

Nanticoke Integration for a Cleaner Environment
(NICE)

The Preliminary Report Outline

by

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Mission Statement:

The Nanticoke Integration for a Cleaner Environment (NICE) aims to protect and improve the surface water quality of the Nanticoke River through the management of the non-point sources of pollution (agricultural runoff) and anthropogenic activities. This plan recommends the additional adjustment on existing agricultural policy, and implementation of best management practices that will alleviate problems associated with non-point source pollution from agricultural runoff and human activities in order to restore boatable, fishable waters, and reduce TMDLs by 50% by 2035.

The Nanticoke is a historically significant river as it was explored by famed English captain John Smith. It is the most biologically diverse watershed in Delmarva that starts its 64 mile journey from Southern Delaware to Tangier Sound in Maryland. Its 725,000 acre watershed provides excellent habitat of national significance for many threatened plants and animals. The largest population of bald eagles in the Northeastern United States can be found in this tributary, which also supports significant species for both commerce and the environment, including rockfish, white and yellow perch, and herring. According to estimates, the Nanticoke River region contains more than half of the land beneath the Chesapeake wetlands and a sizable portion of Maryland's tidal wetlands. Even commercial fisheries and leisure sports are considered to benefit from the region.

Problem	Description	Causes
P1: Decreasing wetlands	Wetlands converted into farmland decreases the environments natural ability to filter Nitrogen, Phosphorous, Suspended Sediment before entering the Nanticoke River	Increase in Agriculture
P2: Channelization	Tributaries of the Nanticoke were shaped into tax ditches to more efficiently carry water off of farm land to reduce flooding, but the straight channels are harmful to fish and the natural environment.	Erosion

	The Nanticoke river watershed is home to many endangered species of birds and waterfowl.	
P3: Increasing loads of Nitrogen and Phosphorus	Nitrogen and Phosphorus are both essential in the agricultural aspect. It helps increase crops on farms and promotes good quality outcomes. But exceeding the amount of these kinds of nutrients that are not anymore being utilized on those farmlands actually gets its residue on water bodies that took tolls to livelihood and water quality.	Mismanagement on Agriculture practices Excessive manure in river intake

P1: Decreasing Wetlands

The topography of Nanticoke is best for agricultural activity due to its flat surface and the soils of unconsolidated sands and clays are perfect for crops. Surrounding the Nanticoke Watershed, almost 40% of its total land area is being used for agriculture. Over the future, more urbanized developments are being established in the area that provide more support to intensive livelihood activities like agriculture itself. With these, the wetlands are getting smaller and smaller as time goes by. And soon, it may occupy almost 80% of the total wet area of the watershed. Other developments are being done like drainage system, pipelaying, and other man made activities not including forestry.

P2: Channelization

Even the European settlement on the Nanticoke, it is always presented as an area with a wide range of wetlands and aquatic life. Sooner or later, when more civilizations are engaging to the area, more settlements are being present. Either agriculture and anthropogenic activities. It was seen that not only agriculture played a huge role in decreasing the Nanticoke’s wetland, but also clearing of streams that lead to more straight channelized systems. These system changes not only affect physical but also biological conditions of an aquatic ecosystem. Physical changes took effect on long term biotic responses that extend over space and time. Results of this stress the growth of individual, abundance, and reproduction of species living in the aquatic environment.

P3: Increasing loads of Nitrogen and Phosphorus

Nanticoke’s water quality is worsening due to increasing loads of Nitrogens and Phosphorus. These nutrients are an essential component of growing crops on farmlands for better output of the crops. Nanticoke’s agricultural industry focuses most on the poultry industry, and growing grain crops for feed. It actually accounts for the worsening of the water quality of the watershed. Increasing loads of nutrients like nitrogen and phosphorus may lead to extensive eutrophication. Probable causes that may occur may develop harmful algae blooms that not only affect the water quality, but also the health of the citizens residing near the watershed. Although as of 2019, the grade of Nanticoke Watershed according to the Nanticoke

Watershed Alliance increased its grade from C to C+, still low due to the total nitrogen load found on the system. Parts of Nanticoke Watershed, mostly on the upper part, are not anymore susceptible for fishing and swimming due to increased bacteria that may cause sickness to humans, and proper life for the aquatic species.

G1: Reduction of Manmade Activities

It may be a good start to promote limitations in terms of manmade activities in the area. The boundary of Nanticoke is already swarmed with agricultural aspects and also urban developments. It may be a good thing to have livelihood beside a watershed since it can benefit the human race on usage of what the watershed offers, but there may come a time that it needs to be managed. People living nearby may have control with this aspect as to where they can see the effects of their activities to the living body near them. In the long run, it may have adverse effects also with regards to their health and human consumption.

G2: Promote Stream Restoration

It may be seen that channelization helps reduce flooding in the area, but it does not thoroughly help the livestock of the ecosystem in the area. Other solutions may be found in order to reduce floods and other water related issues on the land, but stream restoration is also a must. It must be conserved and consider the outcome of life that is present in the aquatic environment. It also promotes improvement on water quality, mitigate habitat loss to protect fish and wildlife. It may also be used for public fishing and other recreational activities once streams are restored to their natural state.

G3: Macromanagement in Agriculture

It is indeed important to include these nutrients in agriculture, as is to promote good crops on farmlands. We have an existing policy with regards to applying fertilizers in the Delaware, Maryland, and Virginia area, but it may need to be looked upon again and reevaluated. Too much inputs on fertilizer and excess amounts that drip to the river actually has a negative effect on the water quality. Best management practice in length of application and usage needs to be monitored better. Different local governments in each state and county must double check their regulations and requirements regarding this.

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