

7. INDIRECT AND CUMULATIVE EFFECTS

Whenever an Area Master Plan is updated, M-NCPPC establishes the land use and zoning for every parcel of land, along with the infrastructure (highways, water, and sewer) needed to support the proposed development. So long as infrastructure is constructed in accordance with the Area Master Plan, M-NCPPC typically has been very successful in curtailing development that is inconsistent with the Area Master Plan. However, when a highway is constructed in a location that differs from its Master Plan-designated location, there generally is pressure from the adjacent property owners to re-zone. The following discussion of indirect effects is an assessment of the development pressure that is likely to occur if an alternative other than the Master Plan alternative were to be constructed.

7.1 Indirect Effects

Indirect effects are defined as those effects “which are caused by an action and are later in time or further removed in distance [than direct effects], but are still reasonably foreseeable” (40 CFR 1508.8(b)). Indirect effects include effects related to induced changes in the pattern of land use, population density, or growth rate.

Indirect Effects on the Agricultural Reserve

Montgomery County and the State of Maryland have enacted rigorous land use plans, policies, and laws for the express purpose of directing growth to areas that have the public infrastructure to support the growth. In 1992, the State’s *Economic Growth, Resource Protection, and Planning Act* required local jurisdictions to address several planning visions focused on concentrating development in suitable areas, protecting sensitive areas, and establishing funding mechanisms to achieve these visions. In 1997, Maryland implemented a series of measures known collectively as the Smart Growth Initiatives. A key component of the initiatives was to direct state funding for growth-related projects to areas designated by local officials as Priority Funding Areas (PFA’s). The intent is to reduce sprawl development. The Smart Growth legislation applies to state-funded projects, and its goals are reinforced by the strict planning, zoning, growth management, and preservation policies of the Maryland-National Capital Park and Planning Commission (M-NCPPC).

Since the 1960’s, the County’s master planning process has provided the basis for growth management policies, land use restrictions, and zoning. M-NCPPC is a bi-county agency established by the Maryland General Assembly in 1927 to acquire, develop, maintain, and administer the local and regional park system within Montgomery and Prince George’s Counties, and to develop and guide land use planning for the physical development of the two counties through comprehensive land use regulation. M-NCPPC develops Area Master Plans to establish land uses based on projected needs for housing, parkland, resource protection, transportation, public facilities, and economic development. Most importantly, county plans balance land use and transportation to ensure there will be adequate infrastructure to support the proposed growth. The Area Master Plans involve extensive citizen input, and the finished products are considered to form an agreement between the



county and its citizens regarding decisions on the location and type of land use, until the next update of the Area Master Plan (generally a 15 - 20 year timeframe).

After approval of an Area Master Plan, a Sectional Map Amendment is developed which specifies the zoning that is permitted on each parcel of land. The zoning then specifies the various types of development that are permitted by right and the types of development that are allowed with a special exception; the density of development; and details such as the lot size, building height, setbacks, and number of residences per acre.

Because adopted Area Master Plans account for planned new roads, the zoning and land use specified in those plans should not be affected by a decision to build the Master Plan Alternative (Alternative 9, Option A). If any alternative other than Alternative 9, Option A should be selected as the Preferred Alternative, that alternative could result in pressure to rezone properties located along the alternative. In addition, regardless of the alternative selected, any owner of an individual property that is made more desirable by the proposed improvements could seek a special exception to construct a non-residential use.

Each zoning category in the Montgomery County Zoning Ordinance includes a list of uses that are permissible for that type of zoning, and a list of uses that may be approved under a special exception. On agricultural properties zoned Rural Density Transfer (RDT), the intent of the zone is to promote agriculture as the primary land use. The following activities are permissible:

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|----------------------------------|------------------------|----------------------|
| Farm | Fish Hatchery | Equestrian Facility |
| Winery | Farmers Market | Christmas Tree Sales |
| Single-Family Dwelling | Small Group Home | Guest House |
| Dwelling for Farm Workers | Adult Foster Care Home | Church |
| Bed & Breakfast (2 rooms max) | Respite Care Home | Public Fire Station |
| Public Ambulance or Rescue Squad | | |
| Adult Day Care (4 adults max) | | |

A special exception can be granted provided the development will be in harmony with the general character of the neighborhood; will not be detrimental to the use, peaceful enjoyment, economic value, or development of surrounding properties; and will be served by adequate public facilities. For example, on agricultural properties zoned RDT, the following activities would be permissible if adequate septic capacity exists and if approved under a special exception:

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|-----------------------------------|---------------------------------|
| Landscape Businesses | Bed and Breakfasts |
| Child and Senior Day Care Centers | Sale of Farm Machinery/Supplies |
| Private Educational Institutions | Animal Boarding |
| Golf Course | Cemetery |
| Funeral Parlor | Veterinary Hospital |
| Antique Shop | Large Group Home |
| Commercial Farm Machinery Sales | Auction Facility |
| Sawmill | Grain Elevator |

Some of the above activities are not permissible if the land is encumbered by a Transfer of Development Rights (TDR) easement.

Montgomery County Planning Department staff have indicated that the selection of Alternative 4 Modified or Northern Terminus Option D of Alternative 8 and 9 could create pressure for rezoning/redevelopment of properties along these alternatives. The parcels along Brink and Wightman Roads currently zoned RE-2 (Residential, one detached home per 2 acres) and the undeveloped properties north of Brink Road located within the Agricultural Reserve and currently zoned RDT are the properties that would most likely be affected. According to the Montgomery County Water and Sewer Plan, there are no foreseeable plans to extend public water and sewer to any of these properties. The lack of public water and sewer is a major constraint to redevelopment of this area.

The 105-acre Woodfield Farm and the 120-acre Benson-Sibley Farm are two properties zoned RDT whose owners have previously requested sewer service to develop churches. Churches are permitted under the RDT zoning, provided there is adequate septic capacity and the land is not encumbered with a TDR easement. Both farms would be bisected by Northern Terminus Option D. Planning Department staff have indicated that if Option D were part of the Preferred Alternative, the most likely development scenarios for the two properties would be to either develop in accordance with the existing zoning or to request approval of a special exception to allow construction of one of the above-listed facilities. In any scenario, the requested development would be outside the sewer envelope and would be limited to an on-lot septic system sized to serve the number of residential lots allowed by the RDT zone (i.e., one home per 25 acres). The previously-proposed churches were not approved because their sewerage needs exceeded the allowable capacity of an on-lot septic system.

The Maryland General Assembly recently passed the Sustainable Growth and Agricultural Preservation Act of 2012. This Act requires local governments to classify the lands under their purview into one of four tiers, ranging from Tier I (land within a Priority Funding Area that already receives sewer service or is slated to receive it) to Tier IV (land that is planned for conservation or preservation, which is not planned to receive sewer service). In accordance with this Act, any new permits issued by the Maryland Department of the Environment (MDE) must be for activities which would be consistent with the tier into which the affected property has been classified. Properties in the Agricultural Reserve are proposed to be classified as Tier IV, therefore, it is unlikely that MDE would approve a Water and Sewerage Construction Permit for new developments within the Agricultural Reserve.

In summary, although it is not disputed that the selection of Alternative 4 Modified or an alternative that includes Northern Terminus Option D could result in development pressure, the likelihood of significant additional development being approved appears remote when considering the stringent state and county regulations that affect development within the Agricultural Reserve. Even if some development is ultimately approved, the environmental impacts would be limited, given the County's stringent Environmental Guidelines, which include the following requirements:

- Maintaining stream buffers on each side of a stream for a distance of 100 feet along Use I streams, 125 feet along Use IV streams, and 150 feet along Use III streams (these buffers can be increased in the case of steep slopes greater than 15% or highly erodible soils).
- Maintaining wetland buffers of 50 feet and 40 feet for wetlands on first and second order streams in Use III and Use IV watersheds, respectively.
- Prohibition of construction within 25 feet of a 100-year floodplain unless MCDEP issues a floodplain permit.
- Providing compensating BMPs for increased imperviousness in sensitive watersheds and Special Protection Areas (SPAs).
- Expanded wetland buffers in SPAs of up to 150 feet for wetlands on first and second order streams in Use III watersheds, 75 feet on first and second order streams in Use IV watersheds, and 50 feet on first and second order streams in Use I watersheds.
- Submission of a forest stand delineation and forest conservation plan as a prerequisite to obtaining county development approvals.
- Afforestation requirements for sites that currently have less than 20% forest cover.
- Reforestation requirements of 2:1 if clearing results in a lower percentage of forest cover than the specified conservation threshold on the property.

In view of these stringent environmental requirements, it is unlikely that the selection of an alternative other than the Master Plan Alternative (Alternative 9, Option A) would result in substantial indirect environmental effects resulting from changes in land use.

Indirect Effects on Businesses

With the exception of the service roads, the improvements with Alternative 5 would be consistent with the Master Plan. Therefore, there should be minimal pressure to rezone. However, Alternative 5 would have the greatest potential for long-term indirect effects on businesses through changes in access attributable to the closure of existing entrances and the construction of service roads. As previously discussed, these changes are proposed for the purpose of improving safety by reducing the number of access points. In some cases, the changes in access result in additional driving distance to enter the businesses from the proposed service road or a side street. Changes in access at Middlebrook Square Shopping Center and Fox Chapel Shopping Center, for example, would inconvenience customers of these businesses. The closure of the entrances from MD 355 could deter customers from stopping at these businesses during their commutes to and from work, choosing instead to patronize a competitor with quicker, easier, or more direct access.

The shopping plaza containing Brusters and Mattress Mart would lose its only access from MD 355, forcing customers to use the Travis Avenue entrance. The loss of an entrance that is visible from MD 355 may reduce the businesses' identity with the MD 355 corridor. As a result, motorists may eventually be less inclined to stop.

Over time, changes in shoppers' preferences could result in sufficient loss of patronage that businesses would choose to relocate.

7.2 Cumulative Effects

Cumulative impacts are defined as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions... [and] can result from individually minor but collectively significant actions taking place over a period of time” (40 CFR 1508.7).

There are numerous approved and planned developments and transportation projects which would impact natural resources both in the near term and long term. These projects were well documented in the *Intercounty Connector Secondary and Cumulative Effects Analysis Technical Memorandum* (SCEA), which is available at <http://www.iccproject.com/feis-download.php>, under the heading “Technical Reports”). The study area for the Midcounty Corridor Study was a subset of the SCEA study area. Corridor 1 of the ICC has been constructed. Therefore, the Corridor 1 projections of future development, Figure 12 (Sheets 4 of 10 and 6 of 10), convey the areas that will be subjected to the most development pressure. Appendix 7 of that report has an estimate of the acreage of Future Development (2010-2030) in Germantown, Gaithersburg, and Montgomery Village. Appendix 8 of that report contains a summary of the potential secondary and cumulative impacts of the natural resources in the Seneca Creek subwatershed. These projections are based on the assumption that Midcounty Highway would be constructed consistent with the Master Plan (Alternative 9). Therefore, these projections are a worst-case scenario, since it is assumed that the selection of any other alternative would necessitate a down-sizing of development due to the reduction in lane-miles of new highway capacity that would be provided, compared to the 22.3 lane-miles of new highway capacity provided by Alternative 9.

The ICC SCEA projected the following cumulative losses of natural resources in the Seneca Creek watershed by 2030, assuming the construction of the planned and programmed highway improvements, including ICC and Midcounty Highway Alternative 9:

Farmland	491.3 acres
Forest	629.7 acres
Floodplain	60.4 acres
Wetlands	40.4 acres
RTE	6.4 acres
Streams	26,700 linear feet

Montgomery County has stringent environmental regulations on new development. These regulations would reduce, but not completely eliminate, future clearing of forests, filling of wetlands, new stream crossings, and increases in impervious surface.

Increases in impervious surface contribute to the degradation of water quality.¹ As forests are replaced by impervious surfaces, less rain water infiltrates into the ground, and more rain water runs off into streams. The reduced infiltration and increased runoff can have the following effects, unless mitigated by stormwater management measures:

- Increases in stream velocity resulting in greater erosive forces and enlarged stream bed,
- Reduced time of concentration of peak flows, and higher peak flows,
- Increased discharge of nutrients and pollutants to streams,
- Erosion of stream banks and the resulting loss of in-stream habitat along the banks,
- Scouring of the stream bottom, thus lowering the stream invert and reducing the interaction between the stream and its floodplain,
- Increased sediment deposition on stream bottoms, causing the spawning habitat and benthic invertebrates to be disrupted,
- Increased stream temperature and additional thermal stresses during summer months,
- Increased bacteria,
- Decrease in benthic macro-invertebrate diversity and abundance.

In addition to these water quality effects, forest clearing can result in a reduction of terrestrial habitat, fragmentation of the terrestrial habitat that remains, and obstructions in wildlife corridors. Forest loss also affects micro-climate, air quality, carbon sequestration, and alters scenic viewsheds.

New stream crossings can obstruct fish passage and result in increased flooding. Filling non-tidal wetlands can diminish water quality, increase runoff and flooding, reduce amphibian habitat, reduce groundwater recharge, and reduce nutrient exchange.

These effects are typical of the changes that have occurred in the past, and will continue to occur, as development increases. The I-270/MD 355 corridor is an area that is planned for intense development due to: its strategic location along I-270, its access to regional markets, its highly educated work force, and the established economic infrastructure that is positioned to attract emerging companies in the biotechnology sector. The State and County initiatives that are in place to attract future growth to this corridor (see **Section 3**), and the current zoning, will support and facilitate future growth which will impact natural resources. Allowing growth to occur where there is adequate infrastructure to support the growth is one of the principles of Smart Growth, and is consistent with County planning efforts to reduce sprawl and protect natural resources in outlying areas, including the Agricultural Reserve.

The permitting agencies have stringent requirements which, in recent years, have resulted in increasing regulation of development, and greater control over environmental impacts. MDE has permitting requirements in place to ensure that stormwater management measures and

¹ Research by Tom Schueler, Executive Director of the Chesapeake Stormwater Network, and others has postulated that the amount of impervious surface in a watershed has a direct relationship to degradation of stream water quality.

erosion and sediment controls are included in every development proposal, that fish passage is accommodated at new stream crossings, that flooding is not increased at stream crossings, and that time-of-year restrictions are employed to reduce impacts to aquatic species. DNR regulates forest clearing to ensure that any proposed forest clearing is minimized and mitigated. EPA requires that Total Maximum Daily Loads (TMDLs) be established for streams and rivers that are impaired. TMDLs establish the total amount of pollutant, from point sources and non-point sources combined, that can enter a stream without exceeding water quality standards. Through the MDE-administered NPDES permit program, Montgomery County is being required to restore streams and plant trees in order to meet the TMDL requirements. USACE has the authority to consider the cumulative effects of multiple development projects affecting the same sub-watershed. M-NCPPC also has stringent development guidelines, as previously discussed.

MCDOT does not have control over private development. However, MCDOT is committed to reducing cumulative effects through actions which they can control. One way to reduce cumulative effects is to reduce the direct effects of the highway project on the natural resources that are threatened by future development. MCDOT has demonstrated a commitment to avoid and minimize the project's effect on natural resources through modifications of Alternatives 4 Modified, 8, and 9. These modifications include:

- Long bridges in stream valley parklands that will reduce wetland impacts and provide for wildlife, fish, and hiker passage beneath the highway;
- Evaluation of northern terminus options to the Master Plan alignment to reduce impacts to sensitive natural resources (Dayspring Creek, rock outcrops, steep slopes, uncommon plant species) and parkland in the North Germantown Greenway Stream Valley Park;
- Incorporation of “environmental site design” techniques for stormwater management;
- Alignment shifts to reduce the wetland and stream impacts at Dayspring Creek in the North Germantown Greenway Stream Valley Park, at Seneca Creek in the Great Seneca Stream Valley Park, and at Whetstone Run near the Watkins Mill Elementary School;
- Alignment shifts, reductions in median width, and retaining walls to reduce impacts to residential and commercial properties;
- Incorporation of 6% grades to reduce the park and forest impact through North Germantown Greenway Stream Valley Park; and
- Use of retaining walls to reduce wetland, forest, and park impacts in North Germantown Greenway Stream Valley Park, Great Seneca Stream Valley Park, and along Whetstone Run.

MCDOT is also committed to ensuring that the mitigation sites for replacing the unavoidable impacts to wetlands, streams, and forests will be protected in perpetuity from future development, through a variety of mechanisms: purchasing conservation easements, mitigating within parkland, or purchasing private lands that will be donated to the MCDP as

parkland. The permanent replacement of the natural resources impacted by the proposed highway project would lessen the long-term cumulative effects.

MCDOT is focusing their mitigation efforts for forests on the acquisition of large parcels that could provide a wildlife habitat hub and attract forest interior-dwelling species. There is the potential to donate these lands to M-NCPPC Parks Department as parkland, as was done on the ICC project. Stream mitigation for impacts to ephemeral streams would focus on projects to stabilize eroded stormwater outfalls from developments that were constructed prior to the requirements for stormwater management. Such projects would mitigate impacts to water quality. The agreed-upon mitigation site for intermittent and perennial stream impacts (SC-21) is within Great Seneca Stream Valley Park, where the stream can be re-connected to its floodplain without increasing the risk of flooding on improved properties. Wetland mitigation will likewise be conducted in stream valley parks, where the created wetlands would have maximum wildlife value. MCDOT is also committed to employing “environmental site design” techniques, consistent with the Maryland *Stormwater Management Act of 2007*. These are the latest techniques for managing stormwater, and they are geared toward offsetting the effects of increased impervious surfaces. Techniques such as bioswales, landscape infiltration, and micro-bioretenion will be employed, in consultation with MDE, MCDPS, and MCDEP.