Native Vegetation Improves Water Quality, Follow Natures Lead

Luzerne Conservation District – Storm & Stream Water Management Ideas

11/20/2026

Rain Gardens –Stormwater Retrofits – Riparian Reforestation and Reforestation – River Shoal Planting for Water Quality Improvements & Water Quantity Reduction







Nature Does It Best

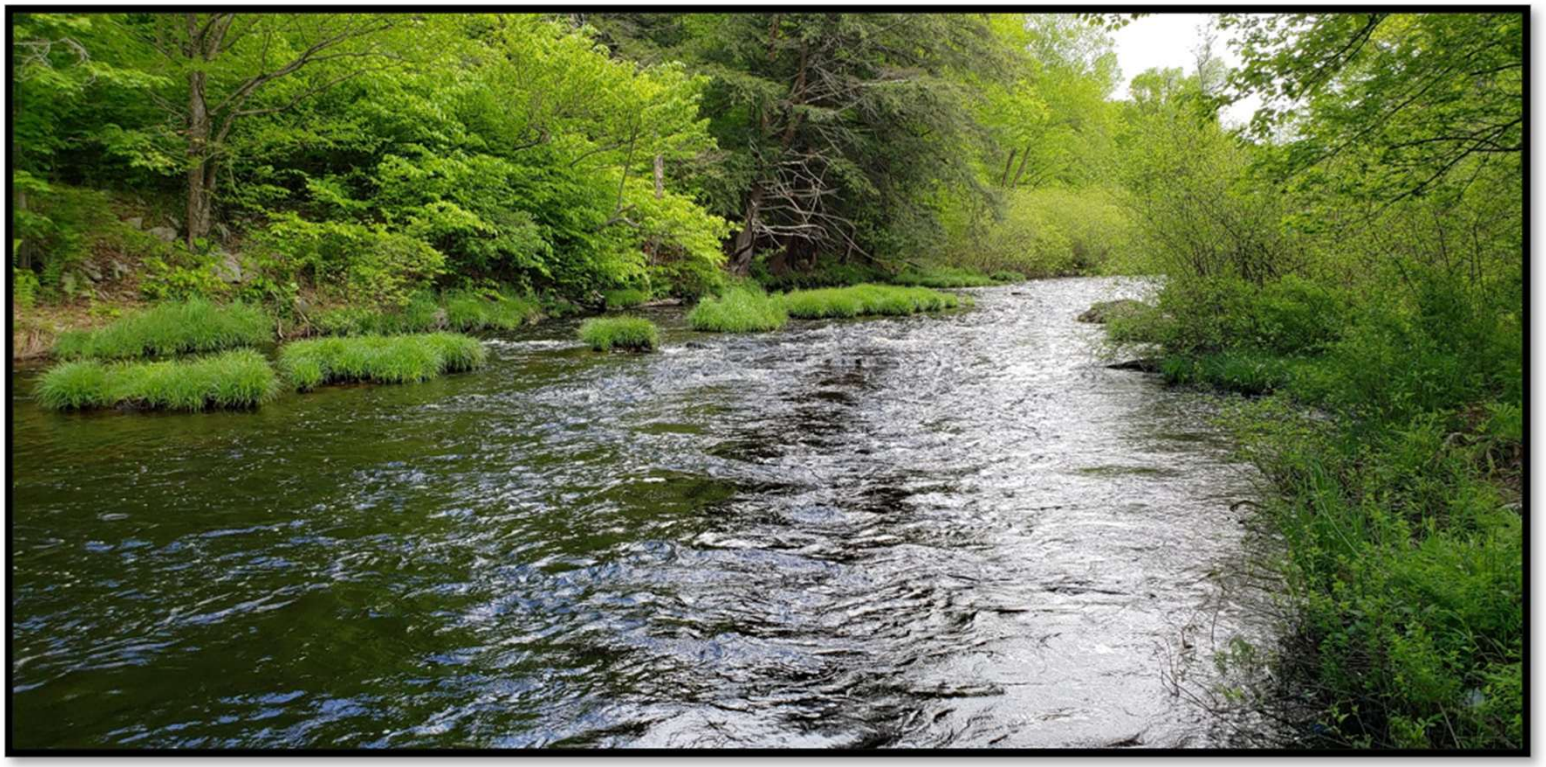


Bowman Creek, Ross Township: State Game Lands 57 with native trees and sedge borders with open natural floodplain

Toby Creek: We constrict and confine flows because development occurred prior to knowledge and regulation. Streams are made to meander and need non-developed floodplain areas during storm events, riparian trees and natural stabilization work!



How do we go forward?



Use nature as our blueprint

Native Plants in Old Storm Basins



Formerly mowed storm basin with few species of vegetation. Site lacked pollinator habitat, bird use by Robins and Killdeer only. Some water quality and quantity protections with little change except orifice control on the outlet Photograph 2017.

Mowing stopped 2017 and planted in 2019 with diverse species of vegetation. Site includes River Birch, Tulip Tree, Silky Dogwood, Elderberry, Goldenrods, Saint Johnswort, and Swamp Milkweed. New animal use includes Monarch Butterfly, Marsh Wren, Red-winged Blackbird, American Toad and Wood Frog Photograph 2026.



New Plants in Storm Basins, what benefits do we create?

- Reduces sediment and nutrient runoff and stormwater impacts
- Allows for MS4 credits and reduction in stormwater fees in some locations
- Reduces mowing in wet, damaging and dangerous locations
- Increases habitat diversity for pollinators, birds and amphibians
- Reduces runoff contaminants and water temperatures to nearby streams
- Increases evapotranspiration and groundwater recharge
- On School District property it creates an onsite outdoor classroom in botany, biology and water quality





New Plants in Storm Basins create many natural benefits

- Stormwater basins contained ~ 2 Red-Winged Blackbird nest 2017, 35 to 40 nests in 2026
- Increases habitat diversity for pollinators, birds and amphibians
- Attracts American Toad and Wood Frog to the basins for breeding and hunting
- Native habitat restoration reduces Mosquito impacts on people
- Increases evapotranspiration and groundwater recharge reducing flood impacts downstream
- On School District property creates an onsite outdoor classroom in botany, biology and water quality





What benefit is vegetation creating in storm basins during weather events?

- More sediment is captured from runoff in stormwater with full vegetation cover
- Vegetation reduces runoff energy in extreme events
- Plants increase water evapotranspiration and groundwater recharge
- In the September 2023 storm event, Cattail growth disbursed high water velocity before the flow scoured berm areas
- Cattail growth was flattened 15 feet wide by 40 feet long without loosing the entire stand of vegetation
- Planted River Birch trees retained flow channel berms from erosion during peak flows





What benefit did naturalized vegetation in storm basins create during September 2023 storm event?

- This event caused the Dallas Borough traffic circle to be submerged by nearly 2 feet
- In the September 2023 storm event, Cattail growth 12 foot high disbursed water velocity before the flow scoured berm areas
- Cattail growth was flattened 15 feet wide by 40 feet long without loosing the entire stand of vegetation
- 2019 Planted River Birch trees retained flow channel berms from erosion during peak flows





Urban & Suburban Trees - Protect water quality, reduces storm event flows and summer air conditioning



Urban & Suburban Tree Planting – Enhancing natural conditions in human developed settings



Urban & Suburban Tree Planting – Mowed grass converted to trees reduces stormwater flows by 12%



Riparian Reforestation Mine Reclamation Protecting Water Quality – Reducing Storm Event Flows



Espy Run Riparian Reforestation Mine Reclamation Fall 2024



Espy Run Riparian Reforestation Mine Reclamation Summer 2026



Espy Run Riparian Reforestation Mine Reclamation Summer 2026, 8.6 Acres

- Riparian planting accelerates restoration times
- Riparian restoration reduces sediment loss to the waterway
- Diminishes streambank erosion probability
- Reduces stream temperatures in summer conditions
- Increases leaf litter covering of the mine spoils reducing mine runoff impacts on stream
- Increases insect life cover for terrestrial and aquatic insects to feed fish



Nanticoke Creek Riparian Reforestation Mine Reclamation Summer 2025



Nanticoke Creek Riparian Reforestation Mine Reclamation Spring 2026, 2.3 Acres



Water Willow (*Justicia americana*) Planting on Susquehanna River



Water Willow creates fish, wildlife habitat, collects sediment and nutrients on the Susquehanna River Susky Bassmasters volunteers planting plugs





Water Willow (*Justicia americana*) Planting on Susquehanna River





- Velocity reductions from plant structure drop out sediment in river systems, note the cobbles become mud and sand in Water Willow beds
- Sediment captured contains nutrients used in the plant's growth
- The Water Willow height creates cover and feeding habitat for fish and wildlife when flooded and/or exposed
- Common species found include Great Blue Heron, Great Egret, Little Green Heron, wild duckling and gosling broods during brood rearing, Virginia and Sora Rails during migration
- Smallmouth Bass in young of year class and adult fish are commonly found when Water Willow are flooded
- Shading of water in extreme summer heat help to reduce global change impacts on water temperatures
- Pennsylvania Game Commission is planting the same species along State Game Land islands on the upper Susquehanna River to improve wildlife habitat and stabilize eroding islands.





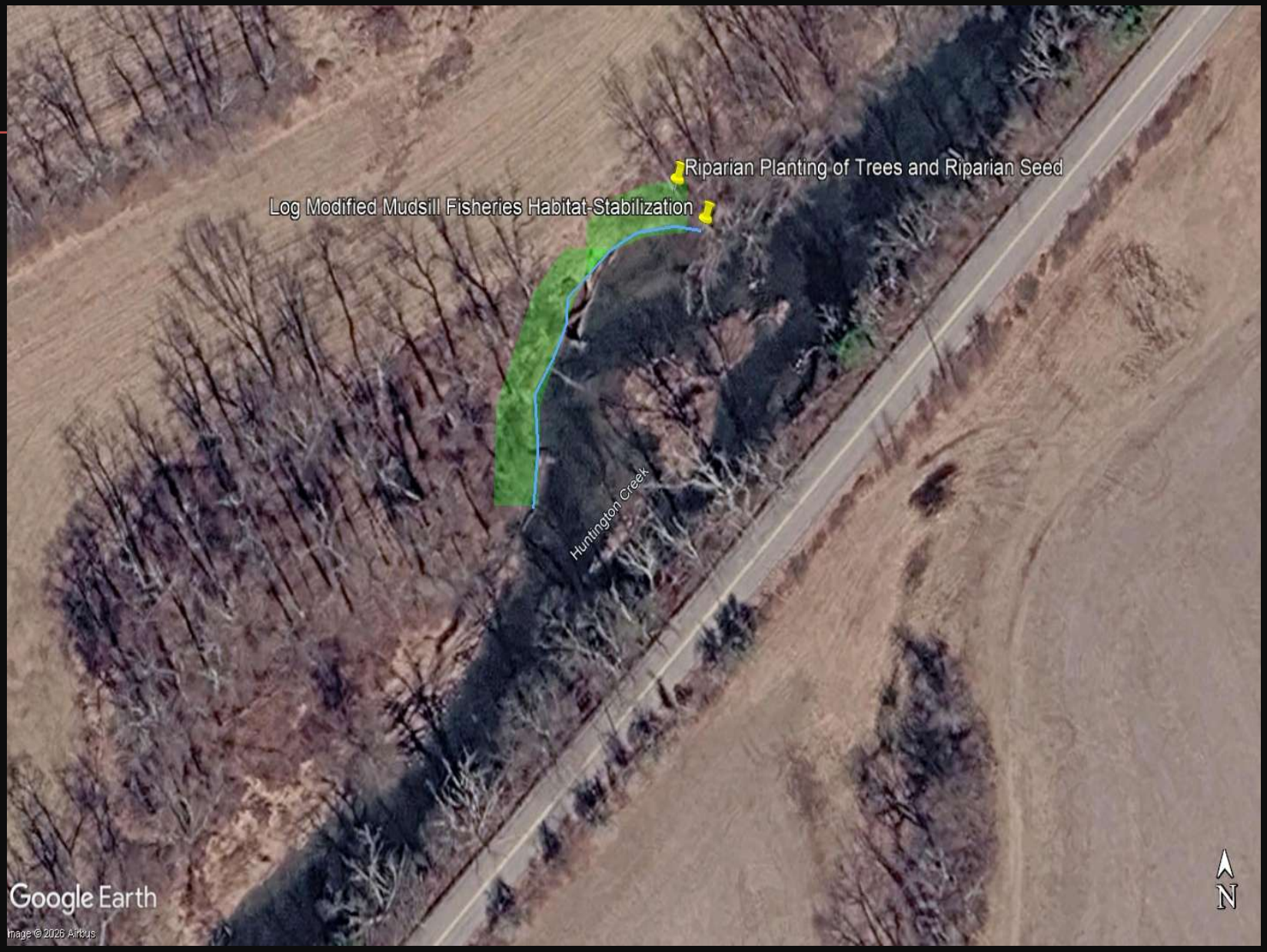
Water Willow Planting on Susquehanna River

Flooded conditions create aquatic habitat

Low flow conditions create terrestrial habitat

High water conditions create protected shorelines from erosion

Huntington Creek Stabilization Project
Huntington Mills



Huntington Creek Stabilization Project
Huntington Mills







Improving Water Quality is in our plans and goals

Benefiting fish, wildlife, and peoples use of waters is our objective

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