed that are ranked and/or status listed by the Natural Heritage Program of the Maryland Department of Natural Resources as Maryland endangered, threatened, highly rare, rare, Watch List, or Watch List/secure species, but 1 tree, 1 herb, and 1 shrub are horticultural remnants. ("Rank" refers to rarity. "Status listing" refers to legal status.) One species is listed by the U.S. Fish and Wildlife Service as a "Federal Species of Concern (FSC)". The status of these species is as follows:

Arisaema dracontium (L.) Schott. Green dragon. A Maryland "untracked Watch List (S3)" ranked herb with no state status listing. Very rare in open woodlands of the flood plain bordering Greene Branch.

Asclepias purpurascens L. Purple milkweed. A Maryland "untracked Watch List (S3)" ranked herb with no state status listing. Rare in fields.

Bouteloua curtipendula (Michx.) Torr. Side-oats grama. A Maryland "rare (S2)" ranked herb with no state status listing. Very rare on open wooded bluffs of the Cockeysville Marble Formation in the Pine Ridge area.

- Carex albursina* Sheldon.. White bear sedge. A Maryland “untracked Watch List (S3)” ranked herb with no state status listing. Rare in rich soils in forests.
- Carex cephaloidea* Desv. Thin-leaf sedge. A Maryland “highly rare (S1)” ranked herb with no state status listing. Rare in alluvial woodlands.
- Carex granularis* Muhl. Meadow sedge. A Maryland “untracked Watch List (S3)” ranked herb with no state status listing. Very rare on the edge of the Merryman’s Woods area.
- Carex hystricina* Muhl. Porcupine sedge. A Maryland “highly rare (S1)” ranked herb listed as state “endangered (E)” and protected. Very rare on a stream bank in The Pines area.
- Carex interior* Bailey. Inland sedge. A Maryland “untracked Watch List (S3)” ranked herb with no state status listing. Occasional on damp open grounds and in marshes.
- Carex radiata* (Wahl.) Dewey. Stellate sedge. A Maryland “highly rare (S1)” ranked herb listed as state “endangered (E)” and protected. Infrequent in dry woodlands.
- Carex trichocarpa* Muhl. Hairy-fruited sedge. A Maryland “rare (S2)” ranked herb with no state status listing. Very rare, several small colonies in Greene Branch Marsh.
- Castanea dentata* (Marsh.) Borkh. American chestnut. A Maryland “rare Watch List (S2S3)” ranked tree with no state status listing. Occasional as sprouts, up to 19.7 feet (6 meters) in height, from old stumps of trees destroyed by chestnut blight.
- Castanea pumila* (L.) P. Mill. Chinquapin. A Maryland “Watch List (S3)” ranked shrub with no state status listing. Very rare in thickets on dry rocky slopes.
- Cyperus diandrus* Torr. Low cyperus. A Maryland “untracked Watch List (S3)” ranked herb with no state status listing. Occasional on damp open grounds and in marshes.
- Cyperus erythrorhizos* Muhl. Red-root sedge. A Maryland “untracked Watch List (S3)” ranked herb with no state status listing. Abundant along reservoir banks and common in marshes, alluvial swamps, and wet ditches.
- Desmodium glutinosum* (Muhl. ex Willd.) Wood. Pointed-leaved tick-trefoil. A Maryland “untracked Watch List (S3)” ranked herb with no state status listing. Infrequent in rocky woodlands.
- Dryopteris celsa* (Palmer) Small. Log fern. A Maryland “tracked Watch List (S3.1)” ranked fern listed as state “threatened (T)” and protected. Very rare, four specimens at one station on a wooded stream bank in the Merryman’s Woods area.
- Eleocharis intermedia* (Michx.) R. & S. Intermediate spikerush. A Maryland “highly rare (S1)” ranked herb listed as state “endangered (E)” and protected. Infrequent in silty mud of reservoir coves in the Pine Ridge area.
- Eupatorium altissimum* L. Tall thoroughwort. A Maryland “untracked Watch List (S3)” ranked herb with no state status listing. Frequent in fields and thickets on the Cockeysville Marble Formation and infrequent on schistose soils.
- Gymnocladus dioicus* (L.) Koch. Kentucky coffee tree. A Maryland “highly rare (S1)” ranked tree with no state status listing, which is native only to Garrett County, but the exact status of native populations in Maryland is unknown. A few trees local in a field in the Orchards area and in the forest along Morgan Mill Road in the Windemere Woods area, which are remnants of horticulture.

Juglans cinerea L. Butternut. A Maryland "highly rare (S1)" ranked herb with no state status listing. This species is listed by the U.S. Fish and Wildlife Service as a "Federal Species of Concern (FSC)". Rare in alluvial forests.

Ludwigia brevipes (Long) Eames. Creeping ludwigia. A Maryland "uncertain status (SU)" ranked herb with no state status listing. Rare on wet sand, as a drawdown plant, north of Warren Road Bridge.

Magnolia tripetala L. Umbrella magnolia. A Maryland "untracked Watch List (S3)" ranked tree with no state status listing. Infrequent as small stands or single trees on stream terraces along Merryman Branch, along Overshot Run, near the community of Warren, in the Merryman's Woods area, and in a thicket in the Turtle Rock Point area; and occasional in a terrace forest of the Windemere Woods area.

Matteuccia struthiopteris var. *pensylvanica* (Willd.) Mort. Ostrich fern. A Maryland "rare (S2)" ranked fern with no state status listing. Very rare, fifteen specimens at one station in the Phoenix area.

Monarda clinopodia L. Pale bergamot. A Maryland "untracked Watch List (S3)" ranked herb with no state status listing. Very rare in alluvial woodlands along Western Run (extirpated by sewer line construction) and in a damp thicket of the power line right-of-way in the Merryman's Woods area.

Najas gracillima (A. Braun) Magn. Thread-like naiad. A Maryland "historically known (SH)" ranked herb with an "endangered extirpated" state status listing (X) and a protected species. Rare in reservoir coves along Dulaney Valley Road.

Najas guadalupensis (Spreng.) Magnus. Southern naiad. A Maryland "untracked Watch List (S3)" ranked submerged aquatic herb with no state status listing. Occasional in shallow waters of the reservoir predominantly in the areas located along Dulaney Valley Road.

Panax quinquefolius L. Ginseng. A Maryland "untracked Watch List (S3)" ranked herb with no state status listing. Very rare, two plants in a rich upland forest of the Laurel Woodlands area.

Potentilla arguta Pursh. Tall cinquefoil. A Maryland "uncertain status (SU)" ranked herb with no state status listing. Very rare in dry open woodlands of the Dulaney Valley Road areas.

Pycnanthemum virginianum (L.) Durand and Jackson. Virginia mountain-mint. A Maryland "rare (S2)" ranked herb with no state status listing. Very rare on partially shaded banks over the Cockeysville Marble Formation near Pine Ridge Golf Course.

Quercus imbricaria Michx. Shingle oak. A Maryland "untracked Watch List (S3)" ranked herb with no state status listing. Very rare in a low forest on the west bank of Gunpowder Falls north of North Central Trail Bridge.

Quercus muhlenbergii Englem. Chinquapin oak. A Maryland "untracked Watch List (S3)" ranked herb with no state status listing. Infrequent in the Cambria Woods, White Pine Point, Pine Ridge, and Overshot Run areas on soils derived from the Cockeysville Marble Formation.

Rotala ramosior (L.) Koehne. Tooth-cup. A Maryland "untracked Watch List/secure (S3/S4)" ranked herb with no state status listing. Very rare, one colony in sandy soil of Greene Branch Marsh.

Rudbeckia fulgida var. *sullivantii* (C. L. Boynt. & Beadle) Cronq. cultiv. Goldsturm Perennial black-eyed Susan. A Maryland "untracked Watch List (S3)" ranked herb with no state status listing (but this cultivar does not meet the description for the type). Very rare in railroad right-of-way near the community of Phoenix (destroyed by construction of North Central Trail) and planted on the traffic island (State property) on the east side of Dulaney Valley Road Bridge.

Rudbeckia triloba L. Three-lobed coneflower. A Maryland "untracked Watch List (S3)" ranked herb with no state status listing. Very rare in a thicket of the Deadman's Cove area and east of the Loch Raven Fishing Center.

Sagina decumbens (Ell.) T. & G. Pearlwort. A Maryland "untracked Watch List (S3)" ranked herb with no state status listing. Infrequent on dry sandy open soils in the northern part of the watershed.

Scirpus verecundus Fern. Bashful bulrush. A Maryland "rare (S2)" species, with no state status listing. Very rare, a few specimens on a forested west-facing slope under a *Quercus* spp. (oak) canopy approximately 1000 feet (305 meters) southeast of the intersection of Loch Raven Drive and the east side of Loch Raven Drive Bridge.

Senecio anonymus Wood. Small's ragwort. A Maryland "untracked Watch List (S3)" ranked herb with no state status listing. Very rare along road banks and on rocky slopes in the Dulaney Valley Road areas.

Silphium trifoliatum L. Whorled rosinweed. A Maryland "untracked Watch List (S3)" ranked herb with no state status listing. Rare in thickets along the North Central Trail and in the Laurel Woodlands area.

Solidago patula Muhl. ex Willd. Rough goldenrod. A Maryland "untracked Watch List (S3)" ranked herb with no state status listing. Rare in wet woodlands and near springs.

Solidago puberula Nut. Downy goldenrod. A Maryland "untracked Watch List (S3)" ranked herb with no state status listing. Rare in dry soils in thickets and along woodland borders.

Sparganium eurycarpum Englem. Large bur-reed. A Maryland "untracked Watch List (S3)" ranked herb with no state status listing. Locally frequent in shallow water of Phoenix Pond.

Thuja occidentalis L. Arborvitae. A Maryland "highly rare (S1)" ranked tree listed as state "threatened (T)", which is native only to Washington County, and these specimens represent horticultural specimens and remnants. Very rare, several trees bordering Paper Mill Road in the Orchards area and planted at Pine Ridge Golf Course.

Triosteum angustifolium L. Narrow-leaved horse-gentian. A Maryland "highly rare (S1)" ranked herb listed as state "endangered (E)". Very rare in thickets of the lower Dulaney Valley Road areas.

Wolffia columbiana Karst. Water-meal. A Maryland "untracked Watch List (S3)" ranked herb with no state status listing. Locally abundant floating on Phoenix Pond.

The 8 fern-allies include spike-mosses, club-mosses, and horsetails, with *Equisetum arvense* (common horsetail) being the commonest and *Selaginella rupestris* (rock spike-moss) being the rarest. All of these are native taxa.

There are 33 fern taxa which occur in a number of habitats throughout the watershed. *Polystichum acrostichoides* (Christmas fern) is the most common, and *Dryopteris celsa* (log fern), a state "threatened" species, and *Matteuccia struthiopteris* (ostrich fern), a state "rare species", are among the rarest. All of these are native taxa.

There are 10 submerged aquatic taxa in Loch Raven Reservoir, Phoenix Pond and the Gunpowder Falls within the watershed. Of these 5 are native to Maryland and 5 are non-native to North America. *Najas minor* (small naiad) is the most common and *Egeria densa* (elodea) is the least common aquatic herb.

The most common plants in number of taxa and total number of individuals in the watershed are the herbs. Of the 645 herb taxa, the most abundant are *Solidago caesia* (blue-stem goldenrod), *S. juncea* (early goldenrod), *S. nemoralis* (gray-stemmed goldenrod), *S. rugosa* (wrinkle-leaf goldenrod), *S. canadensis* var. *scabra* (tall goldenrod), *Aster divaricatus* (white wood aster), *A. lateriflorus* (calico aster), *A. pilosus* (white heath aster), *A. puniceus* (swamp aster), *Erigeron annuus* (daisy fleabane), *Coniza canadensis* (horseweed), *Eupatoriadelphus fistulosus* (hollow Joe-pye-weed), *Hemerocallis fulva* (tawny daylily), *Podophyllum peltatum* (mayapple), *Impatiens capensis* (spotted touch-me-)

not), *Carex trichocarpa* (hairy-fruited sedge), *Cyperus esculentus* (yellow nut-grass), *C. strigosus* (straw sedge), *Juncus tenuis* (pathrush), *Stellaria media* (common chickweed), *Bidens frondosa* (beggar's-ticks), *B. cernua* (nodding bur-marigold), *Alliaria petiolata* (garlic-mustard), *Daucus carota* (Queen Anne's lace), *Panicum dichotomiflorum* (spreading witch grass), *Dichanthelium clandestinum* (deer-tongue), *Festuca* spp. (fescues), *Microstegium vimineum* (stilt grass), and *Polygonum perfoliatum* (perfoliate smartweed). The rarest watershed herbs include *Panax trifolius* (dwarf ginseng), *Viola pedata* (birdfoot violet), *V. sororia* (common blue violet), *Cypripedium acaule* (pink lady's-slipper), and *Obolaria virginica* (pennywort). Of the total herbs, 450 taxa are native and 195 taxa are non-native to North America.

Of the 21 woody vines in the watershed, 14 are native taxa and 7 are non-native taxa. The most common vine is *Lonicera japonica* (Japanese honeysuckle). Other common species include *Celastrus orbiculatus* (Oriental bittersweet) and *Toxicodendron radicans* (poison-ivy). *Ampelopsis brevipedunculata* (porcelainberry) is the rarest woody vine, but it is spreading in the watershed.

All five taxa of coniferous shrubs are non-native. Of the 94 taxa of non-coniferous shrubs that occur in the watershed, 44 are native and 50 are non-native to North America (including three bamboo species). *Lonicera morrowi* (Morrow's honeysuckle), an alien horticultural species, has been spread throughout by birds and has become the most abundant non-native shrub in the watershed. In several areas this shrub forms almost impenetrable thickets, particularly in the central Dulaney Valley Road areas. Of the native shrubs, *Lindera benzoin* (spice bush) is the most common. Other common shrubs include *Kalmia latifolia* (mountain-laurel), *Hydrangea arborescens* (wild hydrangea), *Viburnum dentatum* (southern arrow-wood), *Viburnum recognitum* (northern arrow-wood), *Rubus allegheniensis* (upland blackberry), and *R. phoenicolasius* (wineberry). Among the rarest shrubs in the watershed are *Lonicera standishii* (Standish's honeysuckle), *Pyracantha coccinea* var. *lelandi* (firethorn), *Lycium barbarum* (matrimony vine), *Viburnum setigerum* (tea viburnum), *Viburnum dilatatum* (linden viburnum), and *Ceanothus americanus* (New Jersey tea).

Of the 122 tree taxa in the watershed, 14 are coniferous and 108 are non-coniferous. Among the coniferous tree species in the watershed, *Pinus strobus* (eastern white pine) is most common due to its use in reforestation, and *Pinus virginiana* (Virginia pine) is the most common naturally-seeded conifer. The rarest conifers are those that are remnants of horticulture and include *Picea pungens* (Colorado blue spruce), *Pinus nigra* (Austrian pine), *Larix decidua* (European larch), and *Metasequoia glyptostroboides* (dawn redwood), the last two being deciduous conifers. Of the 14 species of coniferous trees, 6 are native and 8 are non-native to Maryland.

Deciduous forests make up approximately 75% of the watershed area and some large old specimen trees occur among the non-coniferous tree taxa in these forests. The oldest trees in these forests are in excess of 100 years, but most of the trees are less than 60 years of age. Among the oldest watershed trees are several large *Quercus falcata* (southern red oak) along the fire trail in the Merryman's Woods area and near Warren Road Bridge, and several large *Quercus rubra* (northern red oak) and *Quercus montana* (chestnut oak) in the upland forests. The tallest of the watershed trees is *Liriodendron tulipifera* (yellow poplar), reaching over 100 feet (30 meters) in the Merryman's Woods area, the Laurel Woodlands area, and the Poplar Hill area. Among the most commonly seen deciduous trees are those mentioned above and *Acer rubrum* (red maple), *A. negundo* (boxelder), *Quercus rubra* (northern red oak), *Salix nigra* (black willow), *Fraxinus americana* (white ash), *Fagus grandifolia* (American beech), *Carya tomentosa* (mockernut hickory), *Populus grandidentata* (big-tooth aspen), and *Prunus serotina* (black cherry). Included among the rarest watershed deciduous trees are *Asimina triloba* (paw-paw), *Quercus marilandica* (blackjack oak), *Q. stellata* (post oak), and *Chionanthus virginicus* (fringe-tree). Of the 108 non-coniferous tree taxa, 71 are native and 37 are non-native to North America.

Although a complete census of the larger trees of the watershed was not attempted as part of this study, some notes were taken, and the following is a summary of those notes. There are many trees within the watershed which are of "specimen" (also referred to as "monarch") size. Specimen trees are defined as those trees measuring over 30 inches (76.2 centimeters) diameter at breast height (d.b.h.), 4.5 feet (1.37 meters) above the soil surface.

The most abundant tree species in the watershed is *Liriodendron tulipifera* (yellow poplar) and the largest number of specimen trees are also of this species. Many of the older specimens are in excess of 80 feet (24 meters) in height and in the 32 to 36 inch (81 to 91 centimeter) d.b.h. class. *Quercus rubra* (northern red oak) comes in second in

numbers of specimen trees, but in a few stands they exceed *Liriodendron tulipifera* (yellow poplar) in numbers. Other species which occur as specimen trees include in order of total numbers: *Platanus occidentalis* (sycamore), *Fagus grandifolia* (American beech), *Quercus stellata* (post oak), *Acer negundo* (boxelder), *A. rubrum* (red maple), *Fraxinus americana* (white ash), *Juglans nigra* (walnut), *Quercus alba* (white oak), *Acer saccharinum* (silver maple), *Quercus montana* (chestnut oak), *Picea abies* (Norway spruce), and *Larix decidua* (European larch).

The largest tree in diameter noted was an *Acer saccharinum* (silver maple) at 7.5 feet (2.3 meters) in diameter which forks into four trunks at 7 feet (2.1 meters) above the soil surface, and is 70 feet (21.3 meters) in height. It is located along Paper Mill Road in the Jessops area, and the tree is declining. The second largest tree in diameter was a *Platanus occidentalis* (sycamore) along Western Run measured at 5 feet (1.5 meters) in diameter and 65 feet (19.8 meters) in height. A *Quercus montana* (chestnut oak) in a rocky forest of the Laurel Woodlands area was measured at 4.5 feet (1.4 meters) in diameter and 68 feet (20.7 meters) in height. A *Fraxinus americana* (white ash) along Carroll Road on the south side of Phoenix Pond, measured at 4.3 feet (1.3 meters) in diameter, fell during a storm in the summer of 1995. Several *Quercus rubra* (northern red oak) were noted at 4 feet (1.2 meters) in diameter in the Glen Ellen area.

Non-native (exotic) plant species comprise approximately 33% of the vascular plant species within Loch Raven Watershed. Recently, many environmental organizations and governmental agencies have focused their attention on exotic species impacts on native habitats and possible measures for exotic species control. A number of exotic species are abundant in the watershed and control of these species would be prohibitively costly. Also, concurrent replacement by native vegetation would require prohibitively costly labor. Therefore, for purposes of this study, a discussion of the most common and pervasive species follows. The most common exotic, invasive species in the watershed are (in order of abundance) *Microstegium vimineum* (stilt grass), *Lonicera japonica* (Japanese honeysuckle), *L. morrowi* (Morrow's honeysuckle), *L. tatarica* (tartarian honeysuckle), *Celastrus orbiculatus* (oriental bittersweet), *Vinca minor* (periwinkle), *Festuca arundinacea* (tall fescue), *Lonicera x bella* (Zabel's honeysuckle), *Festuca elatior* (meadow fescue), *Poa* spp. (bluegrass), *Najas minor* (small naiad), *Lonicera maackii* (red rem honeysuckle), and *Ailanthus altissima* (tree-of-heaven). *Phalaris arundinacea* (reed canary grass) and *Phragmites australis* (common reed) are native species, at least in part, which are classified as invasives and form extensive monocultures. These two species' invasive attributes are reinforced by introduced clones from other parts of the world. These species have either been deliberately introduced into the watershed or introduced elsewhere and spread into the watershed.

There is no program currently in place to manage exotic species in the watershed. The Maryland Department of Natural Resources (MDNR) investigated the possibility of managing *Phragmites australis* (common reed) colonies through spraying programs (Scarpulla 2003). Locations of colonies within the watershed were supplied to the Reservoir Natural Resources Section. However, the MDNR did not institute the *Phragmites* management program.

GEOGRAPHIC AFFINITIES OF THE FLORA

Loch Raven Watershed contains a variety of habitats, including pine plantations, deciduous forest, mixed coniferous-deciduous forest, swamps, fields, meadows, marshes, ecotones, and various micro-habitats. The actions of mankind and natural elements have combined greatly to alter the character of the once dominant oak-hickory forest. Some areas do resemble the original forest, but many areas are planted with unnatural combinations and ratios of coniferous and deciduous tree species. Many species are also non-native to Maryland or North America. Approximately 33% of the plant species are non-native to Maryland.

Of the 41 species of ferns and fern allies, 13 are northern, eastern, western, and southern in their affinities, but 28 taxa are eastern and northern in their affinities, except for an unusual highly disjunct area of Louisiana (Wherry, 1964). None of the ferns or fern allies are southern only in their distribution and all are native species.

Of the 10 submerged aquatic taxa, 5 are native and 5 are non-native to North America. Of the native species, all are northern, eastern, western, and southern in their affinities.

Among the 645 herb taxa, there is a mixture of non-native species from Europe, Asia, and South America, and native species which form an assemblage that is difficult to compare with floras of other areas. Approximately 30% of the herbaceous flora is non-native to North America. The non-native species are distributed from New England into Florida, with only a few species restricted to the northern area in present distribution. None of the non-native herbs are restricted to the southern area. An examination of the native species such as *Viola* spp. (violets), *Sanguinaria canadensis* (bloodroot), *Aster* spp. (asters), *Erythronium americanum* (trout lily), *Asarum canadense* (wild ginger), *Cryptotaenia canadensis* (honestwort), *Osmorhiza* spp. (sweet cicelies), *Symplocarpus foetidus* (skunk cabbage), *Bidens* spp. (beggar's-ticks), *Helianthus decapetalus* (thin-leaved sunflower), *Solidago* spp. (goldenrods), *Carex* spp. (sedges), *Phytolacca americana* (poke), *Leersia* spp. (cut-grasses), *Dichanthelium* spp. (panic grasses), and *Geum* spp. (avens) illustrates a group of plants with affinities to the north, south, east, and west, but the majority are not common south of the mountains of North Carolina or west of Ohio. Therefore, it is concluded that the herbaceous flora has affinities oriented toward the northeast.

The 21 woody vine taxa are a mixture of native species with eastern, western, northern, and southern affinities, and non-native species. The native species include *Parthenocissus quinquefolia* (Virginia creeper), *Vitis* spp. (grapes), and *Toxicodendron radicans* (poison-ivy). The non-native vines of the watershed are predominantly obnoxious weeds and include *Lonicera japonica* (Japanese honeysuckle), *Celastrus orbiculatus* (oriental bittersweet), and *Vinca minor* (periwinkle). Thirty-three percent of the vines are non-native to North America.

The 99 shrub taxa at Loch Raven form two groups; those that are in the understory of woodland areas and those that populate open areas such as thickets. Most of the first group of shrubs are native species with affinities to the east, west, north, and south. These species are typified by *Lindera benzoin* (spice bush), and *Viburnum* spp. (viburnums). The second group of shrubs is predominately non-native and includes *Lonicera morrowi* (Morrow's honeysuckle), *Rosa multiflora* (multiflora rose), and *Rubus* spp. (raspberries). Fifty-five percent of the shrubs are non-native to North America.

The conifer plantations in the watershed contain northern, eastern, western, southern, and non-native species with associated affinities. For example, *Pinus strobus* (eastern white pine) is an eastern and northern species, *P. echinata* (shortleaf pine) and *P. taeda* (loblolly pine) are eastern and southern species, *P. virginiana* (Virginia pine) is a northern, eastern, western, and southern species, and *Picea abies* (Norway spruce) is a European species. The *Tsuga canadensis* (hemlock) stands have affinities to forests north of our area (Eyre 1980). Some of the hemlocks are remnants of horticulture, but the stands along Western Run and along Fitzhugh Run are native stands. The Juniper-Scrub Pine association represents a habitat common to dry rocky soils from New England into Florida and the states west of our area. The few *Pinus sylvestris* (Scots pine) and *P. resinosa* (red pine) left in the watershed occur as scattered specimens.

Fifty-seven percent of the coniferous tree species within the watershed are non-native to North America, but the native species are predominantly northern in their affinities.

The non-coniferous forests include mature climax forest, medium-age forest, alluvial forests, and scrub woodlands. These forests include *Liriodendron tulipifera* (yellow poplar), *Quercus* spp. (oaks), *Carya* spp. (hickories), *Acer* spp. (maples), *Robinia pseudoacacia* (black locust), *Fraxinus* spp. (ashes), *Prunus serotina* (black cherry), *Salix nigra* (black willow), *Juglans nigra* (walnut), and *Platanus occidentalis* (sycamore). These forests have a predominantly central or eastern forest region affinity, with 34% of these species being non-native to North America.

A large number of species found in the watershed during this study are not listed for this area in Shreve's (1910) report. However, many of these are non-native species, including horticultural escapes or remnants. Some of these "weed" species have become abundant in the watershed, and are frequently spread by birds. Two of the most abundant examples in the watershed are *Lonicera morrowi* (Morrow's honeysuckle) and *Polygonum perfoliatum* (perfoliate smartweed). Most botany field manuals have not yet caught up in their distributive descriptions with the explosive spread of these species. During the several periods through which this study was pursued, changes in abundance of certain species within the watershed were readily apparent. *Phalaris arundinacea* (reed canary grass), *Dryopteris x triploidea* (triploid wood fern), *Dryopteris carthusiana* (spinulose wood fern), *Polygonum perfoliatum* (perfoliate smartweed), *Celastrus orbiculatus* (oriental bittersweet), *Bidens* spp. (beggar's-ticks), *Brassica napus* (turnip), *Hesperis matronalis* (dame's rocket), *Ligustrum* spp. (privets), *Polygonum* spp. (smartweeds), *Festuca* spp. (fescues), and *Galium* spp. (bedstraws) all increased in abundance within the watershed. Most of the increase is due to natural or manmade disturbance within the watershed. Some species decreased in abundance or were extirpated from the watershed due to construction of the North Central Trail (application of crusher run stone upon the soil), bridge replacement construction, and construction of a Baltimore County pumping station (filling of a marsh). Such species include *Salix caprea* (goat willow), *Helenium autumnale* (sneezeweed), *Thelypteris palustris* var. *pubescens* (marsh fern), *Froelichia gracilis* (cottonweed), *Pteridium aquilinum* var. *latiusculum* (eastern bracken), *Tradescantia virginiana* (spiderwort), *Alcea rosea* (hollyhock), *Krigia virginica* (dwarf dandelion), *Tragopogon dubius* (goat's-beard), *Humulus lupulus* (hops), and *Rudbeckia fulgida* var. *sullivantii* cultv. Goldsturm (perennial black-eyed Susan).

Some species populations were found to occur as less than five specimens within the watershed, including: *Rosa canina* (dog rose), *Pyracantha coccinea* var. *lelandi* (firethorn), *Lonicera standishii* (Standish's honeysuckle), *Asclepias viridiflora* (green milkweed), *Dryopteris x boottii* (Boott's wood fern), *Dryopteris cristata* (crested wood fern), *Chrysopsis mariana* (Maryland golden aster), *Humulus lupulus* (hops), *Monotropa hypopithys* (pinesap), *Obolaria virginica* (pennywort), *Yucca filamentosa* (yucca), *Picea pungens* (Colorado blue spruce), *Cenchrus longispinus* (field sandbur), *Rosa multiflora* var. *cathyensis* (crimson rambler rose), *Spiraea japonica* (Japanese spiraea), *S. prunifolia* (bridal-wreath spiraea), *Viola conspersa* (dog violet), *V. pedata* (birdfoot violet), and a number of horticultural specimens at Pine Ridge Golf Course.

The native species of the watershed are predominately northern and eastern in their affinities. The overall flora, native and alien, have less affinity to the northern flora, since many of the alien species are established from Maine to Florida and to the west. Within Loch Raven Watershed approximately 33% of the total plant species are non-native to North America and in a few cases are native only to western states. The ferns and fern allies, the tree canopy, and the herbaceous flora are northern and eastern in their affinities. The summary of the above leads to the conclusion that the native watershed flora is northern and eastern in its affinities, and this is reinforced by the plantations of northern coniferous species which have become such a conspicuous part of the landscape of Loch Raven Watershed.

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APPENDIX: WATERSHED PHOTOGRAPHS

Plate 1

- A. The large dam that impounds Loch Raven Reservoir.
- B. The Jessop family cemetery along Paper Mill Road.

Plate 2

- A. The small dam on Gunpowder Falls below the large dam.
- B. Overlook at the large dam

Plate 3

- A. Canada geese (*Branta canadensis*) along the edge of the reservoir at Pine Ridge Golf Course. Note the fecal droppings on the shoreline sand.
- B. Bed of *Najas minor* (small naiad) submerged aquatic vegetation in the reservoir near the Loch Raven Fishing Center.

Plate 4

- A. Phoenix Pond with *Nuphar advena* (spadderdock) along the far side of the pond.
- B. Bed of *Myriophyllum spicatum* (Eurasian water-milfoil) submerged aquatic vegetation flowering in Gunpowder Falls south of the small dam.

Plate 5

- A. Old growth *Pinus strobus* (eastern white pine) in The Pines area along Loch Raven Drive.
- B. Mixed conifer stand of *Pinus virginiana* (Virginia pine) and *P. resinosa* (red pine) in the Turtle Rock Point area.

Plate 6

- A. *Eupatorium serotinum* (late-flowering thoroughwort) in a field on the edge of an even-age stand of *Pinus virginiana* (Virginia pine) along the west side of the Dulaney Valley Road Bridge.
- B. Stand of even-aged *Pinus strobus* (eastern white pine) along the entrance road to Pine Ridge Golf Course.

Plate 7

- A. North Central Railroad Trail near the community of Phoenix.
- B. Alluvial woodlands along Western Run with *Acer nigrum* (boxelder) and *Salix nigra* (black willow) in the canopy and *Phalaris arundinacea* (reed canary grass) in the herbaceous layer.

Plate 8

- A. Stand of *Acer saccharum* (sugar maple) at the site of a former City of Baltimore tree nursery east of Pine Ridge Golf Course.
- B. Western Run at Ashland Road Bridge.

Plate 9

- A. Mixed forest of *Liriodendron tulipifera* (yellow poplar) and *Pinus strobus* (eastern white pine) in the Windemere Woods area.
- B. Young *Fraxinus americana* (white ash) planting in an old field in the Peerce's Woods area.

Plate 10

- A. *Parthenocissus quinquefolia* (Virginia creeper) growing on the masonry of a bridge abutment.
- B. Young successional forest of *Prunus serotina* (black cherry) and *Robinia pseudoacacia* (black locust) reclaiming part of The Pines area where *Pinus strobus* (eastern white pines) were felled by storm winds.

Plate 11

- A. Deciduous forest of the Laurel Woodlands area.
- B. Greene Branch Marsh

Plate 12

- A. Mowed *Festuca arundinacea* (tall fescue) south of the small dam.
- B. *Sasa veitchii* (Kuma bamboo) covering approximately 0.5 acre (0.2 hectare) on the edge of the watershed and invading the watershed in the Gunpowder Highlands area.

Plate 13

- A. The Loch Raven Fishing Center in the Goetz's Woods area.
- B. Outcrop of Cockeysville Marble on the edge of an abandoned quarry in the Deadman's Cove area.

Plate 14

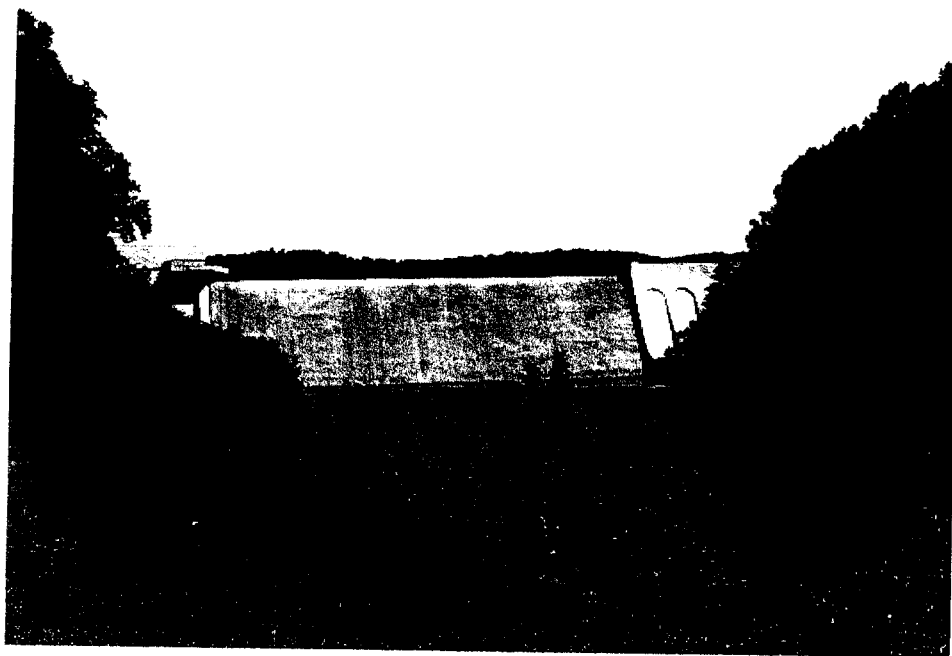
- A. Rocky drawdown shoreline of the reservoir with *Carya cordiformis* (bitternut hickory) and *Acer rubrum* (red maple) in the background of The Pines area.
- B. Dirt fire road with dominant herbaceous layer of *Microstegium vimineum* (stilt grass) on both sides of the road in the Overshot Run area.

Plate 15

- A. Old field with prominent white-headed specimens of *Pycnanthemum flexuosum* (narrow-leaved mountain mint) in the Deadman's Cove area.
- B. Woodland edge ecotone (hedgerow) consisting of *Rosa multiflora* (multiflora rose), *Lonicera japonica* (Japanese honeysuckle), and *Celastrus orbiculatus* (oriental bittersweet) in the Jessops area.

Plate 16

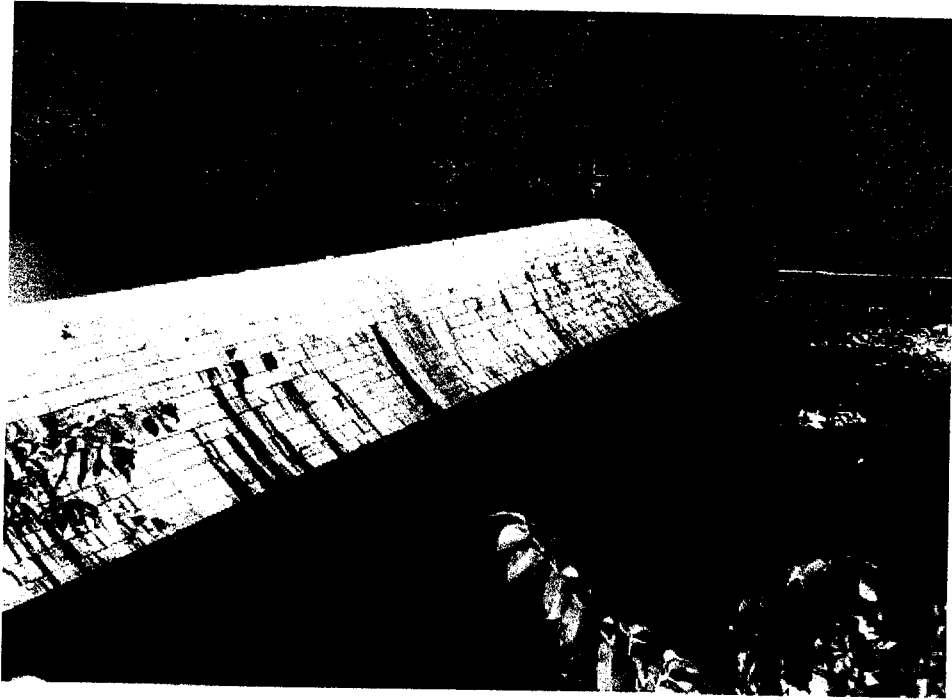
- A. *Fraxinus americanus* (white ash) 4.5-feet (1.4 meters) in diameter, felled by a storm on the bank of Carroll Road in the Phoenix area.
- B. Green and fairway under irrigation at Pine Ridge Golf Course.



A. The large dam that impounds Loch Raven Reservoir.



B. The Jessop family cemetery along Paper Mill Road.



A. The small dam on Gunpowder Falls below the large dam.



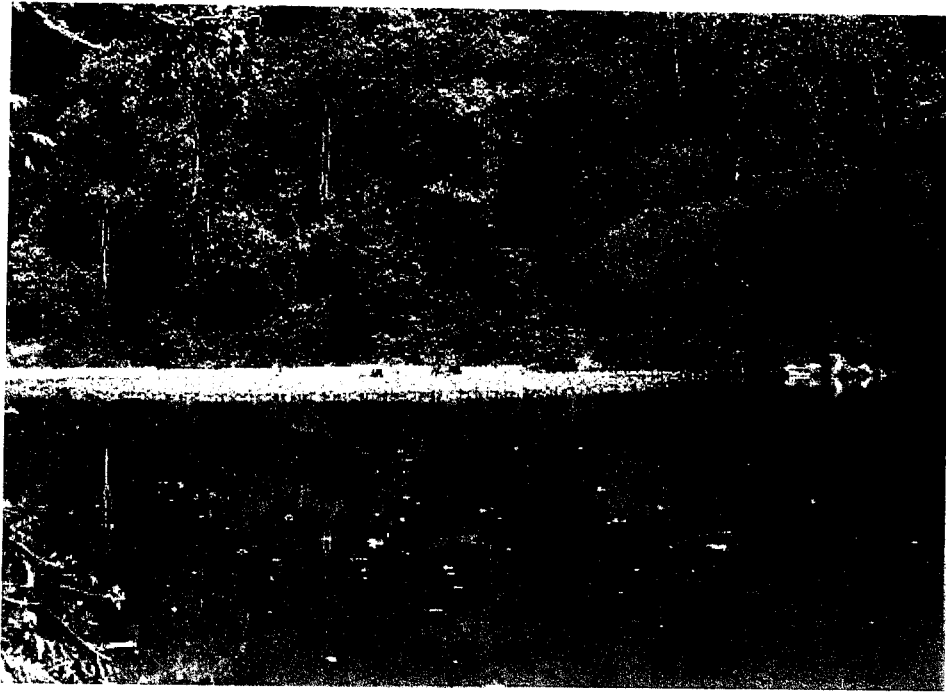
B. Overlook at the large dam.



A. Canada geese (*Branta canadensis*) along the edge of the reservoir at Pine Ridge Golf Course. Note the fecal droppings on the shoreline sand.



B. Bed of *Najas minor* (small naiad) submerged aquatic vegetation in the reservoir near the Loch Raven Fishing Center.



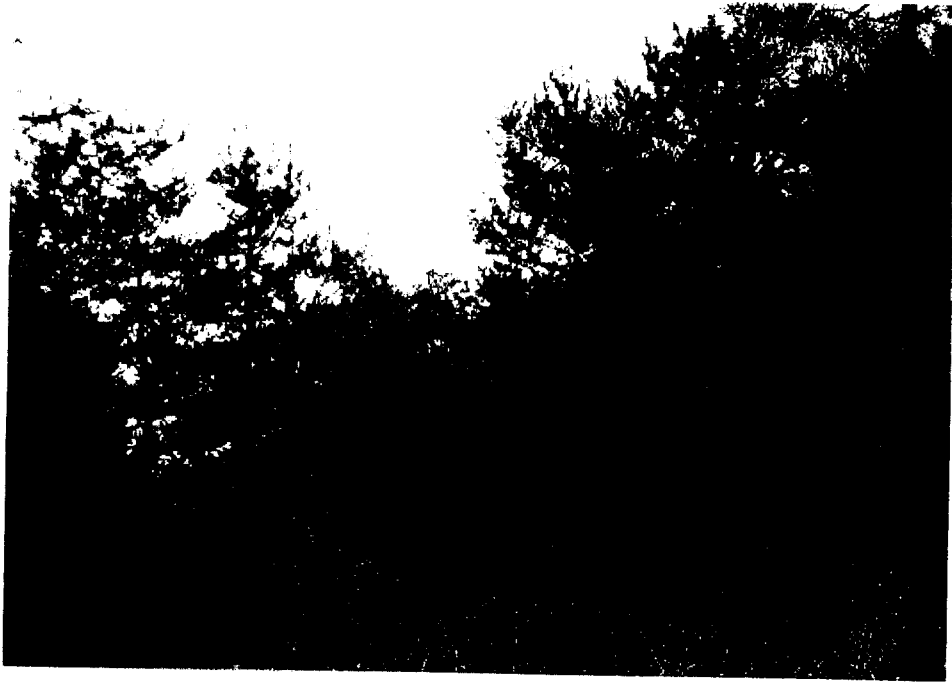
A. Phoenix Pond with *Nuphar advena* (spadderdock) along the far side of the pond.



B. Bed of *Myriophyllum spicatum* (Eurasian water-milfoil) submerged aquatic vegetation flowering in Gunpowder Falls south of the small dam.



A. Old growth *Pinus strobus* (eastern white pine) in The Pines area along Loch Raven Drive.



B. Mixed conifer stand of *Pinus virginiana* (Virginia pine) and *P. resinosa* (red pine) in the Turtle Rock Point area.



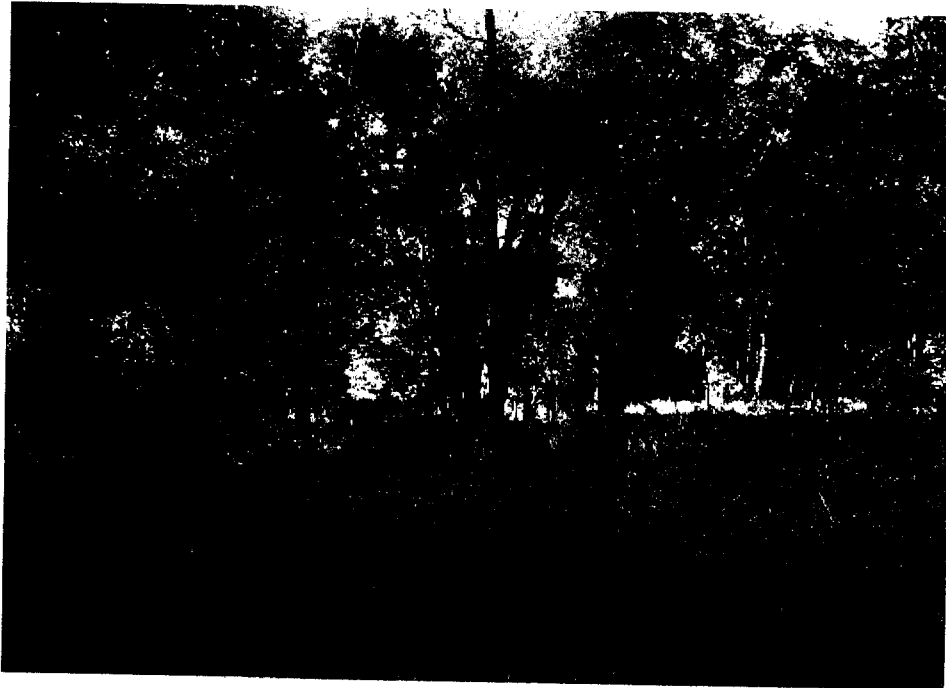
A. *Eupatorium serotinum* (late-flowering thoroughwort) in a field on the edge of an even-aged stand of *Pinus virginiana* (Virginia pine) along the west side of the Dulaney Valley Road Bridge.



B. Stand of even-aged *Pinus strobus* (eastern white pine) along the entrance road to Pine Ridge Golf Course.



A. North Central Railroad Trail near the community of Phoenix.



B. Alluvial woodlands along Western Run with *Acer nigrum* (boxelder) and *Salix nigra* (black willow) in the canopy and *Phalaris arundinacea* (reed canary grass) in the herbaceous layer.



A. Stand of *Acer saccharum* (sugar maple) at the site of a former City of Baltimore tree nursery east of Pine Ridge Golf Course.



B. Western Run at Ashland Road Bridge.



A. Mixed forest of *Liriodendron tulipifera* (yellow poplar) and *Pinus strobus* (eastern white pine) in the Windemere Woods area.



B. Young *Fraxinus americana* (white ash) planting in an old field in the Peerce's Woods area.



A. *Parthenocissus quinquefolia* (Virginia creeper) growing on the masonry of a bridge abutment.



B. Young successional forest of *Prunus serotina* (black cherry) and *Robinia pseudoacacia* (black locust) reclaiming part of The Pines area where *Pinus strobus* (eastern white pines) were felled by storm winds.



A. Deciduous forest of the Laurel Woodlands area.



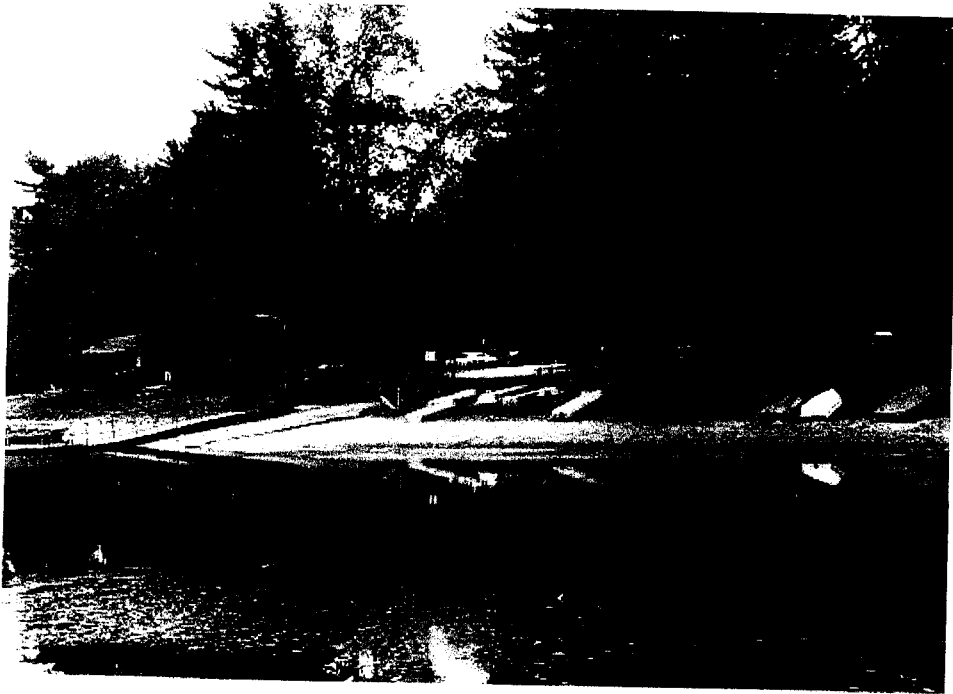
B. Greene Branch Marsh.



A. Mowed *Festuca arundinacea* (tall fescue) south of the small dam.



B. *Sasa veitchii* (Kuma bamboo) covering approximately 0.5 acre (0.2 hectare) on the edge of the watershed and invading the watershed in the Gunpowder Highlands area.



A. The Loch Raven Fishing Center in the Goetz's Woods area.



B. Outcrop of Cockeysville Marble on the edge of an abandoned quarry in the Deadman's Cove area.



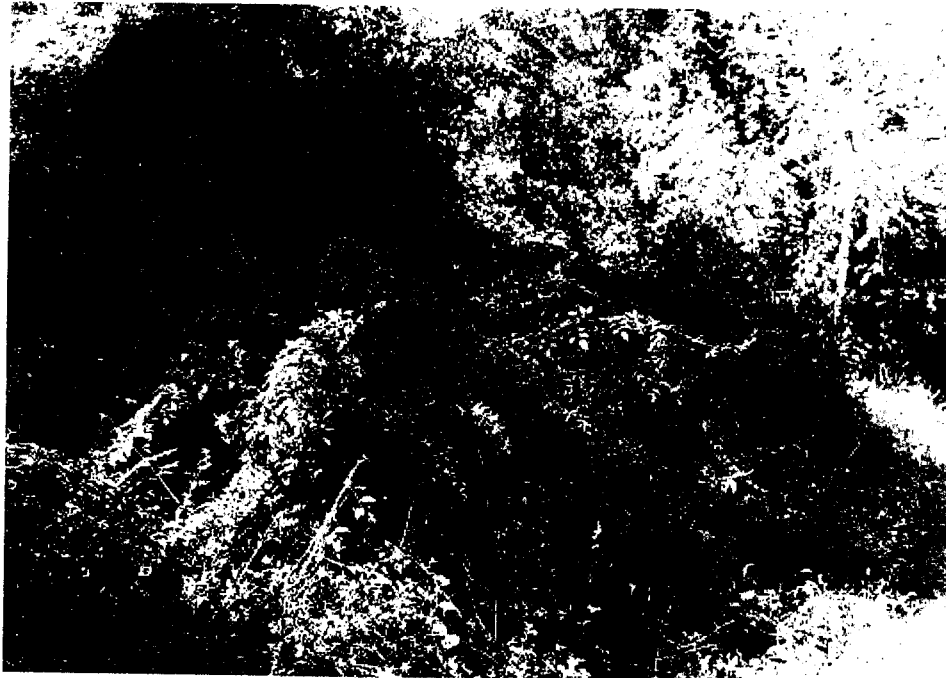
A. Rocky drawdown shoreline of the reservoir with *Carya cordiformis* (bitternut hickory) and *Acer rubrum* (red maple) in the background of The Pines area.



B. Dirt fire road with dominant herbaceous layer of *Microstegium vimineum* (stilt grass) on both sides of the road in the Overshot Run area.



A. Old field with prominent white-headed specimens of *Pycnanthemum flexuosum* (narrow-leaved mountain mint) in the Deadman's Cove area.



B. Woodland edge ecotone (hedgerow) consisting of *Rosa multiflora* (multiflora rose), *Lonicera japonica* (Japanese honeysuckle), and *Celastrus orbiculatus* (oriental bittersweet) in Jessops area.



A. *Fraxinus americanus* (white ash) 4.5-feet (1.4 meters) in diameter, felled by a storm on the bank of Carroll Road in the Phoenix area.



B. Green and fairway under irrigation at Pine Ridge Golf Course.