

TOWN OF PALM BEACH

Information for Town Council Meeting on: September 10, 2024

TO: Mayor and Town Council

VIA: Kirk W. Blouin, Town Manager

FROM: H. Paul Brazil, P.E., Director of Public Works

RE: Stormwater Quality Improvement Report

DATE: July 18, 2024

STAFF RECOMMENDATION

Town staff recommends that construction of measures to reduce nutrient concentrations be considered on a case-by-case basis when adjacent maintenance or rehabilitation is planned for the existing stormwater infrastructure. Chen Moore and Associates will provide a presentation of potential measures for reducing nutrient concentrations in stormwater discharges from the Town's pump stations.

GENERAL INFORMATION

Per Town Council direction, Town staff investigated opportunities to improve the quality of stormwater runoff being discharged by the Town's pump stations. In April of 2023, Chen Moore and Associates was issued a Purchase Order to perform an analysis of options that would work with the Town's existing drainage system to achieve the goal of improving water quality. After presenting these options to Public Works staff, Chen Moore and Associates was tasked with developing costs for the implementation of each option. The following is a description of each option. Chen Moore and Associates will attend the September Town Council meeting to share a presentation which will provide a detailed overview of each option.

New Infrastructure: Baffle Boxes

Baffle boxes are the largest treatment device that was evaluated as a potential solution for stormwater treatment in the Town. Water collected from the inlet drains enters the baffle box before being pumped and discharged into the Lake Worth Lagoon. When the untreated water enters the baffle box, it drains through a metal screen system that is suspended over the static water level and collects solids such as trash and debris. The baffle box is designed with multiple chambers that reduce the turbulence of the water and allow sediments to settle onto the bottom of the device. Baffle box sizing varies, but a typical structure would be 4-ft x 8-ft at the smallest and 10-ft x 20-ft at the largest. To install a baffle box of this size underneath the roadway upstream of existing pump stations, will be a relatively large construction project.

New Infrastructure: Vortex Separator

Vortex separators are the mid-size treatment device that was considered for use in the Town. Vortex separators accept water from inlet pipes into the manhole, then the design of the device encourages water to flow in a vortex movement, promoting separation of sediment and debris onto the floor of the chamber. Treated water exits the chamber over a baffle wall and out the outlet pipe. Vortex separators would be used in locations where baffle boxes cannot fit and would be sized to replace multiple existing stormwater manholes upstream of existing pump stations.

New Infrastructure: Catch Basin Filters

Catch basin inlet filters are the smallest treatment device considered for use within the Town. These filters would be retrofitted to existing catch basin inlets. Existing grates would be removed and replaced with a box or bag that catches organic materials or other debris that cannot fit through the spaces between the bars or bags. This treatment option would require the smallest amount of construction and upfront cost, but the greatest amount of maintenance. Inlet filters also have the lowest lifespan, with an estimated replacement time of once every 5 (five) years.

New Infrastructure: Combination of Baffle Boxes and Vortex Separators

Due to maintenance costs and operational concerns, the analysis of new infrastructure assumed only baffle boxes and vortex separators would be implemented. Site visits were performed to each stormwater pump station and a conceptual schematic was prepared for implementation of a combination of baffle boxes and/or vortex separators as determined by the site geometry. The initial estimated construction cost for constructing the proposed improvements at all thirteen (13) proposed sites was \$9.5M. The estimated increase in maintenance costs for the new facilities would vary based on frequency of cleaning and monitoring performance but estimated at \$12,500 per year.

Non-structural Improvements

Town Staff also investigated the potential benefits of increasing existing BMPs to realize additional water quality benefits without incurring construction costs. Although an increase in street sweeping or cleaning cycles for stormwater catch basins would have an incremental impact, the current operations meet or exceed standard maintenance practices and, as such, any increased frequency in maintenance would have diminishing returns on water quality. In effect, as street sweeping frequency increases, there is less debris to capture.

FUNDING/FISCAL IMPACT

No funding has been dedicated to implementing these improvements as this is conceptual. The conceptual cost of construction for the recommended potential improvements is \$9.5M. This cost is based on conceptual sketches only and does not reflect potential increases that might be discovered upon detailed field investigations of existing utilities or adverse site conditions determined during detailed engineering design.

Attachments

cc: Jason Debrincat, P.E., Assistant Director of Public Works
Patricia Strayer, P.E., Town Engineer
Julie Parham, P.E., Senior Project Engineer
Jeff Coleman, Water Resources Division Manager