



September 9th, 2020

Dear Mr. Lombardi (Jack),

After having viewed the Western Trail HOA Pond/Lake, it was evident that there are strong characteristics of shoreline erosion on over 2/3rds of the property. The following are some of the reasons for this erosion issue along with some competing solutions to assist your HOA in re-establishing the original shoreline – per the Western Trail HOA Engineer’s Site Development Plan and in conjunction with the rules & regulations from the Village of Manhattan(s) Public Works Department.

The movement of water causes shoreline erosion. You can see this in rivers that have carved their own paths through erosion. Erosion does not only happen with crashing waves or a flowing river though, even the slightest of movement will cause erosion. With shoreline erosion in lakes, the lapping of water at the edges is still caused by waves. Any agitation of water creates wave action, even if it is difficult to see. Wind and movement in open bodies of water increase wave action which in turn disturbs the soils along the shoreline. This constant motion causes a continuous effect of whittling away at the shoreline’s edge. A lot of shoreline erosion also occurs at the waterline and below. It cuts away at the earth and leaves overhanging edges behind. These edges eventually become unstable and will collapse without warning. While a collapsing edge gives the impression that erosion happens quickly, the undercutting of the shoreline has been occurring for a long time, underneath the water’s surface.

Many communities have established easements around ponds. Most commonly the easement extends up the bank 10 to 15 feet from the normal water line. In some cases this easement is merely for maintenance, and what goes on in the easement is determined by the HOA's bylaws. In other instances, the pond is owned/maintained by a municipality rather than an HOA, so it is important for homeowners to know the rules about activities in the easement and who has authority over those activities. Activities such as planting plants or building bulkheads may be restricted by the terms of the easement, and homeowners may be liable for damages and repairs for unpermitted activities in the easement. Nevertheless, the terms of easements can be changed if the community feels the need to do so. For HOAs, this may mean amending the bylaws to allow for shoreline plantings or bulkheads.

Projects that alter a lakebed or riverbed or involve removing or installing aquatic plants may require a permit from the IL DNR. Projects that alter the shoreline above the ordinary high-water level may require additional permits from the county, township, watershed district, or city. Contact your County



Planning and Zoning office to find out about additional permit requirements, and to get assistance in planning your shoreline project.

Avoiding construction within 100 feet of the shoreline or the edge of nearshore bluffs is one of the best recommendations when it comes to preventing shoreline erosion. The Western Trail HOA has circumvented this by placing piers, docks, decks and other apparatuses in/on/around the water's edge. After an engineering plan review of the Western Trail HOA development, this appears to be marked out for "naturalization" and not permitted.

When assessing which method of shoreline erosion protection to use, you will need to consider several factors. These include the typical wave action, the shoreline composition, and the desired results. You should also consider the height of the shoreline as sloping shorelines have different needs to bluffs and cliffs. The most common way to manage shorelines in stormwater ponds is with turf grass that is mowed to the water's edge. This strategy provides very little structural integrity to the bank. Turf grass is not an aquatic plant, and its roots do not grow well in saturated soils. Turf grass will not send roots down below the water surface where the most significant erosion is taking place. As a result, pond banks with grass mowed to the edge are almost certain to undercut with time.

Wetland plants established on the shoreline are a preferred method for stabilizing pond banks, and they provide many benefits beyond erosion prevention. The deep, robust root systems of these plants bind soils in the area where most of the erosion is occurring, just below the water surface. Unlike turf grass, these plants thrive in saturated soils. The main advantage of planting shoreline plants is that they provide other services such as filtering pollutants in runoff, absorbing nutrients that grow algae, trapping sediment and yard debris, deter nuisance wildlife, provide cover and forage for fish and invertebrates, and dampen wind and wave energy.

Vegetation is usually a naturally occurring way of preventing shoreline erosion. Maintain a protective layer of trees, shrubs and ground vegetation on the slope. Plant roots will both hold the soil in place and absorb excess moisture that can trigger slumping. Plants, from grass to trees, hold the shoreline soil in place using their root systems.

If your shoreland is undisturbed, leaving the native plants in place is often the best and least expensive protection against erosion. A healthy native plant community will protect the soil. The above-ground plant material will slow runoff, encouraging runoff to soak into the soil rather than pick up soil and carry it into lakes and rivers. Below ground, a fine network of plant roots hold soil particles in place while stout roots help stabilize steep slopes.

Deep-rooted native plants growing in the water and the wet areas along the shore protect shorelines from wave and ice erosion. Many property owners attempt to maintain turf grass along their shoreline and remove aquatic vegetation for swimming and other water activities. Turf grass does not grow well in wet areas and its shallow root system will not protect shorelines. As mentioned above, once aquatic plants are removed, the exposed shoreline receives direct impact from waves and ice and may begin to erode. Restoring your shoreline with native plants that have deep, extensive root systems will minimize erosion damage to your shoreline and provide fish and wildlife habitat, too.

At this point, it is of strong recommendation that the Western Trail HOA move forward to re-establish their shoreline around the HOA Pond/Lake. Per your HOA site development plans – docks, piers, decks

and other apparatuses, should be removed and the pond shoreline replanted with the approved "natural prairie seed mix. This is a mix of forbes that promote deep root growth and will slow/reduce any further shoreline erosion. Once planted, this seed mix should be allowed to grow to a height of 24' – 36" before any vegetation management measures are utilized moving forward.

American Veteran Industries & Engineering recommends that the current mud/land "shelves" be graded back out and that additional waterborne vegetations be installed. AVI/AVE also highly recommends stabilizing the shoreline with riprap or other large grade stone to assist in the slowing/reduction of erosion around the pond/lake. While this method may be more costly to the HOA, this is the best method to immediately stabilize the existing shoreline. This rock stabilization, in conjunction with aquatic plantings and shoreline prairie seed naturalization planting will allow the HOA to enjoy their pond/lake for years to come.

Feel free to contact me with any further questions that you may have.

Thank you.

-Aaron Jones.
President