

THE IMPORTANCE OF EROSION AND SEDIMENT CONTROL

Currently Fluvanna County requires a sediment and erosion plan for every 10,000 square feet of earth that is moved. This quantity is a cumulative amount which means that if LMOA does a project on the golf course that is 5,000 square feet and there is another project at the dam that is 6,000 square feet then the cumulative quantity is 11,000 square feet and we are required to have an E & S plan. Included in this cumulative total are housing starts. Ten thousand square feet is approximately ¼ of an acre which is not very much soil. The State has implemented new guidelines requiring E & S plans for 2500 sq. feet. Currently, Fluvanna is not required to implement these new guidelines because of our distance from the Chesapeake Bay. However, surrounding counties are reviewing these guidelines and raising their standards, so Fluvanna could eventually use these regulations.

Why do we have erosion and sediment control problems at Lake Monticello?

Erosion occurs when soil and solid materials are removed from their natural environment. The removal can be man-made through development and farming, or naturally, via wind, water, weather and animals who make their homes underground. Erosion is due largely in part to the breaking down of the soil, rocks and minerals, but human development has contributed to increased erosion at construction sites. Erosion is also increased when the volume and rate of water flow increases. This happens when natural vegetation is replaced by impervious surfaces such as roofs and pavement.

The Soils at Lake Monticello have been disturbed. During development, trees are often removed to make room for buildings. Removing these trees and shrubs not only removes natural habitats that many animal species rely on, but it also loosens the soil surrounding the roots. Tree roots often strengthen soil areas, preventing land slides, erosion and flash floods. When we remove these plants, the soil will become more impervious, preventing water from soaking in more freely. Good soils have been buried under fill, overturned and moved about by excavations and road construction and exposed to erosion by water. The upper horizons of the soil have been compacted by heavy machinery and trampling. Soil compaction occurs when any weight pushes the soil particles together and reduces the size of the pores in the soil. Compacted soil cannot absorb water so that the water flows across the surface, resulting in more soil erosion. Stripped of its protective vegetation, soil is removed by water faster than it can be formed. Stormwater runoff, excess water which cannot be absorbed, increases risks for erosion, especially if the amount of runoff is due to soil disturbances from development.

What are other impacts of erosion?

Erosion is very evident here at the lake. One can see it when roots of trees are exposed or bare ground is visible. Years of covering the bare earth with mulch, leaves, and straw have caused much soil erosion. While some think that mulch, leaves, and straw are groundcover, they are not ground cover and they do not prevent erosion, they make the situation worse. Planting grasses, plants, and trees prevents erosion. However, it is very difficult to grow these items because there is little topsoil – it has been carried away. Furthermore, with the loss of topsoil comes the loss of nutrients needed by plants and trees to grow. The soil of an oak forest such as the one here at the Lake typically has a pH of 3.5 – 4.5 which is fairly acidic. Acidic soils lead to leaching of nutrients in soils and will decrease the pool of calcium in the soil complex by as much as 50%.

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Calcium is the main component of soil that keeps soil from becoming too acidic. Acid soils have an increased concentration of aluminum and reduced nutrient availability, as well as reducing the storage of calcium in the soil, and its availability for root uptake. Acid soils can inhibit the activity of fungi and bacteria in the soil thereby reducing the rate of humus production, mineralization and fixation of nutrients. When soils are acidic, phosphorus and nitrogen levels decrease in the soil and uptake of these nutrients by the roots of plants decreases. Therefore our plants and trees aren't getting the nutrients they need which leaves them susceptible to disease and weather. We need to stop the erosion process.

How can we stop the erosion?

- One of the best things that LMOA and residents can do is plant grass, groundcover, shrubs and trees.
- Stop using mulch as groundcover; use it to allow vegetation to take hold in the soil.
- Place rip rap under laid with ground cloth in ditches or areas where water moves quickly during a rain event.
- Plant rain gardens in low areas where water tends to pool.
- Demand the county enforce guidelines for construction sites that prevent erosion.
- Preserve as many trees as possible throughout the community, both on LMOA and private property.

LMOA recently began a ditch and drainage project in an area where the runoff is significant and creates problems for roads and homeowners. (This site covers drainage into the stream restoration done several years ago.) LMOA needs to continue with the ditch and drainage work that has been started. There are many areas that need ditch and drainage work to prevent erosion. Not only does LMOA need to prevent erosion, but we need to educate the residents on the best practices of preventing erosion. If keeping sediment out of our lake is important to LMOA, the Association needs to set a good example for the homeowners. We have an excellent opportunity to initiate some programs that will not only help stop erosion but will replace some of the soil that has been lost. This could be accomplished with composting of leaves and using the sediments, if found suitable, from the dredging program. By using smart land-use development, implementing environmentally sound methods to prevent loss of soil and vegetation, man-made erosion can be minimized, therefore protecting our community and natural habitats we all enjoy.

It is for these reasons that I believe we should not spend money on another bulkhead at the present time. We have a bulkhead that works effectively and the cost of adding another bulkhead at the expense of other much needed projects isn't justified. The dredging program consumes a substantial portion of the Lake Health Budget and I believe that the dredging program can be effective with the bulkhead already in place. We need to work on sediment and erosion control before adding another bulkhead.