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Innovations

Stormwater Pond Turbidity

Managing Turbidity on a Regional Stormwater Pond Using Polymer Technology, Central Florida

A large Central Florida development began construction of a regional stormwater pond to provide treatment for past, current, and future projects. The 50-acre pond began construction in 2025 with the intent of becoming operational in late 2026. The site was completely surrounded by wetlands and drainage canals that were heavily monitored by the local regulatory agencies. Soils were a mix of various sands, muck, and a very fine clay. These particular clays were historically problematic and difficult to treat via chemical means.

Due to a variety of influences from weather, economics, and planning challenges, work fell behind schedule. This made for a near worst-case scenario: the need to treat a maximum water volume during the rainy season. Initial site visits by APS personnel provided recommendations for turbidity management and treatment of approximately five million gallons of water for the first subbasin pumping.

Site jar testing indicated that a duplex Floc Log formulation could reduce turbidity from 500 NTUs to 23 NTUs (95% reduction). Using several TurboFloc Systems connected in series would allow the water to be treated and pumped offsite in less than a week.



The 50-acre regional stormwater pond in Central Florida.



Jar test samples and turbidity meter used on site.

However, several months of delays changed the volume to approximately **twenty-seven million gallons** for treatment at the height of the rainy season. Tropical storm and hurricane season began during this time period too, and there was much concern over the possibility of a tropical event flooding the site. This five-fold increase necessitated recommending a two-step treatment process and the use of equipment that the site contractor did not have. Discharge had to meet a limit of **30 NTUs**.

Step 1: Whole-basin treatment with Pond Clear Plus

Whole-basin treatments were accomplished using Pond Clear Plus (PCP) as a surface application. This was one of the largest volume water treatments using PCP to date. The increased volume and depth of the pond water made PCP less effective than desired; site jar tests could only produce a 75% turbidity reduction, so other measures would have to be added.

Dosing calculations showed it would take 12,500 lb of PCP for the calculated volume of water, over 250 bags. Pond Clear Plus is dosed at a ratio of one part product to ten parts water (1:10). Two large hydroseed trucks from out of state were contracted for their ability to hold more than 3,000 gallons of water per application. Each truck could apply 300 lb of PCP per tank load, for a 600 lb PCP application per group tank load.

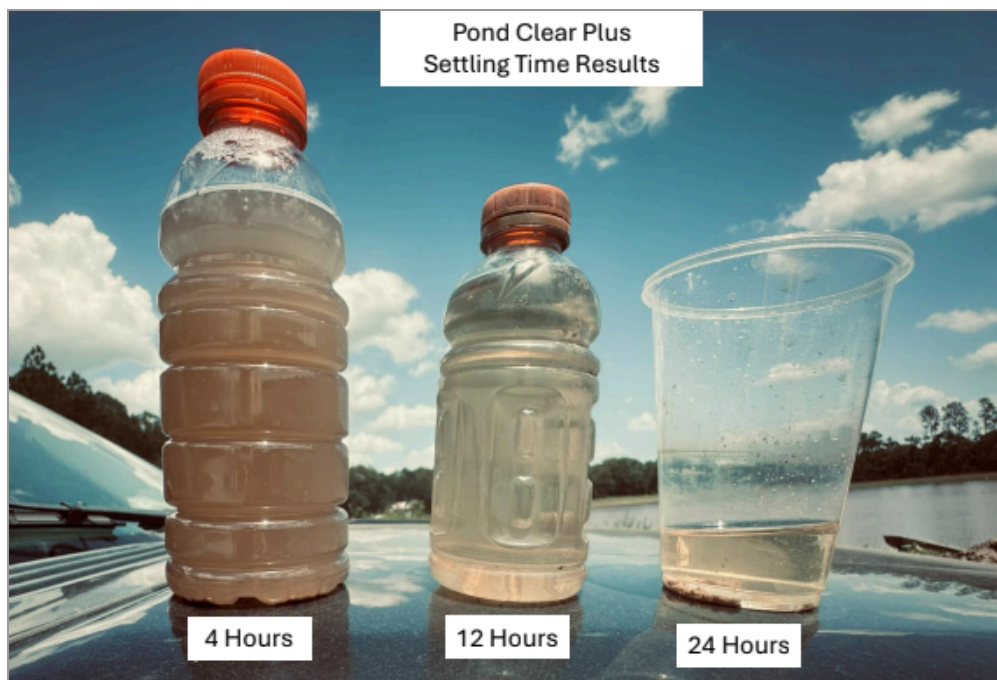


One of the 3,000+ gallon hydroseed trucks used to apply Pond Clear Plus.

Application took two days to complete, and turbidity dropped from 500 NTUs to around **110 NTUs (78% reduction)**. Due to the size of the pond, the middle area could not be adequately reached by the spray equipment on the trucks, so turbidity would still need to be reduced further before reaching the 30 NTU discharge limit.

Field observations, days 1 and 2:

- Light to steady wind kept water agitated at the surface, and floc remained in the water column
- The downwind shore settled quickly; shallow areas had the clearest water
- 24 hours after the final application, turbidity varied: about 100 NTUs on the windward side and 20–30 NTUs on the downwind side



Pond Clear Plus settling time results at 4, 12 and 24 hours (field samples).

Step 2: In-pipe treatment with the TurboFloc System



TurboFloc in-pipe treatment before discharge.

The second stage of turbidity treatment used in-pipe mixing technology via TurboFloc System units. Six of these were connected in series to dose the turbid water and capture the particulate on jute matting and in small pool areas before discharge.

The contractor and regulatory agencies performed constant monitoring to ensure that the discharge stayed below 30 NTUs. The TurboFloc system routinely discharged water at less than 25 NTUs — **22 NTUs** in practice.

Results

27M gal
treated

78%
after Pond Clear Plus
(500 → ~110 NTU)

22 NTU
discharge
(limit 30 NTU)

96%
total turbidity
reduction

Polymer technology was successful in providing turbidity reduction for a large volume of water surrounded by sensitive wetland areas. Turbidity was reduced by 96% (500 NTUs to 22 NTUs). The two-part combination treatment using Pond Clear Plus and the TurboFloc dosing system got the project back on schedule during the peak rainfall and tropical storm season. As the water cleared, wildlife became more visible in and around the pond.

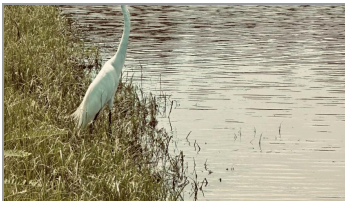
Site: Central Florida, 50-acre regional stormwater pond

Project: Rainy-season treatment of ~27 million gallons to a 30 NTU discharge limit

Products: Pond Clear Plus (12,500 lb, 250+ bags), TurboFloc System, Floc Logs (site jar testing)

When: Construction began 2025; Pond Clear Plus applied over two days

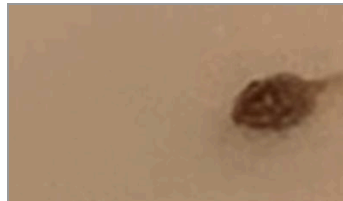
Project gallery



Great egret



American alligator



Tadpole



Settling sample



Hydroseed truck spray



Treated pond



Surface application

Case study by Eddie Snell, Applied Polymer Systems, Inc., 2026.

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