

City of St. Petersburg—Harbor Isles

Water Quality Analysis



Sample Date: 10 Mar 2022

Report Date: 15 Mar 2022

Field Biologist: Matt Kramer

Lab Scientist: Ryan Ebanks

Site #3 2

Glossary 3

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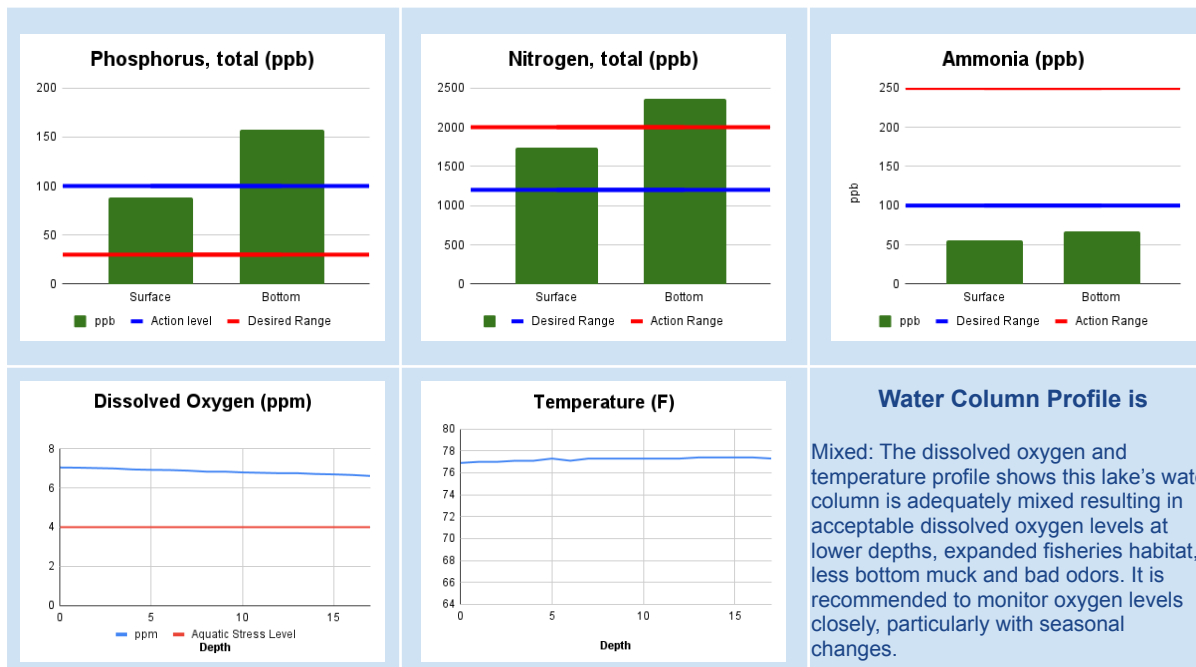
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Water Quality Analysis: City of St. Petersburg—Harbor Isles, Site #3

Sample Date: 10 Mar 2022

| Test | Desired Range | Action Range | Surface | Bottom | This lake is |
|-------------------|---------------|--------------|---------|--------|--------------|
| Phosphorus, Total | < 30 ppb | > 100 | 88 | 157 | High |
| Nitrogen, Total | <1,200 ppb | > 2,000 | 1,741 | 2,356 | High |
| Ammonia | < 100 ppb | > 250 | 56 | 67 | Healthy |
| Alkalinity, Total | > 80 ppm | <40 | 113 | 114 | Healthy |
| Turbidity | < 5 NTU | N/A | 5.82 | 5.60 | High |
| Salinity | <0.5 ppt | NA | 4.1 | 4.1 | High |
| pH reading | 6.5 - 8.5 | NA | 8.1 | 8.3 | Healthy |
| Secchi reading | < 4 feet | NA | 3 | | Low |



Observations

Field observations suggest that this waterbody is experiencing issues with algae. There was a very minor amount of planktonic algae observed during sampling. It was noticed along the wind blown areas of the shoreline. Planktonic algae were targeted with Green Clean on 3/10/2022. Water quality analysis suggests that this site is experiencing elevated nitrogen and phosphorus levels. Also, this lake may be experiencing salt water intrusion. Water quality analysis suggests that this site is experiencing elevated nutrient levels. Elevated nutrient levels often cause excessive plant and algae growth along with a cascading series of detrimental symptoms in a water body. Dense planktonic algae blooms can often lead to reduced water clarity.

Recommendations

- Phosphorus reduction
- Nitrogen reduction
- Water clarity remediation
- 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.