

# SAGG POND RESTORATION FUND



## INTRODUCTION

Groundwater nitrogen is derived from septic, fertilizer, and atmospheric inputs and is currently entering Sagg Pond through submarine groundwater discharge (SGD) and posing a threat to water quality. Cornell Cooperative Extension in collaboration with CLEAR have been monitoring Sagg Pond groundwater, porewater, and surface water since 2021. We prioritized shoreline areas and are pairing them with the best remedy. Several areas along the northeastern shoreline have already been characterized and are ideal for PRBs. We anticipate several western shoreline areas will be suitable as well. The first pilot PRB was installed in Oct. 2023 and is reducing nitrate from 5 mg N/L to below 2 mg N/L on average. The current project involves lab and field work to develop a method for PRB installation which is efficient at nitrate removal, cost-effective, and causes minimal disturbance.

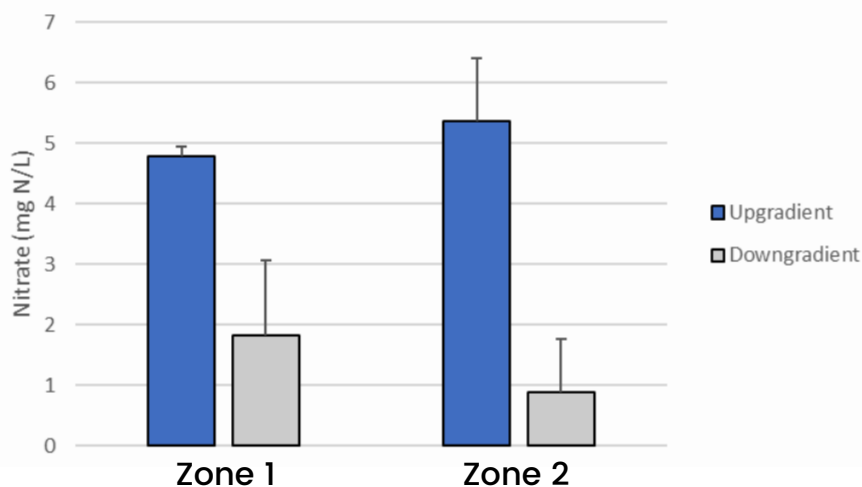
## STAY INFORMED

*We frequently connect with donors and concerned citizens. We provide updates via Zoom and our presentations are archived. See contact information on the back to receive email communication and Zoom links.*

## GET INVOLVED

*CCE's groundwater intern has been helping with the research this summer. Donations support remediation installation, research, and ongoing stewardship of Sagg Pond which provide immediate water quality benefits.*

Sagg Pond pilot PRB performance monitoring



## INNOVATE

We determine which methods and materials work best in the lab to inform our field-scale applied research. We are studying a soil amendment for use in PRBs which is an EPA-approved vegetable oil. The oil adheres to soil grains and supports a microbial community which naturally converts nitrate (nutrient & drinking water contaminant) to nitrogen gas (harmless gas we breathe).

## REMEDiate

We've been monitoring the pilot PRB performance. Results are from groundwater wells upgradient (untreated) and downgradient (treated). Shown are the average nitrate  $\pm$  standard deviation of 4 sampling events collected from the center of identical PRB zones.





## PROJECT FAQs

### **What steps are we taking to improve water quality?**

We recently installed and are monitoring a pilot PRB and received a community preservation fund grant to install a full-scale PRB north of Bridge Lane on the eastern shoreline. We are working on the DEC permit application. We will also be doing site characterization on Sagg Pond western shoreline.

### **What remediation are we planning to implement?**

Permeable Reactive Barriers (PRBs) installed at key areas along the shoreline will intercept and remediate contaminated groundwater before it enters Sagg Pond and improve water quality.

### **How do PRBs work?**

PRBs are installed entirely below ground with no aboveground structures. They act like a sponge for groundwater and allow naturally occurring microbes to consume an organic carbon source like woodchips or vegetable oil. They treat and remove nitrogen, the groundwater nutrient and contaminant of concern, which is derived from sewage, fertilizers, and the atmosphere.

### **Why Sagg Pond?**

The shape of Sagg Pond (i.e. extensive shoreline and shallow water depth), the surrounding land use, the magnitude of the groundwater nitrogen loading, and the form of nitrogen (nitrate) make it ideal for PRB implementation. In 2021 Sagg Pond water had 2 to 16x higher nitrogen concentration than generally accepted as healthy. Current and anticipated threats are exacerbating the harmful effects of nitrogen pollution, putting pond wildlife and biodiversity at risk.

### **What can you do to help?**

Property owners along the shoreline can allow Cornell Cooperative Extension to do site characterization work to determine if a PRB is viable and to install one if necessary. Donations to the Sagg Pond Restoration Fund will go directly towards researching and installing remediation and providing water quality benefits.

### **Who is currently funding this effort?**

Privately raised funds through the Peconic Land Trust act as a match for publicly available money through the Town of Southampton Community Preservation Fund (CPF). On previous applications we've received 100% matching funds using this structure which makes every privately raised dollar go further.

## CONTACT US

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