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Staff Memorandum

JACKSON PARK POND SURVEY, MILWAUKEE COUNTY, WISCONSIN

April 2, 2026

In an effort to build upon the Southeastern Wisconsin Regional Planning Commission (Commission or SEWRPC) Planning Report No. 42, A *Regional Natural Areas and Critical Species Habitat Protection and Management Plan for the Southeastern Wisconsin Region*, Commission staff secured grant funding from the Wisconsin Coastal Management Program (WCMP) to assist with natural area and aquatic site inventory, protection, and management plan development. The goals of the project include increasing the regional capacity to update existing biological inventories, completing inventories lacking surveys, and incorporating data into ecological restoration plans. Commission staff identified Milwaukee County lakes that had very little or no water quality or biotic information collected to conduct aquatic plant surveys, water quality monitoring, aquatic invasive species surveys, shoreline surveys, and/or sediment surveys. The data collected on the lakes surveyed are being summarized in brief reports that are made available to the public. The data and reporting are intended to help establish the ecological status of the waterbodies to assist in management strategies to protect and restore them so that they can continue to serve Milwaukee County and its residents. Four lakes (Jackson Park Pond, McGovern Park Pond, Scout Lake, and Mallard Lake) were surveyed in the summer of 2025.

LAKE BACKGROUND INFORMATION

Jackson Park Pond (Pond) is a 7-acre drained lake located entirely in the City of Milwaukee within Milwaukee County, Wisconsin. The Pond is located within Jackson Park, owned and managed by Milwaukee County Parks. The Jackson Park area was purchased by the City of Milwaukee in 1907 and officially named in 1910

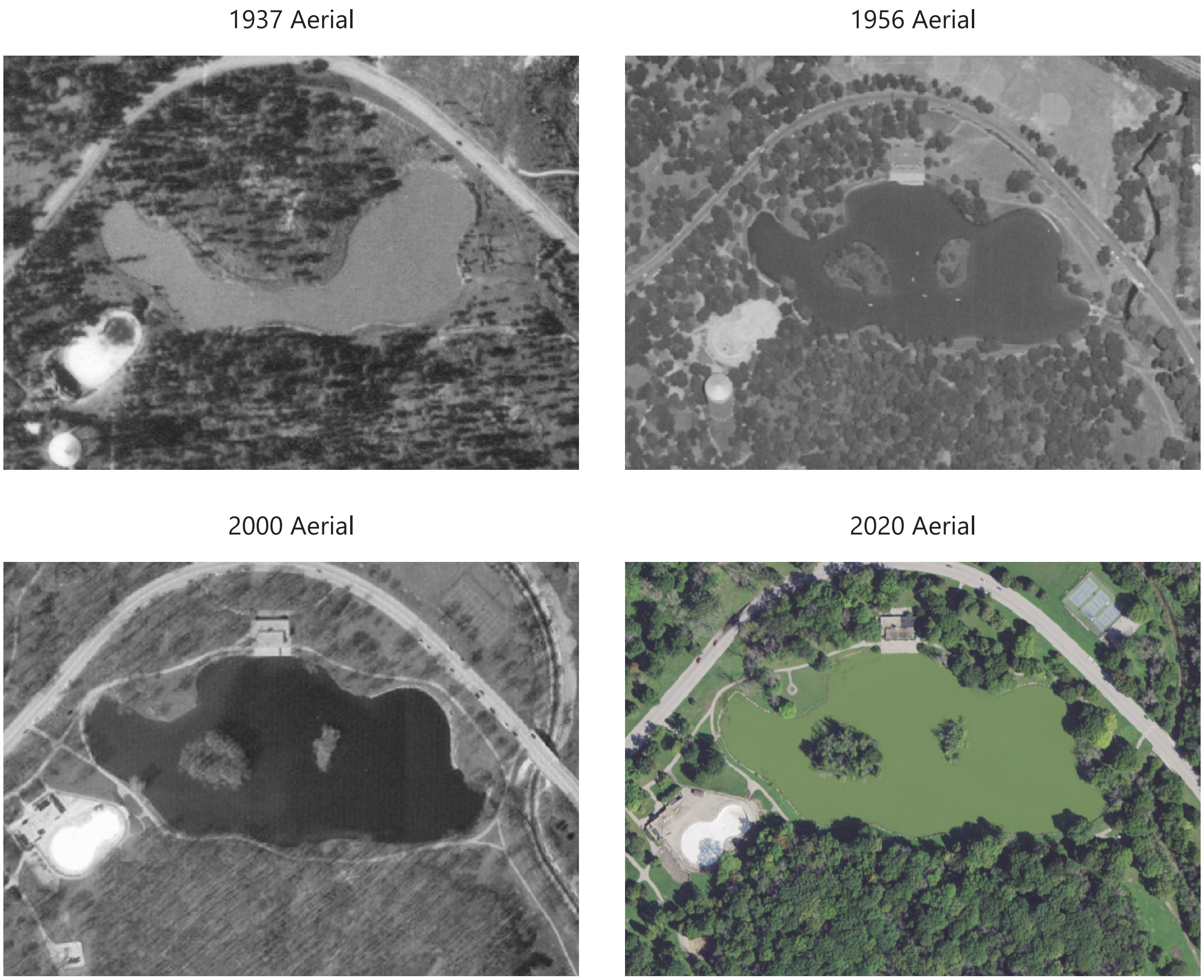
in honor of the seventh U.S. President, Andrew Jackson.[1] The Park's recreational capacity grew throughout the years to meet the public's interests; a singular shelter in the 1910s grew to include cleared picnic areas, a children's playground, a pavilion, and the City's first outdoor pool by the 1930s. Jackson Park Pond was constructed by the Works Progress Administration (W.P.A.) in 1932. The Park contains a sculpture referred to as "The Pewter Lady," which stands in the south side of the Pond. The Pewter Lady was constructed by Gustav Haug and stood over the City's Chamber of Commerce building from 1880 – 1909, gifted to the Park in 1909. At the base of the statue, an inscription says, "May this statue ever be a silent witness to the progress and growth of Milwaukee." The development of both the Park and Pond can be seen in Figure 1.

Today the Park remains a popular destination, receiving thousands of visitors each year.[2] The Pond is central to the Park in both its location and use, as it supports fishing and wildlife viewing opportunities as well as a half-mile paved walking trail surrounding the Pond. The Park has been called a 'birding paradise,' providing

[1] *county.milwaukee.gov/ImageLibrary/Groups/cntyParks/parkwriteups/JACKSON_PARK.doc.*

[2] Ibid.

Figure 1
Aerial Imagery of Jackson Park Pond: 1937, 1956, 2000, and 2020



Source: U.S. Department of Agriculture and SEWRPC

habitat for bird species not commonly seen in the surrounding neighborhood.[3] Additional surveys and citizen science have observed various fish, herptiles, and odonates which included state-listed species of special concern (see Table 1). and A local non-profit, 'Friends of Jackson and Manitoba Parks' recently formed in 2025, provides volunteer work, fundraising, and community events to these parks to provide a more inclusive, sustainable, and enjoyable park experience for everyone.[4,5] The Milwaukee Metropolitan Sewerage District (MMSD), in partnership with Milwaukee County Parks, is currently pursuing improvements to Jackson Park as part of implementation of the Kinnickinnic River Watershed Flood Management Plan.[6] Overall goals of the Plan include, but are not limited to: reducing flood risk, improving riparian and aquatic habitats, and enhancing stream aesthetics within the watershed and in proximity to the Kinnickinnic River. The collaboration invited community members to ask for their input on the proposed Jackson Park project in April of 2021, with

[3] *awealthofnature.org/jackson-park-a-birding-paradise-launches-a-new-friends-group.*

[4] *For more information about Friends of Jackson and Manitoba Parks, visit: fojmparks.org/about.*

[5] *www.jsonline.com/story/news/local/milwaukee/neighborhoods/2026/01/10/new-nonprofit-will-focus-on-improving-jackson-and-manitoba-parks/88089736007.*

[6] *GRAEF, Hey and Associates, Inc., and CDM Smith,* Kinnickinnic River Watershed Flood Management Plan*, prepared for MMSD, 2017. www.mmsd.com/application/files/4314/9522/1491/KK_Watershed_Flood_Management_Plan_05_04_17_-_-EXECUTIVE_SUMMARY_002.pdf.*

Table 1
Aquatic Wildlife Observed at Jackson Park Pond

Species Type	Species Name	Status	Year Observed
Fish	Black Bullhead *(Amereirus melas)*		2024
	Goldfish *(Carassius auratus)*	Nonnative	2022
	Green Sunfish *(Lepomis cyanellus)*		2024
Herptiles	American Bullfrog *(Lithobates catesbeiana)*		2023
	American Toad *(Anaxyrus americanus)*		2025
	Eastern Gray Treefrog *(Hyla versicolor)*		2017
	Northern Green Frog *(Lithobates clamitans)*		2019
	Common Snapping Turtle *(Chelydra serpentina)*		2023
	Western Painted Turtle *(Chrysemys picta)*		2025
	Red-Eared Slider *(Trachemys scripta elegans)*	Nonnative	2023
Odonates	Common Green Darner *(Anax junius)*		2024
	Great Spreadwing *(Archilestes grandis)*		2023
	Ebony Jewelwing *(Calopteryx maculata)*		2023
	Halloween Pennant *(Celithemis eponina)*		2019
	Tule Bluet *(Enallagma carunculatum)*		2019
	Familiar Bluet *(Enallagma civile)*		2024
	Skimming Bluet *(Enallagma geminatum)*		2024
	Orange Bluet *(Enallagma signatum)*		2024
	Common Baskettail *(Epitheca cynosure)*	Rare in Milwaukee County	2021
	Prince Baskettail *(Epitheca princeps)*		2024
	Eastern Pondhawk *(Erythemis simplicicollis)*		2024
	Fragile Forktail *(Ischnura posita)*		2023
	Eastern Forktail *(Ischnura verticalis)*		2024
	Chalk-fronted Corporal *(Ladona julia)*		2018
	Widow Skimmer *(Libellula luctuosa)*		2025
	Twelve-spotted Skimmer *(Libellula pulchella)*		2024
	Four-spotted Skimmer *(Libellula quadrimaculata)*		2023
	Blue Dasher *(Pachydiplax longipennis)*		2024
	Wandering Glider *(Pantala flavescens)*		2024
	Spot-winged Glider *(Pantala hymenaea)*		2018
	Eastern Amberwing *(Perithemis tenera)*		2024
	Common Whitetail *(Plathemis Lydia)*		2024
	Black Saddlebags *(Tramea lacerate)*		2024
	Red Saddlebags *(Tramea onusta)*		2020

Source: Data courtesy of Milwaukee County Parks (MCP) Staff. Data taken from MCP staff surveys, WI Odonate Survey website, Odonata Central, and iNaturalist.

over 362 respondents.[7] Comments pertaining to the Pond included interest in wildlife viewing, fishing, and accessibility.[8] Combining feedback and overall project goals resulted in plans of adding two fishing piers, three overlooks, and removing contaminated lake-bottom sediments (see Figure 2), discussed later in this report.[9] The intended goals of this project are to improve the health of the Pond, decrease runoff, enhance wildlife habitat, reduce flood risk, and improve accessibility to a public natural resource.

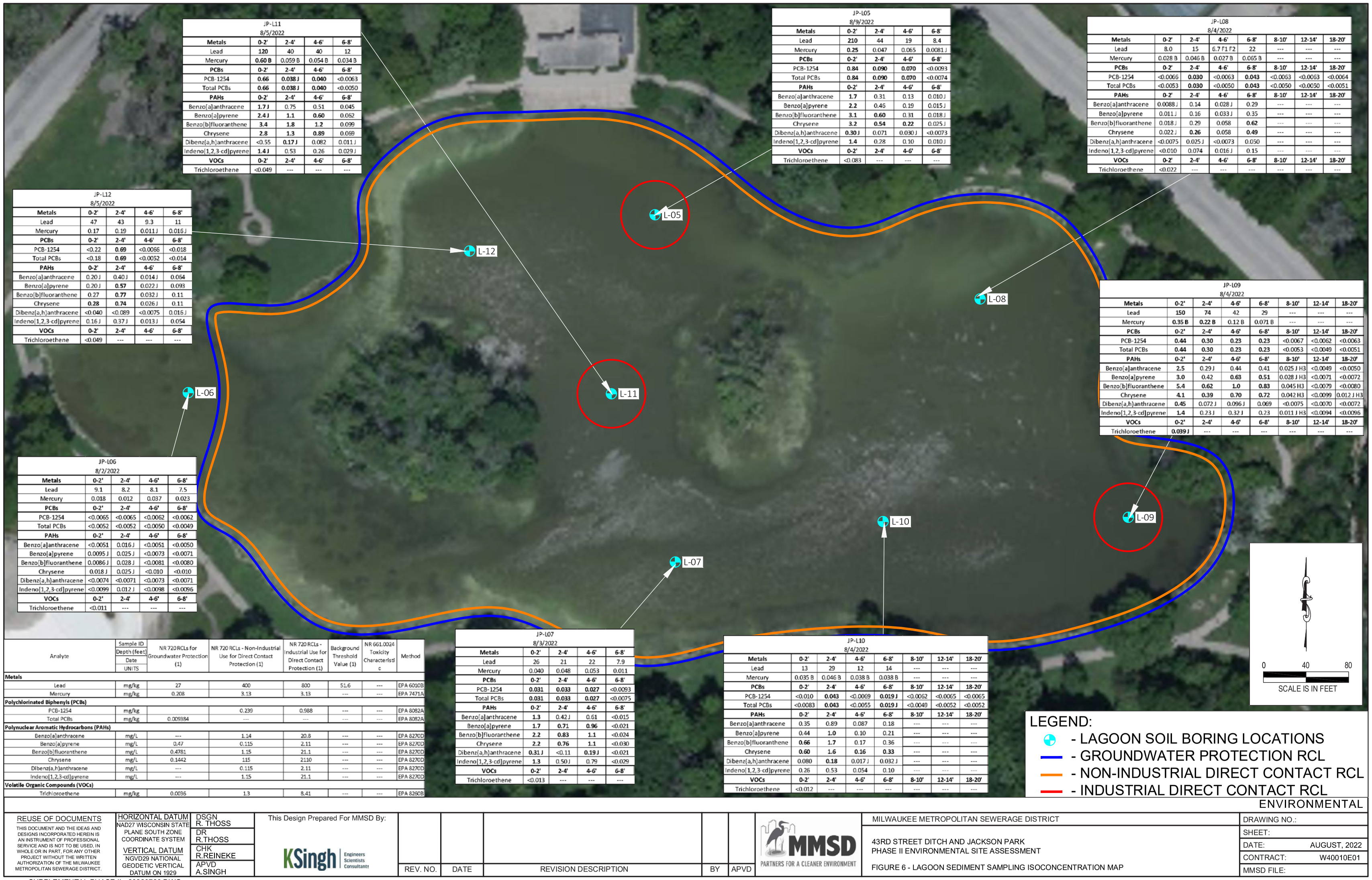
Using the WDNR Watershed Explorer tool, Commission staff delineated the Pond's watershed and summarized the land use and pollutant loading information. The pond has around a 51-acre watershed that

[7] *MMSD 2021 Kinnickinnic River & Jackson Park Story Map, accessed 2026, storymaps.arcgis.com/stories/dc8d3fa1210e48a8a7dfc006a1e287ca.*

[8] *Some aquatic species reported on the iNaturalist platform as observed around the Pond include mallards, Canada geese, painted turtles, American bullfrogs, great blue herons, wood ducks, green herons, ring-billed gulls, green sunfish, red-breasted mergansers, American herring gulls, black bullheads, common snapping turtles, and a common loon.*

[9] *Sediment was found to be contaminated with heavy metals, polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), and volatile organic compounds (VOCs).*

Figure 2
Jackson Park Pond Contaminated Sediment Test Results: 2022



Source: WDNR, KSingh, and MMSD

drains the surrounding park lands immediately surrounding the Pond (see Map 1).[10] Pollutant loading to the lake modeled via the Wisconsin Inland Lake Modeling Suite (WiLMS) model predicts a non-point source loading of 95 pounds per year (see Table 2). As most phosphorus transported to lakes is bound to soil particles, these estimates could be considered a proxy for sediment loading sources as well. Recreational land use is predicted to be the predominant phosphorus loading source, contributing 89 pounds a year (94 percent of the total phosphorus). Considering the watershed is small relative to the Pond's surface area, recreational lands make up the majority of the surface area, and low intensity land use generally comprises the remaining portion of the watershed, these results are unsurprising. Incorporating environmentally friendly turf-grass management and planting native vegetative buffers can help in reducing phosphorus coming to the Pond and aid in maintaining water quality after dredging of contaminated sediments.

SURVEY FINDINGS

Commission staff surveyed Jackson Park Pond's aquatic plant community on August 21st, 2025, then returning to collect sediment depths and water quality data on September 19th, 2025. These efforts included identification of aquatic invasive species (AIS). The weather conditions were warm and sunny with mild wind. The Pond's water clarity was poor, as the Pond appeared to have an active algal bloom on the date surveyed (see Figure 3). The Pond's shoreline was varied, with some areas having vegetative buffers, others large rocks, and some areas with turf grass up to the edge with visible shoreline erosion. Commission staff accessed the Pond on the southwest end via a carry-in ramp. Wood ducks and a turtle were observed during the survey (see Figure 3) as well as muskrat and native birds.

Commission staff completed a point-intercept aquatic plant survey of the Lake using a 104-point sampling grid provided by the Wisconsin Department of Natural Resources (WNDR) (see Figure 4). Water quality measurements, including a Secchi disk reading and profiles of temperature, dissolved oxygen, dissolved oxygen saturation, and pH measured using a Hanna Instruments meter, were recorded at the lake's deep hole site.

Aquatic Plant Observations

Commission staff observed six aquatic plant species during the point-intercept survey (see Table 3).[11] The total littoral vegetation coverage, or the percentage of aquatic plant occurrence in depths that were shallower than the maximum depth of plants, was 26.93. The maximum depth of colonization by plants was seven feet, which was also the recorded maximum depth of the Pond. The average rake fullness was 0.34 (see Figure 5) which indicates the plant abundance was generally low. Five total species were identified by rake sampling, while two plants were seen visually by staff (bulrushes and cattail), not collected on the rake. Of the littoral points, the species ranked in order of abundance were: sago pondweed (*Stuckenia pectinata*, 69.2 percent), curly-leaf pondweed (*Potamogeton crispus*, 23.1 percent), filamentous algae (19.2 percent), floating-leaf pondweed (*Potamogeton natans*, 7.7 percent), and arrowhead (*Sagittaria latifolia,* 7.7 percent). Curly-leaf pondweed was the only aquatic invasive species seen in the Pond, though the invasive Chinese mystery snail, common reed *(Phragmites australis*), and yellow iris (*Iris pseudacorus*) have been reported.[12]

Aquatic plant metrics, such as species richness and the floristic quality index (FQI), can be useful for evaluating lake health. In hard water lakes, such as those common in Southeastern Wisconsin, species richness generally increases with water clarity and decreases with nutrient enrichment.[13] The FQI is an assessment metric used to evaluate how closely a lake's aquatic plant community matches that of undisturbed, pre-settlement conditions.[14] To formulate this metric, Wisconsin aquatic plant species were assigned conservatism (C) values on a scale from zero to ten that reflect the likelihood that each species occurs in undisturbed habitat. These values were assigned based on the species substrate preference, tolerance of water turbidity, water

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[10] *As the watershed was delineated using a computer program, true watershed boundaries may differ.*

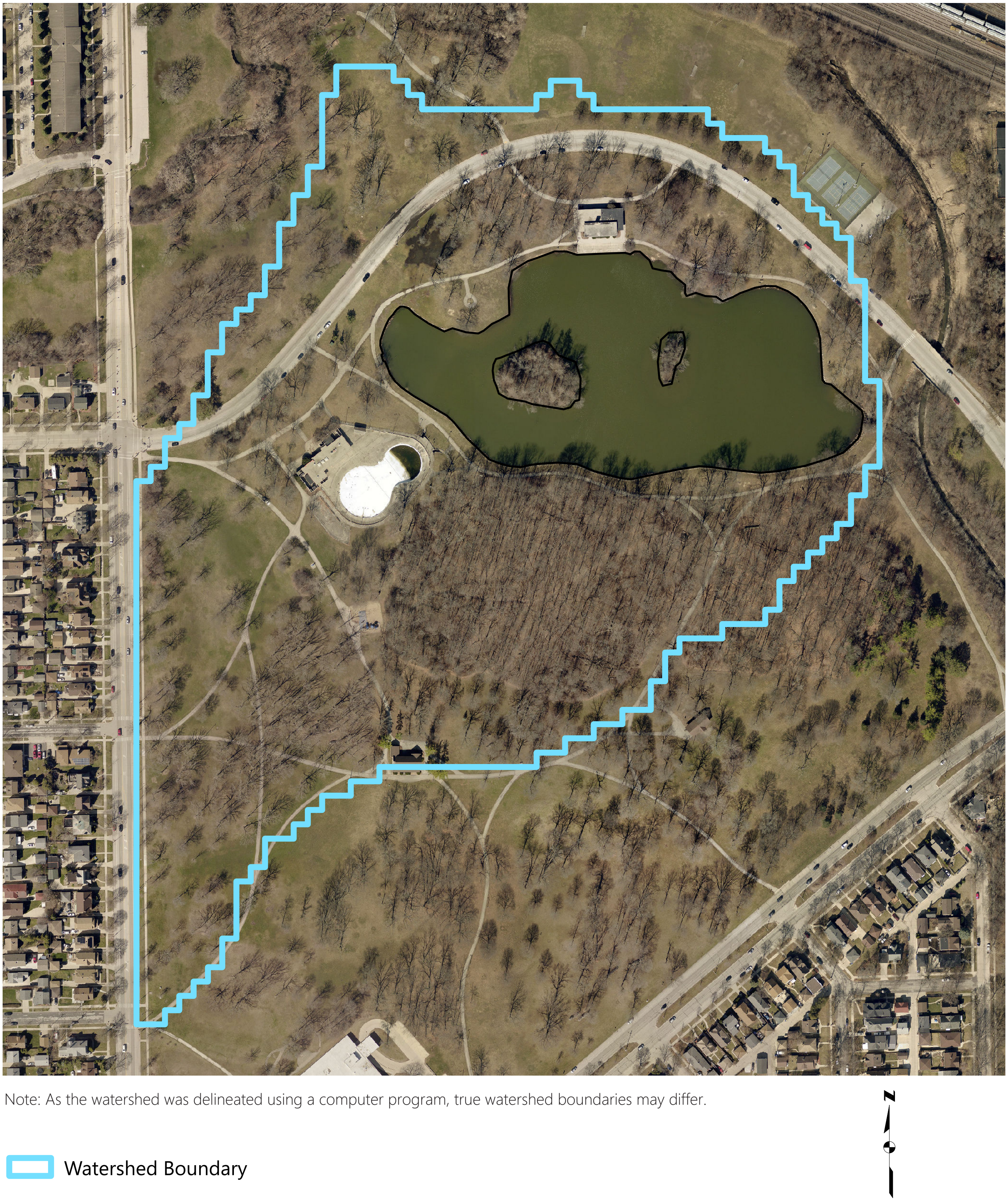
[11] *Filamentous algae was observed and collected in the Pond but is not biologically classified as a plant.*

[12] *apps.dnr.wi.gov/lakes/lakepages/LakeDetail.aspx?wbic=15800&page=facts.*

[13] *Vestergaard, O. and Sand-Jensen, K., "Alkalinity and Trophic State Regulate Aquatic Plant Distribution in Danish Lakes,"* Aquatic Botany *67, 2000.*

[14] *S. Nichols, "Floristic Quality Assessment of Wisconsin Lake Plant Communities with Example Applications*," Lake and Reservoir Management *15(2), 1999.*

Map 1
WDNR-Delineated Jackson Park Pond Watershed



Source: WDNR and SEWRPC

Table 2
WiLMS Nonpoint Phosphorus Loading Output for the Jackson Park Pond Watershed

Land Use Class	Area of Land Use Class (acres)	Percent of Watershed	Low Phosphorus Export (kg/ha)	Likely Phosphorus Export (kg/ha)	High Phosphorus Export (kg/ha)	Annual Phosphorus Load (lbs) (Lower est. – Higher est.)
Recreational[a]	19.4	37.4	5.9	5.9	5.9	89[b]
Forest	13.1	25.2	0.1	0.1	0.2	1 (1 – 2)
Lake Surface	6.8	13.0	0.1	0.3	1.0	2 (1 – 6)
Wetlands	5.9	11.3	0.1	0.1	0.1	1[b]
Pasture/Grass	4.7	9.0	0.1	0.3	0.5	1 (0 – 2)
Medium Density Urban (1/4 Ac)	2.1	4.1	0.3	0.5	0.8	1 (1 – 2)
Total	51.8	100.0	6.6	7.2	8.5	95 (93 – 102)

Note: Information obtained from the WiLMS Nonpoint Phosphorus Loading tool found at: dnr-wisconsin.shinyapps.io/WaterExplorer/.

[a] *Land Use Class was modified from the WiLMS model, as the model's land use classes utilize a coarser land-use classification that incorrectly specified the recreational lands in the watershed. Phosphorus exports were therefore calculated using 0.27 lb/ac/yr for recreational lands using SEWRPC's internal model for unit area load.*

[b] *The lower and higher estimated loads are the same and thus have no range.*

Source: WDNR and SEWRPC

Figure 3
Images from Jackson Park Pond

Overlooking Jackson Park Pond

Wildlife on Woody Habitat

Algal Bloom in September

Algae Near Shoreline

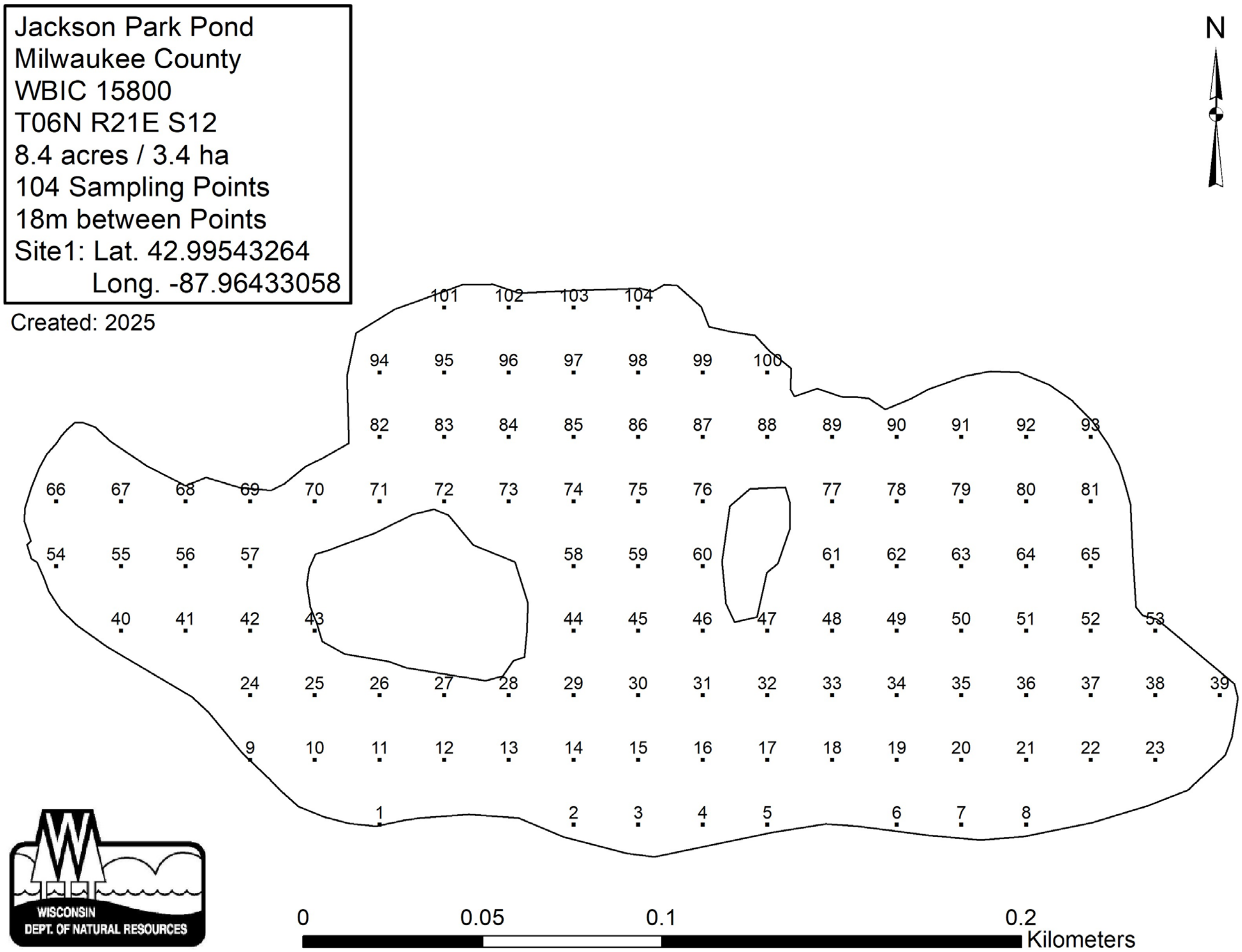
Source: SEWRPC

drawdown tolerance, rooting strength, and primary reproductive means. Native "sensitive" species that are intolerant of ecological disturbance receive high C values, while natives that are disturbance tolerant receive low C values. Invasive species are assigned a C value of 0. A lake's FQI is calculated as the average C value of species identified in the lake, divided by the square root of species richness.

Only four aquatic plant species were directly sampled during the point-intercept survey and therefore included in the FQI calculation.[15] The FQI of Jackson Park Pond in 2025 was 6.4. For reference, the average FQI value for the Southeastern Wisconsin Till Plains ecoregion is 20.0. The lower-than-average FQI score is influenced by the very low species richness of Jackson Park Pond. Although no known previous aquatic plant inventories have been taken for the Pond, considering its artificial origin, high ecological disturbance, and sediment contamination, the aquatic habitat may not be suitable for high species richness. Previous aquatic plant management has included broadcast application of herbicides to maintain public access for fishing and reduction of algae as recent as 2018. After dredging, contaminated sediments and their associated nutrients will be removed and offer an opportunity to stock the Pond with native aquatic plants. Given the interest in waterfowl viewing and fishing opportunities, selecting native plant species like muskgrass (*Chara* sp.), sago pondweed, and various pondweeds (*Potamogeton gramineus, P. natans*, and/or *P. zosteriformis*)

[15] *The nonnative invasive curly-leaf pondweed receives a score of zero in the FQI calculation.*

Figure 4
PI Grid of Jackson Park Pond



Source: WDNR

can provide both habitat for fish and food for waterfowl while increasing biodiversity of the aquatic system.[16] Native species can additionally colonize areas currently dominated by invasive species growth and reduce long-term maintenance needs of chemical applications for aquatic plant management, as native species do not often grow to nuisance levels as invasives do.

Water Quality

Jackson Park Pond has been surveyed for a wide variety of data over the years. In the early 1980s the Pond was sampled for water quality parameters like nutrients, total suspended solids, specific conductivity, temperature, dissolved oxygen, and pH. In 1996, fish from the Pond were examined to inform fish consumption advisories. In the early 2000s another suite of water quality data was taken as well as heavy metal contamination in the Pond's sediment, and retesting for fish consumption advisories. Commission staff have endeavored to summarize previous efforts and report on the Pond's water quality using the available data from the WDNR and the County.

Temperature and Dissolved Oxygen

Seasonal air temperature fluctuation and varying amounts of sunshine influence lake temperatures, causing waters to mix and stratify seasonally. In spring and fall, most lakes are well mixed and therefore are the same temperature from the water surface to the lake bottom. In summer, surface water warms and becomes more buoyant than underlying cooler water. Commission staff measured water temperatures as a depth profile,

[16] *Commission or WDNR staff can provide assistance in aquatic plant species selection upon request.*

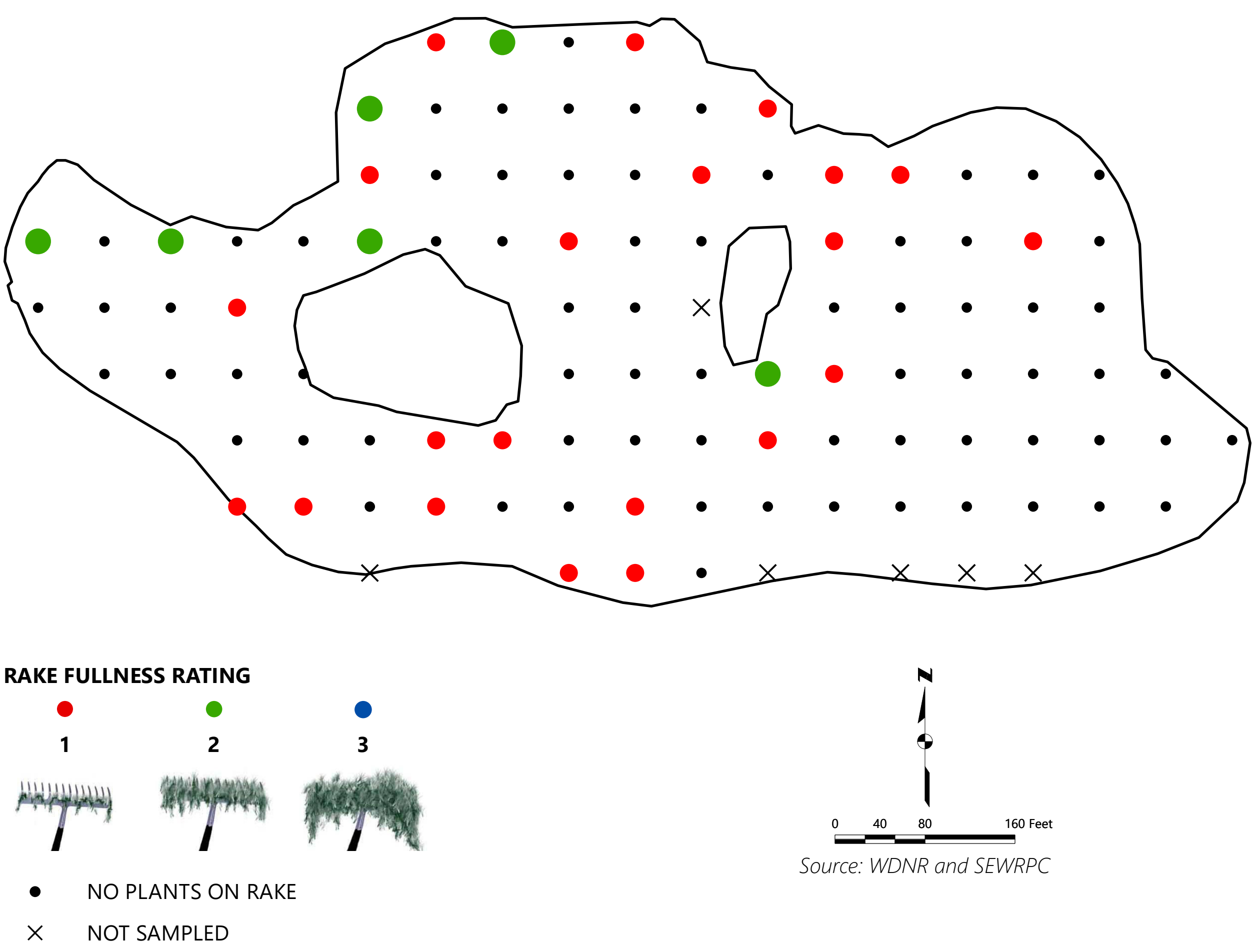
Table 3
Ecological Significance of Aquatic Plant Species in Jackson Park Pond

Species Name	Ecological Significance
Lemna minor (small duckweed)	Provides food for waterfowl. Rapidly absorbs nutrients from water column; mats can prevent extensive mosquito breeding; native.
Potamogeton crispus (curly-leaf pondweed)	Provides habitat for aquatic life in winter and spring; midsummer die-off creates sudden habitat loss and releases nutrients into the water column.
Potamogeton natans (floating-leaf pondweed)	The late-forming fruit provides important food source for ducks; provides good fish habitat due to its shade and foraging opportunities; native.
Sagittaria sp. (arrowhead)	Provides food for waterfowl, muskrat, and deer.
Schoenoplectus sp. (bulrushes)	Habitat for muskrats, invertebrates and young fish; nutlets and rhizoids and a food source for waterfowl and muskrats.
Stuckenia pectinata (sago pondweed)	Most important pondweed for ducks as a food source. Provides food and shelter for young fish.
Typha spp. (cattail)	Provides food and shelter for aquatic and terrestrial lifeforms.

Note: Information obtained from A Manual of Aquatic Plants by Norman C. Fassett, University of Wisconsin Pressure; Guide to Wisconsin Aquatic Plants, Wisconsin Department of Natural Resources; Through the Looking Glass: A Field Guide to Aquatic Plants, Wisconsin Lakes Partnership, University of Wisconsin – Extension; and U.S. Forest Service; Encyclopedia Brittanica.

Source: SEWRPC

Figure 5
Total Rake Fullness in Jackson Park Pond: August 2025



Source: WDNR and SEWRPC

Note: Survey was conducted on Jackson Park Pond on August 21st, 2025.

taken at the deep hole sit down to five feet (see Figure 6). Water temperatures ranged from 21.5 to 23.3°C (70.7 to 73.9°F), which are lower than previously measured temperatures on the Pond (up to 77.9°F in August 1981). Jackson Park Pond did not exhibit stratification and the Pond most likely experiences constant mixing of waters throughout the summer. The water temperatures measured during the 2025 survey are indicative of healthy conditions for warmwater fish species found in Southeastern Wisconsin, but more extensive monitoring should be conducted to evaluate impairment by exceeding acute temperature criteria.[17]

Dissolved oxygen (DO) levels are one of the most critical factors affecting the living organisms of a lake ecosystem. DO is generally higher at the surface of a lake where there is an interchange between the water and atmosphere, stirring by wind action (which aids in atmospheric oxygen diffusion into the surface waters at the air-water interface), and oxygen production by plant and algae photosynthesis. Metabolic processes, such as bacterial decomposition and respiration by aquatic organisms, consume oxygen and decrease DO concentrations. Dissolved oxygen was reported both in ppm, or parts per million, as well as percent saturation. While ppm measures the amount of oxygen in a volume of water, interchangeable with mg/L, the percentage of dissolved oxygen reports the relative amount of oxygen the water could hold at a given temperature and air pressure. When water is holding as much oxygen as can be absorbed, it is 100 percent saturated. Oxygen saturation values above 100 percent, called supersaturation, occur when water contains a higher concentration of dissolved oxygen than is normally soluble at ambient conditions of temperature and pressure. Supersaturation can occur when photosynthesis is releasing oxygen faster than can be used, indicative of algae blooms or eutrophic conditions.

A minimum DO concentration of 5 mg/l is considered necessary for survival of most species of fish. Commission staff measured dissolved oxygen concentrations ranging from 5.7 to 11.1 mg/L[18] (see Figure 6), decreasing with depth. These concentrations are slightly higher than August 1981 dissolved oxygen concentrations in the Pond (4.7 to 9.5 mg/L). Percent saturation of DO in 2025 showed similar data patterns, ranging from 65.5 to 125.4 percent throughout the water column. Comparatively, percent saturation of DO in August 1981 ranged from 55.3 to 112.9 percent. Oxygen supersaturation, recorded at the water's surface down to three feet in the water column, is likely caused by high intensities of photosynthesis from the observed algal bloom the day of monitoring. As 140 percent saturation can cause fish kills, the recorded supersaturation conditions are likely stressful to fish. These conditions are a likely indicator of an enriched nutrient status within the Pond. Incoming sediment and nutrient loading may exacerbate present supersaturation conditions, decreasing habitat quality for aquatic organisms. As fishing is an important recreational activity to the Pond, maintaining dissolved oxygen levels through aquatic plant management, removal of sediments, and monitoring of the site can aid in creating a thriving environment for fishes. Other methods to alleviate dissolved oxygen conditions, such as operating an aerator or circulator, could also be considered. The Friends of Jackson and Manitoba Parks could potentially aid in fundraising and volunteerism for projects.

Nutrients and Trophic Status

Nutrients are elements and compounds needed for plant and algal growth. They are often found in a variety of chemical forms, both inorganic and organic, which may vary in their availability to plants and algae. Typically, growth and biomass of plants and algae in a waterbody are limited by the availability of the nutrient present in the lowest amount relative to the organisms' needs. Lake biological productivity is referred to in terms of "trophic status." Water clarity, total phosphorus, and chlorophyll-*a* are three important determinants of a lake's trophic status.

Water clarity, or transparency, provides an indication of overall water quality—the greater the clarity, the better the water quality. In most Southeastern Wisconsin lakes, water clarity is influenced by the abundance of algae and suspended sediment. Water clarity generally varies throughout the year as algal populations increase and decrease in response to changes in lake temperature, sunlight, and nutrient availability. Large rainfall events can also influence water clarity, with sediment-induced clarity declines caused by heavy runoff. Clarity is measured using a Secchi disk, a black-and-white, eight-inch-diameter disk. This disk is lowered into the water until it is no longer visible, at which point the depth is recorded, and then it is raised until visible again, when depth is recorded again. The average of these depths is called the "Secchi depth."

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[17] *docs.legis.wisconsin.gov/code/admin_code/nr/100/102.pdf#page=18.*

[18] *Conversion of units from ppm to mg/L is a direct conversion of 1:1.*

Figure 6
Water Quality Profiles for Jackson Park Pond

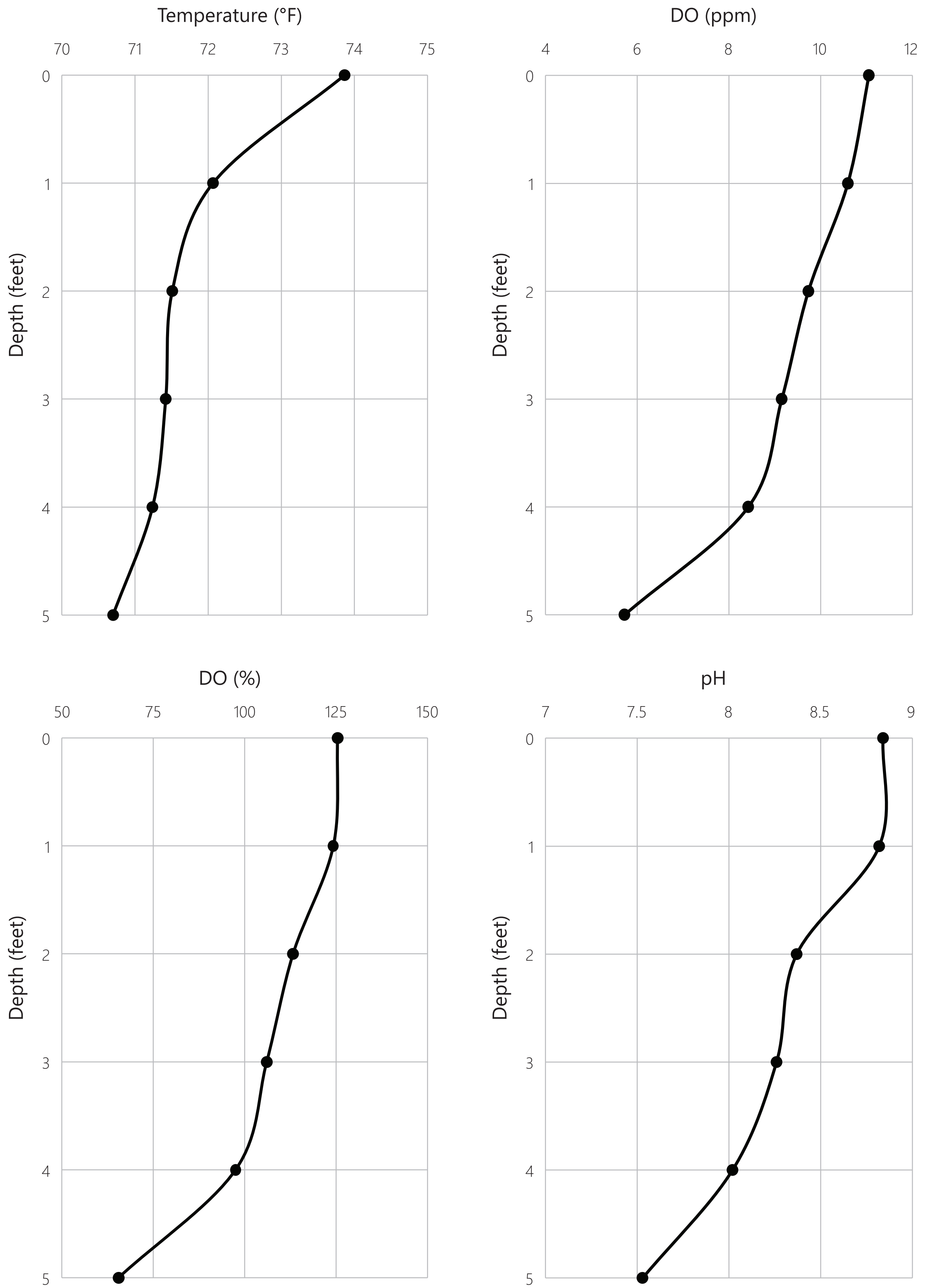
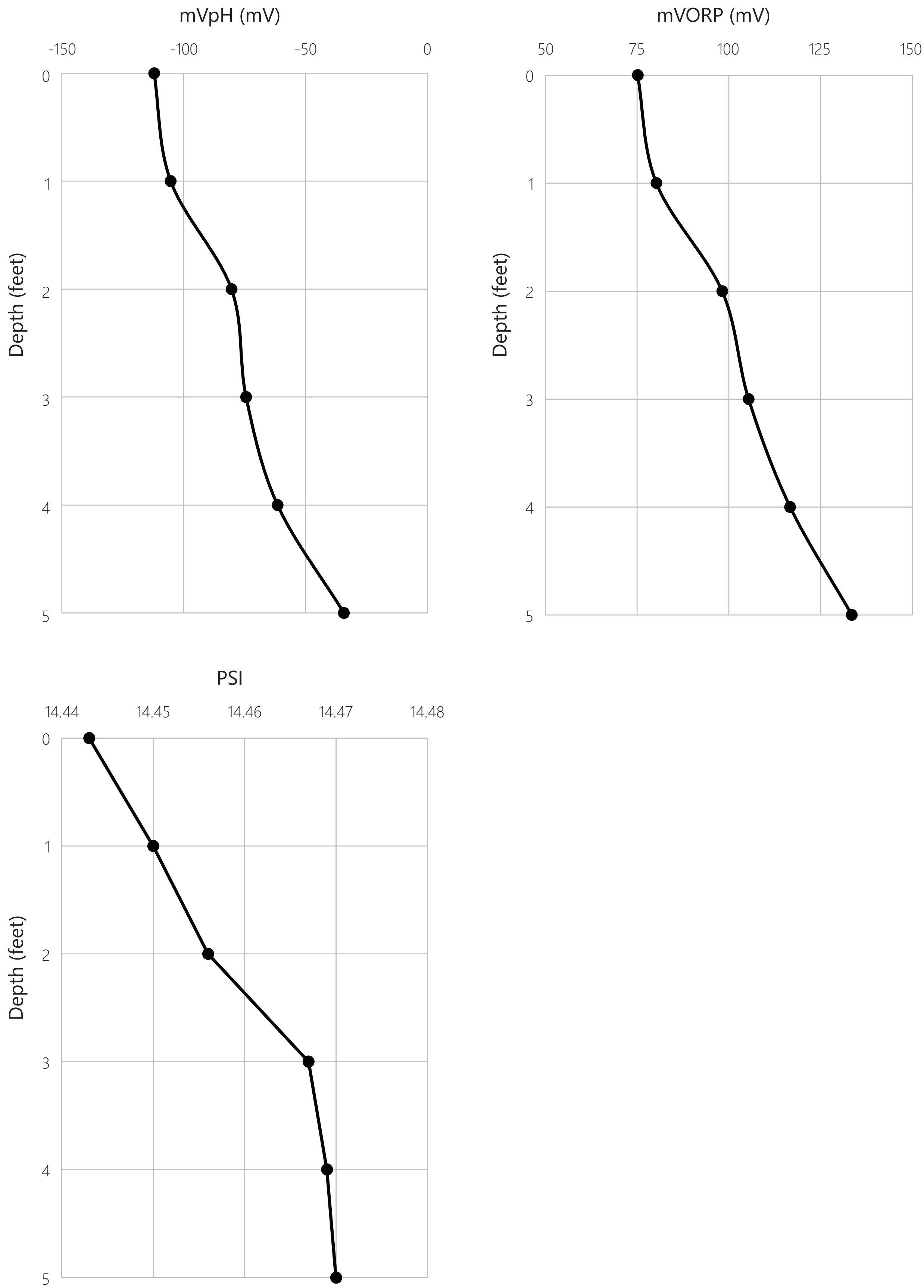


Figure 6 (Continued)



Source: SEWRPC

Commission staff measured a Secchi depth of one foot at the deep hole site, which is indicative of very low water clarity and likely high abundance of algae and/or suspended solids. Although an algal bloom was occurring the day the Secchi depth was taken, this value was within range of past reported Secchi readings, ranging from 1.3 to 3 feet in 1981, indicating little change in Lake clarity over time.[19]

Other parameters indicating trophic status can include phosphorus and chlorophyll-*a*. Phosphorus is a key nutrient for aquatic plants and algae and its availability often limits their growth and abundance. Chlorophyll-*a* is a photosynthetic pigment whose abundance is used to indicate algal biomass within a lake. Although chlorophyll-*a* and phosphorus were not collected in the 2025 survey, the historically collected data is briefly discussed in this memorandum. As a part of the Phase II Milwaukee County Pond and Lagoon Management Plan, water quality data was taken in several of the County Parks' lagoons, including Jackson Park Pond.[20] This data was collected in 2003 and 2004 and is the most recently available data regarding trophic status. As little management has occurred to the Pond since the data was collected, these data can provide insight on possible present-day conditions. The 2003 and 2004 phosphorus concentrations within the Pond were 0.757 and 0.606 mg/L, which are significantly higher than 0.04 mg/L numeric criterion that would indicate impairment due to nutrient enrichment based on WDNR standards for unstratified lakes.[21] The 2003 chlorophyll-*a* concentration was 278 µg/L while the 2004 concentration was 56.5 µg/L; both measurements far exceed the 27 µg/L criterion that would suggest impairment of lakes and reservoirs. When converted to a trophic state index, these measurements indicate that the Pond is most likely hypereutrophic, meaning that it is excessively rich in nutrients. These findings are consistent with those reported in the 2005 Milwaukee County Pond & Lagoon Management Plan, which describes a "trend toward increasing phosphorus levels in many of the lagoons, most notably Jackson Park lagoon."[22] This plan identifies sampling late in the growing season following a precipitation event, shoreline erosion, and the proliferation of geese as potential reasons for high phosphorus concentrations.[23]

A 2003 assessment of Jackson Park Pond determined that an estimated 1,700 linear feet of shoreline exhibited erosion. This assessment was part of the larger Lagoon Shoreline Assessment that surveyed over 30 Milwaukee County Park ponds/lagoons.[24] Of note, Jackson Park Pond had the third highest length of eroding shoreline out of all 31 waterbodies surveyed. Erosion not only contributes nutrients and pollutants in the eroded sediment but also decreases future stormwater infiltration capacity. As precipitation events occur, stormwater more readily flows directly over eroded sites and into the waterbody instead of being stored and filtered for contaminants by vegetation. Past measurements of *E. coli* concentrations in Jackson Park Pond allude to high fecal matter presence, another source of nutrients in aquatic environments. Samples ranged from 1,700 CFU/100mL in 2004 and 4,900 CFU/100mL in 2003. For reference, beach closures occur at 1,000CFU/100mL; though the Pond is not permitted for beach use and there is presently no standard for recreational waters.[25] Jackson Park has observed up to 150 geese sightings in a single week, as reported by the online database eBird, and geese could be a major component of fecal matter and associated nutrients.[26] Using the average number of geese seen per week in the Park, Commission staff estimate that

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[19] *apps.dnr.wi.gov/lakes/waterquality/Station.aspx?id=413680.*

[20] *Milwaukee County Environmental Services,* Milwaukee County Pond & Lagoon Management Plan*, June 2005. county.milwaukee.gov/files/county/administrative-services/Environmental-Services/MILWAUKEECOUNTYPONDANDLAGOONMGMTPLAN.pdf.*

[21] *dnr.wisconsin.gov/topic/SurfaceWater/Impairments.html.*

[22] *Milwaukee County Environmental Service, 2005,* op. cit.

[23] *Other studies have estimated that geese can contribute between 0.49 and 0.62 grams of phosphorus per day per goose. See P.T. Gremillion and R.F. Malone, "Waterfowl waste as a source of nutrient enrichment in two urban hyper-eutrophic lakes,"* Lake and Reservoir Management *2: 3193-22, 1986, and L. Marion, B. Clergeau, L. Brient, and G. Bertu, "The importance of avian-contributed nitrogen (N) and phosphorus (P) to Lake Grand-Lieu, France,"* Hydrobiologia *279 (5485): 1743-1746, 1994.*

[24] *Spuhler, UW Extension,* Lagoon Shoreline Assessment*, February, 2003.*

[25] *dnr.wisconsin.gov/topic/Beaches/Predicting.html.*

[26] *ebird.org/barchart?r=L2132433&bmo=1&emo=12&byr=1900&eyr=2026&spp=cangoo.*

there are 17,311 geese-days throughout the year.[27] Using the high range of 0.62 grams of phosphorus contributed per day per goose (Gramillion and Malone, 1986), up to 23.7 pounds of phosphorus a year can be contributed to the Park and Pond by geese feces. The elements of contamination reported in the 2005 Milwaukee County Pond & Lagoon Management Plan are identified as still present in 2021 by MMSD.[28]

Dredging the Pond, reducing fertilizer use on turf grass near the Pond, reducing the geese population, and/or enhancing native shoreline vegetation could help to reduce phosphorus and chlorophyll-*a* concentrations in the Pond and enhance water clarity. Dredging is scheduled to occur within the near future, which would physically remove the sediment and associated nutrients and pollutants. With such a large undertaking, implementing other improvements within the time period could allow for synergistic outcomes to improved Pond quality. Particularly, native shoreline plantings can decrease soil erosion, increase pollinator visitation, and discourage direct access of geese into and out of the Pond to deter nuisance populations.[29]

Other Parameters

Commission staff additionally recorded pH and mVORP values as detected in the suite of the Hanna Instruments meter (see Figure 6). The pH scale measures the acidity of water, a logarithmic measure of the hydrogen ion concentration on a scale of 0 to 14. Pure water has a pH of 7, neutral on the pH scale. In Wisconsin lakes, pH can range anywhere from 4.5 in some acid-bog lakes to 8.4 in hard water, marl lakes.[30] Many chemical and biological processes are affected by pH, as are the solubility and availability of many substances. Different organisms can tolerate different ranges of pH, with most preferring ranges between about 6.5 and 8.0. Although moderately acidic (slightly below a pH of 7) does not usually harm fish, as pH drops to 6.5 or lower, some species can be adversely affected, especially during spawning. In addition, many metals are more soluble in water with low pH than they are in water with high pH and can be released from lake sediment if present under low pH conditions.

With an average pH of 8.3, Jackson Park Pond is a slightly basic waterbody.[31] The pH of the Pond ranged from 7.53 to 8.84 and was more alkaline near the surface (see Figure 6). These measurements are consistent with 1981 findings (pH between 7.2 and 8.7) and indicate no long-term change in the Pond pH. A waterbody's pH can be affected by acids released by decomposition of organic material, underlying soil and bedrock type, and photosynthesis of aquatic plants, phytoplankton, and algae. Additionally, external factors such as pollutants contained in discharges from point sources and in stormwater runoff can also affect the waterbody's pH.

Additionally, mVORP measurements refer to the oxidation-reduction potential (ORP), measured in millivolts (mV), which reports the electron transfer capacity by measuring oxidizing or reducing agents. The unique combination of dissolved solutes in the water (i.e. chlorine, decaying matter, hydrogen, oxygen) swing the redox value to be positive or negative. A high ORP typically signifies oxidizing conditions in a lake ecosystem, which sustains aerobic bacteria to enhance decomposition, while low ORP can indicate reducing conditions that sustain anaerobic bacteria and may limit decomposition. The mVORP values of Jackson Park Pond were positive and increased with depth, corresponding with the high dissolved oxygen observed. These positive results indicate that decomposition can occur efficiently under aerobic, oxidizing conditions.

Sediment

A historic 1970 WDNR survey indicated a maximum depth of 7.7 feet in Jackson Park Pond, whereas the 2025 survey found a maximum depth of 7 feet, suggesting that sedimentation has been occurring over the

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[27] *'Geese-days' serves as an estimate of the daily geese visitations throughout the year. This metric does not serve to count unique individuals, as it is assumed the same geese stay for extended time periods. The metric was calculated by taking the sum of the average geese per week, multiplied by seven for the number of geese seen per day.*

[28] *MMSD, 2021,* op. cit.

[29] *Smith, et al.,* Managing Canada Geese in Urban Environments, *1999*.

[30] *Wisconsin Department of Natural Resources, Byron Shaw, Christine Mechenich, and Lowell Klessig,* Understanding Lake Data: *www.uwsp.edu/cnrap/UWEXLakes/Documents/ecology/shoreland/background/understanding%20lake%20data.pdf.*

[31] *Lillie, R.A. and Mason, J.W, Limnological characteristics of Wisconsin lakes: Wisconsin Department of Natural Resources Tech. Bulletin No. 138, 1983.*

years into the Pond. As part of the natural aging process, all lake basins gradually fill with sediment. This sediment is primarily derived from the following processes.

- Sediment carried to a lake by actively flowing water: Erosion over broad expanses of upland areas is typically the primary source of such sediment to most lakes. This sediment is generally funneled to lakes through tributary streams. In some cases, general overland flow around the lake and shoreline erosion can also be significant contributors to a lake's overall sediment load. Much of the sediment carried to lake basins by moving water is comprised of inorganic gravel, sand, silt, and clay. Lakes with large watersheds, significant land and/or shoreline disturbance can lead to the accumulation of large amounts of sediment to be deposited into the lake bottom each year. Coarser-grained sediments (i.e., silt, sand, and gravel) commonly accumulate near the point where moving water enters a lake. In contrast, portions of lakes well offshore, or otherwise distant from moving water, accumulate clay-size sediment. The actual amount of sediment entering lake basins is highly dependent on lake- and watershed-specific factors and is therefore highly variable.

- Sediment originating in a lake comprised of dead plants and animals: All aquatic plants, algae, diatoms, fish, and other aquatic life eventually die and settle to the lake bottom. When the supply of such material exceeds the ability for material to be decomposed and removed from the lake bottom, organic deposits form. These deposits are commonly termed muck or peat. Muck is deposited throughout lake basins while peat is generally confined to riparian wetlands. The amount of these materials deposited within lakes is highly variable and is highly dependent upon the level of lake nutrient enrichment.

The sediment of Jackson Park Pond has been surveyed in the past under investigation by the Environmental Protection Agency (EPA) due to the presence of PCBs in the soil.[32] The results of the survey did not reach any conclusions about the source of the pollutants. Measurements taken by K. Singh & Associates, Inc. and MMSD in 2022 showed the sediment was contaminated by PCBs, PAHs, VOCs, and heavy metals (see Figure 2). These data indicated the levels of these pollutants throughout the Park area, and will inform the dredging locations, volume, and disposal process to the Pond as a part of the implementation of the Jackson Park Project.

Water Depth and Sediment Type

Commission staff recorded the water depth as well as sediment type at each point-intercept grid survey point. Recorded water depths ranged from one to seven feet (Figure 7), with an average depth of five feet (see Map 2). The deepest areas of the Pond were near eastern lobe of the while the shallowest areas were around the islands and in the northwest.

The Pond's sediment was largely organic muck, observed at 87 percent of surveyed points; rock was observed at 11 percent, with sand being the other 2 percent. When referenced to the 1970 survey, the 2025 observations majorly correspond to the historic sediment composition, with an increase in muck as would be expected by the sedimentation process.

Commission staff surveyed flocculent sediment depths in Jackson Park Pond using a seven-foot-long hollow plastic tube marked in inches to the top. At selected points from the point-intercept survey, the pole was lowered until it hit the current Pond bottom, and a depth measurement was recorded. The pole was then pushed down once more to break through accumulated sediment until it could not be pushed further, called the point of refusal, and another measurement was made. Accumulated sediment was calculated by subtracting the point of refusal measurement from the current Lake bottom depth.

Out of the 56 sediment depths collected, accumulated sediment depths ranged from zero to 2.5 feet (see Map 3). The highest amount of accumulated sediment was seen in the eastern side on the Pond. However, as the length of the sediment measurement tool was only seven feet, much of the western, deeper half of the Pond was unable to be quantified for sediment accumulation. As only a limited number of sediment depths were taken, the total sediment load to the Pond is unable to be confidently quantified.

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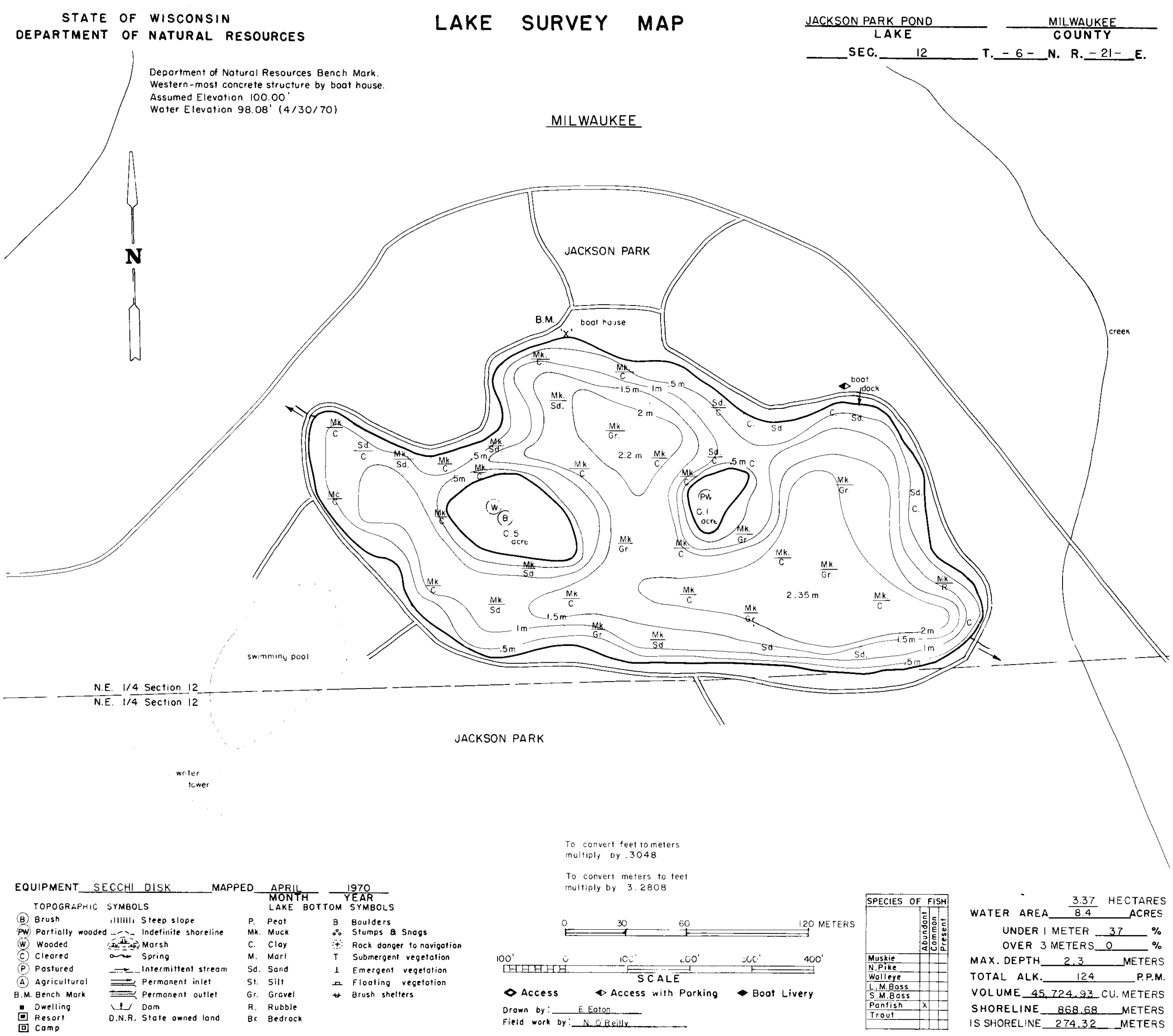
[32] *K. Singh & Associates Inc.,* Phase I Environmental Site Assessment, Milwaukee County Jackson Park Lagoon, *1999.*

Figure 7
Jackson Park Pond Map: 1970



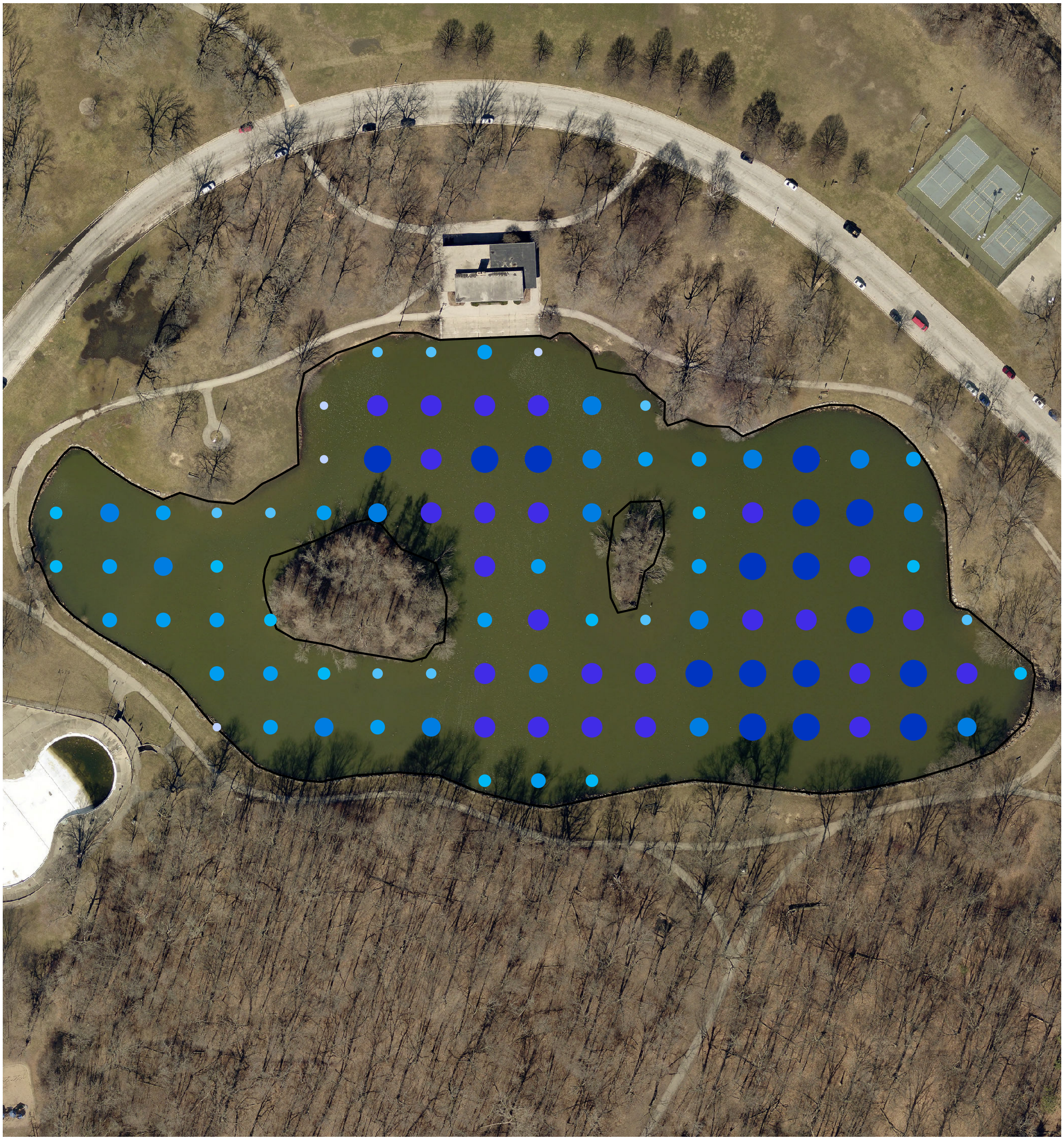
Source: WDNR and SEWRPC

As dredging of the contaminant sediment in Jackson Park Pond is scheduled, quantifying both pre- and post-dredge water depths and flocculent sediment depths with a sediment tool able to survey all depths of the Pond would aid in the future management of the Pond beyond the near future.

SUMMARY

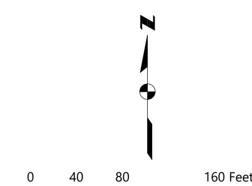
- Jackson Park Pond is of great value to Park users and supports great wildlife viewing opportunity, access to greenspace, and recreational opportunities.
- The Jackson Park Project will include improvements to the Pond, including; dredging of contaminated sediment, installation of fishing piers, and the addition of wildlife overlooks. Implementation of the project is expected in the near future. Execution of the planned restoration work should help enhance water quality and aquatic habitat.
- The Pond has historically had fairly poor water quality and there have been studies regarding contaminants in sediment. The water quality likely impacts the recreational fishery of the Pond, one of its most popular uses.

Map 2
Water Depth in Jackson Park Pond: Summer 2025



Water Depth (feet)

- 0.00 - 1.00
- 1.01 - 2.00
- 2.01 - 3.00
- 3.01 - 4.00
- 4.01 - 5.00
- 5.01 - 6.00
- 6.01 - 7.00



Source: WDNR and SEWRPC

Map 3
Flocculent Sediment Depths in Jackson Park Pond: Summer 2025

Sediment Depth (feet)

- 0.00 - 0.5
- 0.51 - 1.0
- 1.01 - 1.5
- 1.51 - 2.0
- 2.01 - 2.5

N

0 45 90 180 Feet

Source: WDNR and SEWRPC

- Jackson Park Pond likely suffers from eutrophic or hypereutrophic conditions, which is contributed by waterfowl, turf management, and/or shoreline erosion. These pollution sources can be managed through methods such as native shoreline plantings, restoring eroded shorelines, aquatic plant stocking, and reducing nutrient loads to the Pond from geese and turf fertilizers.

- The aquatic plant community in the Pond is fairly depauperate. Post-dredging management of the Pond presents an opportunity to improve aquatic plant conditions that can aid in the ecological function and recreational use of the Pond.

- Project fundraising and volunteer hours for restoration projects could be provided by Friends of Jackson and Manitoba Parks, Milwaukee Parks Foundation, The Park People, or other non-profit organizations. Aquatic rakes could be provided for hand-pulling aquatic invasive species.