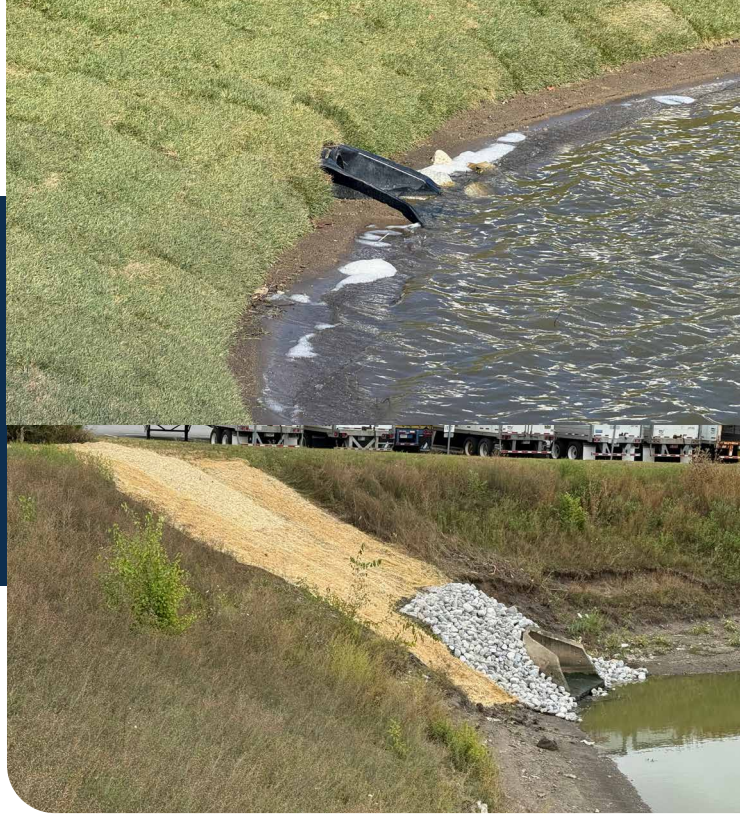


FINDLAY, OH

FACILITY POND SHORELINE STABILIZATION



EROSION CHALLENGES AT THE FACILITY

Over multiple years, erosion on this distribution site led to extensive damage to the pond's shoreline. Continual shifting of the retention pond water level combined with parking lot runoff resulted in significant erosion across the property. AQUALIS was called to address the pond shoreline as well as a dissipator pad on the other side of the property.

IDENTIFYING THE SOURCE OF EROSION

During an inspection, the facility manager noted erosion had become severe along the slope, shoreline and fence line of the pond area. Along the shoreline, erosion was particularly severe, spanning eight to twelve inches from the water line in some areas. Erosion occurs as water runs over soil, loosening the sediment and depositing it elsewhere, in this case, in the bottom of the pond. Failure to address this erosion will eventually result in sediment accumulation at the bottom of the pond that will require dredging.

RESTORING STORMWATER FLOW

Additionally, the two headwalls that inlet to the pond had disconnected. As stormwater runs off the parking lot, it is collected by catch basins that later deposit into the pond via the headwalls. Because these headwalls had separated, the runoff rushed through the cracks in the pipe, exacerbating them.

On the other side of the parking lot, the dissipater pad along the edge of the property was also suffering from erosion. AQUALIS was called to stabilize this area and repair the entire property back to original design.

AQUALIS first repaired the damaged headwalls. The fracture structures were removed so the area could be excavated and properly graded. Then the headwalls were replaced and sealed to the existing conveyance lines. Joints were sealed with hydraulic cement and mortar. Riprap was then placed around the headwalls to stabilize the areas.

STABILIZING THE POND SHORELINE

To repair the large sections of erosion along the shoreline, AQUALIS first regraded the slope of the pond. A mini excavator was brought in to stabilize the shoreline, adding fill where needed. The team chose to use patented ShoreSOX technology to stabilize the severe erosion along the water's edge. To install the ShoreSOX material, the team first hammered stakes into the ground to tie the material to. The material is rolled out half in the water and half on the bank. The edge of the

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material on the ground is then tied to the stakes, anchoring the system to the ground. The material is then folded in half so that it lays on top of the shoreline. Fill is then pumped into the folded material, creating a strong barrier. The ShoreSOX can then be tamped to the appropriate grade. The material now acts as a barrier against the changing water levels and rushing runoff. Sod can then be installed on top of the material, resembling a typical grassed shoreline.

In conjunction with the ShoreSOX, riprap was placed along the shoreline as aligned with the original design.

ADDRESSING SITEWIDE EROSION

The erosion on the side of the property, away from the pond was then addressed. The small dissipater pad was excavated and graded appropriately. Then riprap was placed. Addressing erosion across the entire property is essential to ensuring the repair is effective. If the pond was appropriately repaired without addressing erosion in the parking lot, the excess sediment from the parking lot would still accumulate in the pond and a dredge would still be necessary.

Once the repairs were complete, the area could be returned to full functionality. Due to the equipment, grassed areas of the property had been disturbed. Hydroseed compatible with the soil type was sprayed across the area to promote vegetation growth to combat further erosion.

RESULTS AND LONG-TERM PERFORMANCE

The completed repairs stabilized the pond shoreline and restored the stormwater system to its original design intent. Repaired and sealed headwalls safely transport parking lot runoff into the pond, eliminating soil loss caused by separated connections and uncontrolled flows.

Shoreline erosion was mitigated through strategic riprap placement, and the installation of ShoreSOX technology. This combined approach protects the pond from fluctuating water levels and high-velocity runoff while maintaining a natural, grassed shoreline. The repairs preserve the pond's storage capacity and significantly reduce the risk of future sediment accumulation and costly dredging.

Erosion beyond the pond was also addressed by reconstructing the dissipater pad and stabilizing surrounding areas, preventing sediment from migrating across the site. Hydroseeding restored disturbed areas and promotes long-term vegetation growth for continued erosion control.

By addressing erosion across the entire property, AQUALIS delivered a comprehensive, long-term solution that improves stormwater performance, reduces maintenance needs, and protects the integrity of the site.