

**5a. US 301 Southern Corridor Transportation Study (Waldorf Area):** Only a portion of this transportation study is located within the SCEA boundary. This SHA study examines several alternatives to upgrade US 301 through the Waldorf area of Charles County, as well as, two bypass corridor alternatives, one to the west and one to the east of US 301, both of which begin at T.B. in Prince George's County and extend southward into Charles County tying back into US 301 near Turkey Hill Road. Several optional alignments are included within both the west and east corridors. In addition, the study includes a No-Build Alternative and a Transportation System Management (TSM)/Transportation Demand Management (TDM) Alternative. To provide a smoother flow of traffic, the upgrade alternatives include making improvements to US 301 such as, constructing grade separated interchanges, adding general purpose lanes to increase capacity, and upgrading US 301 to a six-lane fully access controlled highway supported by frontage roads. The bypass alignments consist of four general use lanes throughout their entire length, two HOV lanes (one in each direction) along the northern portion of the alignments and several new interchanges. A preliminary DEIS for the study is in preparation. Following is a summary of the impacts that would result from the upgrade alternatives and the bypass corridor alternatives:

|                                       | <u>Upgrade<br/>Alternatives</u> | <u>Western<br/>Bypass</u> | <u>Eastern<br/>Bypass</u> |
|---------------------------------------|---------------------------------|---------------------------|---------------------------|
| Wetlands Disturbed (Acres)            | 4.2 to 6.0                      | 33.0 to 52.0              | 33.0 to 59.0              |
| Number of Stream Crossings            | 5                               | 13 to 19                  | 11 to 13                  |
| 100-Year Floodplain Disturbed (Acres) | 3.8 to 5.39                     | 15.4 to 22.2              | 13.8 to 22.2              |

In addition to the above projects, information regarding development activity within the SCEA boundary has been obtained through the planning departments of Prince George's County and Charles County. Based on existing readily available information, Table IV-18 lists the developer's projects identified and potential impacts:

**TABLE IV-18  
SCEA DEVELOPMENT ACTIVITY**

| MAP I.D. | DEVELOPMENT  | POTENTIAL IMPACTS                                |                                  |                      |                   |
|----------|--|--|----------------------------------|----------------------|-------------------|
|          |  | WATERSHED LOCATION                               | FEMA 100-YEAR FLOODPLAIN PRESENT | NWI WETLANDS PRESENT | PARKLANDS PRESENT |
|          | <i><u>Subdivisions Approved in Prince George's County Within the SCEA Boundary</u></i>             |  |                                  |                      |                   |
| 6.       | <b>Brinkley Towns:</b> 84 dwelling units   | Potomac River<br>(Chain Bridge to Marshall Hall) | X                                | X                    |                   |
| 7.       | <b>Fisher Heights:</b> 154 dwelling units (pending)  | "  |                                  | X                    |                   |
| 8.       | <b>National Church of God Lots 1 and 3:</b> 60 dwelling units (went to final plat)                 | "  |                                  |                      |                   |
| 9.       | <b>Woodside Estates Plats 1 and 2:</b> 59 dwelling units   | "  | X                                |                      | X                 |
| 10.      | <b>Fawsett Woods:</b> 16 dwelling units  | "  |                                  |                      |                   |
| 11.      | <b>Old Fort Forest:</b> 41 acres, 10 dwelling units  | "  |                                  | X                    |                   |
| 12.      | <b>Caltor Manor:</b> 35 acres, 23 dwelling units   | "  |                                  | X                    |                   |
| 13.      | <b>Palmer Woods:</b> 32 dwelling units   | "  |                                  |                      |                   |
| 14.      | <b>Oaklawn:</b> 40 dwelling units  | Piscataway Creek                                 |                                  | X                    |                   |
| 15.      | <b>Rose Valley Woods:</b> 150 dwelling units   | "  |                                  | X                    | X                 |
| 16.      | <b>Villages of Piscataway:</b> 1,100 dwelling units  | "  |                                  | X                    |                   |
| 17.      | <b>Greens at Piscataway/Glassford Village:</b> 241 lots  | "  |                                  | X                    |                   |
| 18.      | <b>St. James Village:</b> 400 acres, 800 dwelling units  | "  | X                                | X                    |                   |
| 19.      | <b>Berry Woods:</b> 219 lots   | "  |                                  | X                    |                   |
| 20.      | <b>Palumbo CDP/Belle Oaks:</b> 109 dwelling units (pending)  | Mattawoman Creek                                 | X                                | X                    |                   |
| 21.      | <b>Manokeek:</b> 242 acres, 106 lots (went to final plat)  | "  | X                                | X                    |                   |
| 22.      | <b>Summerwood:</b> 116 acres, 163 lots   | "  |                                  |                      |                   |
| 23.      | <b>Simmons Acres:</b> 379 acres, 533 lots (mostly built)   | "  | X                                | X                    |                   |
| 24.      | <b>Addition to Simmons Acres:</b> 138 acres, 182 lots  | "  | X                                | X                    | X                 |
| 25.      | <b>Kingsview:</b> 350 dwelling units   | "  | X                                | X                    |                   |
|          | <i><u>Subdivisions with Valid Preliminary Plans in Charles County Within the SCEA Boundary</u></i> |  |                                  |                      |                   |
| 26.      | <b>Wexford Village Section II:</b> 98.9 acres, 251 lots  | "  | X                                | X                    |                   |
| 27.      | <b>McBerry:</b> 12.5 acres, 46 singled family detached units (SFD)                                 | "  |                                  |                      |                   |
| 28.      | <b>Robinwood:</b> 3.36 acres, 8 SFD  | "  |                                  | X                    |                   |
| 29.      | <b>Stratford Forest:</b> 127.8 acres 275 SFD   | "  |                                  | X                    |                   |
| 30.      | <b>Charles Crossings:</b> 219.2 acres, 373 SFD, 78 townhouse units (TH)                            | "  |                                  | X                    |                   |

**TABLE IV-18 (cont)**  
**SCEA DEVELOPMENT ACTIVITY**

| MAP I.D. | DEVELOPMENT  | POTENTIAL IMPACTS                            |                                  |                      |                   |
|----------|--|--|----------------------------------|----------------------|-------------------|
|          |  | WATERSHED LOCATION                           | FEMA 100-YEAR FLOODPLAIN PRESENT | NWI WETLANDS PRESENT | PARKLANDS PRESENT |
| 31.      | <b>Audrey Manor:</b> 26.18 acres, 26 SFD   | Mattawoman Creek                             |                                  |                      |                   |
| 32.      | <b>Bracey Estates:</b> 69.91 acres, 40 SFD   | "  | X                                | X                    |                   |
| 33.      | <b>Kingsview:</b> 427.0 acres, 640 lots  | "  |                                  | X                    |                   |
| 34.      | <b>Myers Estates, Phase I:</b> 15.0 acres, 41 SFD  | Potomac River (Marshall Hall to Smith Point) |                                  |                      |                   |
| 35.      | <b>Montrose Farms:</b> 7.73 acres, 7 SFD   | Mattawoman Creek                             |                                  | X                    |                   |
| 36.      | <b>Falcon Ridge:</b> 117.3 acres, 184 SFD  | "  |                                  | X                    |                   |
| 37.      | <b>Hunters Brooke:</b> 191.07 acres, 319 SFD   | "  |                                  | X                    |                   |
|          | <b><u>Major Subdivisions with Final Plat Approval in Charles County Within the SCEA Boundary</u></b> | "  |                                  |                      |                   |
| 38.      | <b>Rolling Meadows Section 1:</b> 6.70 acres, 40 SFD   | "  |                                  | X                    |                   |
| 39.      | <b>Cedarbrook:</b> 12.02 acres, 36 SFD   | "  |                                  | X                    |                   |
| 40.      | <b>Wexford Village (Hamilton Farm):</b> 63.20 acres, 174 SFD   | "  |                                  | X                    |                   |
| 41.      | <b>Hamilton Family:</b> 24.38 acres, 22 SFD  | "  |                                  | X                    |                   |
| 42.      | <b>St. Charles Town Center, Parcel G:</b> 10.77 acres commercial                                     | "  |                                  | X                    |                   |
| 43.      | <b>Sun Valley, Sections 3 and 4:</b> 10.0 acres, 85 SFD  | "  | X                                | X                    |                   |
| 44.      | <b>Stanford:</b> 17.27 acres, 109 TH   | "  |                                  | X                    |                   |
| 45.      | <b>Springhaven Woods (Parcel 3):</b> 67.52 acres, 127 SFD  | "  |                                  | X                    |                   |
| 46.      | <b>Streamview:</b> 83.4 acres, 198 SFD   | "  |                                  |                      |                   |
| 47.      | <b>Ashford II and III:</b> 119.0 acres, 289 SFD  | "  |                                  |                      |                   |
| 48.      | <b>Meadowland:</b> 45.97 acres, 94 SFD   | "  | X                                | X                    |                   |
| 49.      | <b>Somerset:</b> 242.0 acres, 234 lots   | "  |                                  | X                    |                   |
| 50.      | <b>Kanegis:</b> 28.4 acres, 60 SFD   | "  |                                  |                      |                   |
| 51.      | <b>Berry Valley Phase I:</b> 97.49 acres, 94 SFD, 208 TH   | "  | X                                | X                    |                   |
| 52.      | <b>Stone Ridge:</b> 24.0 acres, 39 SFD   | "  |                                  |                      |                   |
| 53.      | <b>Cartegena Highlands:</b> 40.8 acres, 37 SFD   | "  | X                                | X                    |                   |

**TABLE IV-18 (cont)**  
**SCEA DEVELOPMENT ACTIVITY**

| MAP I.D. | DEVELOPMENT   | POTENTIAL IMPACTS                                |                                  |                      |                   |
|----------|---|--|----------------------------------|----------------------|-------------------|
|          |   | WATERSHED LOCATION                               | FEMA 100-YEAR FLOODPLAIN PRESENT | NWI WETLANDS PRESENT | PARKLANDS PRESENT |
| 54.      | Phillips Meadow: 54.9 acres, 33 SFD   | Mattawoman Creek                                 | X                                | X                    |                   |
| 55.      | Berry Hill Manor, Section II: 81.57 acres, 81 SFD   | "  |                                  |                      |                   |
| 56.      | Brentwood: 185.0 acres, 323 SFD   | "  |                                  | X                    |                   |
| 57.      | Settle Woods: 145.9 acres, 120 SFD  | "  |                                  | X                    |                   |
| 58.      | Acquinsicke Estates: 44.0 acres, 6 SFD  | "  |                                  | X                    |                   |
| 59.      | Marshall's Landing: 12.11 acres, 36 lots  | Potomac River<br>(Marshall Hall to Smith Point)  |                                  |                      |                   |
| 60.      | Strawberry Hills IV B: 111.48 acres, 203 SFD  | "  |                                  | X                    |                   |
| 61.      | Fenwick Shores: 264.03 acres, 61 SFD  | Potomac River<br>(Chain Bridge to Marshall Hall) |                                  | X                    |                   |
| 62.      | South Hampton: 260.82 acres, 205 SFD  | Potomac River<br>(Marshall Hall to Smith Point)  |                                  | X                    |                   |
| 63.      | Sarah Manor: 4.15 acres, 8 SFD  | Mattawoman Creek                                 |                                  |                      |                   |
|          | <i>Projects Pending Planning Commission Approval in Charles County Within the SCEA Boundary</i> | "  |                                  |                      |                   |
| 64.      | Town Center South, Lots 6 - 11: 12.71 acres commercial  | "  |                                  | X                    |                   |
| 65.      | Pine Valley (Deer Valley): 29.86 acres, 46 SFD  | "  |                                  | X                    |                   |
| 66.      | Hardship Plantation: 101.88 acres, 13 SFD   | "  | X                                | X                    |                   |
| 67.      | Oxford Property: 36.09 acres, 66 SFD  | "  |                                  |                      |                   |
| 68.      | Kingsview West: 200.18 acres, 299 SFD   | "  |                                  |                      |                   |
| 69.      | Myers Estates: 34.50 acres, 153 SFD   | Potomac River<br>(Marshall Hall to Smith Point)  |                                  |                      |                   |

### **3. Cumulative Impacts**

#### **a. Surface Waters**

Surface waters included with the SCEA boundary are located in the Middle Potomac River Basin, also known as the Washington Metro Area Sub-Basin, and the Lower Potomac River Basin. Watersheds associated with the SCEA surface waters are: the Potomac River, from Chain Bridge to Marshall Hall (generally called the upper tidal Potomac River), which includes the sub-watersheds of Henson Creek and Broad Creek; Piscataway Creek which includes Tinkers Creek sub-watershed; Potomac River, from Marshall Hall to Smith Point; and Mattawoman Creek (Figure IV-13).

The tidal Potomac River has a well-documented history of water quality degradation and has been the target of concern and clean-up efforts since the 1800s. Up until the 1900s, pollution concerns were largely seasonal or caused by periodic events. According to information from the Maryland Washington Council of Governments (MWCOG), as regional population grew during the 20<sup>th</sup> century, the amount of untreated wastewater being directly discharged into the Potomac increased. The U.S. Public Health Service, in 1925, declared that the river was unsafe for swimming as a result of high levels of bacteria and the danger of catching water-borne diseases. By 1940, health concerns prompted the construction of wastewater treatment plants which provided primary treatment of all of the region's wastewater. However, water quality degradation accelerated when the effluent volumes exceeded the assimilative capacity of the river. In 1951, large scale summer fish kills resulted from low dissolved oxygen levels. From 1950 to the 1970's the Potomac River became increasingly degraded as regional wastewater discharges increased, leading to swimming bans, low dissolved oxygen and massive algae blooms (MWCOG 1989). During this same period, federal, state and local governments began coordinated efforts to address the poor condition of the river including establishment of water quality standards and recommendations for upgrades and increased capacity at regional wastewater treatment plants. In the early 1970's following passage of the Clean Water Act, many of the point source water quality protections recommended during the 1950's and 1960's were in place or were planned for implementation. Over the next decade, the river recovery efforts began to produce encouraging improvements in the river. In 1978, MWCOG reported that severe algal blooms had not been observed in the upper Potomac estuary since the late 1960's. By 1979, a major change in the health of the river was illustrated through a rising interest in permitting some water contact sports in the Washington area.

As treatment of wastewater continued to improve in the region during the 1980's, it became clear that the river was also being heavily influenced by non-point sources of

degradation such as sedimentation and agricultural and urban runoff. As report by MWCOG, by 1986, point-source discharges contributed less than 1 percent of suspended solids and only 8 percent of total phosphorous loads to the tidal Potomac. At the same time, non-point source nutrient runoff to the tidal Potomac was estimated at about 14 - 15 percent for total nitrogen and total phosphorous. Regional efforts to lower non-point source pollutant loading to the Potomac and the Chesapeake Bay have resulted in the implementation of sediment and erosion controlled, stormwater management and agricultural best management practices in much of the Potomac watershed.

Despite steady increases in population in the Potomac watershed, MWCOG reported an encouraging positive trend in overall water quality in the vicinity of the Woodrow Wilson Bridge in its 1993 publication, "Potomac River Quality 1990: Conditions and Trends in the Washington Metropolitan Area." From 1983 to 1990, phosphorous and nitrogen levels declined at the bridge, dissolved oxygen (DO) remained consistently above state standards and bacteria levels also continued to show improvement, although summer levels remained above those allowable for swimming. Downstream of the Woodrow Wilson Bridge, water quality improvements have not been quite as consistent, most likely due to less advanced wastewater treatment and increasing population. However, despite persistent water quality problems, downstream water quality in the lower estuary remains much improved over historic levels.

The Maryland Department of Natural Resources (DNR) publication, "Maryland Water Quality, 1993 - 1995", reports that water quality is fair in the segment of the Potomac from Chain Bridge to Marshall Hall. The publication states that in the lower mainstem segment above Marshall Hall and off the mouth of Piscataway Creek, elevated bacteria and high nutrient levels were observed as a result of urban runoff, sediment releases and upstream sources. Water quality data collected during the period 1984 - 1994 from the Potomac River segment from Chain Bridge to Marshall Hall show that these waters had relatively high nitrogen levels and relatively low phosphorous levels. Also, chlorophyll levels were not high, algal blooms were infrequent and high turbidity levels reduced light penetration beyond the critical limit for growth of submerged aquatic vegetation (SAV). Oxygen levels declined each summer but were not below the state water quality criterion of 5 milligrams per liter. In 1996, Skelly, et al. reported that during the previous five years, overall water quality conditions had improved and declining trends in phosphorous and chlorophyll levels were continuing. Bioassessment of sites on Henson and Broad Creeks indicated moderately impaired habitat and biological community (Primrose, 1995). The DNR publication reports that water quality is fair in the Piscataway Creek. Primarily due to river inflow and urban runoff, there were high bacteria, nutrient and suspended sediment levels. Seasonal algal blooms with low DO and high pH levels were the result of nutrient enrichment of the tidal portion of Piscataway Creek according to the DNR publication. In the

lower free-flowing creek, high bacteria and phosphorous levels were observed. Bacteria levels declined and nitrogen nutrient levels increased in the tidal portion of Piscataway Creek. The publication states that low pH and DO levels were frequently observed in the free-flowing segment of the stream and occurred naturally as a result of drainage from a wetland area just upstream of the monitoring site. Bioassessment of sites on lower Tinkers Creek and lower Piscataway Creek indicated some apparent water quality impact as moderately impaired biological communities were identified in moderately impaired habitat conditions (Primrose, 1995). The DNR publication titled, "Potomac Washington Metro Basin, Environmental Assessment of Stream Conditions", September 1999, states, "The major impacts to non-tidal streams in the basin appear to be nutrient enrichment, stream bank instability, and lack of functional riparian buffers. Overall, the major impacts to non-tidal streams in the Potomac Washington Metro basin are stream alterations that result from urban activities". It is evident from the data presented in Section IV.M.2.b. that residential, commercial, industrial and institutional land uses increased during the period 1973 - 1997 within the SCEA boundary while agricultural and forest land have decreased. Thus, there has been a trend toward urbanization, converting land within the SCEA boundary to developed uses. This trend is expected to continue into the future based on 2020 land use which indicates that developed land within the SCEA boundary is projected to nearly triple during the period 1997 - 2020.

As reported in the DNR publication, "Maryland Water Quality, 1993 - 1995", for the portion of the Potomac from Marshall Hall to Smith Point, water quality varies from fair in the upper segment to good in the lower segment. According to the publication, at Potomac River monitoring stations off Indian Head and Moss Point, high nutrient levels and elevated ammonia levels were observed. Also, elevated bacteria levels were observed in the upper third of the tidal river. High nutrient levels were the result of agricultural runoff, sediment release, poor flushing characteristics and upstream sources while elevated suspended sediment levels were due to agricultural runoff and erosion. Water quality data collected during the period 1984 - 1994 show that these waters had relatively high nitrogen levels. Also, chlorophyll levels were not high, algal blooms were infrequent and high turbidity levels reduced light penetration above the critical limit for SAV growth. Oxygen levels declined each summer but were not below the state water quality criterion of 5 milligrams per liter. In 1996, Skelly, et al. reported that overall water quality conditions had improved during the previous eleven years and declining trends in phosphorous and chlorophyll levels were continuing. The DNR publication also reports that algal blooms were observed in the Potomac from Marshall Hall to south of Mattawoman Creek. The publication states that water quality in the Mattawoman Creek varies from good in the upper portion to fair in the lower tidal portion of the creek. At a monitoring station in the lower free-flowing portion of the creek, high bacteria and total phosphorous levels and very low DO and pH levels were observed. Also, high nutrient levels and elevated pH levels were observed in the

lower tidal portion of the Mattawoman Creek. As reported in the DNR publication, elevated bacteria and nutrient levels were due to agricultural and urban runoff. Myrtle Grove Lake, located within the SCEA boundary in the Mattawoman Creek watershed, experiences water quality problems as a result of elevated nutrients and sediments from upstream agricultural areas. In a 1989 survey of regional DNR biologists and a 1991 statewide lake assessment program, the lake, which covers 23 acres, was classified as an eutrophic lake.

Cumulative impacts to surface waters within the SCEA boundary result from the addition of direct impacts resulting from Alternative 5A Modified to the impacts to surface waters from other past, present and future actions. The SHA-Selected Alternative has the potential to negatively affect surface water quality through increased runoff generated from new impervious surfaces associated with the roadway improvements, as well as erosion and sedimentation resulting from the exposure of soils during construction. Uncontrolled runoff from impervious surfaces has been linked to thermal and chemical pollution, as well as loss of stream stability and aquatic habitat (Schueler 1987). These impacts are primarily caused by increases in the level of peak discharges in receiving streams and by the introduction of pollutants such as particulates, petroleum-based fuels, metals, deicing salts and other contaminants that typically accumulate on road surfaces and become mobilized during rain events. These effects would be mitigated through compliance with stormwater management and sediment and erosion control requirements, including water quality treatment, regulated by the Maryland Department of the Environment (MDE). Future planned development indicated in Section IV.M.2.b, would add to past and current surface water impacts through increased impervious areas and stormwater runoff. During the period 1997 - 2020, the amount of developed land within the SCEA boundary is projected to nearly triple. The growth in development will increase the overall percentage of impervious area in the watershed. The loss of natural land cover results in increased stormwater runoff and reduced groundwater infiltration which affects a stream's ability to support aquatic life. There are fewer groundwater seeps discharging into the streams to sustain the baseflow between periods of rainfall and the streams become more flashy when it rains, quickly swelling from the increased runoff. The increase in runoff volume results in greater erosion of streambanks. The sediment coming from eroding streambanks is now believed to be a greater source of sediment in streams than that which comes from outside the streams. Stormwater management can help to control the runoff entering streams, however, the combination of numerous stormwater management facilities discharging in the same watershed can result in a peak discharge being sustained over a longer period of time. Future planned development will also have an effect on the amount of nutrients entering the surface waters within the SCEA boundary. According to 1997 land cover data from MDP, approximately 51 percent of the area within the SCEA boundary is covered by forests. Stormwater runoff from forest land has much lower levels of nitrogen and phosphorus than runoff from agricultural land, pasture, urban land

or land transitioning from agricultural uses to urban uses. As forest land within the SCEA boundary is developed, the increase in nitrogen and phosphorus in the runoff will be significant. Stormwater management practices cannot be expected to intercept and treat all of the nitrogen and phosphorus in the stormwater runoff from developed land. As a result, degradation of water quality can be expected due to additional nutrients entering the streams. However, the current regulatory framework for stormwater management and sediment and erosion control requirements administered by MDE would help to minimize the impacts to surface waters from development under the future land use scenario.

**b. Floodplains**

The 100-year floodplains within the SCEA boundary indicated on Flood Insurance Rate Maps from the Federal Emergency Management Agency (FEMA) occur along the following waterways: the Potomac River, Henson Creek, Carey Branch (a tributary to Henson Creek), Hunters Mill Branch (a tributary to Henson Creek), Broad Creek, Tinkers Creek, Pea Hill Branch (a tributary to Tinkers Creek), Swan Creek, Piscataway Creek, Butler Branch (a tributary to Piscataway Creek), Burch Branch (a tributary to Piscataway Creek), Mattawoman Creek, Piney Branch (a tributary to Mattawoman Creek), Pomonkey Creek, Pomonkey Mill Swamp (a tributary to Pomonkey Creek), Old Womans Run (a tributary to Mattawoman Creek), Pole Branch (a tributary to Old Womans Run), and Marbury Run (a tributary to Mattawoman Creek).

Floodplain areas of the Potomac and its tributaries have been historically impacted by urban development. As far back as the early 1800s, dredging within the Potomac was conducted to create navigable channels. In the early 1900s, channel dredging and land reclamation increased, creating much of the current shoreline. The majority of the reclaimed areas were then built upon, adding to overall risk to life and property from flooding.

Past stresses to the floodplains of waterways within the SCEA boundary, other than the Potomac River, have also occurred. Any unregulated encroachments on the 100-year floodplain from development would have occurred prior to the passing of the Non-Tidal Wetlands Act in 1989 which affords protection to floodplains. As indicated in Section IV.M.2.b., with the SCEA boundary, during the period 1973 - 1981, developed land (residential, commercial, industrial, institutional, extractive) increased by more than 10 percent. Flood studies of Henson Creek and Piscataway Creek prepared in 1986 by Prince George's County Stormwater Management Technical Group indicated that 68 houses were located in the floodwaters of the 100-year floodplain along Henson Creek or its tributaries and 73 houses and one commercial establishment were located in the floodwaters of the 100-year floodplain along Piscataway Creek or its tributaries. Roadway construction associated with development has also impacted the

100-year floodplain at road crossings. Current Maryland, federal and local regulations discourage development in floodplains and a Waterways Construction Permit is required for any floodplain encroachment which includes grading, filling or placing structures in the 100-year floodplain.

Past alterations to floodplains within the SCEA boundary, such as the previously described channel dredging and land reclamation along the Potomac and encroachment by residential areas in the Henson Creek and Piscataway Creek floodplains, have eliminated or reduced some of the valuable functions associated with floodplains. Stream valley parkland acquired by Prince George's County along streams such as Henson Creek, Piscataway Creek and Tinkers Creek has helped mitigate impacts to stream floodplains.

Direct impacts to the 100-year floodplain are quantified in Section IV for Alternative 5A Modified. The impact for the SHA-Selected Alternative is 3.4 acres. Cumulative impacts to the 100-year floodplain within the SCEA boundary result from the addition of the direct impacts resulting from Alternative 5A Modified combined with other past, present and future actions. Future development anticipated within the SCEA boundary, as indicated in Section IV.M.2.b., would add to past and present impacts to the 100-year floodplain. However, effects to floodplains under the future land use scenario are expected to be minimal as a result of the current regulatory framework and given that portions of the floodplains within the SCEA boundary are located in parkland or planned to be set aside as parkland.

### **c. Wetlands**

Based on National Wetland Inventory (NWI) mapping, the wetlands located within the SCEA boundary include the following types: palustrine forested, palustrine emergent, palustrine open water, palustrine scrub-shrub, palustrine unconsolidated bottom, estuarine intertidal emergent, estuarine intertidal scrub-shrub and riverine tidal emergent. Ecological functions provided by wetlands include filtering pollutants in surface runoff, maintaining base flow in streams and slowing floodwaters.

The United States Fish and Wildlife Service (USFWS) reported that from the mid-1950's to the late 1970's approximately 24,000 acres of wetlands were lost in Maryland. The causes of these losses include draining and clearing for agriculture, urban development and natural forces. For areas within the Chesapeake Bay Watershed, USFWS has determined that Maryland experienced a net loss of 4,810 acres of wetlands during the period 1982 - 1989 (Tiner et. al. 1994). According to the MDP publication, "Maryland's Land, 1973 - 1990, A Changing Resource," the area of wetlands in Prince George's County totaled 3,324 acres in 1973 and also in 1981 and then increased slightly to 3,337 acres in 1990. In Charles County, the MDP

publication reports the area of wetlands totaled 6,726 acres in 1973, 6,777 acres in 1981 and 6,789 acres in 1990. According to MDP Land Use/Land Cover Maps, within the SCEA boundary, the area of wetlands increased slightly from a total of 765 acres in 1973 to 784 acres in 1981 and then decreased to 749 acres in 1997. Thus, variations have occurred in wetland trends, losses and gains, depending on the type of data analyzed regional or local. The loss of wetlands within the SCEA boundary during the period 1981 - 1997 occurred at the same time developed land within the SCEA boundary increased by 49.4 percent as indicated in Section IV.M.2.b.

Direct impacts to wetlands that would result from Alternative 5A Modified are quantified in Section IV. The SHA-Selected Alternative would impact 1.3 acres. Cumulative impacts to wetlands within the SCEA boundary result from the addition of direct impacts resulting from Alternative 5A Modified combined with other past, present and future actions. Future development within the SCEA boundary, indicated in Section IV.M.2.b., would add to past and present impacts to wetlands. However, given the current federal and state regulatory framework contained in Section 404 of the Clean Water Act, the Maryland Nontidal Wetlands Protection Act and the "no net loss" wetlands policies, impacts to wetlands under the future land use scenario would be minimized.

**d. Woodlands**

Forested areas within the SCEA boundary identified by 1997 MDP Land Use/Land Cover mapping include deciduous, evergreen and mixed forests, as well as, brush areas. These forested areas are widespread and account for approximately 51 percent of the entire area within the SCEA boundary. Forest habitats are essential for a wide variety of animals, birds, and plants, with riparian forests providing critical habitat for over half of the terrestrial wildlife species in the region (USDA 1996). Streamside forests are also important for aquatic organisms that use decaying organic matter and downed woody debris for shelter and that benefit from temperature regulation, and other water quality benefits provided by forests.

According to the MDP publication, "Maryland's Land, 1973 - 1990, A Changing Resource," the area of forests in Prince George's County decreased by 2.1 percent, from 158,276 to 155,018 acres, during the period 1973 - 1981, and further decreased by 6.0 percent, to 145,714 acres, during the period 1981 - 1990. The area of forests in Charles County decreased by 1.5 percent, from 201,672 to 198,725 acres, during the period 1973 - 1981, and further decreased by 5.5 percent, to 187,751 acres, during the period 1981 - 1990. Within the SCEA boundary, based on MDP land use/land cover mapping, the area of forests decreased by 1.7 percent, from 64,073 to 62,998 acres, during the period 1973 - 1981, and further decreased by 14.0 percent, to 54,147

acres, during the period 1981 - 1997. As indicated in Section IV.M.2.b., during the period 1973 - 1997, the amount of developed land (residential, commercial, industrial, institutional, extractive land uses) within the SCEA boundary increased substantially by 64.8 percent.

A loss of forest area results in a loss of the valuable ecological functions associated with forests which include stabilizing soils, filtering nutrients and sediment, and regulating stormwater and stream flow. Maryland forest resources have been afforded protection through regulations of the Chesapeake Bay Critical Area Protection Law of 1984 and the Forest Conservation Act of 1991. Both of these regulations are state-mandated programs, administered at the county level. Critical Area regulations limit the amount of clearing permitted within 1,000 feet of tidal waters and require mitigation in the form of reforestation for impacts to forests. The regulations give additional protection to the preservation and/or creation of forested shoreline buffers within a 100-foot distance from tidal waters. The Maryland Forest Conservation Act and Reforestation Law apply to lands outside the Critical Area. The Act sets allowable clearing thresholds for development dependant upon local zoning designations. The Act also requires reforestation when thresholds are exceeded. Or, if no forest is present on a development site, a percentage of the land must be planted with trees. Certain highway projects may be exempted from the Forest Conservation Act provided there is compliance with the Maryland Reforestation Law, Natural Resource Article 5-103. The Reforestation Law requires replacement of the forest cleared by highway projects on an equal basis on public property. These restrictions on forest clearing and the requirements for reforestation provide a strong incentive for forest conservation.

The Maryland Reforestation Law requires that when highway construction using state funds causes the cutting or clearing of forests in the size of one acre or more, replacement is required on an acre-for-acre (1:1) basis and must be accomplished on public land. Priority areas for mitigation include onsite or within the same county and watershed as the impact. If an appropriate mitigation site cannot be identified, a fee-in-lieu of mitigation must be deposited into the Reforestation Fund at ten cents per square foot of impact (\$4,356/acre). Mitigation must be completed within one year or two growing seasons after the highway construction has been completed.

Direct impacts to woodlands that would result from Alternative 5A Modified are quantified in Section IV. The impact would be 58.2 acres to woodlands. Cumulative impacts to woodlands within the SCEA boundary result from the addition of direct impacts as a result of Alternative 5A Modified to the impacts to woodlands combined with other past, present and future actions. Future development within the SCEA boundary, indicated in Section IV.M.2.b., would add to past and present impacts to woodlands. The amount of developed land within the SCEA boundary is projected to nearly triple during the period 1997 - 2020. With approximately

51 percent of the area within the SCEA boundary covered by forests, based on 1997 land cover data from MDP, there is the potential for substantial impacts to woodlands from future planned development. However, impacts to woodlands would be regulated under the Maryland Forest Conservation Act, the Maryland Reforestation Law and the Chesapeake Bay Critical Area Protection Law, and effects would be offset through reforestation requirements. Since enactment of the Reforestation Law in 1989, 2,130.8 acres of forested land have been cleared by highway construction and 2,433.7 acres have been replanted with fee-in-lieu monies.

**e. Parklands**

There are numerous parklands and recreation areas within the SCEA boundary. An inventory of the parklands and recreation areas identified within the SCEA boundary is provided below. SHA-Selected Alternative 5A Modified would result in direct impacts to Henson Creek Stream Valley Park, requiring 0.2 acre of right of way, from the publicly owned public park. While there is potential for impacts to occur to parklands listed below as a result of other future actions, impacts to parklands within the SCEA resulting from other future actions, combined with the SHA-Selected Alternative impacts, including future development, are expected to be minimal since it would be extremely rare, if at all, that development would be permitted on public parkland. Also, use of land from a significant publicly owned public park as part of a federally funded or approved transportation project would require a Section 4(f) evaluation to document that there are no feasible and prudent alternatives to the use of land from the park, and that the project includes all possible planning to minimize harm to the park.

Parklands and Recreation Areas Within the SCEA Boundary

|   |  |
|---|--|
| J. Frank Dent Neighborhood Park/School  | Valley View Community Park                 |
| Southlawn Neighborhood Park/School      | Windbrook Neighborhood Park                |
| Leyte Drive Neighborhood Playground     | Livingston Road Community Park             |
| Henson Creek Stream Valley Park         | Harmony Hall Recreation Center             |
| Henson Creek Golf Course                | Riverview Community Park                   |
| Webster Lane Neighborhood Park          | Potomac River Waterfront Conservation Area |
| Oxon Hill Manor Historic House          | Tantallon North Neighborhood Park          |
| Betty Blume Neighborhood Park           | Franklin Square Neighborhood Park          |
| Potomac River Waterfront Community Park |  |

|   |                                       |
|---|---------------------------------------|
| Fort Foote Neighborhood Recreation Center       | Tantallon South Neighborhood Park     |
| Fort Foote Historic Site                        | Potomac Landing Neighborhood Park     |
| Jones Point Park                                | Tantallon Country Club                |
| Tucker Road Recreation Center                   | Tantallon Neighborhood Park           |
| Apple Grove Neighborhood Park/School            | Fort Washington Park                  |
| Lynnaian Neighborhood Playground                | Piscataway National Park              |
| Hunters Mill Community Park                     | Piscataway Park Scenic Easement       |
| Tinkers Creek Stream Valley Park                | Accokeek Neighborhood Park.           |
| Allentown Road Aquatic Facility Park            | Southview Golf Course                 |
| Fort Washington Forest Neighborhood Park/School | Mattawoman Watershed                  |
| Piscataway Creek Stream Valley Park             | Piscataway Park                       |
| Rose Valley Neighborhood Park/School            | Ruth B. Swan Memorial Park            |
| Friendly Neighborhood Park                      | General Smallwood State Park          |
| Louise F. Cosca Regional Park                   | Mattawoman Natural Environment Area   |
|   | Myrtle Grove Wildlife Management Area |

**f. Agricultural Land**

The amount of land used for farming in Maryland has been declining. The 1992 Census of Agriculture reports that 2,223,000 acres were being farmed at that time which signified a decline of more than 350,000 acres in ten years. According to MDP's publication, "Maryland's Land, 1973 - 1990", agricultural land use in Prince George's County dropped to 59,410 acres in 1990, a decline of 6,237 acres during the period 1973 - 1990. In Charles County, agricultural land use dropped to 62,281 acres in 1990, a decline of 4,038 acres during the period 1973 - 1990. The Atlas of Agricultural Land Preservation in Maryland (AALPM) indicates that many large areas of Maryland's prime and productive agricultural land are being fragmented by development. The SHA-Selected Alternative under consideration would directly impact prime farmland soils as discussed in Section IV.E.3. and later in this section.

The agricultural land zoned Residential-Agricultural, located generally between Piscataway Creek and the Charles County line, can be impacted by future development since the zoning classification allows low density residential development. Based on information

contained in the AALPM, the agriculturally zoned land in both Prince George's and Charles Counties is rated "least protective", the lowest category with regard to level of protection for preserving farmland, based on the number of residential units that are permitted to be built on the property. Agricultural zoning that permits one unit per fewer than ten acres is rated "least protective". Prince George's County does not actually have a zone with the primary purpose of preserving agricultural land use. However, the AALPM treats the Residential-Agricultural zone as agricultural since it encourages the retention of agriculture as a primary land use although its primary purpose is to provide for large lot single-family detached residential subdivisions. Within the SCEA boundary, the agriculturally zoned land is, for the most part, located in Prince George's County situated in several areas, generally between the Piscataway Creek and the Charles County line. There is an area of agricultural land that is protected by private conservation easement that is located west of MD 210, just south of Piscataway Creek in Prince George's County, with a small portion extending into Charles County. Based on mapping contained in the AALPM, the greater portion of the land area within the SCEA boundary is land that is developed or zoned/planned for development. A small portion is publicly owned land such as parks. The AALPM refers to Prince George's County as the most heavily urbanized county in the state. Approximately three-fourths of the land within the SCEA boundary in Charles County is located in the area designated as the Development District.

According to land use/land cover mapping from MDP, agricultural land use within the SCEA boundary dropped by 2.3 percent, from 14,339 to 14,005 acres, during the period 1973 - 1981, and further decreased by 11.2 percent, to 12,437 acres, during the period 1981 - 1997. As indicated in Section IV.M.2.b., the amount of developed land within the SCEA boundary increased by 10.3 percent during the period 1973 - 1981 and further increased by 49.4 percent during the period 1981 - 1997.

Direct impacts to prime farmland soils that would result from Alternative 5A Modified are quantified in Section IV.E.3. The prime farmland impact would be 4.5 acres. Cumulative impacts to agricultural land within the SCEA boundary result from Alternative 5A Modified combined with other past, present and future actions. Future development within the SCEA boundary, indicated in Section IV.M.2.b., would add to past and present impacts to agricultural land. However, the greater portion of the land area within the SCEA boundary is land that is developed or zoned/planned for development. There is only one isolated area of agricultural land identified within the SCEA boundary that is protected by private conservation easement. Thus, impacts by future development to agricultural land within the SCEA boundary that is not zoned/planned for development are expected to be minimal.

#### **4. Secondary Effects**

Secondary effects are indirect effects which "may include growth inducing effects and other effects related to induced changes in the pattern of land use".

Area master plans define the pattern of land use envisioned for the area within the SCEA boundary. Land use plans contained in the area master plans represent ultimate conditions when public facilities recommended in the master plans such as, roadway improvements and adequate water and sewer systems, are provided. The improvements proposed by the MD 210 project are in keeping with the transportation recommendations that are contained in the area master plans. The MD 210 improvements would therefore, support the land use recommended in the area master plans and would not induce changes in the type of development that would occur. There does not appear to be any development in the study area that is dependent on the SHA-Selected Alternative for access.

Adequate public facilities (APF), in terms of transportation, in Prince George's County are based on level of service thresholds at the intersection that would be affected by proposed development. Compliance with the APF thresholds is a requirement which precludes land development. These thresholds are defined differently for signalized and unsignalized intersections. At signalized intersections, a critical lane volume of 1,450 vehicles per hour or less is required in order to meet the APF. If the critical lane volume would exceed 1,450 vehicles per hour as a result of the traffic generated by the proposed development, then specific improvements would be required to lower the critical lane volume to the required threshold. In special cases, such as when the existing conditions already exceed the APF threshold, mitigation might be allowed in the form of providing improvements so that the traffic generated by the proposed development would not worsen the existing situation. At an unsignalized intersection, the level of service threshold is based on delay - a delay greater than 50 seconds is considered a failing intersection. If traffic generated by the proposed development would result in creating delays in excess of 50 seconds at an unsignalized intersection, then the applicant is required to perform a traffic signal warrant study. If the study indicates a traffic signal is required, the applicant must obtain the necessary approvals and permits to provide the traffic signal. When APF thresholds are complied with or improvements provided to come into compliance with the required level of service threshold, then the property can be developed in accordance with its zoning. Thus, APF requirements limit when land can be developed in accordance with its zoning, but the type of development would remain consistent with the master plans.

By addressing traffic congestion and level of service on MD 210, Alternative 5A Modified would address APF requirements affecting when development could occur. By

improving capacity on MD 210, the stress placed on local roads from commuters who divert to these roadways to avoid traffic congestion along MD 210 would be reduced or eliminated. The Build Alternative would affect the rate of development but would be in accordance with the zoning and land use supported by improvements to MD 210 as envisioned by the area master plans. Therefore, the Build Alternative under consideration would not affect the type of development that would occur but would affect when development in accordance with planned land use could occur.

## **5. Conclusions**

Direct impacts on the environment from Alternative 5A Modified are added to other past, present and future actions to arrive at cumulative impacts. Alternative 5A Modified would result in direct impacts to surface waters, 100-year floodplains, wetlands, woodlands, parklands and prime farmland. A description of direct impacts to the SCEA resources has been included in the previous discussion of cumulative impacts. Direct impacts have been quantified in detail in Sections IV.E. to IV.J.

Secondary effects in terms of induced changes in the type of development that would occur in the MD 210 corridor are not expected. The SHA-Selected Alternative is in-keeping with transportation recommendations contained in the area master plans which would support the land use recommended in the master plans. The Prince George's County Adequate Public Facilities (APF) Ordinance limits the timing and extent to which land can be developed in accordance with its zoning, and it dictates the extent of infrastructure improvement necessary to facilitate such development. Transportation capacity is one element of APF. Regarding transportation, before a new subdivision can be approved by the Planning Board, county regulations require that the Planning Board determine that transportation facilities in the vicinity of the subdivision will be adequate to serve it. The Planning Board determines adequacy on the basis of information submitted by the subdivider as well as agencies responsible for building the required facilities, such as the SHA and the County Department of Public Works and Transportation. Alternative 5A Modified would enhance intersection capacity affecting when development could occur and thus the rate of development; however, the SHA-Selected Alternative would not affect the type of development that would occur.

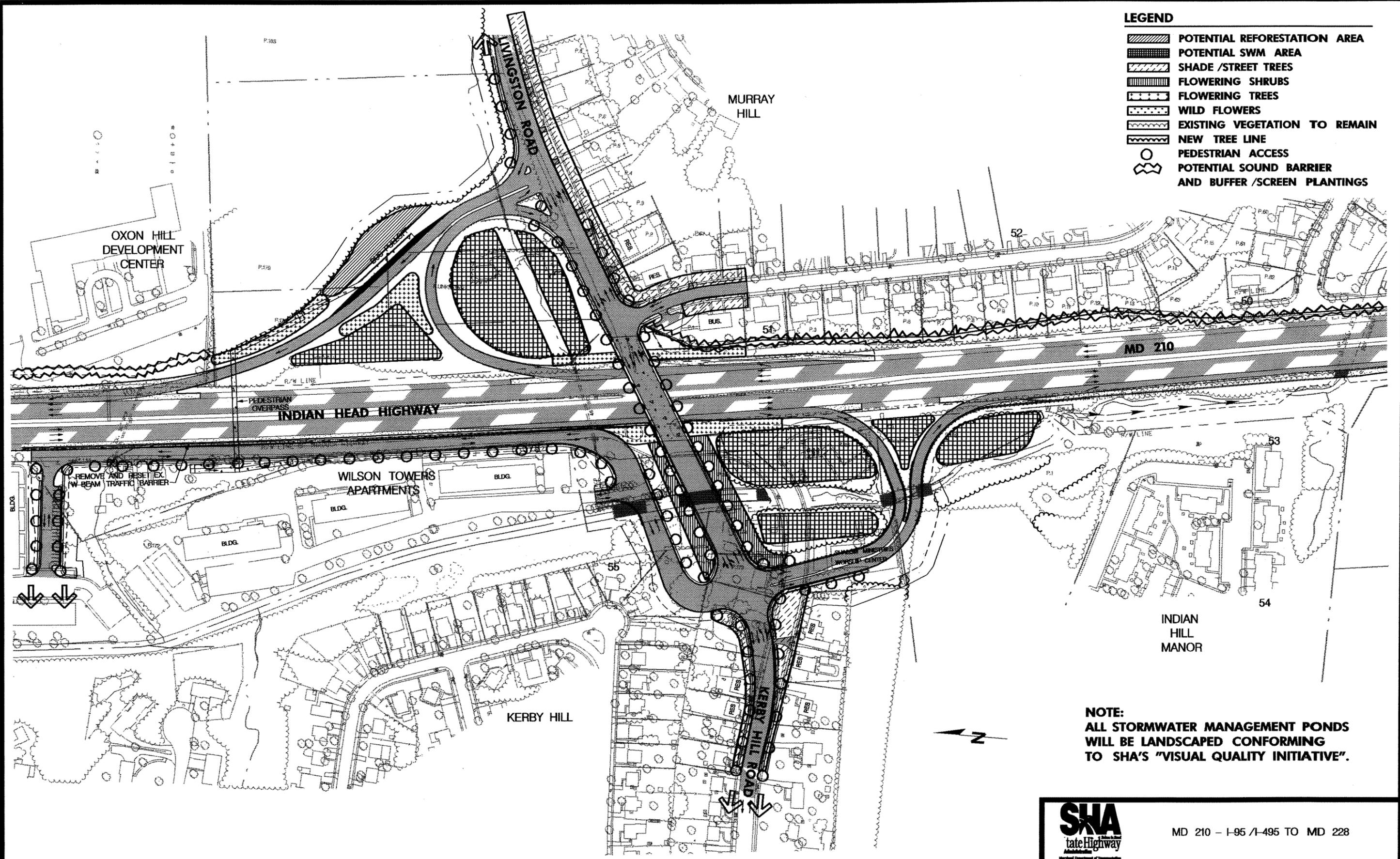
Cumulative effects to natural resources within the SCEA boundary are the result of impacts to resources from other past, present and future actions in addition to the direct impacts that would result from Alternative 5A Modified. Surface waters, floodplains, wetlands, woodlands and prime farmland have all historically been impacted by development within the SCEA boundary and would be further impacted by Alternative 5A Modified. Impacts to these

resources from other future actions within the SCEA boundary would add to the overall cumulative effect. Impacts to surface waters from other future actions can be expected in light of projected increases in developed land and impervious surfaces. Greater streambank erosion is likely to occur from increased runoff volume, along with degradation of water quality from additional nutrients entering the streams. However, the current regulatory framework for stormwater management and sediment and erosion control requirements would help to minimize the impacts to surface waters from development under the future land use scenario. Floodplain impacts from other future actions within the SCEA boundary are expected to be minimal given that portions of the floodplains are located in parklands or planned to be set-aside as parklands. Impacts to wetlands from other future actions are expected to be minimal as a result of the current regulatory framework and "no net loss" policies. In light of projected increases in developed land and the vast forested areas contained within the SCEA boundary, there is the potential for substantial impacts to woodlands from other future actions. However, impacts to woodlands would be regulated through forest conservation and reforestation requirements. Impacts to parklands from future development within the SCEA boundary are expected to be minimal. The greater portion of undeveloped land within the SCEA boundary is land that is zoned for development. Thus, impacts by future development to agricultural land that is not zoned for development are expected to be minimal.

Overall, in the context of the current federal, state and local regulatory framework, future cumulative effects to resources, particularly floodplains, wetlands, parklands and agricultural land, are expected to be minor while impacts to surface waters from other future actions would be minimized and woodland impacts would be offset through conservation and reforestation. Protection of natural resources would be facilitated through permitting, planning and zoning, and approval processes that are conducted by those agencies that regulate potential effects to resources.

#### **N. Visual Quality**

The SHA-Selected Alternative 5A Modified will maintain MD 210 as a six lane, partially controlled access highway, making use of the existing horizontal and vertical alignments for mainline MD 210; however, six grade separated interchanges will be implemented, each including an overpass of MD 210. These interchanges will change the visual environment of MD 210 for travelers on existing roads and for residential and commercial occupants of immediately adjacent properties. The bridge structures themselves will be considered for aesthetic design treatments that would be architecturally compatible with the surrounding community or would be part of an overall theme for the MD 210 corridor. Other structures such as noise walls and retaining walls will be necessary to mitigate the impacts of the proposed



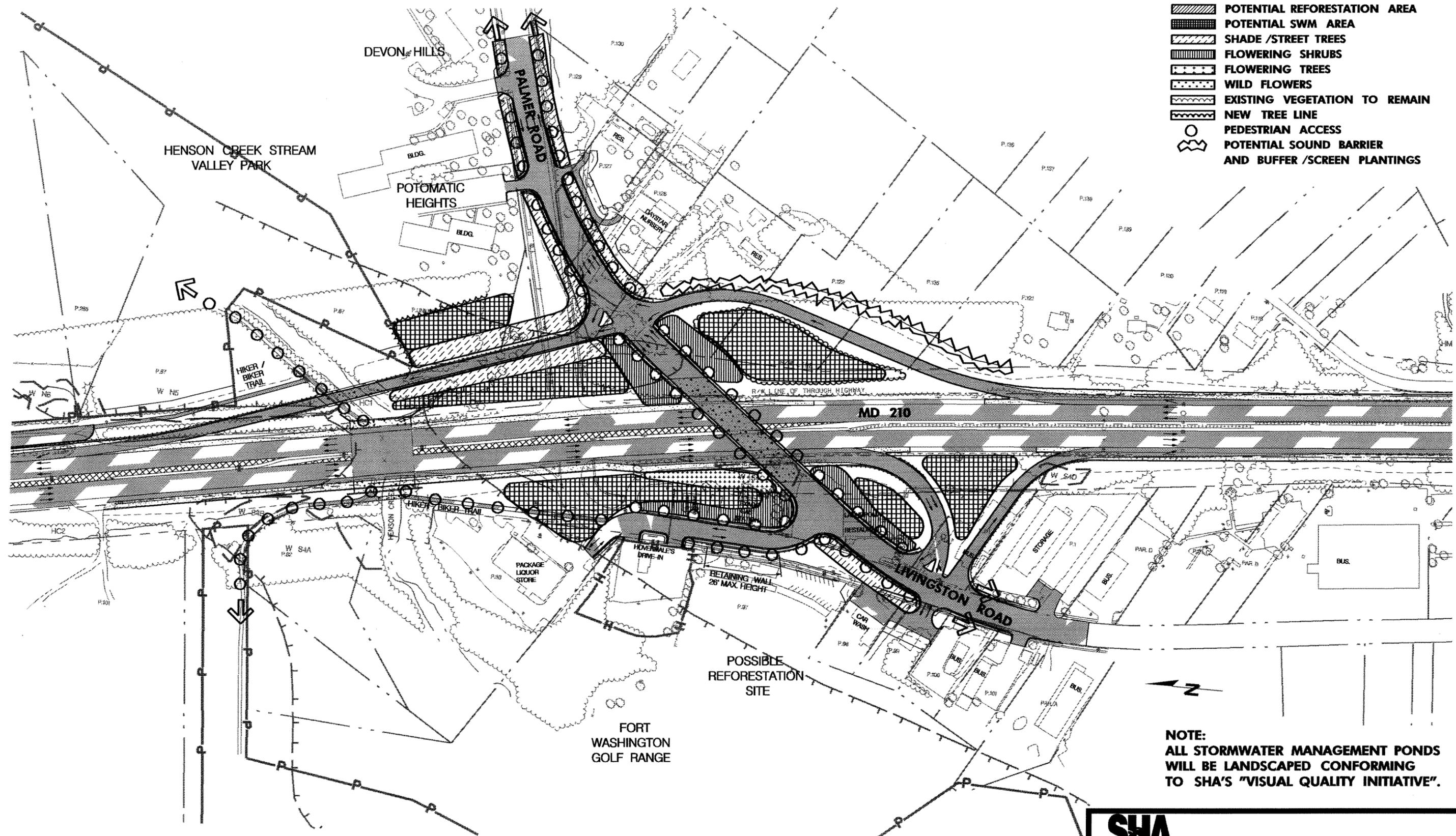
- LEGEND**
- POTENTIAL REFORESTATION AREA
  - POTENTIAL SWM AREA
  - SHADE /STREET TREES
  - FLOWERING SHRUBS
  - FLOWERING TREES
  - WILD FLOWERS
  - EXISTING VEGETATION TO REMAIN
  - NEW TREE LINE
  - PEDESTRIAN ACCESS
  - POTENTIAL SOUND BARRIER AND BUFFER /SCREEN PLANTINGS

**NOTE:**  
 ALL STORMWATER MANAGEMENT PONDS  
 WILL BE LANDSCAPED CONFORMING  
 TO SHA'S "VISUAL QUALITY INITIATIVE".

|   |   |                 |
|---|---|-----------------|
| <br>Maryland Department of Transportation | MD 210 - I-95 /I-495 TO MD 228  |                 |
|   | <b>LANDSCAPE CONCEPT PLAN</b><br>KERBY HILL RD /LIVINGSTON RD INTERCHANGE |                 |
| DATE<br>MAY, 2004                         | SCALE: 1" = 200'  | FIGURE<br>IV-16 |

**LEGEND**

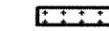
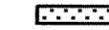
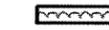
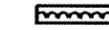
-  POTENTIAL REFORESTATION AREA
-  POTENTIAL SWM AREA
-  SHADE /STREET TREES
-  FLOWERING SHRUBS
-  FLOWERING TREES
-  WILD FLOWERS
-  EXISTING VEGETATION TO REMAIN
-  NEW TREE LINE
-  PEDESTRIAN ACCESS
-  POTENTIAL SOUND BARRIER AND BUFFER /SCREEN PLANTINGS

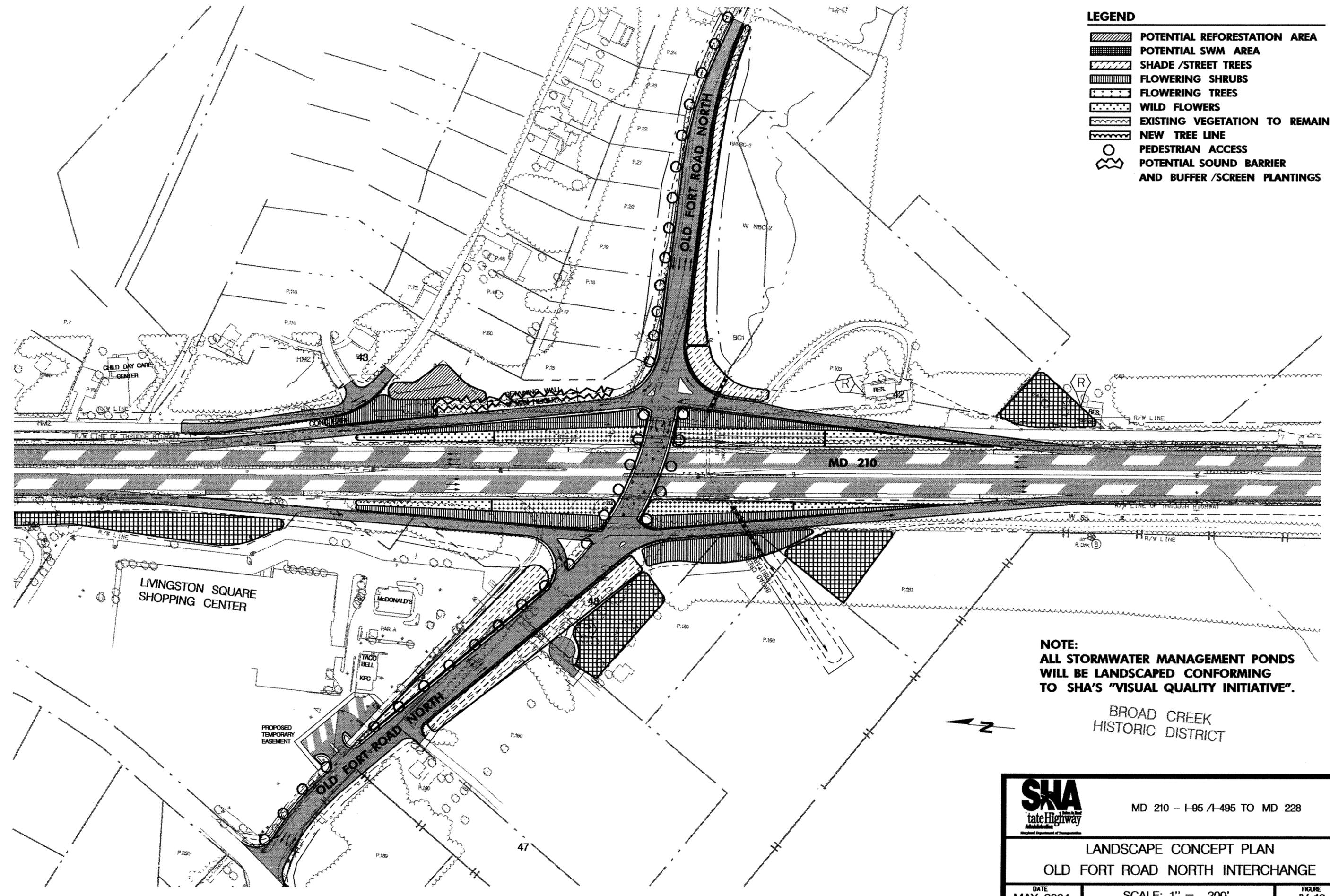


**NOTE:**  
 ALL STORMWATER MANAGEMENT PONDS  
 WILL BE LANDSCAPED CONFORMING  
 TO SHA'S "VISUAL QUALITY INITIATIVE".

|   |   |                 |
|---|---|-----------------|
|  | MD 210 - I-95 / I-495 TO MD 228                                 |                 |
|   | LANDSCAPE CONCEPT PLAN<br>LIVINGSTON RD / PALMER RD INTERCHANGE |                 |
| DATE<br>MAY, 2004   | SCALE: 1" = 200'  | FIGURE<br>IV-17 |

**LEGEND**

-  POTENTIAL REFORESTATION AREA
-  POTENTIAL SWM AREA
-  SHADE /STREET TREES
-  FLOWERING SHRUBS
-  FLOWERING TREES
-  WILD FLOWERS
-  EXISTING VEGETATION TO REMAIN
-  NEW TREE LINE
-  PEDESTRIAN ACCESS
-  POTENTIAL SOUND BARRIER AND BUFFER /SCREEN PLANTINGS

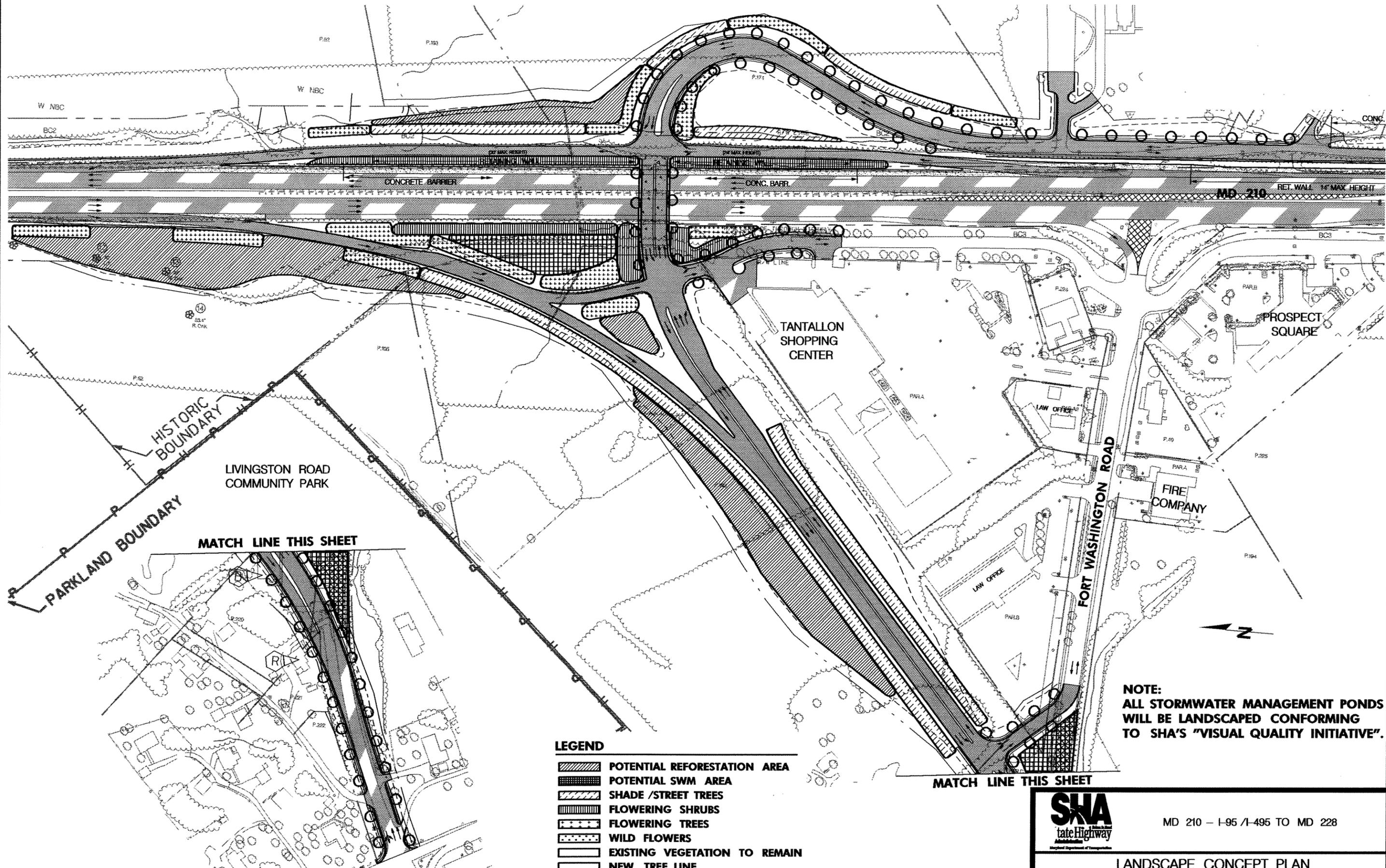


**NOTE:**  
**ALL STORMWATER MANAGEMENT PONDS**  
**WILL BE LANDSCAPED CONFORMING**  
**TO SHA'S "VISUAL QUALITY INITIATIVE".**



BROAD CREEK  
 HISTORIC DISTRICT

|   |   |                 |
|---|---|-----------------|
|  <p><b>SHA</b><br/>                 State Highway<br/>                 Administration<br/>                 Maryland Department of Transportation</p> | MD 210 - I-95 /I-495 TO MD 228                            |                 |
|   | LANDSCAPE CONCEPT PLAN<br>OLD FORT ROAD NORTH INTERCHANGE |                 |
| DATE<br>MAY, 2004   | SCALE: 1" = 200'  | FIGURE<br>IV-18 |



**NOTE:**  
 ALL STORMWATER MANAGEMENT PONDS  
 WILL BE LANDSCAPED CONFORMING  
 TO SHA'S "VISUAL QUALITY INITIATIVE".

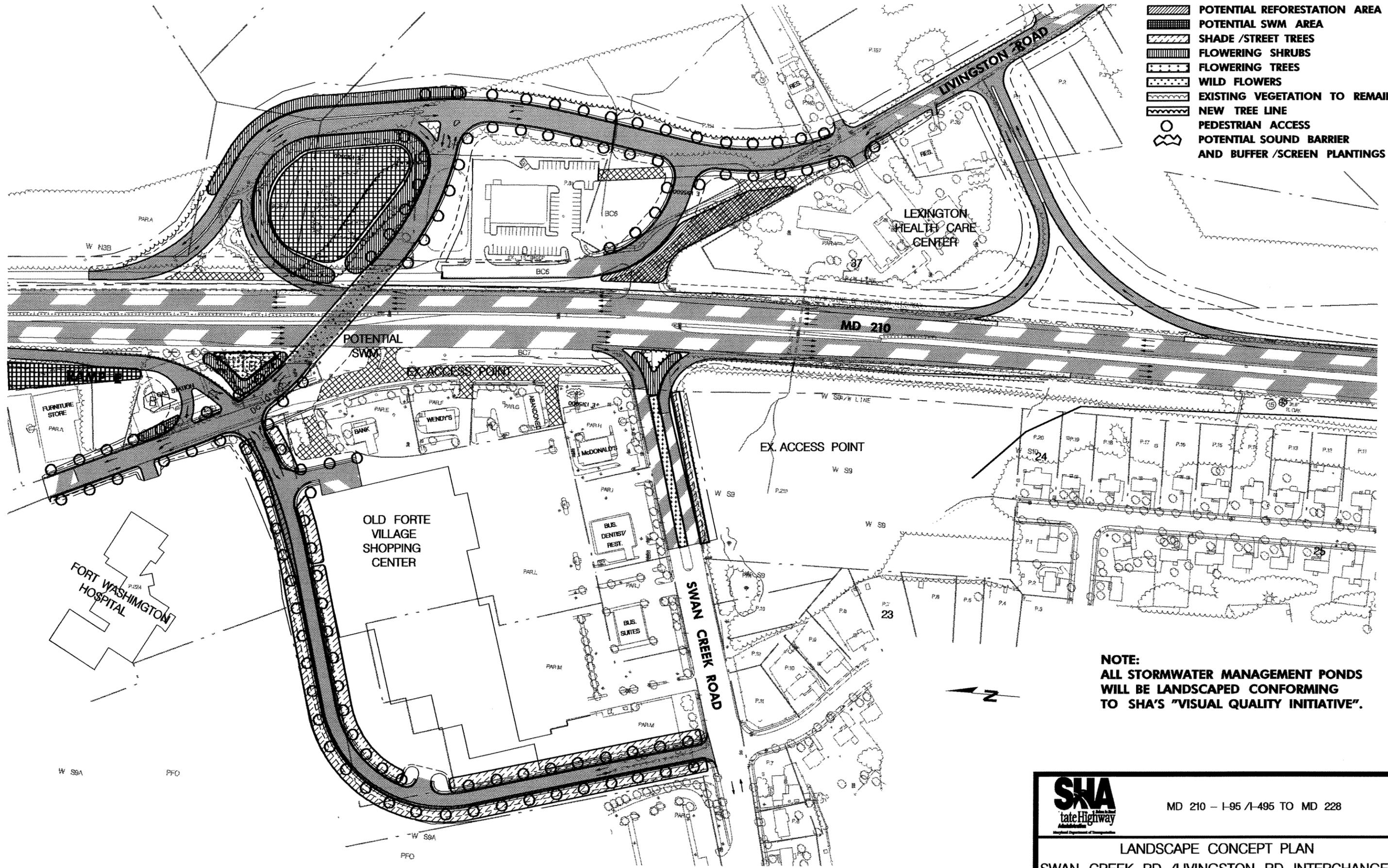
- LEGEND**
- POTENTIAL REFORESTATION AREA
  - POTENTIAL SWM AREA
  - SHADE /STREET TREES
  - FLOWERING SHRUBS
  - FLOWERING TREES
  - WILD FLOWERS
  - EXISTING VEGETATION TO REMAIN
  - NEW TREE LINE
  - PEDESTRIAN ACCESS
  - POTENTIAL SOUND BARRIER AND BUFFER /SCREEN PLANTINGS

|                   |  |                 |
|-------------------|--|-----------------|
|                   | MD 210 - I-95 /I-495 TO MD 228   |                 |
|                   | <b>LANDSCAPE CONCEPT PLAN</b><br><b>FORT WASHINGTON RD INTERCHANGE</b> |                 |
| DATE<br>MAY, 2004 | SCALE: 1" = 200'   | FIGURE<br>IV-19 |

concept4.dgn

**LEGEND**

-  POTENTIAL REFORESTATION AREA
-  POTENTIAL SWM AREA
-  SHADE /STREET TREES
-  FLOWERING SHRUBS
-  FLOWERING TREES
-  WILD FLOWERS
-  EXISTING VEGETATION TO REMAIN
-  NEW TREE LINE
-  PEDESTRIAN ACCESS
-  POTENTIAL SOUND BARRIER AND BUFFER /SCREEN PLANTINGS



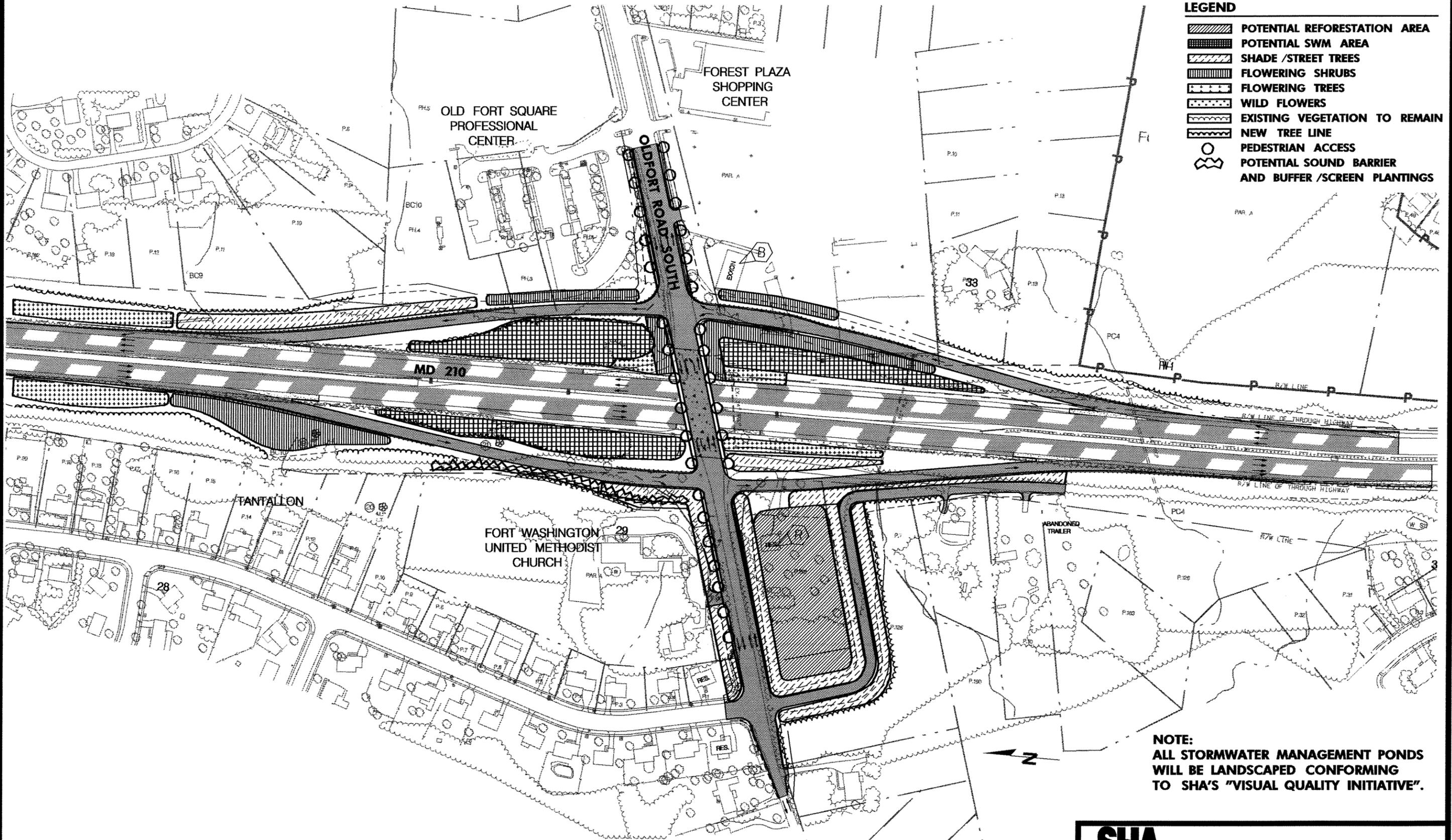
**NOTE:**  
 ALL STORMWATER MANAGEMENT PONDS  
 WILL BE LANDSCAPED CONFORMING  
 TO SHA'S "VISUAL QUALITY INITIATIVE".



MD 210 - I-95 /I-495 TO MD 228

**LANDSCAPE CONCEPT PLAN**  
 SWAN CREEK RD /LIVINGSTON RD INTERCHANGE

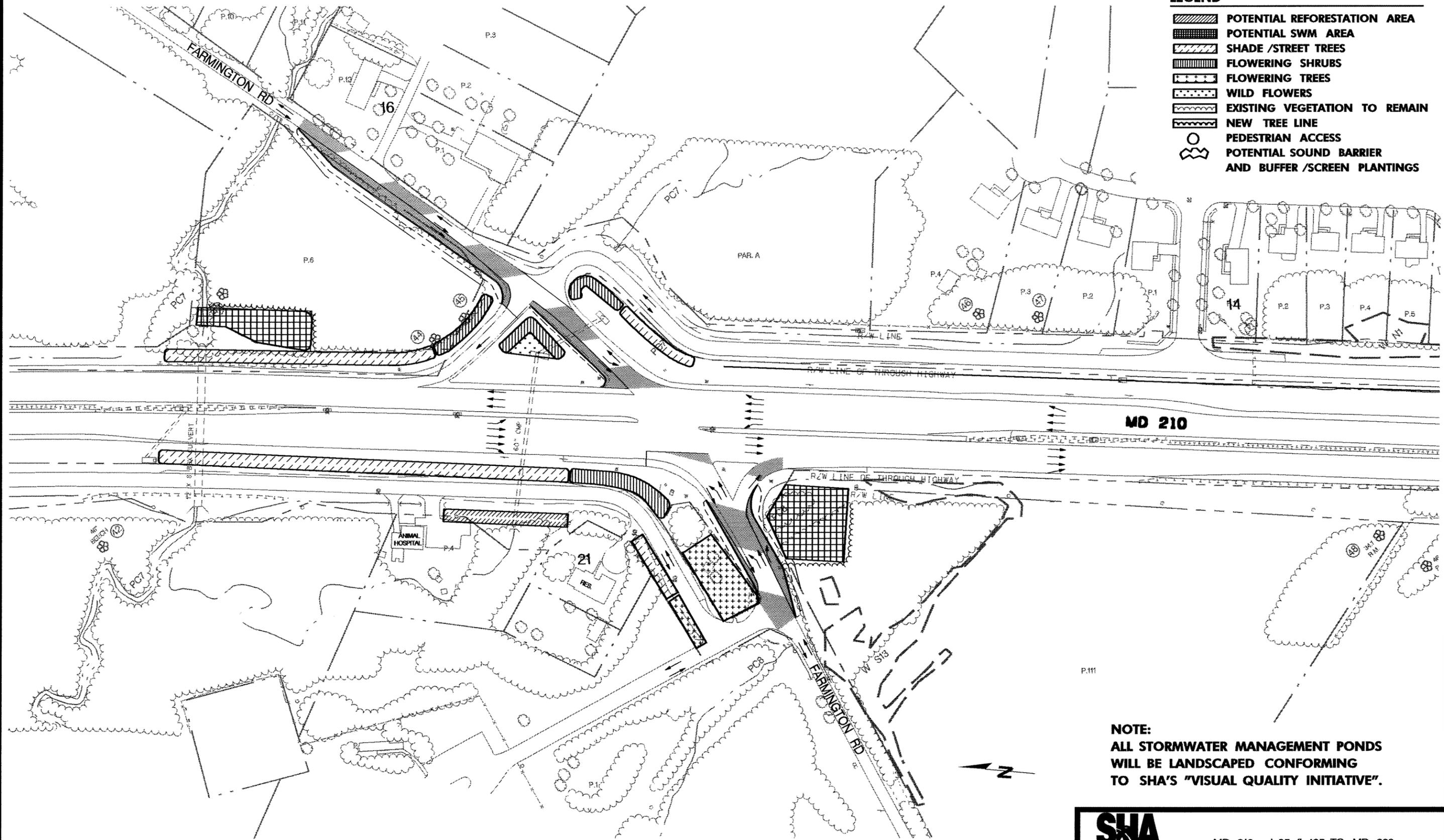
|                   |                  |                 |
|-------------------|------------------|-----------------|
| DATE<br>MAY, 2004 | SCALE: 1" = 200' | FIGURE<br>IV-20 |
|-------------------|------------------|-----------------|



- LEGEND**
- POTENTIAL REFORESTATION AREA
  - POTENTIAL SWM AREA
  - SHADE /STREET TREES
  - FLOWERING SHRUBS
  - FLOWERING TREES
  - WILD FLOWERS
  - EXISTING VEGETATION TO REMAIN
  - NEW TREE LINE
  - PEDESTRIAN ACCESS
  - POTENTIAL SOUND BARRIER AND BUFFER /SCREEN PLANTINGS

**NOTE:**  
 ALL STORMWATER MANAGEMENT PONDS  
 WILL BE LANDSCAPED CONFORMING  
 TO SHA'S "VISUAL QUALITY INITIATIVE".

|   |                                 |                 |
|---|---------------------------------|-----------------|
|   | MD 210 - I-95 / I-495 TO MD 228 |                 |
| <b>LANDSCAPE CONCEPT PLAN</b><br><b>OLD FORT RD SOUTH INTERCHANGE</b> |                                 |                 |
| DATE<br>MAY, 2004   | SCALE: 1" = 200'                | FIGURE<br>IV-21 |



**LEGEND**

-  POTENTIAL REFORESTATION AREA
-  POTENTIAL SWM AREA
-  SHADE /STREET TREES
-  FLOWERING SHRUBS
-  FLOWERING TREES
-  WILD FLOWERS
-  EXISTING VEGETATION TO REMAIN
-  NEW TREE LINE
-  PEDESTRIAN ACCESS
-  POTENTIAL SOUND BARRIER AND BUFFER /SCREEN PLANTINGS

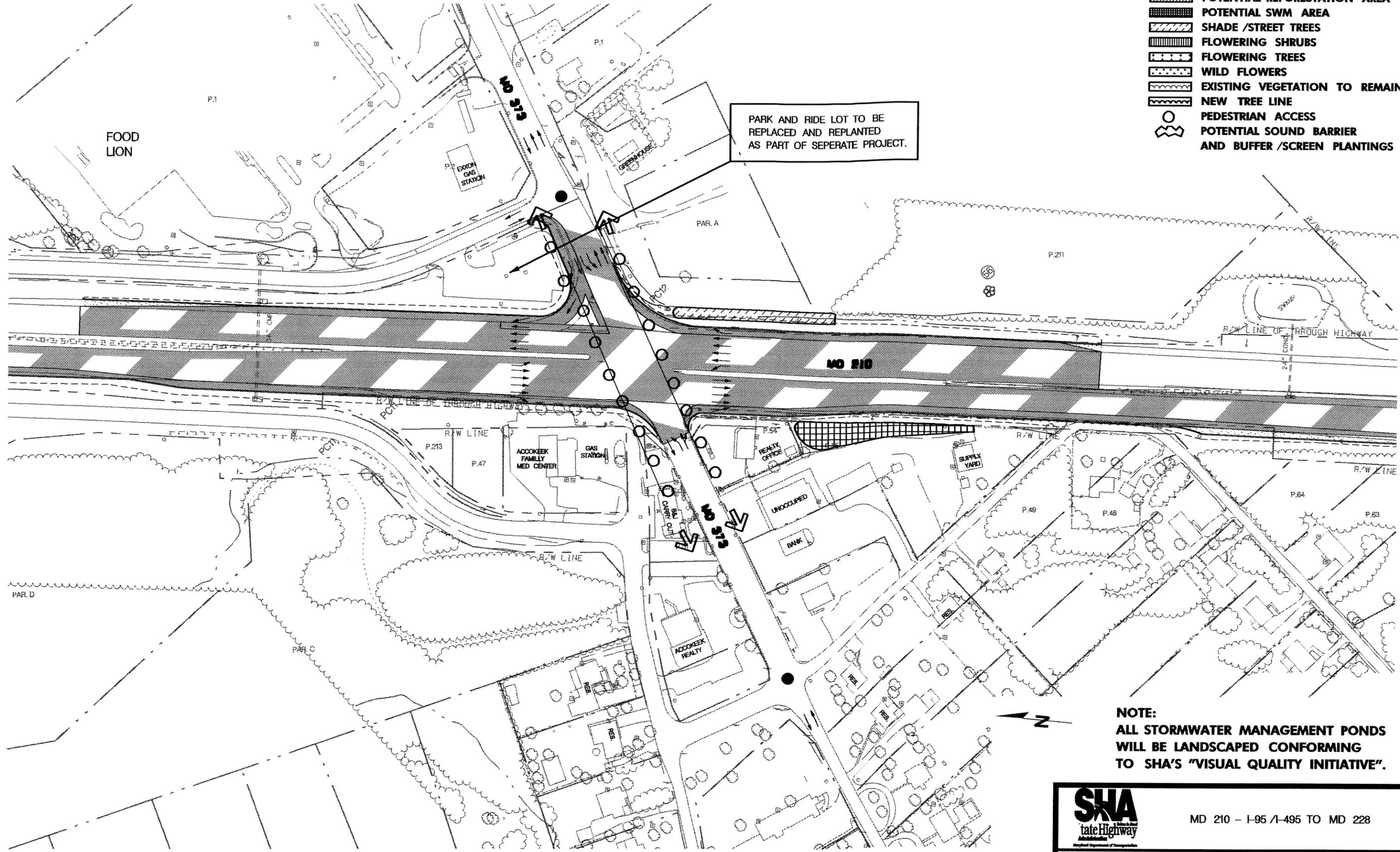
**NOTE:**  
**ALL STORMWATER MANAGEMENT PONDS**  
**WILL BE LANDSCAPED CONFORMING**  
**TO SHA'S "VISUAL QUALITY INITIATIVE".**

|   |  |                 |
|---|--|-----------------|
|  | MD 210 - I-95 /I-495 TO MD 228                                     |                 |
|   | <b>LANDSCAPE CONCEPT PLAN</b><br><b>FARMINGTON RD INTERSECTION</b> |                 |
| DATE<br>MAY, 2004   | SCALE: 1" = 200'   | FIGURE<br>IV-22 |

**LEGEND**

-  POTENTIAL REFORESTATION AREA
-  POTENTIAL SWM AREA
-  SHADE /STREET TREES
-  FLOWERING SHRUBS
-  FLOWERING TREES
-  WILD FLOWERS
-  EXISTING VEGETATION TO REMAIN
-  NEW TREE LINE
-  PEDESTRIAN ACCESS
-  POTENTIAL SOUND BARRIER AND BUFFER /SCREEN PLANTINGS

PARK AND RIDE LOT TO BE REPLACED AND REPLANTED AS PART OF SEPERATE PROJECT.



**NOTE:**  
**ALL STORMWATER MANAGEMENT PONDS**  
**WILL BE LANDSCAPED CONFORMING**  
**TO SHA'S "VISUAL QUALITY INITIATIVE".**

|  |                                |                 |
|--|--------------------------------|-----------------|
| <br>Maryland Department of Transportation | MD 210 - I-95 /I-495 TO MD 228 |                 |
| <b>LANDSCAPE CONCEPT PLAN</b><br><b>MD 373 INTERSECTION</b>  |                                |                 |
| DATE<br>MAY, 2004  | SCALE: 1" = 200'               | FIGURE<br>IV-23 |

interchanges and will also incorporate aesthetic treatments to the extent practicable and agreeable to community residents. Three of the existing intersections, in the project area (Wilson Bridge Drive, Farmington Road and MD 373) are proposed to be expanded with the existing traffic signals to remain at Farmington Road and MD 373. Crosswalks, clearly identified at intersections, will define areas that are meant for pedestrian use.

Preliminary concept plans have been developed for the SHA-Selected Alternative indicating potential landscaping measures that will be among the considerations investigated during final design. These concepts are shown on Figures IV-16 through IV-23.

Measures to be taken in addressing visual impacts for the MD 210 mainline, proposed interchanges and expanded intersections could include the use of earth berms where practicable and rounding of grading on cut and fill slopes, reforestation and landscaping including the use of native materials, and revegetation on cleared slopes. Privacy screen fencing could also be considered. Direct coordination and communication with the affected communities would be provided.

Additionally, construction activity and some of the materials stored for the project may be displeasing to residents in the immediate vicinity of the project. This visual impact will be temporary and should pose no substantial problem in the long-term.

## **O. Construction Impacts**

Construction activities for the proposed MD 210 mainline Alternative 5A Modified and the various interchange and intersection options will have temporary impacts to resources, residences, and travelers within the immediate vicinity of the project. These impacts will include traffic detours, potential air and fugitive dust emissions, increased noise levels, natural resources, and visual quality.

### **1. Traffic Detours**

Detours and road closures during construction will create temporary inconveniences for residents, business owners and travelers. Maintenance and protection of traffic plans will be developed during final design to mitigate access impacts and to minimize delays throughout the project. These plans will include appropriate signs, pavement markings, and media announcements. Access to all businesses and residences will be maintained through construction scheduling.

## **2. Air Emissions**

The operation of heavy equipment would have minor, temporary impacts on air quality during construction of the alternatives. The primary source of impact would be windblown soil and dust in active construction zones, and secondarily from increased levels of exhaust pollutants.

Measures will be taken to reduce fugitive dust and other emissions generated during construction by wetting disturbed soils, staging soil-disturbing activities, and prompt revegetation of disturbed areas. Emissions from construction equipment will be controlled by the contractors in accordance with state and federal regulations.

## **3. Construction Noise Impacts**

Temporary noise impacts will occur in the study area during the construction of any of the build alternatives. Sources of this noise would include earth moving equipment, vibratory rollers, pavers, trucks, jackhammers, and compressors. In most cases, the effects of increased noise levels associated with construction equipment are limited to within 300 feet of the source. These effects would typically be limited to weekday, daylight hours in accordance with local ordinances.

Several mitigation procedures can be followed to assist in minimizing the temporary impacts of construction noise. Adjustments to the equipment, the provision of temporary noise barriers, varying the construction activity areas to redistribute noise events, good communication with the public, and monetary incentives to the contractor could be considered to lessen the temporary noise impacts. These mitigation measures will be examined during final design to minimize public impacts and annoyances during construction.

Construction noise impacts are also discussed in Section IV.K.4.

## **4. Natural Resources**

Temporary construction-related impacts to soils, surface waters, and wetlands are anticipated to occur as the result of this project. Temporary and permanent impacts to these resources have been addressed in throughout Chapter IV.

Temporary impacts to soils include increased erosion potential from areas cleared of vegetation for construction activities. Standard sediment and erosion control measures will be implemented in accordance with state and local regulations to minimize adverse impacts.

Temporary construction-related impacts to wetlands include increased sedimentation, in-stream and in-wetland work for the construction of abutments and other structures, and temporary construction crossings. The use of surface mats, clean rock fills, and other measures to be determined at final design, will be used to minimize temporary impacts to wetlands. Original grades will be restored as needed in temporary wetland impact areas and native vegetation will be re-established.

Temporary impacts to surface water resources are also anticipated from construction-related activities. Temporary impacts would result from temporary stream crossing, dikes and coffer dams, temporary channel relocations, and suspended solids from increased erosion and sedimentation. Runoff from disturbed areas may contain high sediment loads, which can reduce both the diversity and numbers of organisms in the aquatic environment. Physical impacts such as temporary stream crossings and coffer dams, disrupt the stream substrate and could affect fish migrations through these areas. This will eliminate benthic macroinvertebrate populations in this portion of the stream during the construction period, and for a short period after construction until migration and drift allow for the re-colonization of the area. Changes to the channel widths resulting from coffer dam construction may generate excessive scouring of the substrate and generate sediment impacts immediately downstream of the construction area.

## **5. Visual Quality**

Construction activity and some of the materials stored for the project may be displeasing to residents in the immediate vicinity of the project. This visual impact will be temporary and should pose no substantial problem in the long-term.

### **P. Relationship Between Local Short-Term Uses of Man's Environment and the Maintenance and Enhancement of Long-Term Productivity**

The long-term benefits of the SHA-Selected Alternative would occur at the expense of short-term construction impacts in the immediate vicinity of project area. These short-term effects would include localized noise and air pollution, and minor traffic delays. With proper controls, they would not have a lasting effect on the environment.

The local short-term impacts by the construction of the Build Alternative are consistent with the maintenance and enhancement of long-term productivity for the local area, state, and region. The Prince George's County Subregion V Master Plan and Subregion VII Master Plan both recommend major improvements to MD 210. The transportation improvements addressed in this document have been considered in accordance with the master plans.

**Q. Irreversible and Irretrievable Commitments of Resources Which Would be Involved in the Proposed Action**

The construction of the SHA-Selected Alternative and intersection and interchange options involve the irreversible and irretrievable commitment of various natural, human, and fiscal resources. The alternative and options would require the commitment of land to new highway construction, which is considered an irreversible commitment during the time period that the land is used for a highway facility. If a greater need for the land be proven, or the highway proven to be no longer necessary, it is possible to re-convert the property to another use. It is not anticipated, however, that either of these two situations will occur.

Fossil fuels, labor, and construction materials will be used in considerable quantities for the SHA-Selected Alternative. In addition, labor and natural resources are also used in the quarrying, manufacturing, mixing, and transporting of construction materials. The materials used in the highway construction process are irretrievable, however, they are not in short supply and their use should not have an adverse effect on continued availability of these resources.

Construction of Alternative 5A Modified would require an irretrievable commitment of state and federal funds for right of way acquisition, materials, and construction. Funds for annual maintenance would also be required. The loss of tax revenues from private land taken for highway use would be an irretrievable revenue loss for Prince George's County.

The commitment of these resources is established on the premise that the local and regional residents, commuters, and business communities will benefit from the proposed highway improvements. Benefits which are anticipated to outweigh the loss of these resources would include increased safety, accident reduction, improvements to traffic flow, and reduction in travel time.