Henson Creek Village Area Study - Environmental Impact Analysis

Presenter
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Atm Islam
ENVIRONMENTAL STUDY GOALS

- Address flooding and stormwater issues in the study area and surrounding communities
- Explore the potential to energize the Henson Creek Stream Valley Park as a regional recreational feature or a destination to explore nature.

KEY DEFINITIONS

- **FEMA Flood Maps** – Insurance Rate Map to identify location of high flood hazard and increased probability of risk
- **Stormwater Management (SWM)** – Quantity & quality control for the treatment of pollutants associated with the impacts with development
- **Wetlands** – Areas of saturated land and soil with a high groundwater table located near the presence of streams or rivers.
- **Waters of the United States** – Intermittent streams either natural or man made by storm drains, swales, etc.

<table>
<thead>
<tr>
<th>NOAA Atlas Point Precipitation Rainfall Event Frequency (in inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration</td>
</tr>
<tr>
<td>1 year</td>
</tr>
<tr>
<td>2 year</td>
</tr>
<tr>
<td>10 year</td>
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<tr>
<td>100 year</td>
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<tr>
<td>500 year</td>
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Congress amended the Clean Water Act to increase focus on stormwater pollution. Final stormwater regulation adopted by US Environmental Protection Agency (EPA). Prince George’s County was issued a National Pollutant Discharge Elimination System (NPDES) stormwater permit. Prince George’s County required 100-yr stormwater management for quantity control in certain flood prone watersheds.

1980’s 1990 1993 2019
Permit Goals

- Treat stormwater for quantity control (1, 2, 10, 100 year) and/or water quality
- Support containment of litter and trash
- Implementing environmental site design (ESD) technologies for new and redevelopment projects to the maximum extent practicable (MEP).

Source: Maryland Stormwater Design Manual, Chapter 5
(National Pollutant Discharge Elimination System) NPDES MS4 Phase I Permit
PRINCE GEORGE’S COUNTY

Permit Goals

- Develop and implement plans to address stormwater waste load allocations established under EPA approval Total Maximum Daily Load (TMDL) estimates

- Controlling stormwater runoff peaks, volumes, and velocities to prevent both downstream flooding and streambank/channel erosion.

Source: Maryland Stormwater Design Manual, Chapter 5
Henson Creek Village Study Area

Livingston Road – Old Fort Road to Palmer Road

Adjacent to the Henson Creek Stream

Hiker/biker trail located along the Henson Creek Stream

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2020 Henson Creek Village Area Study
Fort Washington Area Flooding Photos

Figure 1 – Swann Creek

Figure 2 – Swann Creek
Fort Washington Area Flooding Photos

Figure 3 – Swann Creek

Figure 4 – Swann Creek
Figure 5 – Potholes Developing after Flooding
Fort Washington MD

Figure 6 – Swann Creek
Fort Washington Area Flooding Photos

Figure 7 – Fort Washington, MD

Figure 8 – Oxon Hill, MD
Key Highlights

- 5.7 miles total – Camp Springs to Fort Washington
- Lack of connectivity between Livingston Road and the current trail
- Lack of trailhead & parking
- Limited amenities along the Trail (benches, pavilions, play equipment)
History Through Photos – 1938 - 1998
FEMA Floodplain Map

PRINCE GEORGE’S COUNTY

- FEMA 100-year floodplain represents the area that is most prone to high flooding by a 100-year storm even

- New development must be constructed 2’ above 100 year Floodplain elevation. Car’s cannot traverse floodwater deeper than 6” in depth.

Legend

<table>
<thead>
<tr>
<th>Property</th>
<th>Road Gas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental</td>
<td>Stream Center and Drainage (2017)</td>
</tr>
<tr>
<td>Floodplain (FEMA - 2016)</td>
<td>1% Annual Chance Flood Hazard</td>
</tr>
<tr>
<td>Wetland (DNREC)</td>
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Floodplain Area

2020 Henson Creek Village Area Study
Floodplain Map

- Prince George’s County delineated 100-year floodplain
- Areas north of study area is shown as part of floodplain as well
- Overtopping of WSSC facilities and water intrusion into sewers
- Erosion & sediment control required to lessen silt, sand deposits from entering Potomac River.
Design Engineer shall evaluate downstream flooding for areas shown in yellow

Any proposed new development and redevelopment for areas shown in yellow are required to provide an onsite attenuation for 100-year storm event.
There are no registered stormwater management facilities that are located within the Livingston Road Study Area.
Potential Future Improvements:

- Design of Riparian Improvements to reduce flooding by straightening alignment of streams, armoring stream banks
- Improving low flow channels with cross vanes, stabilization mating are some of the methods used to improve flow
- Improvement of existing wetlands within the area to help with water quality and flood control
- Introduction of new wetlands.
Root Wad Placement

Root wads are used for bank stabilization and aquatic habitat enhancement.

Cross Vanes

Cross vanes are utilized to deflect stream flow to the center of the channel and relieve the pressure on an eroding streambank.

Soil Stabilization Matting

Soil stabilization matting ensures protection of stream banks by reducing bank erosion.

Rock Vane

Rock vanes are rigid engineering techniques to direct flows away from unstable stream bank and to improve aquatic habitat.

Stream Restoration Treatment Methods

Imbricated Riprap

Imbricated Riprap is a slope stabilization techniques to protect stream channel embankments.
Case Study of Other Similar Projects

Ellicott City, Maryland

Clear Creek Basin – Atlanta, Georgia

Buffalo Bayou - Houston, Texas

City of Laurel, Maryland

The City of Frederick, Maryland