2022 HOWARD COUNTY WATERSHED REPORT CARD

Student Scientists in Action

Howard County Conservancy
connecting people to nature

2022 STREAM GRADE: B-

STREAMS

- Severe stream bank erosion
- High nitrate levels
- Riparian buffer lacking
- Further study needed

SCHOOLYARDS

- Litter is prevalent on schoolyards
- Impervious surfaces dominate the landscape
- Strategic placement of native trees and plants needed

ABOUT THE PROGRAM

The Watershed Report Card program was designed to provide a systemic opportunity for Howard County Public School 9th grade students to participate in a Meaningful Watershed Educational Experience (MWEE).

This year, more than 5,000 Earth Space Science and Biology students participated in this project. This experience provides an opportunity for students to engage in an authentic and meaningful exploration of their local watershed. Students have been collecting data at these stream sites for eight years. Student scientists can access historical data collected by our students on the Chesapeake Commons Water Reporter map.

OVERALL SCHOOLYARD DATA

Students collected data on erosion, downspouts, storm drains, parking lots, dumpsters, turf management, water chemistry, permeable surfaces, tree canopy, and existing environmental features to determine their schoolyard's overall score. Examining ways to slow stormwater runoff in schoolyards was the main focus this year.

SCHOOLYARD FEEDBACK

Atholton High School
+ Three stormwater management ponds
+ Native plant garden in the courtyard area
– Excessive amount of plastic and litter on schoolyard

Centennial High School
+ Stenciled storm drains
– Lots of impervious surfaces
– Many highly eroded areas

Glenelg High School
+ Existing rain garden
+ Recycling bins available
– Low plant biodiversity

Hammond High School
+ Native plant garden
– Blocked storm drains
– Excessive amount of litter on schoolyard

Homewood Center
+ Native plant gardens present
+ No Mow Zone established
– Unmarked storm drains

Howard High School
+ Storm drains stenciled
– Compacted soil and erosion
– Litter present throughout schoolyard

Long Reach High School
+ Native plant garden established
– Lots of impervious surfaces
– Significant litter on schoolyard

Marriotts Ridge High School
+ Native plant gardens present
– Lack of buffer near stormwater ponds
– Erosion present in high-traffic areas

Mt. Hebron High School
+ Native plant gardens in two courtyards
– Lots of litter on school campus
– Erosion in high foot-traffic areas

Oakland Mills High School
+ Large native plant garden established
– Significant amounts of litter throughout schoolyard
– Erosion widespread in high-traffic areas

Reservoir High School
+ Outdoor recycling bins available
– Litter visible throughout on the schoolyard
– Erosion present in high-traffic areas

River Hill High School
+ Large, established rain garden
+ Storm drains stenciled
– Litter present throughout schoolyard

Wilde Lake High School
+ Existing rain garden
– Impervious surfaces prevalent throughout school grounds
– Schoolyard litter present

SCHOOLYARD ACTION RECOMMENDATIONS

Students across the county have recognized three main areas that need improvement on our schoolyards – reduce the amount of litter prevalent on schoolyards, add native plants and trees to solve erosion issues plus increase biodiversity, and reduce the amount of impervious surface on schoolyards.

Protect & Encourage Biodiversity
13/13 Schools

- Remediate eroded areas on schoolyard
- Add rain gardens
- Plant more native trees/bushes
- Eliminate invasive species

Reduce Schoolyard Litter
12/13 Schools

- More recycling bins
- Sponsor schoolyard clean ups
- Reduce pollution on school grounds

Increase Pervious Surfaces
9/13 Schools

- Replace impervious surfaces
- Add green roofs

STREAM QUALITY OBSERVATIONS

South Branch Patapsco at Mt. Pleasant — POOR
Patapsco River at Orange Grove — MODERATE
Little Patuxent at Lake Elkhorn — MODERATE
Little Patuxent at Macomber Lane — POOR
Little Patuxent at Faulkner Ridge — POOR
Middle Patuxent at Shady Lane — MODERATE
Middle Patuxent at Southwind Trail — MODERATE
Middle Patuxent at Sweet Hours Way — MODERATE

SENSITIVE MACROINVERTEBRATE CHART

	Casemaker Caddisfly	Mayfly	Stonefly	Water Penny	Hellgrammite
South Branch Patapsco at Mt. Pleasant	●				
Patapsco River at Orange Grove	●	●		●	●
Little Patuxent at Lake Elkhorn		●	●		
Little Patuxent at Macomber Lane					
Little Patuxent at Faulkner Ridge					
Middle Patuxent at Shady Lane	●	●	●	●	●
Middle Patuxent at Southwind Trail	●	●			●
Middle Patuxent at Sweet Hours Way		●		●	●

Macroinvertebrates are often used in studies to determine the water quality due to their known pollution tolerances, limited mobility and dependence on the land environment around the stream. The sensitive macroinvertebrates are of particular importance because they do not tolerate high levels of pollution. At each stream site, students searched in riffles, runs and pools, under cobbles and leaf matter, and through root wads using D-Nets to find a variety of macroinvertebrates.

STREAM FEEDBACK

South Branch Patapsco at Mt. Pleasant
Homewood Center, Marriotts Ridge High School
+ Established riparian buffer
– Dissolved oxygen levels were very poor
– Low macroinvertebrate score

Patapsco River at Orange Grove
Howard High School, Long Reach High School and Mt. Hebron High School
+ Excellent riparian buffer
– Poor conductivity levels and erosion on stream banks
– High nitrate levels

Little Patuxent at Lake Elkhorn
Atholton High School
– Steep embankments, lots of evidence of fast water eroding the banks
– Fair rating for biological macroinvertebrate survey

Little Patuxent at Macomber Lane
Oakland Mills High School
– High phosphate and nitrate concentration
– Poor macroinvertebrate count
– High stream banks and lots of sedimentation

Little Patuxent at Faulkner Ridge
Wilde Lake HIgh School
– No sensitive macroinvertebrates found
– High nitrate levels
– Stream banks show significant erosion

Middle Patuxent at Shady Lane
Glenelg High School
+ Mature riparian buffer
+ Good macroinvertebrate biodiversity
– High nitrite and high phosphorus levels

Middle Patuxent at Southwind Trail
Reservoir High School, Centennial High School
+ Large riparian buffer
+ Variety of macroinvertebrate species found
– High stream banks indicate significant erosion

Middle Patuxent at Sweet Hours Way
Hammond High School, Reservoir High School
+ Wide variety of macroinvertebrate species found
– High nitrite levels
– Evidence of erosion, lots of sediment

STREAM RECOMMENDATIONS

South Branch Patapsco at Mt. Pleasant
Homewood Center, Marriotts Ridge High School
Repair the stream bank erosion at the testing site by anchoring it with native vegetation.

Patapsco River at Orange Grove
Howard High School, Long Reach High School and Mt. Hebron High School
Stabilize stream banks by planting more native plants and trees in the riparian buffer. At school, stencil more storm drains to bring awareness to protecting our watershed.

Little Patuxent at Lake Elkhorn
Atholton High School
Restore the natural meanders in stream to slow the water. Remove trash and debris.

Little Patuxent at Macomber Lane
Oakland Mills High School
Improve habitat to encourage benthic macroinvertebrates and add native plants to anchor eroded stream banks.

Little Patuxent at Faulkner Ridge
Wilde Lake HIgh School
Improve stream health by reducing fertilizer input from surrounding neighborhoods and create pooling areas for fish and other wildlife.

Middle Patuxent at Shady Lane
Glenelg High School
Decrease the use of fertilizer near the stream to protect the stream life.

Middle Patuxent at Southwind Trail
Reservoir High School, Centennial High School
Create more habitat in stream for macroinvertebrates. Encourage surrounding eighborhoods to decrease fertilizer use.

Middle Patuxent at Sweet Hours Way
Hammond High School, Reservoir High School
Encourage pet owners to pick up pet waste. Increase native vegetation along stream, especially on eroded stream banks.

THANK YOU
to the following
for your continued
dedication and support

HCPSS Earth Space Systems Science and Biology Gifted & Talented Teachers

Conservancy Volunteer Naturalists

HCPSS Secondary Science Office

THANK YOU
to our Partners

Howard County Public School System

LIVE GREEN HOWARD