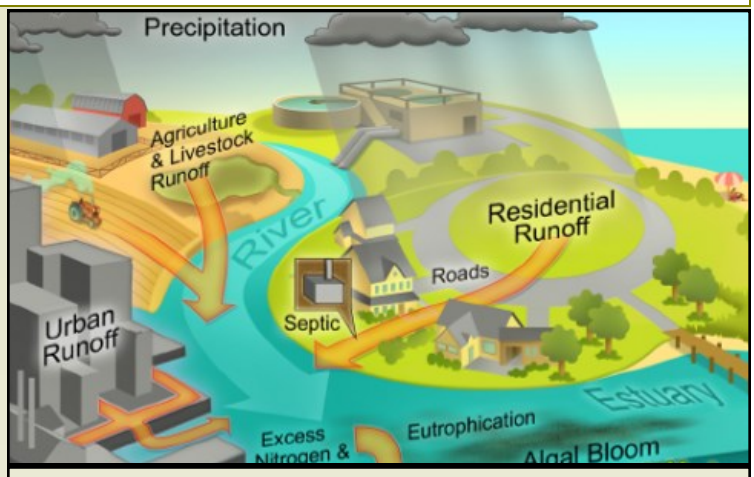
PLANNING PRIMER 15: WATER BODY PROTECTION

Site Specifics - Development In Context

WATER BODY PROTECTION

At the Water's Edge

The boundary between land and water is a critical area for natural development and human history, as well as the health of our waterways. Directly adjacent to the water, this area often has a saturated water table close to the surface, therefore can be susceptible to flooding. Often these water's edge borders contain the highest diversity of wildlife.



Surface water flow example: illustrates common pathways that contaminants can be transported by surface water flow

Waterside plants and forests are crucial to the protection and enhancement of water quality. Many stream corridors and lakeside areas have been cleared of vegetation through historical agricultural and/or development practices. This can lead to increased water pollution downstream, and can also increase flooding. Therefore, retaining and incorporating natural vegetation as a buffer between developed or farmed areas and bodies of water is an important development practice.

Wooded buffer example: the creek that flows toward the river has a 100 foot wooded buffer on both sides for much of its length which provides multiple benefits.

BENEFITS OF WATER BODY PROTECTION

- Percolation and groundwater recharge is improved
- Sediment flow into streams or lakes can be reduced
- Excess nutrients and chemical pollutants are filtered
- Stream bank erosion is reduced
- Nutrients become available for desired plant growth
- Flooding is moderated
- Water temperatures are lowered for habitat quality
- Woody and leafy debris contribute to aquatic habitat
- More visual diversity and beauty
- Better habitat and safe corridors for animals

How to protect streams and other water bodies

Municipalities have significant capacities to protect stream corridors. Zoning can include minimum stream and other water body setback requirements. Many communities require that sensitive lands be subtracted from lot yield calculations. Federal floodplain regulations and state/local wetland protection measures can prevent ill advised development in, and adjacent to, wetlands (New York State regulated wetlands require a 100-foot buffer setback). Conservation or rural friendly subdivisions can be designed to protect water and wildlife resources. Typically, County Soil and Water Conservation Districts and NYS DEC offers technical expertise regarding projects.

"Development in or near environmentally sensitive areas, such as flood plains, wetlands, wildlife habitat, surface waters, aquifer recharge areas, etc. should limit negative impacts on these resources." Growth and Development Guidelines, Jefferson County Planning Board - 2005

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Buffered water body example: large trees near this stream's edge shade the water, which helps maintain dissolved oxygen for successful fish habitats.

Protected water body: communities should determine the needed level of water body protection and enact and implement appropriate regulations.

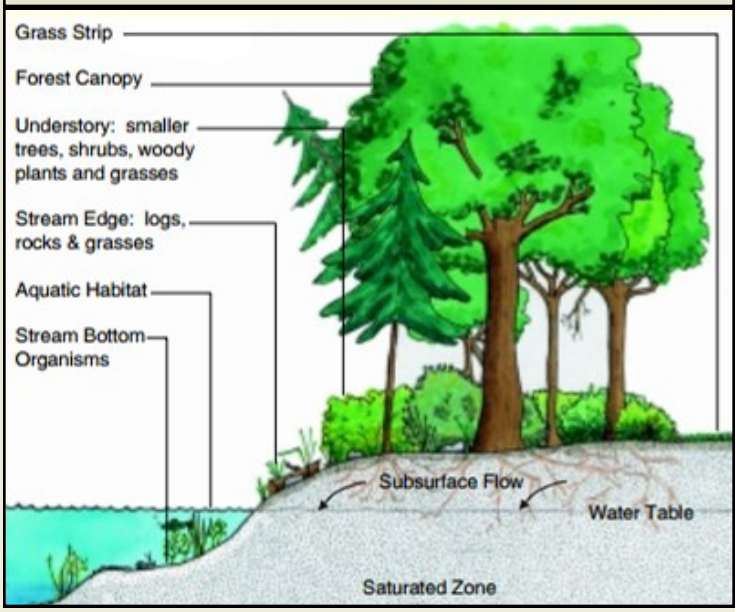

Image: Ducthess County Planning

Buffer strips: are combinations of trees, shrubs, and grasses parallel to a stream, shoreline, or wetland. They provide a physical barrier to protect a water body from disturbance, encroachment and from pollution. Buffer strips may be planted as part of a project or use existing vegetation. By slowing runoff, buffer strips can moderate flooding and prevent stream bank erosion. The vegetation and soils can also strain and filter sediments and some sediment-associated pollutants. Constructed buffer strips are sometimes structured in zones, with trees closest to the stream, followed by one or two rows of shrubs, and a 20 to 24 foot wide grass zone on the outer edge. About 10 to 20 percent removal of solids can occur in such strips.

Filter strips: areas of close growing vegetation (often grasses) on gently sloped land surfaces bordering a surface water body. Filter strips originated as an agricultural practice but are now being used in urban settings. They're intended to capture sheet flow, slowing runoff and allowing for trapping of sediment (and sediment-associated pollutants) and infiltration. The width and length of the filter strip depend on the size and grade of the slope it drains.

WATER BODY PROTECTION GUIDELINES

- Maintain a minimum 60 foot vegetative buffer along stream corridors. Increase widths when:
  - √ Soils are gravelly, sandy, and well drained, or have low phosphorus absorption capacity;
  - √ Slopes are steeper (sometimes even 5 percent)
  - √ Adjacent to sensitive wetlands; or
  - √ Vegetation lacks forest species or a grassy strip
- When possible, implement a three zone buffer design (15 ft. mature tree edge; 60 ft. strip managed trees and shrubs; 20 ft. grass strip) to remove nutrients, sediment, animal-derived organic manner, and pesticides from surface runoff.
- Establish a 100 to 300 foot buffer for wildlife corridors or to set back from septic systems, manure concentrations, or other potential water contaminants.
- Use a wide variety of native trees, shrubs, and plant types.
- Choose species which are tolerant of flooding.
- Prevent channelized storm water flow into the buffer.

Stormwater ponds: (wet ponds) consist of permanent ponds where solids settle during and between storms, and zones of emergent wetland vegetation, where dissolved contaminants are removed through biochemical processes. Wet ponds are usually developed as water features in a community, which can increase the value of adjacent property.

Infiltration basins: are shallow impoundments designed to permit stormwater to infiltrate into the soil. They can be long, narrow, stone filled excavated trenches, 3 to 12 feet deep. Runoff is stored in a basin or in voids between stones in a trench and slowly infiltrates into the soil below, where filtering can remove some pollutants. Infiltration devices should be combined with pre-treatment practices such as swales or sediment basins to limit premature clogging.

PLANNING PRIMERS: compiled by the Jefferson County Planning Office - modeled with permission after the set of *Greenway Guides*, developed by the Dutchess County Department of Planning and Development - 2001
Also based on the Jefferson County Planning Board *Growth and Development Guidelines* - 2005