

Alpha NutriFilter

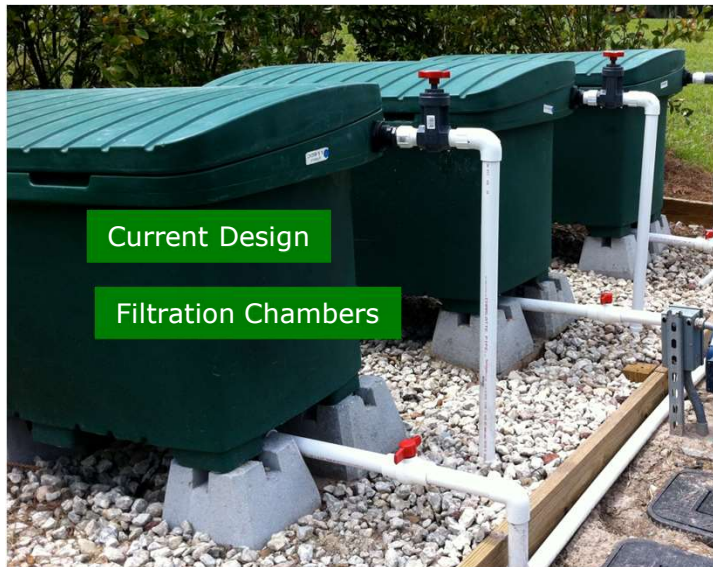
Nutrient Filtration System

Current Design



All Natural Filter Media
Removes Phosphorus

Alpha NutriFilter nutrient filtration system assists in pond and stream protection, pond, stream and watershed restoration projects. The system captures phosphorus with a design based on an innovative "side-stream" filtration system that utilizes a proprietary phosphorus removal filtration media.



Current Design

Filtration Chambers

The Alpha NutriFilter system utilizes a **chemical free** phosphorus removal design. The Alpha NutriFilter system is both cost-effective and compact, capturing phosphorus and other pollutants as well.

The system includes modular filter chambers and pump that are installed at the edge of the pond.

The system functions like a **large aquarium filter**. The water from the pond is pumped directly into the filtration chambers that contain a number of small and removable filter pouches.



PhosFilter Filtration Media Pouches



Alpha NutriFilter Nutrient Filtration System



The pouches contain a patented filtration media composed of natural, environmentally friendly elements. The active filter media inside the replaceable pouches can be specified to target and remove specific pollutants that may be unique to the chemical composition of the pond or pond. An assortment of "Blends" is available to capture pollutants as required. The Alpha NutriFilter System is designed to restore a pond to a state of vibrant health. Our system will assist in meeting the TMDL Numeric Nutrient Criteria standards.

Previous Installations of Alpha NutriFilter

South Florida Cattle Ranch - Platt Branch Restoration

Testing by the South Florida Water Management District at this Florida cattle ranch showed a **phosphorous removal rate that exceeded 90%**.



Lazy-S ranch

The purpose of this 2004, two-year Alpha NutriFilter field trial was to determine the quantity and deployment geometry for the Alpha NutriFilter technology to significantly reduce the phosphorus levels in the runoff from the cattle operation.

The ranch was approximately two square miles in size. Water levels and discharge were controlled by small ditches connected to primary ditches, which in turn were controlled by a pump system.

Alpha NutriFilter Nutrient Filtration System

South Florida Cattle Ranch - Platt Branch Restoration

Testing by the South Florida Water Management District at this Florida cattle ranch showed a **phosphorous removal rate that exceeded 90%**.

Lazy-S Ranch Drainage Ditch previously flowed directly into Platt Creek, ultimately flowing into Lake Okeechobee



Mr. Eugene Stokes, the owner, operated the pump when necessary discharging water off property. The discharge exceeded recommended concentrations. The Lake Okeechobee Phosphorus Source Control Grant program administered by the District was the mechanism for improvements at this site.

Water from the main agricultural ditch was originally discharged via a pump on an as-needed basis.

Reservoir Pond held stormwater prior to treatment in the NutriFilter ponds



The designed modification re-directed the discharge to a 2-acre reservoir, and finally pumped into two beds lined with Alpha NutriFilter filtration media. The water percolated through the media and discharged downstream via an underdrain system.

Alpha NutriFilter Nutrient Filtration System

South Florida Cattle Ranch - Platt Branch Restoration



Alpha NutriFilter media applied on top of drainage pipes

Alpha NutriFilter media is installed on top of the drainage pipes.

Phosphorus is removed as the stormwater passes through the media.

Clean water flows into the Platt Branch.



East Pond Alpha NutriFilter pond construction



Alpha NutriFilter Nutrient Filtration System

South Florida Cattle Ranch - Platt Branch Restoration

Sump Pump

Stormwater is pumped from the Ranch swales/sump into the Reservoir Pond. Water then is gravity fed into either the East or West Alpha NutriFilter Pond.



Alpha NutriFilter Pond

Water levels in the two ponds were periodically drawn down for cleaning/debris removal.

Over 90% of the phosphorus has been removed.

Alpha NutriFilter Nutrient Filtration System

South Florida Cattle Ranch - Platt Branch Restoration



Discharge Pipe

Clean stormwater flows into Platt Branch after passing through the Alpha NutriFilter media in the NutriFilter Pond.

Over 90% of the phosphorus has been removed.

Over 150 pounds of phosphorus was removed in two seasons based on calculation from the TP measurements before and after the media filters.



Platt Branch

Alpha NutriFilter Nutrient Filtration System

Chandler Hammock Slough – Stormwater Runoff Remediation



In 2003, Madrid Engineering designed and constructed a Alpha NutriFilter nutrient filtration system that was sponsored by the South Florida Water Management District under the Lake Okeechobee Phosphorus Source Control Grant Program-Release 2.

The nutrient filtration system was constructed for the purpose of water quality improvement of runoff that flows through Chandler Hammock Slough from approximately four-square miles of agricultural lands.

The water treatment employed a wetland-based detention system for the capture and filtration of the water that flowed through Chandler Hammock Slough for the removal of nutrient pollutants.



Alpha NutriFilter Nutrient Filtration System

Chandler Hammock Slough – Stormwater Runoff Remediation



The system design consisted of the construction of a Alpha NutriFilter media bed totaling 0.2 acre.

Additionally, two existing 24-inch pipes and one 36-inch pipe were raised three feet to retain the water so that it will pass through the filter.

The pipes also acted as emergency spillways. Chandler Slough eventually flows into Taylor Creek, approximately two miles down stream.



Alpha NutriFilter Nutrient Filtration System

Chandler Hammock Slough – Stormwater Runoff Remediation

Trial 1 – The “Burrito” – Alpha NutriFilter was wrapped in geotextile and laid across a shallow slough. Runoff water passed through the filter before discharging from the site. This method was moderately successful as a first trial.

