



The City of Naples Stormwater Master Plan’s mission is to protect people and property against flood by maintaining and improving the public stormwater management system, while protecting and restoring ecological systems that work naturally to improve water quality and the environment and quality of life for residents and visitors. The 2018 Stormwater Lakes Management Plan Update identified several lake restoration projects and are now in the design phase for project improvements. These projects are Lake 19 or 15th Avenue North Lake, Lake 11 or Spring Lake, and Lake 31 or East Lake.

This slide show is intended to be informative about the specifics of the projects. The images contained in this presentation are available on this website.



15th Avenue N. Lake (Lake 19)



The 15th Avenue North Lake is located between 12th Street North and 10th Street North across from Fleischman Park.



Spring Lake (Lake 11)



Spring Lake/Lake 11 is located south of 5th Avenue South between West and East Lake Drives.



East Lake *(Lake 31)*



East Lake/Lake 31 is located East of East Lake Drive and just north of 8th Ave S.



Options proposed to improve water quality and lake functions

- ❖ Improve the water quality
- ❖ Return lakes to a healthy, attractive and environmentally thriving stormwater feature
- ❖ Lake functions include storing and directing stormwater
- ❖ Lakes also mitigate flooding, reduce flows during rainfall events and reduce the discharge of pollutants
- ❖ All the improvements featured are being evaluated but won't necessarily be implemented



The goals of this project are to enhance the health and aesthetics of these lakes by improving water quality, planting native wetland plants, removing accumulated sediment and pollutants through dredging among other best management practices.

The functions of these lakes include storing and treating stormwater by allowing sediments and pollutants to settle out of the water column. Pollutants can also be taken up by biological processes including uptake by aquatic and shoreline vegetation. These lakes also help to mitigate flooding during rainfall events with stormwater eventually being directed to outfalls which connect to our natural waterways.

All the improvements and Best Management Practices featured are being evaluated but won't necessarily be implemented.



Options proposed to improve water quality and lake functions

Public Input

- ❖ City is seeking public input for the options to improve water quality presented in this slide show
- ❖ The options will be evaluated on the costs and benefits



Maintenance

- ❖ All options being considered will require maintenance

The City is seeking public input for the options proposed to improve water quality, lake functionality, and aesthetics as presented in this slide show. The options will ultimately be evaluated on the costs and benefits. All options being considered will require routine maintenance.



Options proposed to improve water quality and lake functions

Dredging

- ❖ All three lakes will be dredged to remove accumulated organic and potentially pollutant laden sediment from the bottom of the lake and re-establish lake depths



Exotic Vegetation

- ❖ All exotic vegetation will be removed

Plant Littoral shelf

- ❖ Plant diverse wetland vegetation along the shorelines to form a littoral shelf and provide shoreline stabilization
- ❖ Littoral shelf is shallow shelf that is planted with native aquatic vegetation
- ❖ Purpose of littoral shelf is to help filter out nutrients and minerals

All three lakes will be dredged to remove accumulated organic and pollutant laden sediment from the bottom of the lake. All exotic vegetation will be removed from the lakes. Planting diverse wetland vegetation along the shorelines will form a littoral shelf and provide shoreline stabilization. The littoral shelf is shallow shelf that is planted with native aquatic vegetation that filters out unwanted nutrients and minerals.



Options proposed to improve water quality and lake functions



Install Floating Islands

- ❖ Provide nutrient removal from lake
- ❖ Generally consist of components of a typical wetland
- ❖ Instead of soil, roots are anchored in an inert, floating medium and suspended within a water column
- ❖ Provides plants direct access to nutrients that are within water column and targeted for removal



Floating islands provide nutrient removal from the lake and generally consist of components of a typical wetland. Instead of soil, roots are anchored in an inert, floating medium and suspended within a water column. This provides plants direct access to nutrients that are within the water column and targeted for removal.



Options proposed to improve water quality and lake functions

Install Nutrient Separating Baffle Boxes

- ❖ Used for water quality treatment at outfall of storm drains
- ❖ Box primarily removes sediment and suspended solids from stormwater
- ❖ Periodic removal of sediment is required



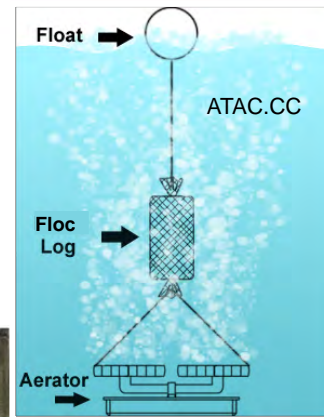
Nutrient Separating Baffle Boxes are used for water quality treatment at the outfall of storm drains. The box primarily removes sediment and suspended solids from stormwater. Periodic sediment removal is required.



Options proposed to improve water quality and lake functions

Aerators & Floc Logs

- ❖ Submersed aerators help reoxygenate lake water
- ❖ Floc logs add a second layer of water quality improvement by removing unwanted nutrients
- ❖ Impedes growth of algae by moving water and creating a non-stagnant environment

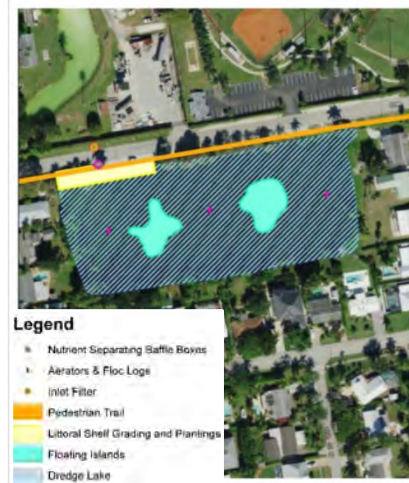


Submersed aerators help reoxygenate lake water. The floc logs are designed to reduce the turbidity within the lakes and reduce sediment accumulation which allows for prolonged benefits of the dredging and improvement of water quality treatment effectiveness of the Lake. As shown in the diagram the attached floc logs add a second layer of water quality improvement by removing unwanted nutrients. The combination of these two water quality improvement tools impedes growth of algae by moving water and creating a non-stagnant environment.



What items are specifically proposed for 15th Avenue N. Lake/Lake 19 Restoration

- ❖ Dredging and exotic vegetation removal
- ❖ Sidewalk extension on north side of lake
- ❖ Informational signage
- ❖ Littoral shelf
- ❖ Floating islands
- ❖ Nutrient Separating Baffle Box
- ❖ Aerators & Floc logs



The specific improvements proposed at 15th Avenue North Lake/Lake 19 include dredging, exotic vegetation removal and the extension of the sidewalk on the north side of lake with informational signage. A littoral shelf and floating islands will add attractive vegetation to the lake. A Nutrient Separating Baffle Box and the combination of aerators and floc logs will provide additional water quality improvements.



What Items Are Specifically Proposed for 15th Avenue N. Lake (*Lake 19*) Restoration

- ❖ This is a computer rendering of a Nutrient Separating Baffle Box

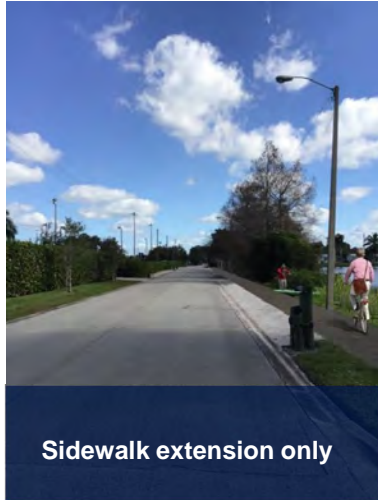


This is a computer rendering of a Nutrient Separating Baffle Box that will provide additional water quality improvements by capturing sediments prior to flows entering the lake.



What Items Are Specifically Proposed for 15th Avenue N. Lake (*Lake 19*) Restoration

Two options for the sidewalk extension on north side of lake:



The specific improvements proposed at 15th Avenue North Lake/Lake 19 are a sidewalk extension on north side of the lake with informational signage. The second option shown with the reinforced grass swale is the preferred option.



What Items Are Specifically Proposed for Spring Lake (Lake 11) Restoration

- ❖ Dredging and exotic vegetation removal
- ❖ Littoral shelf
- ❖ Floating islands
- ❖ Nutrient Separating Baffle Box (NSBB)
- ❖ Aerators & Floc Logs



The specific improvements proposed at Spring Lake/Lake 11 include dredging, exotic vegetation removal, planting a littoral shelf, floating islands, a Nutrient Separating Baffle Box, and aerators with floc logs.



What Items Are Specifically Proposed for Spring Lake (*Lake 11*) Restoration

- ❖ Littoral shelf on the north side of Spring Lake
- ❖ Nutrient Separating Baffle Box at the north side of Spring Lake

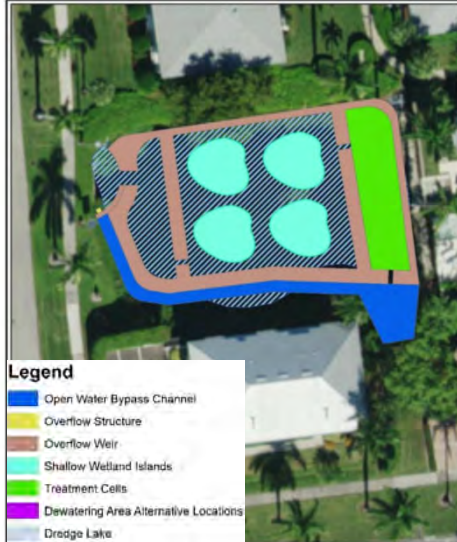


This is an example picture of a littoral shelf that was created at another City lake is similar to the littoral shelf proposed for the north side of Spring Lake/Lake 11.



What Items Are Specifically Proposed for East Lake (Lake 31) Restoration

- ❖ Dredging and exotic vegetation removal
- ❖ Shallow wetlands planted
- ❖ Overflow weir
- ❖ Open water bypass channel
- ❖ Wetlands treatment cells



The specific improvements proposed at East Lake/Lake 31 include dredging and exotic vegetation removal. Also included is a wetland treatment area comprised of shallow planted wetlands, an open water bypass channel, an overflow weir, and wetlands treatment cells. The water flow will either move through the bypass channel, which is designed to handle a storm event to prevent flooding to the surrounding property owners, or the wetland treatment cells. To enter the wetland treatment cells the water will flow over a designed overflow structure into the initial cell and then be routed through the cell over the next overflow weir into the shallow wetland cell and then be routed through to the next overflow weir to polishing cells prior to going over the final overflow weir to discharge through the main outfall structure for the Lake. The shallow wetlands will be planted with a variety of native aquatic plants.



What Items Are Specifically Proposed for East Lake (*Lake 31*) Restoration

- ❖ Example of wetlands treatment cells



This is an example the proposed wetland treatment cells in East Lake/Lake 31.



Thank You



Please provide your comments on the contact page of this website or you may mail/email any additional comments to:

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**Please Note: The comment period for this phase
will be open through August 2, 2020.**

Please provide your comments on the contact page of this website or you may mail/email any additional comments to the people listed on this slide. The comment period will be open until August 2, 2020.

Thank you for your interest in the Naples Lakes Improvements Project.