

## What is the Appoquinimink Tributary Action Team?

The Tributary Action Team brings together residents of the watershed to learn about various environmental concerns, and to frame the water-pollution issue for public conversation. In this way, Tributary Action Teams initially define the major problems contributing to pollution in the watershed. Together with a larger group of citizens, the Delaware Department of Natural Resources and Environmental Control and the Tributary Action Team will develop pollution control strategies for reducing nutrient loading into the Appoquinimink River.

## Want to Learn More?

If you would like to join this citizen effort, or learn more about the Appoquinimink watershed, please contact:

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## Land use and land cover in the Appoquinimink watershed

*Data from 1997*

### KEY

■ residential, commercial  
■ agriculture  
■ brushland

■ forest  
■ water  
■ wetlands  
□ barren

# Working to improve water quality in the Appoquinimink Watershed



Prepared by the  
Appoquinimink Tributary Action Team  
in cooperation with the Delaware Department  
of Natural Resources and Environmental Control

*Everyone lives in a watershed – a defined land area that drains into a particular waterway. Delaware has four major watersheds or drainage basins, the Piedmont, Chesapeake Bay, Delaware Estuary and Inland Bays. Each of these four major watersheds, or basins, is comprised of smaller watersheds or sub-basins. The Appoquinimink watershed is one of the state's 45 smaller watersheds.*

## The Appoquinimink Watershed

### Characteristics

The Appoquinimink watershed lies within the major Delaware Estuary basin. It encompasses the towns of Odessa, Townsend and Middletown and drains 30,239 acres to the Appoquinimink River. The tidal Appoquinimink River is framed by wetlands and tidal marshes, which extend along its banks to the Delaware River. These wetlands are highly valued as habitat for waterfowl, shorebird and other wildlife, as well as spawning and nursery areas for fish and aquatic life. The river's headwaters drain mostly agricultural lands and feed four major ponds.

Through the years, residents in the watershed have enjoyed the many recreational opportunities provided by the river – boating, swimming and fishing. However, an increasing number of people are complaining about the growing amount of algae proliferating on the ponds as well as the numbers of dead fish. These occurrences are related to the quantity of nutrients in the river.

The activities conducted on a watershed's land area eventually affect the waterway to which the land drains as water flows over and through the land. What happens on the ground has an impact on water quality.

The land use in the watershed is changing. From 1986 to 1997, 30% of the forests of the watershed were lost. Meanwhile, land in residential use almost tripled as acres in agricultural production declined. These changes and the trend of increasing residential development impact water quality.

### Pollution Concerns

The primary pollution concern in the Appoquinimink River is nutrient over-enrichment of nitrogen and phosphorus. These nutrients promote rampant algae growth, which in turn reduces oxygen leading to stress and death of aquatic life, such as fish. This excess of nutrients can be contributed to waterways through nonpoint source pollution and point source pollution. Nonpoint sources of pollution are diffuse, land and air-based and have no well-defined source. Activities with the potential to contribute to nonpoint source pollution include agriculture, forestry, construction and urban runoff, septic systems, home lawn care and other domestic activities. Point sources of pollution include permitted piped discharges of treated wastewater that flow directly into waterways from sources such as municipal and industrial wastewater treatment plants.

### What is a TMDL?

A Total Maximum Daily Load (TMDL) is the maximum amount of a pollutant that a water body can receive without violating water quality standards. The TMDL for the Appoquinimink River requires reduction of nutrient loading of nitrogen and phosphorus to the waters. A TMDL includes pollution from the end of pipes, or point source, as well as nonpoint source. A pollution control strategy is the plan that describes the ways that you reduce the pollutants entering the waterways. These strategies may be actions required by regulation. Because pollution control strategies will reduce nutrients, they will likely impact everyone living in the watershed.

