



Prepared By:  
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For:

 MARYLAND-NATIONAL CAPITAL PARK AND PLANNING COMMISSION  
Prince George's County Planning Department

# 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.

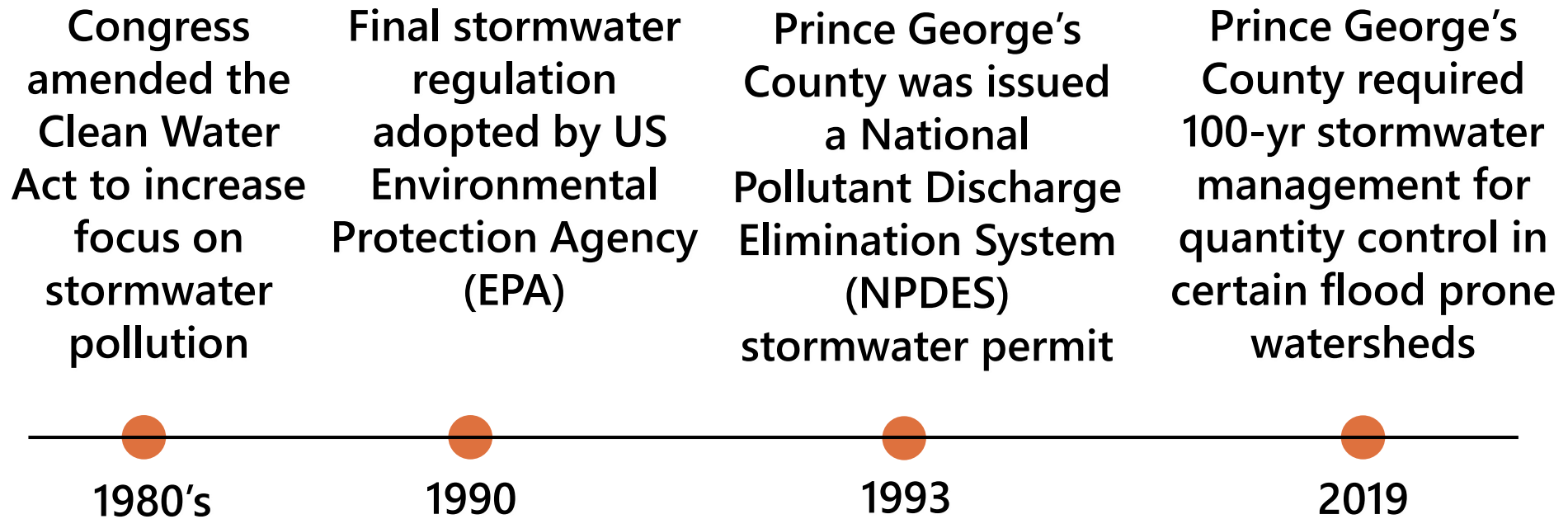
## KEY DEFINITIONS

- 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.

NOAA Atlas Point Precipitation Rainfall Event Frequency (in inches)	
Duration	24-hour
1 year	2.58
2 year	3.13
10 year	4.82
100 year	8.31
500 year	11.8



# STORMWATER MANAGEMENT IN PRINCE GEORGE'S COUNTY





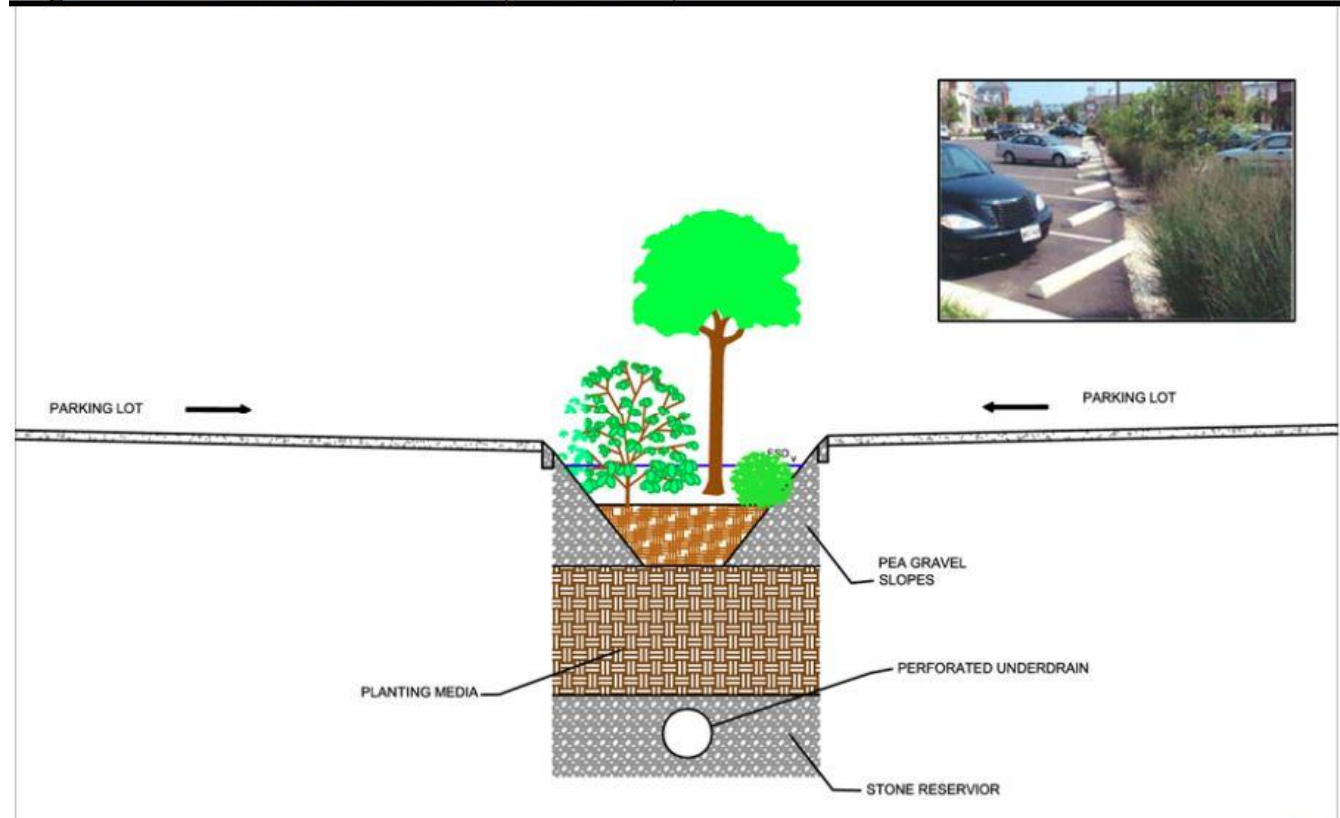


# (National Pollutant Discharge Elimination System) NPDES MS4 Phase I Permit PRINCE GEORGE'S COUNTY

## 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).

Figure 5.16 Micro-Bioretention (Variation 3)



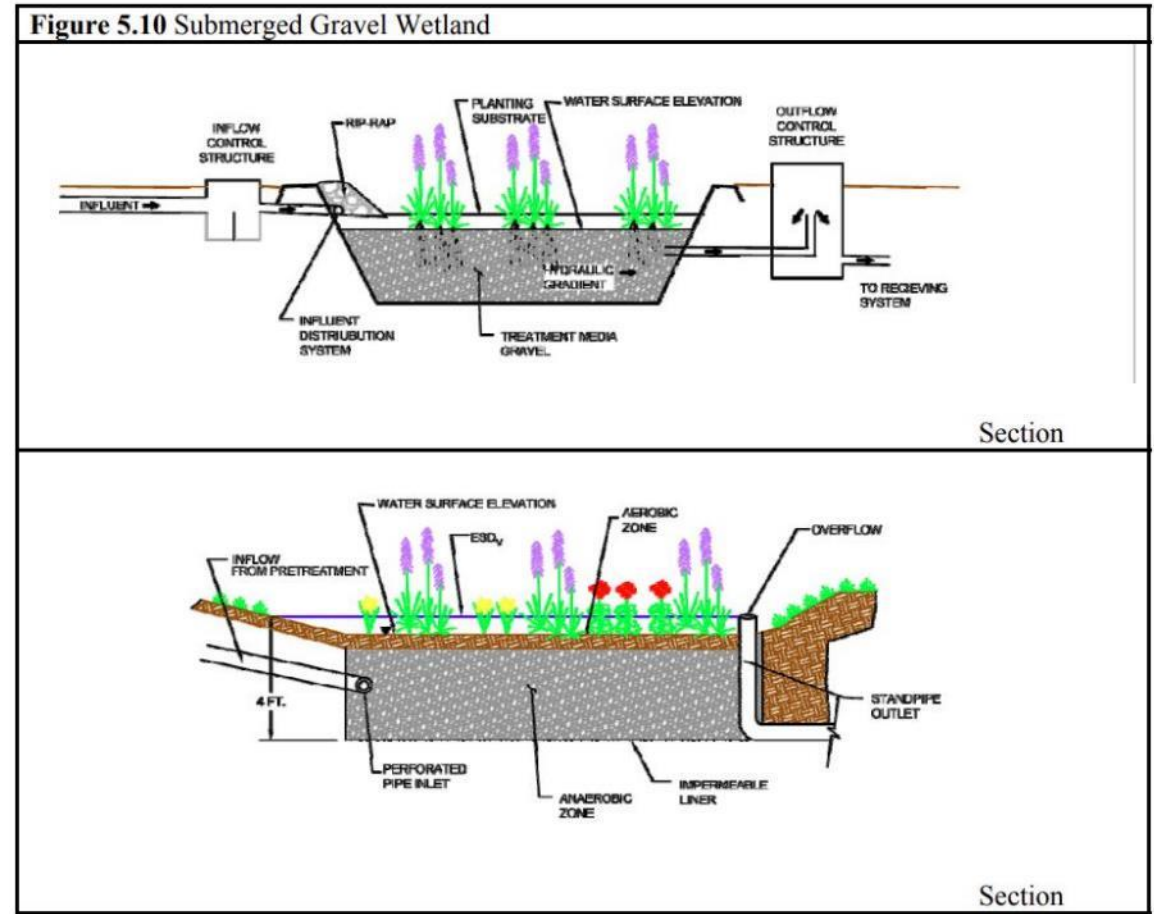
Source: Maryland Stormwater Design Manual, Chapter 5

Profile

# (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



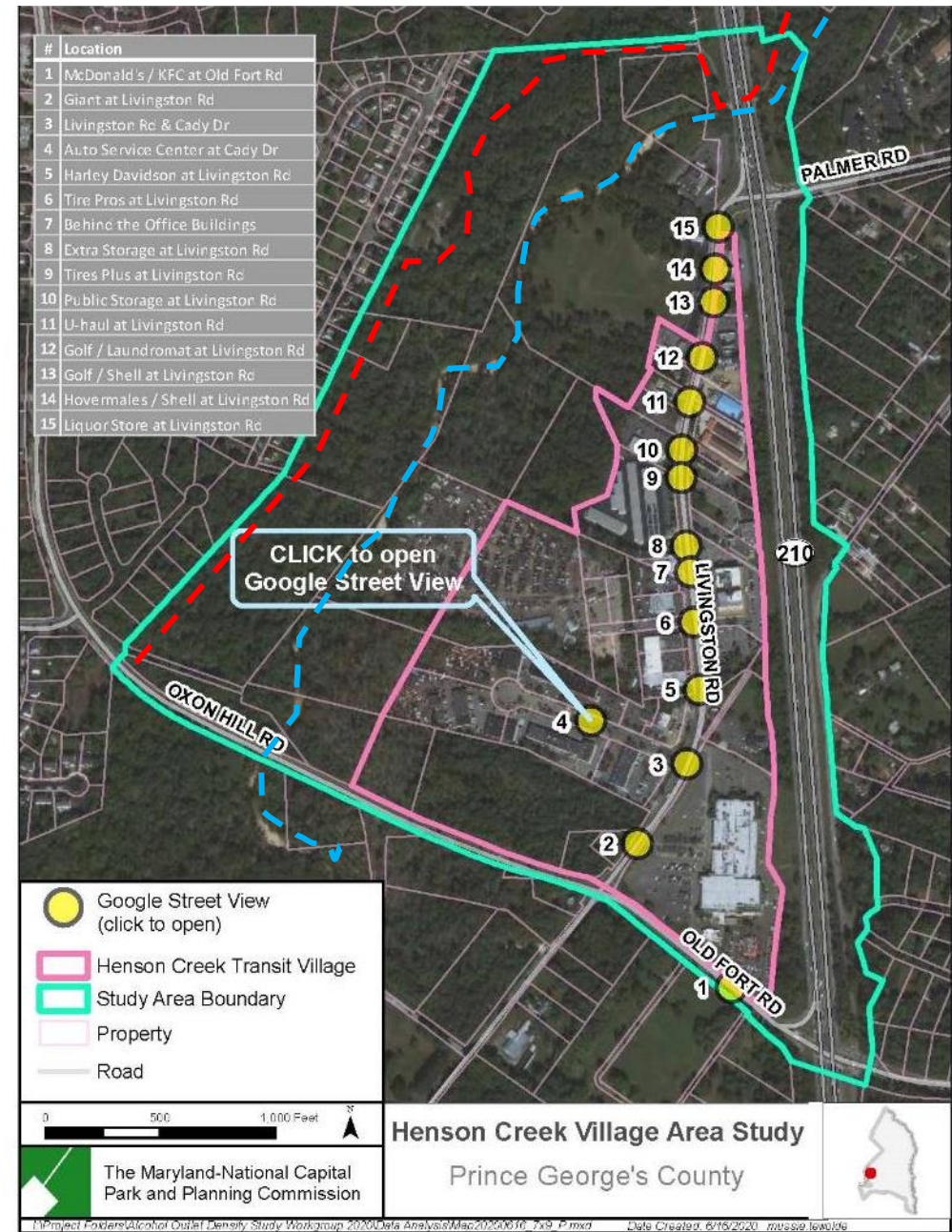
# Henson Creek Village Study Area

Livingston Road – Old Fort Road to Palmer Road ●

Adjacent to the Henson Creek Stream ●

Hiker/biker trail located along the Henson Creek Stream ●

--- Hiker/Bike path  
--- Henson Creek Stream







# 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





# Fort Washington Area Flooding Photos



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

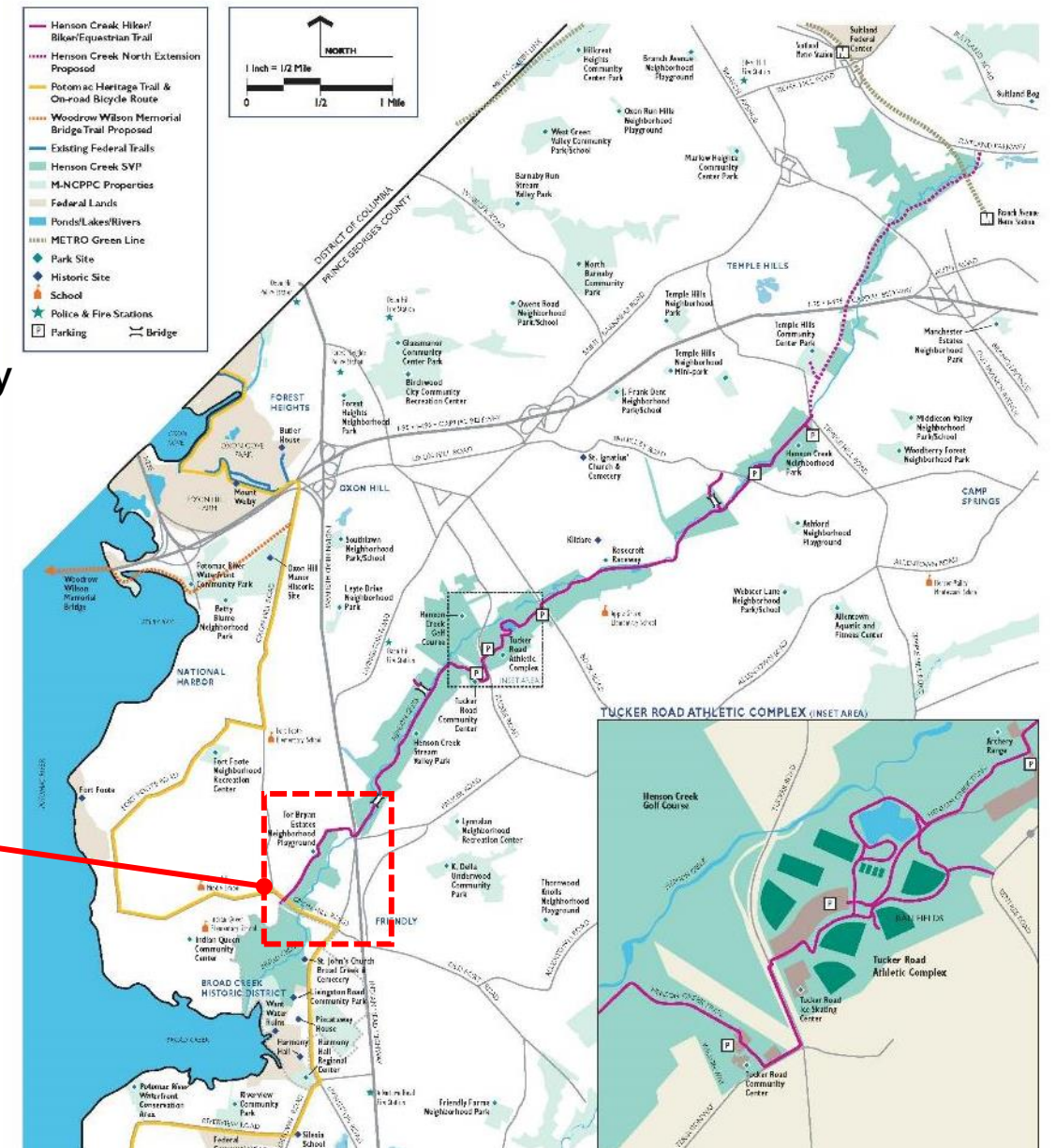




# Key Highlights

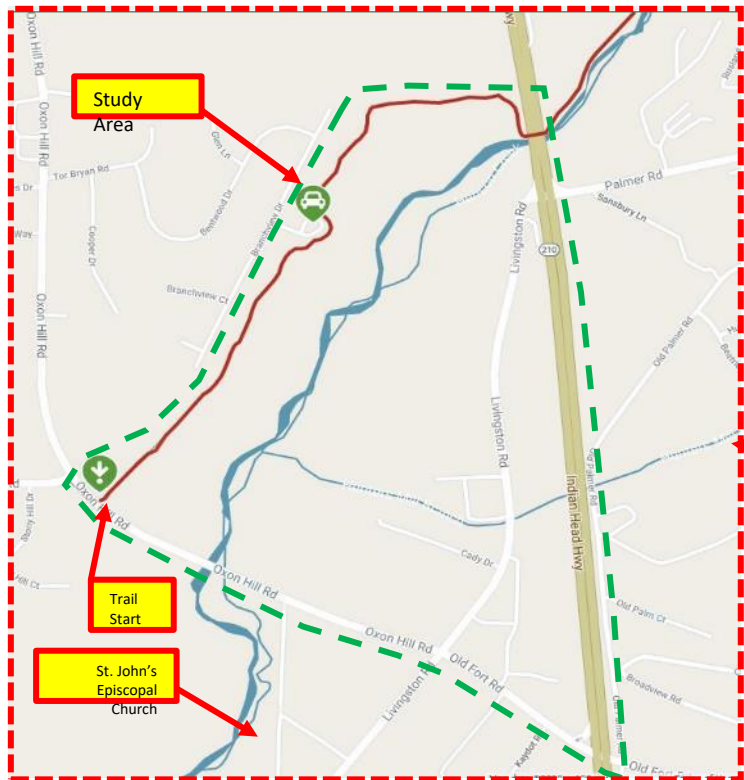
- 5.7 miles total – Camp Springs to Fort Washington
- Lack of connectivity between Livingston Road and the current trail
- Lack of trailhead & parking
- Limited amenities along the Trail (benches, pavilions, play equipment)

# HENSON CREEK TRAIL

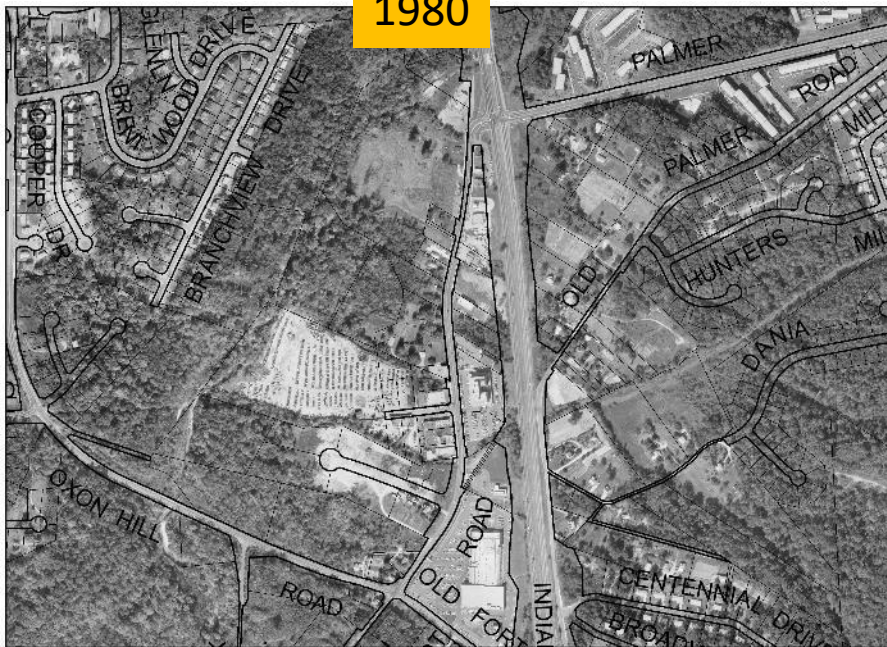
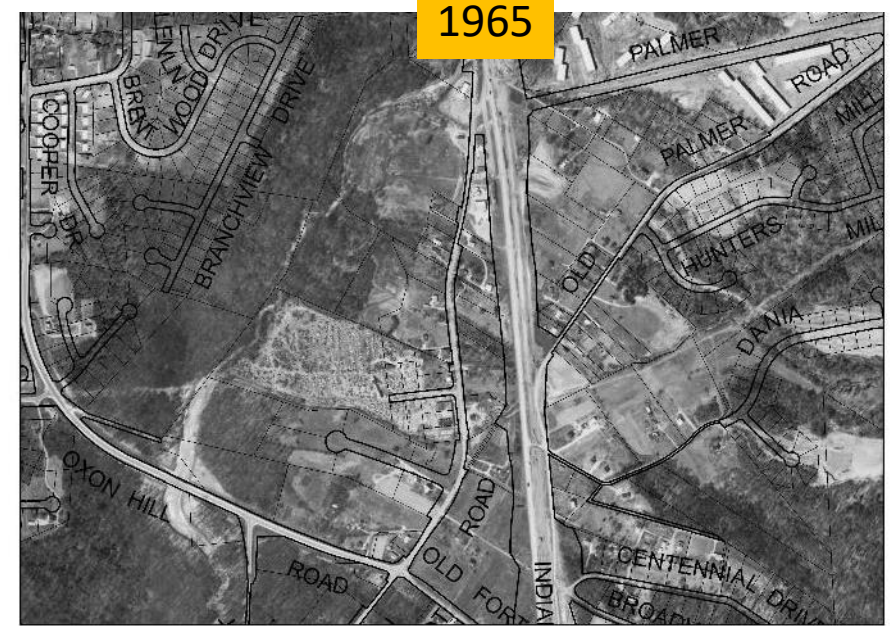
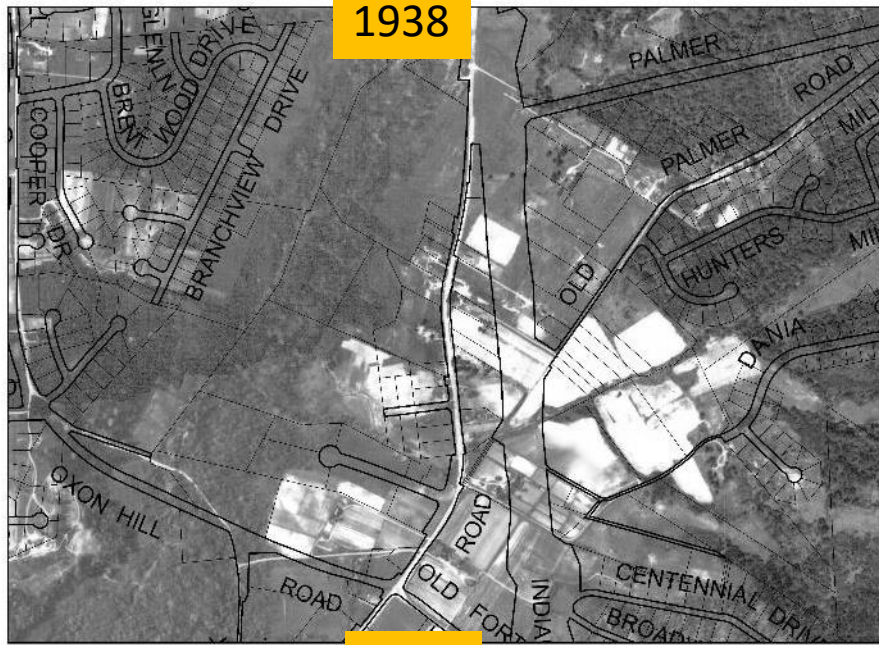


## LEGEND

- Parking
- Trailhead
- Tunnel
- Restroom
- Endpoint
- Drinking Fountain
- Henson Creek Stream
- Hiker/Biker Trail
- Study Area







## History Through Photos – 1938 - 1998





# FEMA Floodplain Map

PRINCE GEORGE'S COUNTY

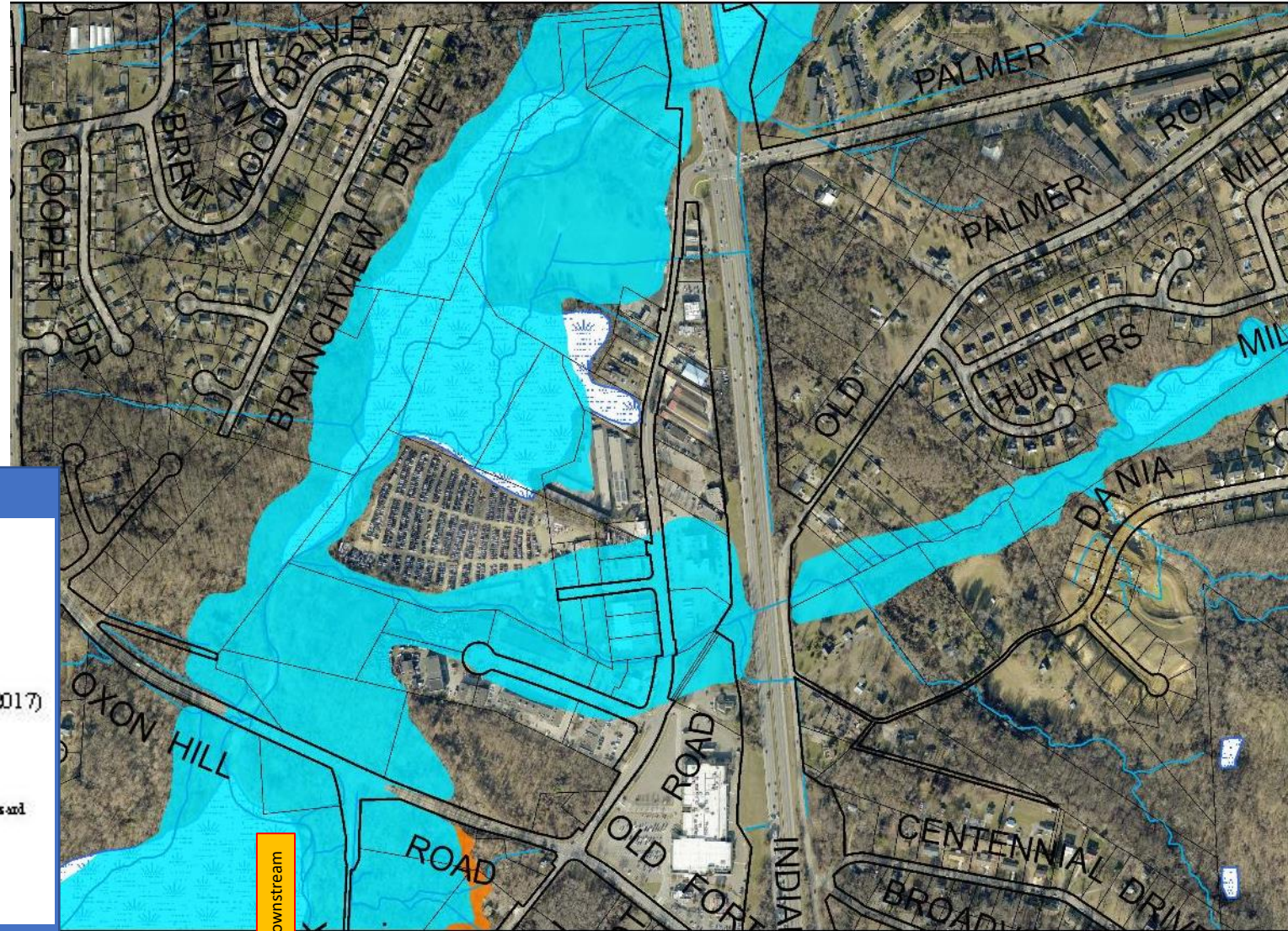
- FEMA 100-year floodplain represents the area that is most prone to high flooding by a 100-year storm even
- New development must be constructed 2' above 100 year Floodplain elevation. Car's cannot traverse floodwater deeper than 6" in depth.

**LEGEND**

**Property**  
Road Casings —

**Environmental**  
Stream Center and Drainage (2017) —  
Floodplain (FEMA - 2016)  
1% Annual Chance Flood Hazard  
Wetland (DNR)

Floodplain Area

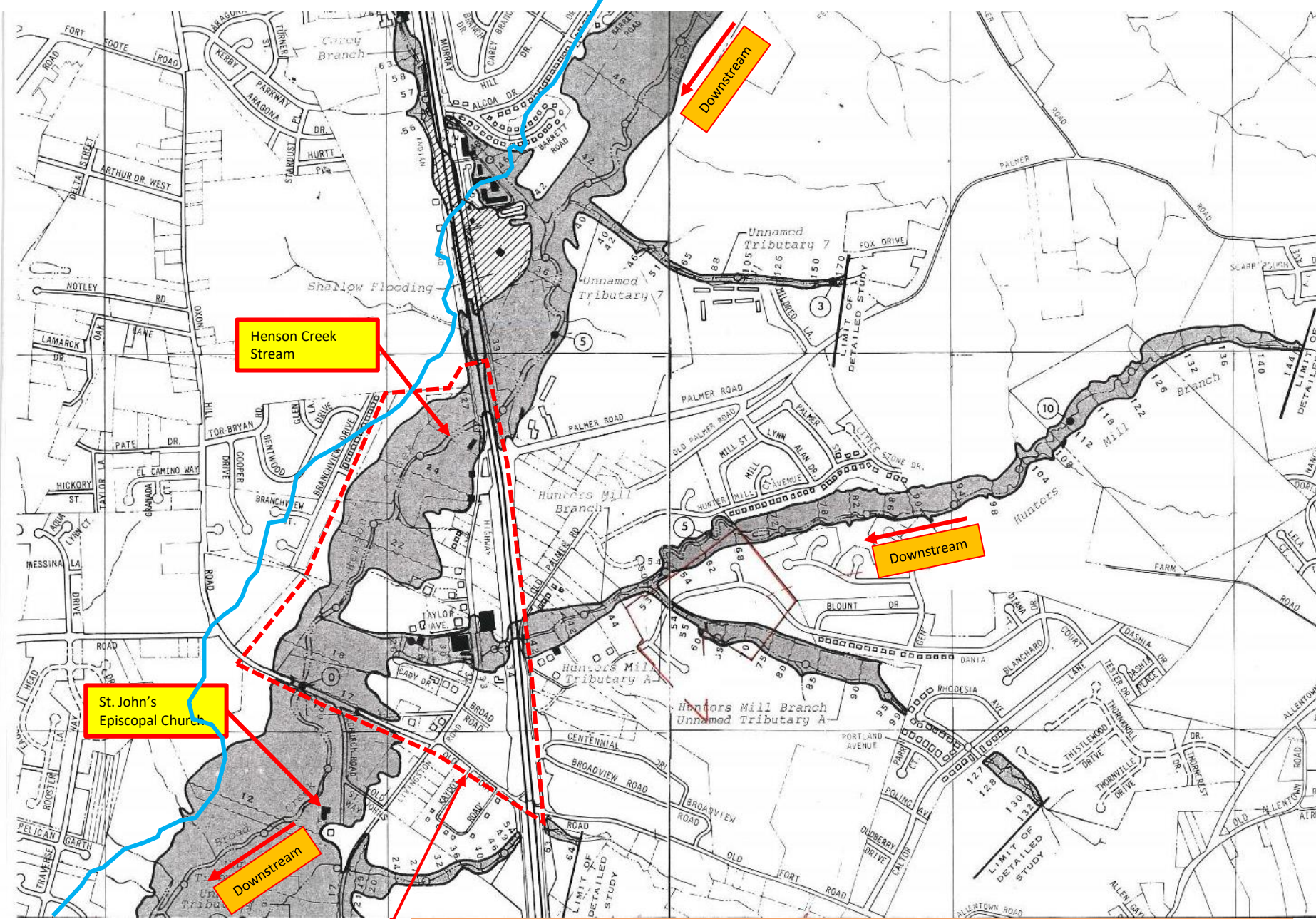


STUDY AREA



# 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.



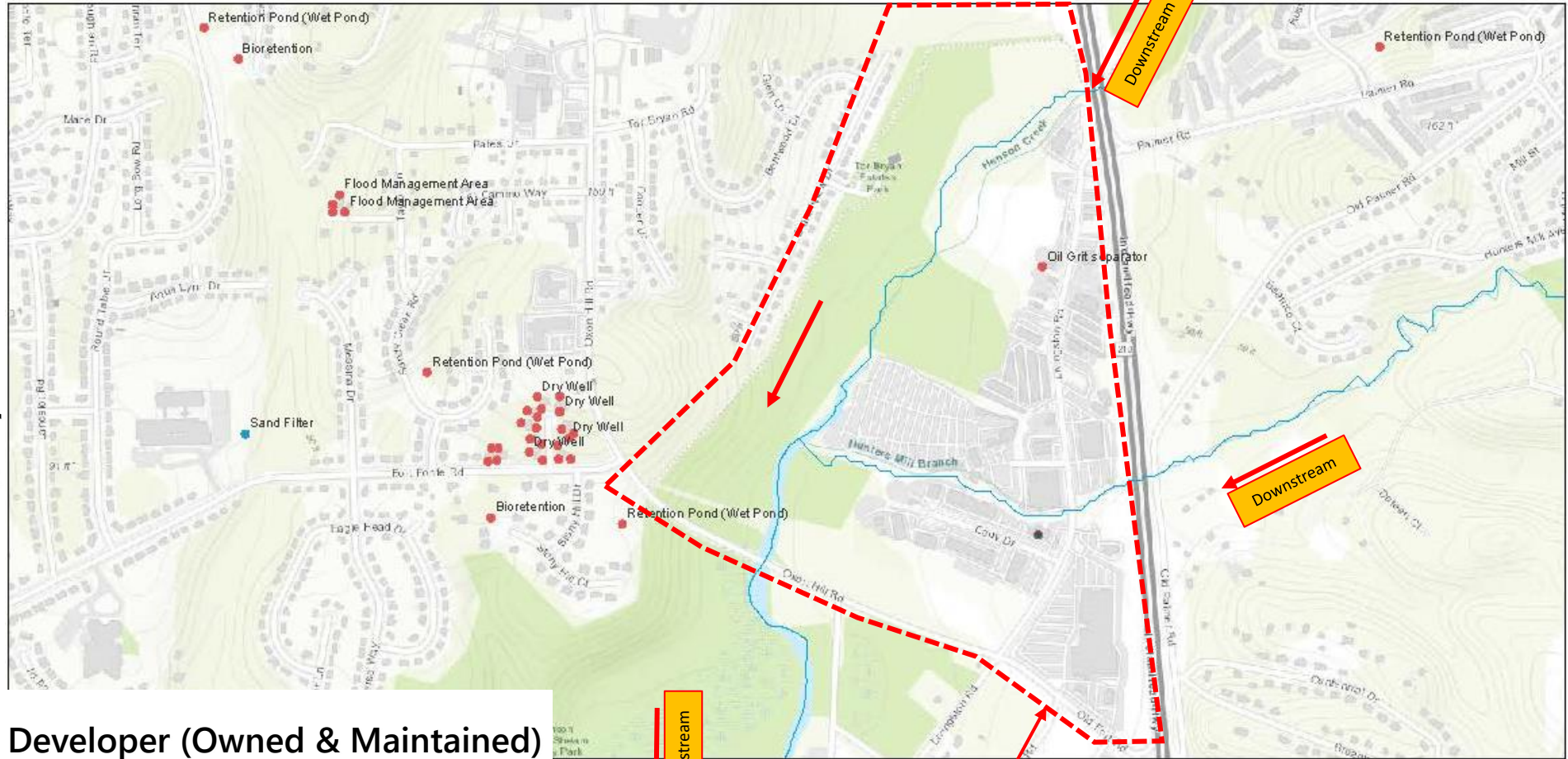
STUDY AREA








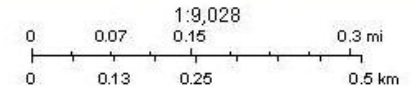


There are no registered stormwater management facilities that are located within the Livingston Road Study Area.



-  Developer (Owned & Maintained)
-  Clean Water Partnership
-  Major Streams

**STUDY AREA**



Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

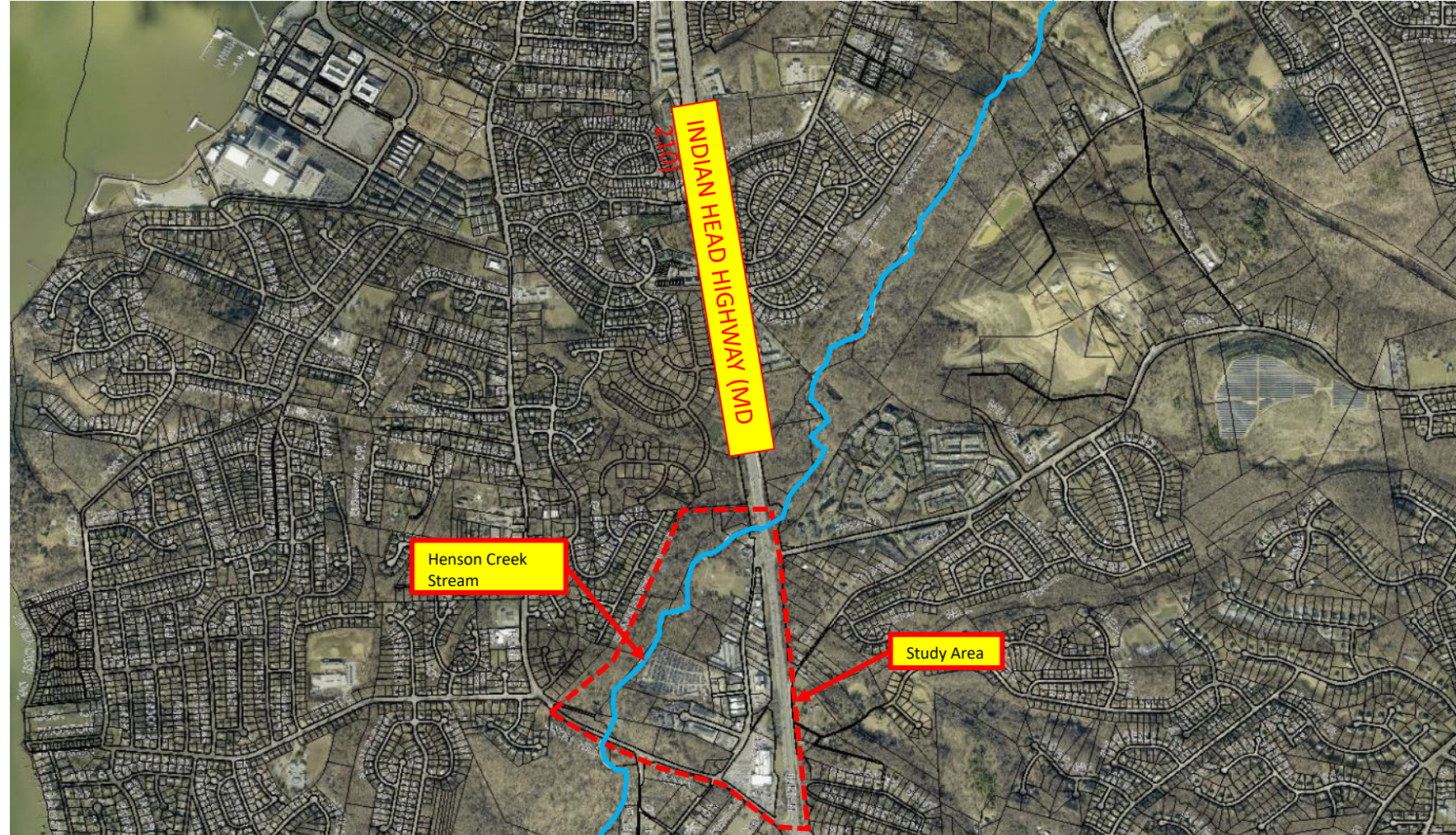
## Registered Stormwater Management Facilities PRINCE GEORGE'S COUNTY DEPARTMENT OF ENVIRONMENT





## 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.



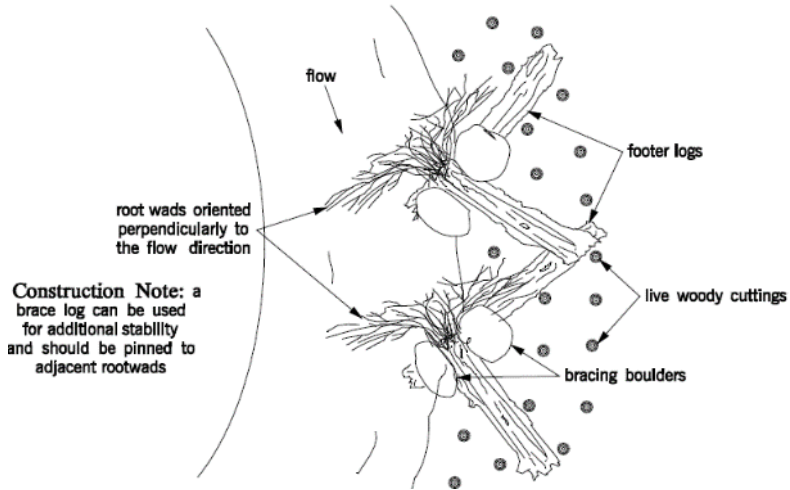
## MD State Highway Administration Development Study HENSON CREEK VILLAGE AREA





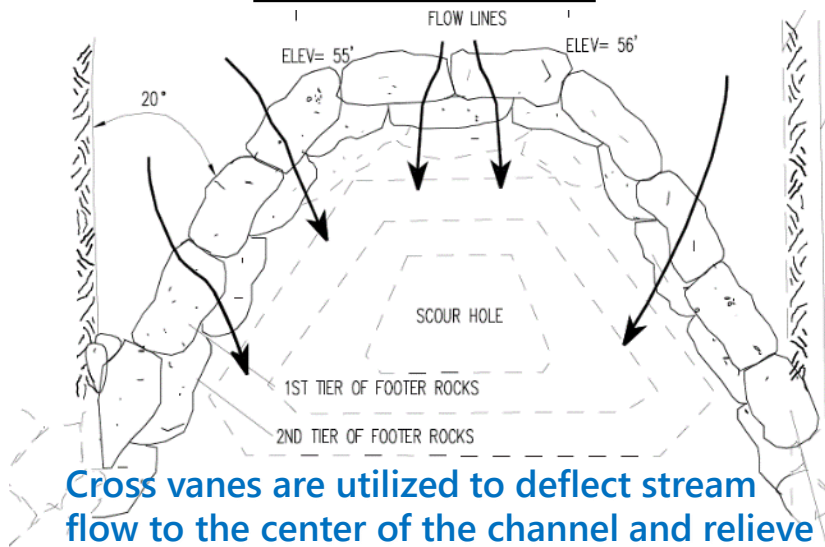
# Root Wad Placement

PLAN VIEW



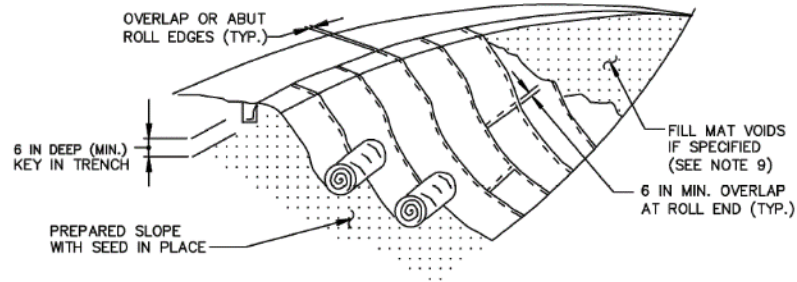
Root wads are used for bank stabilization and aquatic habitat enhancement

## Cross Vanes



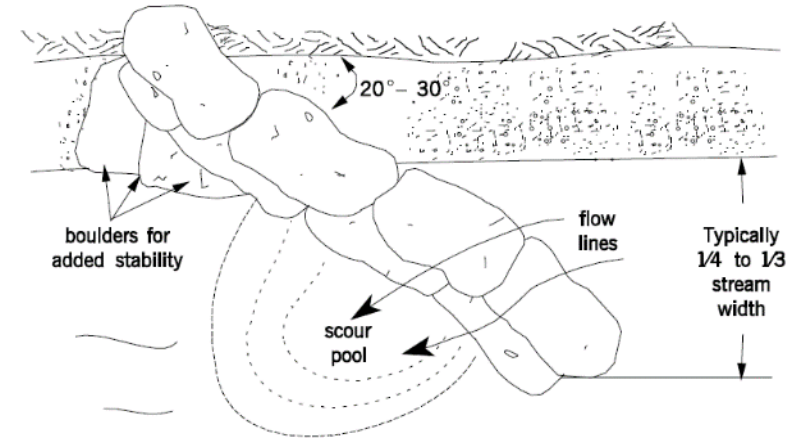
Cross vanes are utilized to deflect stream flow to the center of the channel and relieve the pressure on an eroding streambank

# Soil Stabilization Matting



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

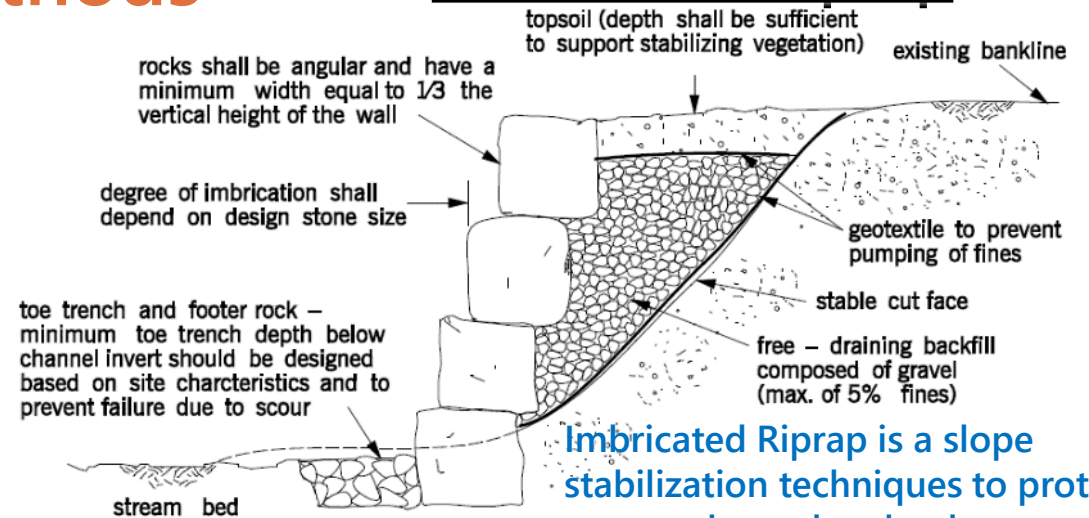
# Rock Vane



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