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Guidelines for Environmental Management of Development in Montgomery County – Stream Type Updates

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Summary

The proposed updates to the *Guidelines for Environmental Management of Development* in Montgomery County ("Environmental Guidelines") are in response to the County Council's request to make the regulatory changes needed to implement the new environmental requirements in the 2014 Approved and Adopted 10 Mile Creek Limited Amendment to the Clarksburg Master Plan and Hyattstown Special Study Area.

Recommendation – Approval of revisions to the Environmental Guidelines to update stream type definitions and characteristics

Background

The 2014 *Approved and Adopted 10 Mile Creek Limited Amendment to the Clarksburg Master Plan and Hyattstown Special Study Area* ("10 Mile Creek Master Plan") established some new environmental standards and buffers for new development in the Ten Mile Creek Watershed that are within the 10 Mile Creek Master Plan planning area. The County Council resolution adopting the 10 Mile Creek Master Plan included the following general provision:

> The Planning Department should work with the Executive Branch Departments, including the Department of Environmental Protection and Department of Permitting Services, to take all actions necessary to implement the recommendations in this Master Plan (such as a comprehensive sewer and water category change). In addition, these agencies should identify any changes in regulations or law necessary to implement the Master Plan recommendations.

Among the changes needed to implement these new environmental requirements are changes to the M-NCPPC's Environmental Guidelines. Staff presented an overview of the needed changes to the Planning Board at a public hearing in June 2014. Staff then began the process of reviewing the new environmental requirements that apply to new development in the Ten Mile Creek Watershed and drafting changes to the Environmental Guidelines to implement those new requirements in the M-NCPPC development review and approval process. One significant change was the implementation of ephemeral stream protection strategies

heretofore, not done in any other watershed within Montgomery County. Due to ongoing litigation, however, the final draft and Planning Board review of these changes was delayed. Staff has resumed the process of updating the Environmental Guidelines but is not ready to bring all the draft changes to the Planning Board. In the meantime, development applications for sites in the 10 Mile Creek Master Plan area have been submitted to the Planning Department and are currently under review. Before adoption of the 10 Mile Creek Master Plan, ephemeral streams were noted on plans, but were not required to be protected. To review applications in this planning area, it is necessary to update the Environmental Guidelines definition of ephemeral streams. In addition to revising the definition of ephemeral streams to reflect the provisions of the 10 Mile Creek Master Plan, Staff has drafted updates to the other two stream types (intermittent and perennial) regulated by the Planning Department, along with additional guidance for assisting in the identification and differentiation of the three stream types. These updates are necessary because the stream types are not specifically defined in the 10 Mile Creek Master Plan and the current definitions in the Environmental Guidelines are not adequate. The update to the definitions will be incorporated into the Glossary of the Environmental Guidelines (Attachment A), and the update to the stream type identification guidance will be incorporated as Appendix E of the Environmental Guidelines (Attachment B).

The other regulatory changes necessitated by the 10 Mile Creek Master Plan, such as stream buffer requirements, can be considered with the more comprehensive Environmental Guidelines update since they are defined and described within the 10 Mile Creek Master Plan. The proposed updates related to stream types, in conjunction with Master Plan guidance on these additional requirements, will enable the review of applications within the Ten Mile Creek watershed until the remaining updates to the Environmental Guidelines are completed. Draft updates to the rest of the Environmental Guidelines will be finalized and presented to the Planning Board in the future.

Analysis

There are currently three stream types defined within the Environmental Guidelines: perennial, intermittent, and ephemeral. Development applications are required to identify all perennial, intermittent, and ephemeral streams on their plans and to calculate protective buffers for perennial and intermittent streams as outlined in the Environmental Guidelines. Prior to the adoption of the 10 Mile Creek Master Plan, ephemeral streams did not require a buffer but are noted in the Environmental Guidelines as features that "should be protected as much as possible through plan layout and conditions on a voluntary basis". As a result, ephemeral streams had not been given the same level of protection as perennial and intermittent streams. The 10 Mile Creek Master Plan, however, established some new environmental standards and buffers for new development in the Ten Mile Creek Watershed that are within the 10 Mile Creek Master Plan planning area. Among those new standards is the emphasis on the value of protecting ephemeral streams and requiring a 50-foot buffer around them to help maintain natural drainage patterns and functions. Based on the analysis and discussions that took place during the approval of the 10 Mile Creek Master Plan, it became clear that the current definition of ephemeral streams provided in the Glossary of the Environmental Guidelines was inadequate. Below are two definitions of ephemeral streams. The first is the current definition in the Environmental Guidelines and the second is the proposed definition.

1. Ephemeral Stream (current) – a channel at the terminus of an intermittent stream that has flow only in direct response to precipitation

2. Ephemeral Stream (proposed) – Streams that are above the groundwater table and convey flow only during, and for a short duration after (generally less than 48 hours), and in direct response to, a precipitation event. Ephemeral streams do not include roadside ditches.

The current definition requires an ephemeral stream to flow directly into an intermittent stream. This definition excludes many ephemeral streams that were intended to be protected by the County Council in their adoption of the 10 Mile Creek Master Plan. In addition to intermittent streams, ephemeral streams often flow into other hydrologic features, such as perennial streams, wetlands, and floodplains.

The current definitions for intermittent and perennial streams were reviewed as part of this update to the definition of ephemeral streams. Staff has included revisions to those definitions to provide more clarity and consistency among the definitions, and to include characteristics of each stream type separate from the definitions. Below are two definitions of intermittent streams. The first is the current definition of intermittent streams from the Environmental Guidelines and the second is the proposed definition.

1. Intermittent Stream (current) – surface waters, contained within a defined channel or bed, that flow at least once per year. An intermittent stream, for purposes of these guidelines, includes one or more of the following characteristics: (1) Defined or distinct channel; (2) hydric soils or wetlands within or adjacent to channel; (3) hydraulically sorted sediments; (4) removal of vegetative litter; or (5) loosely rooted vegetation by the action of moving water.

2. Intermittent Stream (proposed) – Streams that typically have baseflow at least once per year. Typically, in the winter and spring, the groundwater table is elevated, increasing the likelihood that the groundwater level is higher than the bed of a stream channel. Therefore, an intermittent stream will usually have baseflow during the winter and spring seasons and infrequent baseflow during the rest of the year. Because of discontinuous flow regimes, intermittent streams typically have physical, hydrological, and biological characteristics that are not as well-developed as perennial streams. Depending on the frequency and duration of flows, however, the characteristics of intermittent streams can be similar to those of either perennial or ephemeral streams.

Below are two definitions of perennial streams. The first is the current definition from the Environmental Guidelines and the second is the proposed definition.

1. Perennial Stream (current) – a stream that has base flow all year.

2. Perennial Stream (proposed) - Streams that typically have continuous baseflow from the groundwater table, which is generally located above the streambed throughout the year.

In addition to updated definitions of the three stream types, Staff is also proposing to include a definition for “stream” and “channel”, which are not currently included in the Environmental Guidelines. Inclusion of these definitions is necessary to support the definitions of the three stream types. Below are the proposed

definitions of “stream” and “channel” for inclusion in the update to the Glossary of the Environmental Guidelines.

Stream – a body of water in a channel that flows at least some of the time.

Channel – a linear depression with bed and banks on the land surface created by, and conveying, water that flows at least some of the time.

Recommendation

Staff recommends the Planning Board approve this update to the Environmental Guidelines, which includes stream type definitions in the glossary and associated guidance in Appendix E. These updates would apply to all development applications currently under review and future applications.

Attachments

Attachment A - Proposed update to the Glossary of the Environmental Guidelines
Attachment B - Proposed update to the Environmental Guidelines (Appendix E)

Attachment A

Updates to the Glossary in the *Guidelines for Environmental Management of Development in Montgomery County*

Ephemeral Stream – Streams that are above the groundwater table and convey flow only during, and for a short duration after (generally less than 48 hours), and in direct response to, a precipitation event. Ephemeral streams do not include roadside ditches.

Intermittent Stream – Streams that typically have baseflow at least once per year. Typically, in the winter and spring, the groundwater table is elevated, increasing the likelihood that the groundwater level is higher than the bed of a stream channel. Therefore, an intermittent stream will usually have baseflow during the winter and spring seasons and infrequent baseflow during the rest of the year. Because of discontinuous flow regimes, intermittent streams typically have physical, hydrological, and biological characteristics that are not as well-developed as perennial streams. Depending on the frequency and duration of flows, however, the characteristics of intermittent streams can be similar to those of either perennial or ephemeral streams.

Perennial Stream – Streams that typically have continuous baseflow from the groundwater table, which is generally located above the streambed throughout the year.

Stream – A body of water in a channel that flows at least some of the time.

Channel – A linear depression with bed and banks on the land surface created by, and conveying, water that flows at least some of the time.

Attachment B

APPENDIX E

STREAM TYPES

One method of classifying streams is through physical, hydrological, and biological characteristics. Using these features, streams can fall into one of three types: perennial, intermittent, and ephemeral. Definitions and characteristics of each stream type are provided in this Appendix.

As part of the review process of a land development project, the identification and documentation of perennial and intermittent streams on or near the proposed development site are required to define protective buffers around such streams. But distinguishing between these two stream types is not critical since their buffers, as specified by these Guidelines, are the same.

The delineation of ephemeral streams is particularly important in a watershed where there are regulatory requirements to define buffers around them. In these Guidelines, protective buffers around ephemeral streams are defined differently than buffers for intermittent and perennial streams. Therefore, in watersheds where the preservation of ephemeral streams is required, it is important to distinguish between ephemeral and other stream types on and near a development site.

To determine the characteristics of a stream and to help classify the stream type, data and observations should be collected in the field, as well as from already documented information. Previously approved NRI/FSDs or plan drawings for the subject site or for nearby sites may provide useful information on land features, including streams, that exist on or near the subject site. If available, historical flow and biological monitoring data may be checked to supplement field data. In addition, mapped information, such as topographic and soil maps, Geographic Information System (GIS), and fine resolution Light Detection and Ranging (LIDAR) can also be used as preliminary data sources. However, such maps are generally not based on detailed stream data and must be supplemented with data acquired in the field.

Although each of the stream types have typical characteristics, it can sometimes be difficult to place a stream into a specific type because not all of the characteristics may be present, and characteristics can overlap and vary based on time of year and weather conditions. Best professional judgment must be applied when classifying a stream.

Documented Data

Prior to conducting field work to collect data on or to verify the extent, location, and characteristics of streams on or near a subject site, a plan preparer or plan reviewer should review previously documented information for the site and surrounding area. Such documented information could include, but would not be limited to, the following:

- Aerial photography
- Topography
- Digital terrain based on LIDAR Data
- Soils data
- Mapped streams

- Land cover, including forest and tree stands, buildings, roads, etc.
- Property boundaries and other property information
- Recent weather and climate conditions
- Historical hydrologic and biological data
- Floodplain maps
- Mapped wetlands

Possible sources of this data include: GIS data maintained by the M-NCPPC, Montgomery County Information Technology and Innovation Department, Montgomery County DEP databases, USDA NRCS Soils Survey (available from USDA's website), previously submitted and approved NRI/FSDs or plan drawings for the subject site or for nearby sites, USGS, and NWS.

Stream Types and Their Characteristics

Each of the three stream types are described below. Characteristics that are listed represent those that are typical of each stream type in Montgomery County and should be observable under normal conditions. If a site is subject to unusual or extreme natural or man-made conditions one or more of these stream characteristics may be absent, either temporarily or permanently. Therefore, prior to conducting field work on a site, a plan preparer or plan reviewer should consider factors that could affect stream type determination.

Perennial Streams

Perennial Stream – Streams that typically have continuous baseflow from the groundwater table, which is generally located above the streambed throughout the year.

Stream Characteristics:	
Typically Present in Perennial Streams	**Typically Absent in Perennial Streams**
Baseflow present in the channel throughout the year	Dry channel during parts of the year
Sinuous channel	
Very well-defined channel banks and bed that include riffles and pools	
Evidence of fluctuating high-water marks, such as sediment-stained leaves, blackened or decaying leaf litter, bare ground, or vegetation drift lines	
Evidence of soil and debris movement (scouring) in the channel. Leaf litter is transient or temporary in the channel.	
Wetland or hydrophytic vegetation may be present	
Stream bank soils with hydric indicators at or above the low flow conditions	
Seeps, springs, or wetlands may be adjacent to or feed into stream channel	

Stream Characteristics:	
Typically Present in Perennial Streams	**Typically Absent in Perennial Streams**
Aquatic fauna present such as benthic macroinvertebrates, fish, stream salamanders, tadpoles, or crayfish	
Algae-covered or water-stained rocks	
Sorted sediments	

Intermittent Streams

Intermittent Stream – Streams that typically have baseflow at least once per year. Typically, in the winter and spring, the groundwater table is elevated, increasing the likelihood that the groundwater level is higher than the bed of a stream channel. Therefore, an intermittent stream will usually have baseflow during the winter and spring seasons and infrequent baseflow during the rest of the year. Because of discontinuous flow regimes, intermittent streams typically have physical, hydrological, and biological characteristics that are not as well-developed as perennial streams. Depending on the frequency and duration of flows, however, the characteristics of intermittent streams can be similar to those of either perennial or ephemeral streams.

Stream Characteristics:	
Typically Present in Intermittent Streams	**Typically Absent in Intermittent Streams**
Baseflow present in the channel at least once per year	Baseflow present in the channel throughout the year
Sinuous channel	
Very well-defined channel banks and bed that include riffles and pools	
Evidence of fluctuating high-water marks, such as sediment-stained leaves, blackened or decaying leaf litter, bare ground, or vegetation drift lines	
Evidence of soil and debris movement (scouring) in the channel. Leaf litter is transient or temporary in the channel.	
Wetland or hydrophytic vegetation may be present	
Stream bank soils with hydric indicators at or above the low flow conditions	
Seeps, springs, or wetlands may be adjacent to or feed into the stream channel	
Aquatic fauna present when there is surface flow; during dry periods, signs of the presence of stream biota at other times of the year	
Algae-covered or water-stained rocks	
Channel head-cuts at the beginning of intermittent streams may be, but are not always, present	
Sorted sediments	

Ephemeral Streams

Ephemeral Stream -- Streams that are above the groundwater table and convey flow only during, and for a short duration after (generally less than 48 hours), and in direct response to, a precipitation event. Ephemeral streams do not include roadside ditches.

Ephemeral streams typically have a highly discontinuous storm-driven flow regime with insufficient flow durations to establish the observable biological, physical, and hydrological characteristics typically associated with the intermittent or continuous conveyance of water.

Under these Guidelines, protected ephemeral streams are those in the Ten Mile Creek watershed within the Ten Mile Creek Master Plan area that touch or overlap with environmental buffers associated with other downstream hydrologic features (e.g., perennial, and intermittent streams, floodplains, wetlands, seeps, and springs). Ephemeral stream segments in the Ten Mile Creek watershed within the Ten Mile Creek Master Plan area that are upslope from protected ephemeral stream segments are also protected under these Guidelines if the upslope ephemeral stream touches or overlaps the buffers of the downslope protected ephemeral streams.

Stream Characteristics:	
Typically Present in Ephemeral Streams	**Typically Absent in Ephemeral Streams**
poorly-developed sinuosity	moderate to well-developed sinuosity
evidence of leaf litter or small debris jams in flow areas	blackened or decayed leaf litter
poorly-sorted sediments	well-sorted sediments
poorly-developed removal of vegetation litter	streambed forms (such as riffles/pools, runs, point bars)
poorly-developed vegetation drift lines	frequent-flow marks, algae covered or water-stained or lined rocks
fibrous roots in channel	obligate wetland vegetation along or in channel
side slope soils with characteristics typical of the surrounding landscape	hydric soils in or adjacent to channel
	streamflow (except during or briefly [≤ 48 hrs.] after storms)
	alluvial deposits
	natural levees
	floodplains
	evidence of stream biota (e.g., fish, stream salamanders, or aquatic macroinvertebrates)