City of St. Petersburg—Harbor Isles

Water Quality Analysis

Sample Date: 10 Feb 2022
Report Date: 15 Feb 2022

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Lab Scientist: Ryan Ebanks

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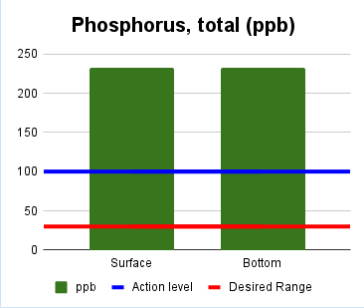
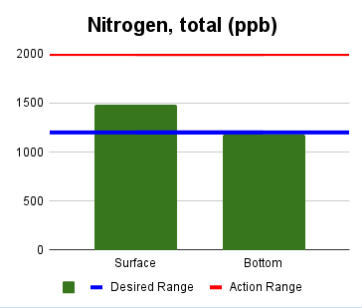
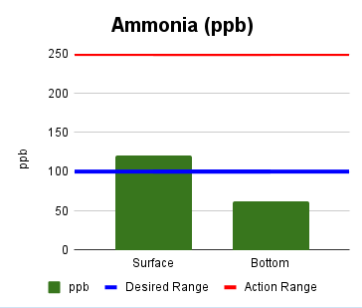
Water Quality Analysis: City of St. Petersburg—Harbor Isles, Site #3

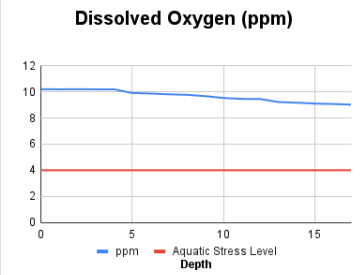
Sample Date: 10 Feb 2022

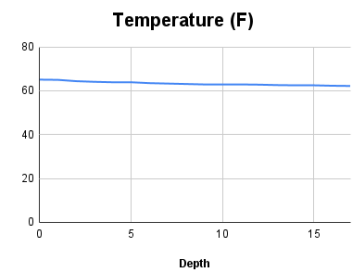
Test	Desired Range	Action Range	Surface	Bottom	This lake is
Phosphorus, Total	< 30 ppb	> 100	232	232	High
Nitrogen, Total	<1,200 ppb	> 2,000	1,480	1,716	Healthy
Ammonia	< 100 ppb	> 250	120	62	Healthy
Alkalinity, Total	> 80 ppm	<40	104	104	Healthy
Turbidity	< 5 NTU	>10	11.9	11.6	High
Salinity	<0.5 ppt	NA	4.1	4.1	High
pH reading	6.5 - 8.5	NA	8.0	8.0	Healthy
Secchi reading	< 4 feet	NA		3.5	Low











Water Column Profile is

Mixed: The dissolved oxygen and temperature profile shows this lake's water column is adequately mixed resulting in acceptable dissolved oxygen levels at lower depths, expanded fisheries habitat, less bottom muck and bad odors. It is recommended to monitor oxygen levels closely, particularly with seasonal changes..

Observations

Since last month's sampling event, phosphorus levels have increased above the action levels. Nitrogen levels have decreased, and it is still below the action level. Field observation suggests that planktonic algae is still present in site but at a very low density along the perimeter via windblow. Please note that the Green Clean Application took place immediately after sampling. Water quality analysis suggests that this site is experiencing elevated phosphorus levels and saltwater intrusion. Lakes with high nutrient concentrations are likely to become an unbalanced ecosystem. This can lead to a variety of negative effects including, but not limited to, foul odors, reduced clarity, etc.

Recommendations

- Phosphorus reduction
- Watershed management
- Ongoing water quality monitoring

Water Quality Parameter	Desired Range	Action Level	Non-normal results may lead to	Common causes of non-normal levels
Phosphorus, total	< 30 ppb	> 100 ppb	Excessive algae growth, muck accumulation, nuisance midge fly population, unbalanced fishery, etc.	Reclaimed water discharge, landscape fertilizer runoff and agricultural drainage, phosphorus laden bottom sediments
Nitrogen, total	< 1,200 ppb	> 2,000 ppb	Excessive algae growth, muck accumulation, nuisance midge fly population, unbalanced fishery, etc.	Reclaimed water discharge, landscape fertilizer runoff and agricultural drainage, organic material input like grass clippings and leaf litter
Ammonia	< 100 ppb	> 250 ppb	May lead to fish and wildlife becoming unhealthy or passing, especially under high pH conditions	Organic decomposition, landscape/fertilizer runoff, and anoxic conditions (low oxygen), excessive waterfowl excrement
Dissolved Oxygen	> 4 ppm	N/A	Leads to nutrient recycling from the sediments (phosphorus), may cause fish kill events, foul odors, etc.	Stratification, higher than normal biological oxygen demand
Temperature	< 4 degree difference	N/A	Often leads to low dissolved oxygen, nutrient recycling, and unbalanced ecosystems	Natural processes
Alkalinity	> 80 ppm	N/A	Drastic pH swings and an unhealthy ecosystem to grow sportfish populations	Low background levels
Conductivity	< 1,200 uS/cm	N/A	Fish kills for salt intolerant species, damage to turf through irrigation, change in algae community (golden algae)	Salt water intrusion, road salt runoff, excessive additions of reclaimed / effluent water
Turbidity	< 5 NTU	N/A	Loss of clarity in water and in extreme conditions fish kills	Sediment run-off, bottom sediment in suspension, algae blooms, etc.
Secchi Disk	> 4 feet	N/A	Loss of clarity in water	Sediment run-off, bottom sediment in suspension, algae blooms, etc.
pH reading	6.5 - 8.5	N/A	Unbalanced ecosystems and potentially fish kill events	Watershed run-off, pool discharges, algae blooms, etc.

^The above thresholds are general goals that have been determined by decades of lake management experience from our lake management team and a variety of peer reviewed journal studies.