

My current role in an environmental *regulatory* agency limits my environmental *advocacy* ability beyond the scope of the existing regulatory framework. The area where I see some flexibility to advocate for Nature-Based Solutions (NbS) is during personal conversations with property owners where there is an educational opportunity. This is why effective communication in all sustainability fields is so important.

Standing on somebody else's property while they express eagerness for tree removal in order to have a clear view of a river, for example, is an uncomfortable situation that must be responded to by explaining that vegetation removal will likely cause significant repercussions, including that of their property eroding away. This is a situation that I frequently encounter. In my regulatory role, I advocate for living shorelines as a NbS by informing property owners of their many benefits. Below are photos I have gathered during work inspections in Hillsborough County, FL and their relation to NbS.



Taken at Ulele Spring in Downtown Tampa. Although this natural spring has been altered by pumping and concrete hardening, it has undergone restoration efforts with native plantings in addition to the bulkhead and unconsolidated rock. Manatees more frequently visit the spring following its restoration. This site is an educational model for *living shorelines*.

Additional information on Ulele Spring can be found here: <https://www.fishhabitat.org/waters-to-watch/detail/u-lele-springs-hillsborough-river-florida>



This site is also a freshwater environment but it is on a lake. Much of the wake action affecting lake sites comes from personal watercraft vessels, like jet-skis, in addition to boats. The owner of this site removed the introduced and *nuisance* vegetation, including brazilian pepper and torpedo grass, and began planting favorable species like pickerelweed to attenuate wave energy. They also left the cypress trees undisturbed. While more plantings may be necessary, time alone may allow for vegetation recruitment for further bank protection.

Living Shorelines as a NbS advances the UN's SDGs: #11 Sustainable Cities & Communities, #13 Climate Action, #15 Life on Land, #6 Clean Water & Sanitation



Grey infrastructure, like seawalls, have their place, especially in artificial man-made canals such as the one photographed here in the Westshore area. However, the artificial canal is connected to Tampa Bay, so any potential issue stemming from the upland property can easily wash into the bay. For example, lawn clippings, heavy in synthetic fertilizers, can be seen floating just waterward of the seawall. While the lawn and the use of chemicals are the main issues, this shoreline design lacking a buffer other than a concrete wall is complicit in Bay's eutrophication.



Another vulnerability of grey infrastructure is that it does not traditionally have any mechanisms for adaptation or flexibility, and it has a definite lifespan. The seawall in this photograph likely failed due to a combination of wave action, storm surge, and outward pressure from the upland. There was no vegetation on the waterside of the wall to help break wave action, nor was there vegetation on the landward side of the wall to help stabilize soils.

In 2021 I attended a Florida Fish & Wildlife led Living Shoreline training designed for marine contractors in which a top “selling point” for native shorelines is their *longevity*. The industry estimates that a poorly built or maintained seawall lasts an average of 20 years, with the best-case scenario estimated at 30–40 years. The grey infrastructure estimated lifespans do not meet the widely understood timeframe needed for Sustainability, where the ability to protect a shoreline is not only for now but is required indefinitely for future generations. While living shorelines need minor maintenance in the sense of occasional replanting and reorganizing minimal hardening (like shells or oyster bags), their purpose is to never be replaced. Their design is such that the selected plants, and minimal hardening if desired, grow strategically and intentionally in a beneficial way that prevents erosion, improves water quality, and is resilient in the face of disturbance events.

Living Shorelines as Nature-based Solutions for Advancement in the UN's SDGs

SDG #11 Sustainable Cities & Communities

Grey infrastructure alone promotes transferring of wave energy, instead of energy dissipation, and thus erosion. Hardened shorelines make erosion a problem especially for areas with only natural shorelines. The finite lifespans of seawalls and bulkheads can lead to collapsed infrastructure and significant monetary repair and cleanup costs.

SDG #13 Climate Action

Replacing grey spaces with green spaces improves thermal regulation. Furthermore, varying wetland environments are meaningful carbon sequestration tools. Living shorelines thus serve as enhanced or created wetland environments that contribute as carbon sinks.



Source: <https://www.wetlands.org/>

SDG #15 Life on Land

Replacement of grey spaces with green spaces through living shorelines promotes biodiversity. Native plants create critical habitats for fauna contributing to ecosystem resilience. Living shorelines also serve as protection buffers for the habitats and inhabitants upland thereof, including humans.

SDG #6 Clean Water & Sanitation

Living shorelines double as protection buffers on the waterward side as well. They help improve water quality by filtering, regulating water flow, and enhancing water availability. These services are especially key for waterbodies that are directly connected to natural and critical water sources.