LAKE CHEROKEE

Water Quality Assessment

&

Ecological Restoration Proposal

Submitted to the City of Orlando
Department of Public Works & Environmental Services

Prepared by the Lake Cherokee Neighborhood Association
Orlando, Florida

March 2026

WBID: 3168X6 • 28.533° N, -81.371° W

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LAKE CHEROKEE NEIGHBORHOOD ASSOCIATION

The Lake Cherokee Neighborhood Association is a group of residents currently in the process of formally organizing to provide focused and sustained attention on the declining ecological health of Lake Cherokee. While the association remains informal at this stage, it represents an active and engaged community of lake-area homeowners who have come together out of shared concern for the lake's water quality, public safety, and long-term ecological value.

The association has already undertaken meaningful groundwork: coordinated shoreline and watershed trash removal to reduce direct nutrient inputs; community water quality sampling to supplement the City's monitoring record; aerial drone documentation of lake surface conditions; and the preparation of this proposal. These activities reflect the association's commitment to being a working partner — not simply a petitioner — in the restoration of Lake Cherokee.

All technical work and recommendations in this proposal have been developed in consultation with a professional environmental engineer with direct experience in Florida lake management and water quality restoration. The association is fully committed to functioning as a formal community co-applicant and partner to the City of Orlando throughout every phase of the program described herein.

EXECUTIVE SUMMARY

Lake Cherokee experienced its poorest water quality on record in 2025.

Since 1987, the City of Orlando has been monitoring the water quality of Lake Cherokee resulting in nearly four decades of data collection. That record shows a lake that is capable of being clean, healthy, and beautiful: between 2008 and 2016, water clarity improved dramatically and algal blooms were rare. But beginning around 2017, the long-term monitoring record shows a deterioration in water quality, with year-to-year variability but a clear overall decline. In 2025, the corrected chlorophyll-a (a direct measure of algal growth) hit the highest level ever recorded. Total phosphorus — typically the limiting nutrient driving algal blooms in Florida freshwater lakes — more than doubled compared to the lake's best years. The lake's trophic state index (TSI) reached 65 in 2025, within the eutrophic range under conventional Carlson TSI screening criteria and continuing to worsen. A significant fish kill occurred in 2025, leaving dead bass and bluegill on the shoreline. Algal scums have produced noxious odors and made the lake unsuitable for recreation.

We believe this lake can recover. The data show it has before. What we need now is a committed partnership with the City of Orlando to diagnose the sources of the problem, treat the underlying causes, and restore the lake to the clean, native-plant-lined, fishable water body our neighborhood deserves.

Our vision for Lake Cherokee is a lake managed on ecological principles: a healthy littoral zone of native aquatic plants, a restored fish community, and a management program that minimizes chemical inputs. We are not asking the City to do this alone. The association is prepared to contribute in concrete ways: conducting ongoing aerial drone surveys to detect and map algal blooms and nuisance plant growth; conducting quarterly water quality sampling to supplement City monitoring and provide higher-frequency data; organizing coordinated shoreline and watershed trash collection; and taking the lead on funding and installing native beneficial plantings along the littoral zone. We are also fully prepared to work alongside City staff, co-author grant applications, and support every phase of the restoration program. But we need the City's formal commitment and technical leadership to make it happen.

What the Data Show

- TSI of 65 in 2025 — record high; eutrophic by conventional Carlson TSI screening criteria (TSI ≥ 60), indicating elevated algal biomass and impaired water clarity
- Chlorophyll-a of 43.5 μg/L in 2025 — record high; nearly 7× the 2016 minimum of 6.4 μg/L
- Total Phosphorus of 0.0798 mg/L (79.8 μg/L) in 2025 — more than double the 2012–2016 recovery period average (2.02×)
- Dissolved Oxygen: individual spot measurements hit 0.18 mg/L in 2022 and 0.41 mg/L in 2015 — near-anoxic readings capable of causing bloom-related fish kill events
- Cyanobacteria: FDEP Algal Bloom Dashboard records a September 9, 2025 sample identifying Microcystis aeruginosa and Raphidiopsis raciborskii as co-dominant taxa — both are confirmed cyanotoxin-producing genera. Cylindrospermopsin returned a

tentative low-level detection (0.29 μg/L, “I” qualifier). Microcystins — the toxin most associated with Microcystis aeruginosa — have never been screened.

What We Are Asking the City to Do

1. Enroll Lake Cherokee in the City’s Lake Management Program with dedicated monitoring and management resources.
2. Commission an expedited diagnostic package: sediment phosphorus coring, stormwater inlet mapping and dry-weather flow survey, and a full cyanotoxin screening panel.
3. Coordinate with FDOH and FDEP regarding precautionary HAB advisory signage at lake access points, pending completion of a full cyanotoxin assessment.
4. Engage SJRWMD and FDEP to pursue Section 319 and SWIM funding for stormwater retrofits and lake restoration.
5. Develop a formal Lake Management Plan for Lake Cherokee, with native plant restoration and ecological management as the primary management framework, within 18 months.
6. Commit to a formal review and expansion of the City’s Lake Management Program budget and staffing, commensurate with the complexity of managing 100+ urban lakes under current water quality conditions.

Why the City’s Lake Program Needs Expanded Investment
Precautionary HAB liability: Cyanobacterial bloom conditions across 100+ City lakes require systematic toxin monitoring and specialized field staff. Reactive emergency response to unmonitored blooms costs far more than annual proactive screening.
Grant leverage: Section 319 and SWIM funding require 40–50% local match. Every dollar of dedicated City lake budget unlocks two or more dollars in federal and state restoration capital otherwise unavailable.
Economic value: A lake at TSI 65 with recurring fish kills and algal scums depresses adjacent property values and tax revenue. Proactive restoration costs a fraction of the cumulative price of repeated algaecide applications, emergency cleanups, and eventual large-scale dredging.
Sustainable engineering: Transitioning from a chemical-first to an ecological-first model — native plantings, alum, stormwater retrofits — requires upfront diagnostic investment (sediment coring, electrofishing, water chemistry) but reduces long-term per-lake maintenance costs once biological restoration is established.
Urban Lake Syndrome: Orlando’s high impervious cover and legacy sediment phosphorus mean City lakes cannot self-heal. A dedicated, well-funded lake management team is the minimum investment required to protect public health, maintain the City’s natural assets, and meet its watershed stewardship obligations.

1. INTRODUCTION

1.1 Purpose

This Water Quality Assessment and Ecological Restoration Proposal presents an analysis of the City of Orlando's nearly 40-year ambient water quality monitoring record for Lake Cherokee (WBID 3168X6), a formal assessment of current ecological and public health conditions, and a proposed restoration strategy. It is submitted by the Lake Cherokee Neighborhood Association to the City of Orlando's Department of Public Works & Environmental Services as the basis for a formal partnership on lake restoration.

The report is also intended to support engagement with FDEP, SJRWMD, and FWC, and to serve as a foundation for grant applications. The neighborhood association is prepared to function as a co-applicant and community partner in all phases of the restoration program.

1.2 Lake Description

Lake Cherokee is a 12-acre shallow urban lake (WBID 3168X6; 28.533° N, 81.371° W) located within the Little Econ watershed. The Lake Cherokee neighborhood of Orlando and its sub-basins surrounding the lake are comprised of predominantly residential land use with high impervious cover. The lake supports or has historically supported recreational fishing, kayaking, paddleboarding, and wildlife habitat. It currently has no dedicated water quality improvement and management plan within the City's lake program.

1.3 Data Sources

Primary water quality analysis is based on the City of Orlando Ambient Surface Water Quality dataset (WIN_21FLORL), downloaded from the Orange County Water Atlas (orange.wateratlas.usf.edu). The dataset comprises 4,187 records spanning September 1987 through February 2026 across 55 parameters, collected at monitoring station CHEROKEE.

Supplemental cyanotoxin and species identification data are drawn from the Florida Department of Environmental Protection Algal Bloom Dashboard (floridadep.gov/AlgalBloom), which contains a water sample record for Lake Cherokee dated September 9, 2025. This record includes cyanobacterial taxa identification and a multi-toxin screening panel and is cited in Section 2.3.

1.4 The Case for Expanded City Lake Program Investment

Lake Cherokee is one of more than 100 lakes within the City of Orlando's boundaries. Most share the same underlying conditions: high impervious cover, concentrated stormwater loading, legacy sediment phosphorus accumulation, and a trajectory of declining water quality under a reactive, application-based management model. The neighborhood association respectfully submits that the restoration of Lake Cherokee — and the long-term health of the City's lake portfolio — requires not only the specific actions described in this report, but a sustained institutional commitment to expanded lake program staffing, diagnostic capability, and dedicated restoration budget.

Precautionary HAB Liability

Cyanobacterial bloom conditions are present at Lake Cherokee and are likely developing across many City lakes. Managing HAB risk systematically across a 100+ lake portfolio requires specialized field staff, laboratory partnerships for cyanotoxin screening, and a documented monitoring program. The cumulative cost of reactive emergency management — resident illness reports, media attention, unplanned advisory coordination, and post-event water quality response — substantially exceeds the cost of proactive annual screening and early-warning monitoring.

Grant Capital Leverage

EPA Section 319 nonpoint source grants and SJRWMD SWIM program cost-share agreements both require 40–50% local match. A dedicated City lake restoration budget converts each local dollar into two or three dollars of total restoration capacity by unlocking federal and state funding that would otherwise flow to other jurisdictions. Without local match capital, the City cannot competitively access these programs regardless of the ecological need. Lake Cherokee's conditions, combined with a documented restoration plan, make it a strong candidate for both programs — but only if the City can commit the required match.

Economic Value of Urban Lake Quality

Waterfront property values are directly sensitive to lake water quality and recreational usability. A lake at TSI 65 with recurring fish kills and algal scums represents a measurable drag on adjacent property values, neighborhood investment, and the City's tax base. Proactive restoration is substantially more cost-effective than reactive accumulation: a decade of repeated algaecide and herbicide applications, emergency fish-kill response operations, and eventual large-scale dredging when sediment phosphorus becomes unmanageable can cost orders of magnitude more than the diagnostic and structural interventions proposed here.

Transition to Sustainable Ecological Engineering

A chemical-first management model — routine algaecide, broadcast herbicide — generates recurring operational costs without addressing root causes and often suppresses the native vegetation communities that would otherwise provide the most cost-effective long-term water quality control. Transitioning to an ecological-first model, as demonstrated by the City of Winter Park's lake management program, requires higher upfront diagnostic investment: sediment coring, electrofishing surveys, water quality monitoring beyond basic trophic state parameters, and contractor-supervised native planting programs. This investment reduces long-term per-lake maintenance costs significantly once biological restoration is established and the native plant community can self-maintain.

Urban Lake Syndrome

Orlando's urban lakes are not self-regulating systems. High impervious cover concentrates stormwater loading; legacy sediment accumulation releases internal phosphorus under anoxic conditions; and shallow lake geometry amplifies bloom dynamics. Without active, skilled management, these lakes will continue to deteriorate regardless of resident behavior. A dedicated, adequately staffed, and well-funded lake management team is not a discretionary investment — it is the baseline institutional capacity the City needs to protect public health, preserve the value of its natural assets, and fulfill its environmental stewardship obligations to the communities built around these water bodies.

2. WATER QUALITY STATUS

2.1 Long-Term Trend

The nearly 40-year record shows a lake that has cycled between mesotrophic conditions (TSI 43–54, 2004–2016) and eutrophic conditions (TSI 59–65, 1987–2003). The 2008–2016 improvement — coinciding with reduced TP loads and improved Secchi depth — establishes a clear baseline for what recovery looks like. The post-2017 period has generally shifted back toward eutrophic conditions, with year-to-year variability (TSI 47–65); the record deterioration in 2025 (TSI 65) indicates one or more unresolved loading increases that have not yet been identified or addressed.

Year	TSI	Total P (mg/L)	Chl-a (µg/L)	DO (mg/L)
1987	61.0	0.0580	34.1	10.56
1990	59.5	0.0708	24.6	9.49
1993	63.6	0.0620	40.5	10.27
2000	61.1	0.0638	30.1	10.17
2004	53.7	0.0593	14.1	8.74
2008	51.4	0.0424	13.3	—
2010	50.5	0.0415	13.6	—
2012 ✓	**46.0**	**0.0372**	**7.3**	—
2016 ✓	**43.0**	**0.0395**	**6.4**	6.30
2017	55.0	0.0555	21.4	7.90
2020	54.2	0.0450	22.7	7.60
2021	**61.0**	**0.0535**	**39.9**	**6.60**
2022	55.8	0.0500	22.0	**5.12** ⚠
2024	56.5	0.0532	25.9	7.68
2025	**65.0** ⚠	**0.0798** ⚠	**43.5** ⚠	8.15

✓ Recovery period best values (2012–2016) ⚠ Record or critical value — Insufficient data

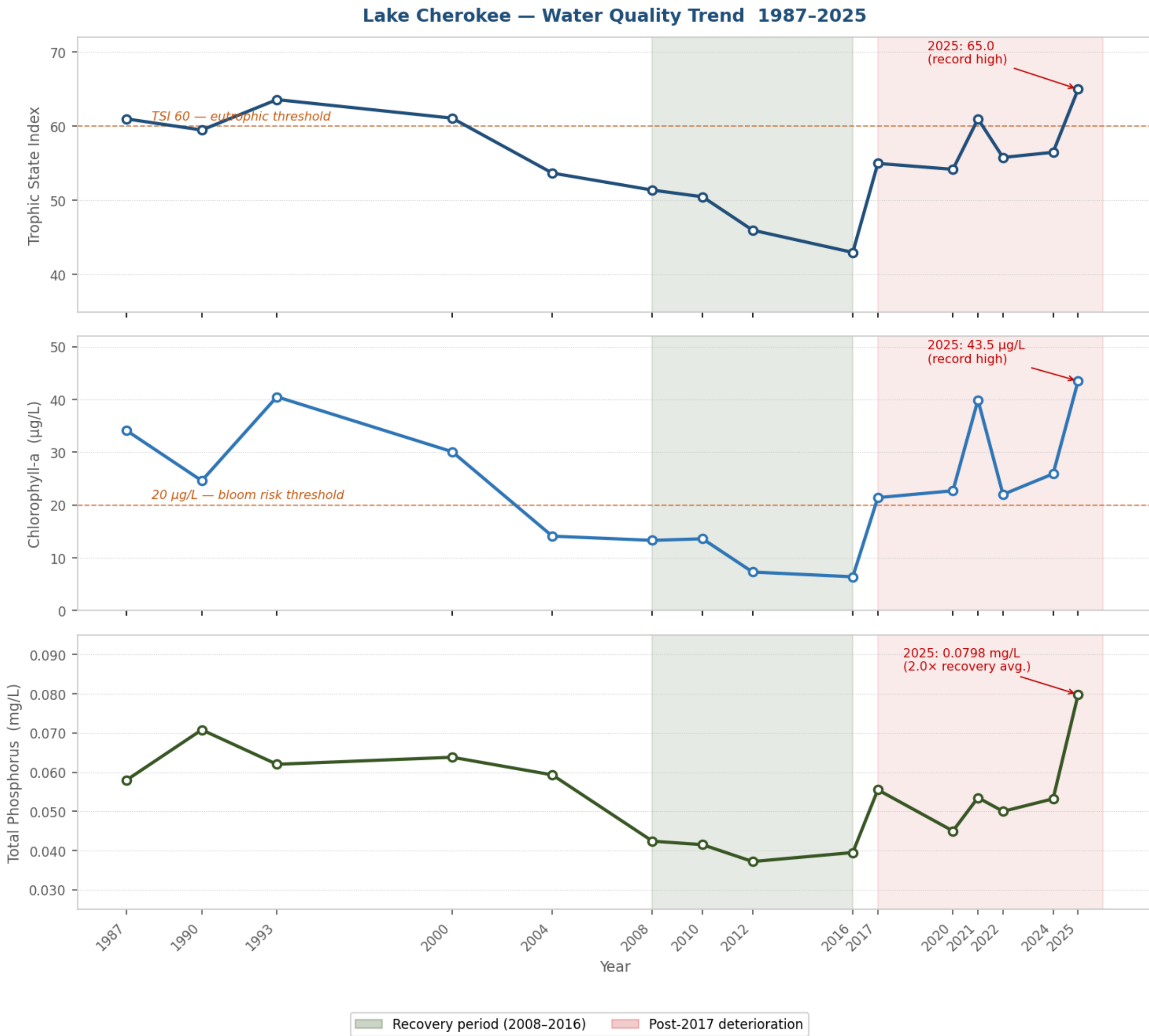

Figure 1. Lake Cherokee annual water quality indicators, 1987–2025. Green shading: recovery period (2008–2016). Red shading: post-2017 deterioration. Data source: City of Orlando WIN_21FLORL dataset.

2.2 Nutrient Loading

TP averaged 0.057 mg/L across the full dataset (range: 0.019–0.210 mg/L). The 2025 annual mean of 0.0798 mg/L is more than double (2.02×) the TP loading that prevailed during the lake's recovery period and is elevated well into the range associated with eutrophication risk; formal determination of applicable NNC thresholds requires color and alkalinity classification, which should be completed as part of the diagnostic phase. The increase from the 2012–2016 recovery period to the 2025 annual mean — 2.02×, assuming consistent monitoring methodology — is substantial and consistent with renewed eutrophication pressure; source investigation is warranted. Sediment internal loading should be assessed in parallel with external source mapping; the DO and bloom dynamics observed in 2021–2022 are consistent with anoxic phosphorus release from legacy sediment accumulation.

Total nitrogen averaged 0.894 mg/L over the record (range: 0.098–3.204 mg/L). The appearance of duckweed (Lemna spp.) and Azolla spp. following the suspension of routine herbicide applications is consistent with nutrient-rich, low-turbulence surface conditions; their presence reflects favorable growth conditions under elevated nutrient availability rather than indicating a specific nutrient source. Nitrogen fixation by Azolla is typically significant only under nitrogen-limited conditions, which are unlikely to prevail in a eutrophic urban lake of this character.

The dataset-wide mass ratio of total nitrogen to total phosphorus (N:P) averages approximately 16:1, and the 2025 annual means (TN 1.61 mg/L; TP 0.0798 mg/L) yield a ratio of approximately 20:1. Both values exceed the commonly applied freshwater phosphorus-limitation threshold of ~15:1 by mass, confirming that phosphorus is the primary nutrient controlling algal growth in Lake Cherokee. This stoichiometric confirmation is an important underpinning of the restoration strategy: interventions that reduce phosphorus availability — stormwater retrofit, internal sediment deactivation, and native plant uptake — will have the most direct and predictable impact on algal biomass. Nitrogen management (fertilizer ordinance compliance, septic screening) remains a secondary but complementary measure.

2.3 Algal Biomass and Cyanotoxins

Chlorophyll-a has tracked TP closely across the record. The 2025 annual mean of 43.5 µg/L and the 2021 value of 39.9 µg/L represent conditions well above the threshold for sustained, visible cyanobacterial bloom development.

The WIN dataset contains six anatoxin-a screening results — one from 2023 and five from 2025 — all at the laboratory reporting limit (0.250 µg/L) and all qualified as non-detects. A separate water sample collected from Lake Cherokee on September 9, 2025 and recorded in the FDEP Algal Bloom Dashboard (floridadep.gov/AlgalBloom) provides both species-level identification and a broader cyanotoxin panel. That record identifies Microcystis aeruginosa and Raphidiopsis raciborskii as co-dominant taxa. Both are bloom-forming cyanobacteria with documented cyanotoxin-producing strains: Microcystis aeruginosa is the primary producer of microcystins — liver toxins and the most commonly detected cyanotoxin in Florida freshwater lakes — while Raphidiopsis raciborskii (formerly Cylindrospermopsis raciborskii) produces cylindrospermopsin and, in some strains, saxitoxins.

The FDEP panel returned anatoxin-a, nodularin-R, and saxitoxins as not detected. Cylindrospermopsin was reported at 0.29 µg/L with an “I” qualifier, indicating a result between the laboratory method detection limit and the practical quantitation limit — a tentative low-level detection, not a fully confirmed quantitative result, but not absent. Critically, microcystins were not included in the FDEP panel and have never been screened at Lake Cherokee across either dataset, despite Microcystis aeruginosa being identified as a co-dominant bloom-forming species. This is the most significant gap in the current cyanotoxin risk profile for the lake. A comprehensive cyanotoxin panel — including at minimum microcystin variants (LR, RR, YR), cylindrospermopsin, anatoxin-a, and saxitoxins — conducted during an active bloom event is an urgent priority and should be completed in 2026.

2.4 Dissolved Oxygen and Fish Kills

Annual mean DO fell to 5.12 mg/L in 2022 and 6.60 mg/L in 2015 and 2021. Individual spot measurements reached 0.18 mg/L in 2022 and 0.41 mg/L in 2015 — near-anoxic readings capable of causing acute fish stress and mortality, especially during warm overnight bloom-collapse conditions. Annual averages substantially understate the severity of nocturnal minima during peak bloom periods. Fish kills observed by residents during these periods are consistent with overnight DO depression associated with algal bloom decomposition. Under current nutrient loading conditions, similar bloom-driven dissolved oxygen depressions are likely to recur during warm-season bloom events.

2.6 February 2026 Snapshot

The February 12, 2026 sample shows DO at 11.34 mg/L, pH 7.89, specific conductance 246.3 µS/cm, and Secchi depth 1.62 m (5.31 ft). These are moderate winter conditions, consistent with typical seasonal patterns and insufficient to indicate any sustained change in the lake's underlying nutrient status. Warm-season bloom risk is expected to increase materially from spring into summer.

3. ECOLOGICAL RESTORATION VISION AND STRATEGY

The Lake Cherokee Neighborhood Association's restoration objectives are straightforward: eliminate fish kills, eliminate toxic bloom conditions, and restore the lake to a state that is ecologically functional and visually beautiful. The neighborhood wants a lake lined with native aquatic plants, supporting a healthy fishery, where children and dogs can be near the water without hazard.

Achieving this through natural means is not only the community's preference — it is also the most defensible long-term strategy. A biologically functional littoral zone and a well-structured fish community are self-sustaining; they do not require expensive chemical treatments to maintain. The goal of eliminating routine glyphosate applications from Lake Cherokee's management program is therefore both a community value and a legitimate ecological objective, provided that the underlying nutrient loading is controlled and a native plant community is successfully established.

The strategy is sequenced deliberately. Native plant restoration is the cornerstone, but it cannot succeed against a backdrop of unaddressed external loading or active internal phosphorus release from sediments. The restoration program must address root causes first, then create the conditions for biological recovery to take hold and persist.

3.1 Phase 1: Immediate Priorities (0–6 Months)

Cyanotoxin Assessment

A full cyanotoxin panel (anatoxin-a, microcystin variants, cylindrospermopsin) should be commissioned immediately through a Florida-certified laboratory. Results should be shared with FDOH and FDEP. HAB advisory signage should be posted at lake access points pending the outcome. This is a non-negotiable prerequisite to any in-lake vegetation management activity; herbicide-induced cell lysis in an active cyanobacterial bloom carries documented cyanotoxin release risk and should not proceed without toxin characterization and contractor-timed application protocols.

Stormwater Inlet Survey

A dry-weather flow survey of all stormwater inlets to Lake Cherokee should be conducted to map contributing catchments, quantify dry-weather discharge volumes, identify potential illicit connections, and prioritize inlets by loading magnitude. This is the essential precursor to stormwater retrofit design and can typically be conducted by City stormwater engineering staff or funded through SJRWMD's basin assessment program.

Community Coordination

The neighborhood association requests a formal meeting with City lake management and stormwater staff to establish a collaborative working relationship, define roles and responsibilities, and agree on a scope of work for the diagnostic phase.

The association has made the following specific commitments to this restoration effort:

- Aerial drone monitoring: The association will conduct ongoing drone surveys of the lake surface to detect early-stage algal bloom formation, map nuisance and invasive aquatic plant coverage, and track changes in littoral zone condition between City sampling events. Drone imagery will be shared with City lake management staff and can be time-stamped for correlation with water quality data.

- Quarterly water quality sampling: The association will conduct quarterly sampling of core water quality parameters — at minimum temperature, dissolved oxygen, Secchi depth, and pH — to supplement the City's monitoring program and provide higher-frequency data for tracking seasonal bloom dynamics and detecting early signs of deterioration. Sample results will be reported to City lake management staff and maintained as a community dataset alongside the WIN record.
- Shoreline and watershed stewardship: Association members will organize regular coordinated trash and debris removal from lake access points, the shoreline, and adjacent stormwater inlets. Reduction of solid waste inputs to the lake directly reduces nutrient loading and improves the habitat quality available to native plantings.
- Native planting program — funding and installation lead: The association will take primary responsibility for fundraising and installation of native beneficial plantings in the emergent littoral zone. This includes identification of donor nursery partnerships, volunteer planting coordination, and post-installation monitoring. The association requests City technical guidance on target species, placement, and permitting through the APMP process.

3.2 Phase 2: Diagnostics (6–18 Months)

Bathymetric Survey

A bathymetric survey should be conducted to map the lake bottom topography and identify depressional features where sediments preferentially accumulate under gravity. This spatial data directly informs alum dosing strategy: applicators target higher alum concentrations above depositional depressions where internal phosphorus release is most concentrated. Bathymetric mapping also provides baseline data for tracking long-term sediment infill rates and supports dredging volume estimates if mechanical removal becomes necessary.

Muck Thickness Survey

Measurements of organic muck thickness on a regular grid superimposed on the lake bottom will characterize the spatial distribution of nutrient-rich sediment deposits. Data collected may identify nutrient hotspots and areas receiving disproportionate loading from specific surface sources, directly informing the prioritization of stormwater inlet retrofits and the design of any sediment management program.

Sediment Phosphorus Coring

A minimum of 3–5 sediment cores distributed across the lake basin should be collected and analyzed for total phosphorus, iron-bound phosphorus fractions, and net internal loading rates under anoxic conditions. This study will determine whether alum-based sediment deactivation is warranted and, if so, inform dosing calculations. Without this data, any native planting program risks being undermined by continued internal loading driving algal biomass above levels that established vegetation can tolerate or outcompete.

Indicative cost range: $8,000–$20,000. Likely fundable through SJRWMD cost-share agreements.

Species Identification and Toxin Profiling

Microscopic identification of dominant cyanobacterial taxa and quantitative toxin profiling should be conducted across at least one full bloom season (April–October) to characterize bloom dynamics, identify peak risk windows, and assess whether a shift in dominant species is contributing to the worsening trend. FDEP's HAB response program may provide sampling support at no cost once Lake Cherokee is formally registered.

Fish Community Electrofishing Survey

An FWC or licensed contractor electrofishing survey will establish the current fish assemblage, biomass, and size-class distribution. Fish kills may have suppressed piscivore populations and skewed the community toward small planktivores, reducing zooplankton grazing control on phytoplankton. Survey results will directly inform stocking decisions and biomanipulation targets.

3.3 Phase 3: Active Restoration (12–48 Months)

External Load Reduction

Stormwater retrofit installations — baffle boxes or wet detention cells depending on inlet configuration and available right-of-way — should be designed and constructed at the highest-loading inlets identified in the Phase 1 survey. This is the most consequential long-term investment: without reducing external TP input, no in-lake measure will hold. The City of Winter Park's stormwater program, which has operated over 35 baffle box/exfiltration systems since 1989, provides a directly applicable model for an urban Florida lake context.

Ancillary measures include: septic-to-sewer conversion review for any properties in the immediate watershed; enforcement coordination with the City on Orange County's Fertilizer Ordinance (Chapter 15, Article VIII) rainy-season restrictions; and a FWC-coordinated non-native waterfowl management program to reduce direct nutrient inputs from Muscovy ducks and domestic birds.

Sediment Management

If the coring study confirms significant internal phosphorus loading — which the bloom and DO dynamics strongly suggest — alum-based sediment phosphorus deactivation is recommended as the in-lake treatment of choice. Alum treatment is well-validated in Florida, safe for fish and invertebrates at label-compliant doses, and has been successfully applied at City of Winter Park lakes. It does not require the repeated applications that algaecide programs demand, making it compatible with the neighborhood's goal of reducing long-term chemical dependency in lake management. The deactivation effect typically persists for 5–15 years in well-managed systems.

Native Aquatic Plant Restoration — The Centerpiece Strategy

Native plant restoration is the community's primary management objective and, once external and internal loading are controlled, the most ecologically durable outcome available. A well-designed native littoral zone accomplishes what no herbicide program can: it creates a self-sustaining biological system that actively competes with nuisance algae and floating plants for available nutrients, stabilizes the shoreline against erosion, provides structurally complex fish and wildlife habitat, and delivers the aesthetic character the neighborhood wants for the lake.

The planting program should be developed in two tiers. The emergent/shoreline tier (generally from the shoreline to approximately 1–2 feet water depth, depending on slope) should prioritize: Pickerelweed (Pontederia cordata), Blue Flag Iris (Iris virginica), Duck Potato (Sagittaria lancifolia), Soft Rush (Juncus effusus), and Maidencane (Panicum hemitomon) for areas with wave exposure. The submerged tier, deployable once water clarity improves sufficiently to support sustained submerged vegetation establishment (approximately 1.2 m / 4 ft Secchi depth as an initial planning threshold), should target Eel Grass (Vallisneria americana), Potamogeton spp. (pondweeds), and Najas guadalupensis (southern naiad) as primary species.

A FWC-permitted Aquatic Plant Management Plan (APMP) should be developed in parallel, defining target native cover objectives, monitoring protocols, and thresholds for intervention if invasive exotic species establish. This plan is also the appropriate vehicle for articulating the community's position on chemical use (see Section 3.4).

Fish Community Restoration

Pending electrofishing results, Largemouth Bass stocking at rates advised by FWC's Lake Restoration Program will be the primary biomanipulation intervention. Restoring a piscivore-dominated fish assemblage allows zooplankton populations to recover, re-establishing top-down biological control on phytoplankton biomass. This complements, but does not replace, the nutrient-reduction and planting components.

Aeration

A bottom aeration or circulation system should be evaluated for installation prior to or concurrent with the native planting program. Maintaining DO above 5 mg/L throughout the water column during summer stratification will protect the fish community during the restoration window, when algal biomass may still be elevated even as loading inputs are being reduced. FWC has co-funded aeration systems at multiple central Florida urban lakes and should be approached as a potential cost-share partner.

3.4 Vegetation Management During the Restoration Transition

The neighborhood association has requested suspension of routine glyphosate applications to Lake Cherokee pending development of an Aquatic Plant Management Plan. This is a reasonable precautionary position. A tentative cylindrospermopsin detection and confirmed presence of toxin-producing species on record (see Section 2.3) make herbicide-induced rapid lysis of active cyanobacterial blooms a documented risk — cell lysis can release intracellular toxins into the water column at concentrations exceeding the source bloom material. The request is also consistent with the association's long-term management objective of eliminating routine chemical applications once a functional native plant community is in place.

The neighborhood's position on glyphosate is not absolute. The association recognizes that targeted aquatic herbicide applications may remain necessary for control of confirmed invasive exotics — particularly Water Hyacinth (Eichhornia crassipes), Hydrilla (Hydrilla verticillata), Torpedo Grass (Panicum repens), and Water Lettuce (Pistia stratiotes) — where mechanical alternatives are impractical or insufficient. The association's preference is that any such applications be: (1) species-specific and targeted rather than broadcast; (2) timed to avoid peak bloom conditions; (3) conducted under a written APMP rather than on a reactive basis; and (4) evaluated first for whether mechanical removal is a viable alternative.

The vegetation observed since the herbicide suspension — duckweed (Lemna spp.), Azolla, and filamentous green algae — while at limited surface coverage, should be treated as diagnostic signals rather than managed as a cosmetic problem. Their proliferation is consistent with high nutrient availability in the system, and that mechanical nutrient export (harvest and land-disposal of biomass mats) is a productive near-term option while the nutrient loading investigation proceeds. Filamentous algae, Duckweed and Azolla mats harvested and composted on land represent a tangible nutrient removal pathway from the lake.

In the event that algal bloom conditions deteriorate acutely before longer-term nutrient reduction measures have taken effect, targeted surface alum application may be considered as a treatment of last resort. Unlike the whole-lake sediment deactivation program described in Section 3.3, surface alum involves spot application to the water column to flocculate suspended algal biomass and associated dissolved phosphorus, sinking it out of the active water column. It carries lower risk than broad algaecide application and significantly reduces the risk of rapid toxin release associated with herbicide treatment during active blooms. The association's acceptance of surface alum as a contingency tool is conditional on: (1) application limited to acute, documented bloom events where bloom coverage and persistence pose a clear public safety or ecological risk; (2) FDEP permitting and administration by a licensed contractor; (3) prior cyanotoxin characterization of the bloom; and (4) confirmation that mechanical removal is not a practicable alternative at the required scale. Surface alum does not address root causes and cannot substitute for the structural interventions described in this plan.

Vegetation Management Principles Agreed by the Association
Routine broadcast glyphosate: suspended pending APMP development and cyanotoxin assessment completion.
Exotic invasives (Water Hyacinth, Hydrilla, Torpedo Grass, Water Lettuce): targeted chemical control acceptable where mechanical removal is impractical; timed to avoid active cyanobacterial bloom conditions.
Native emergent vegetation: protect and expand; not subject to routine management.
Filamentous Algae / Duckweed / Azolla mats: mechanical harvest preferred; dispose on land to export nutrients from system.
Surface alum application: contingency measure of last resort for acute bloom conditions only; subject to FDEP permitting, prior cyanotoxin screening, and contractor administration.
All in-lake chemical applications: conducted under written APMP by licensed aquatic pesticide applicator.

4. FORMAL REQUESTS TO THE CITY OF ORLANDO

The Lake Cherokee Neighborhood Association respectfully requests the following actions from the City of Orlando. In return, the association commits to active partnership in every phase: conducting ongoing aerial drone surveys to track bloom formation and nuisance plant coverage; conducting quarterly water quality sampling to supplement City monitoring; organizing coordinated shoreline and watershed trash collection; taking the funding and installation lead on native beneficial plantings; resident outreach and education; data collection support; and co-applicant status on grant applications.

Immediate (Within 90 Days)

7. Coordinate with FDOH Orange County and FDEP Central District regarding precautionary HAB advisory signage at lake access points, pending completion of a full cyanotoxin panel.
8. Commission a full cyanotoxin screening panel (anatoxin-a, microcystin variants, cylindrospermopsin) through a Florida-certified laboratory before summer 2026 bloom season.
9. Formally enroll Lake Cherokee in the City's ambient monitoring program with a minimum monthly sampling frequency for core trophic state parameters (TP, Chl-a, Secchi) and quarterly cyanotoxin monitoring.
10. Initiate a dry-weather flow survey of all stormwater inlets discharging to Lake Cherokee.
11. Establish a wet season stormwater nutrient load monitoring program at primary inlets discharging to Lake Cherokee.
12. Convene a working meeting with City lake management and stormwater staff and the neighborhood association to establish the collaborative framework for the restoration program.

Short-Term (6–18 Months)

13. Fund or cost-share a sediment phosphorus coring study (minimum 3–5 cores) to characterize internal loading and inform alum treatment design.
14. Begin stormwater retrofit design for the highest-priority inlets identified in the dry-weather flow survey, with construction included in the City's next capital improvement cycle.
15. Submit a joint Section 319 or SJRWMD SWIM grant application with the neighborhood association for diagnostic and retrofit work.
16. Develop a written Aquatic Plant Management Plan (APMP) for Lake Cherokee incorporating the association's stated management principles, in coordination with FWC and a licensed aquatic management contractor.
17. Arrange an FWC electrofishing survey to characterize the current fish community and advise on restocking needs.

Long-Term (18–48 Months)

18. Develop and adopt a formal Lake Management Plan for Lake Cherokee with measurable restoration targets (target: TSI ≤ 50, Chl-a ≤ 15 μg/L, no fish kills, no HAB advisories), adaptive management protocols, and a committed funding pathway.

19. Implement alum-based sediment phosphorus deactivation if confirmed by the coring study, administered by a licensed contractor under FDEP permitting.
20. Execute the native aquatic plant restoration program under the APMP, with phased planting across the emergent and submerged zones as water clarity allows.
21. Install bottom aeration or lake circulation system to protect fish community during restoration window and prevent summer DO crashes.
22. Implement piscivore restocking per FWC recommendations following electrofishing assessment.

5. FUNDING PATHWAYS

The following programs are directly applicable to the Lake Cherokee restoration program. The neighborhood association is prepared to co-apply on any of these mechanisms where a non-governmental co-applicant strengthens the application.

Program	Potential Award	Eligible Work	Contact
EPA CWA Section 319 (FDEP-administered)	$100K–$500K (40% local match)	Nonpoint source load reduction, stormwater retrofits, diagnostic studies	FDEP NPS Program (850) 245-8336
SJRWMD SWIM Program	Varies (cost-share)	Lake restoration, sediment studies, drainage basin surveys	SJRWMD (800) 725-7267
City Stormwater Utility	Capital program	Stormwater inlet retrofits, maintenance	City Public Works (407) 246-2314
FDEP Watershed Restoration	Technical + financial	NNC exceedance projects, lake restoration	FDEP Central District (407) 894-7555
FWC Lake Restoration Program	Cost-share	Aeration, fish surveys, aquatic plant restoration	FWC Aquatic Habitat (850) 488-4066

A formal NNC assessment by FDEP to determine whether Lake Cherokee exceeds its applicable nutrient criteria is recommended as an early action; an exceedance determination can trigger both regulatory engagement and funding eligibility that would otherwise require a longer application process.

Appendix A. RESIDENT GUIDANCE — LAKE PROTECTION AND SAFETY

This summary is intended for distribution to Lake Cherokee watershed residents by the neighborhood association.

A.1 During Bloom Conditions

How to recognize a Harmful Algal Bloom
Blue-green, olive, or pea-soup-green water • Surface scums or paint-like streaks
Musty or earthy odor • Dead fish at shoreline • Foam at water's edge

- No swimming, wading, kayaking, or pet contact during visible bloom conditions.
- Do not eat fish caught during or immediately after a bloom event.
- Rinse off immediately with clean water if skin contact occurs; seek medical attention for rash, nausea, or neurological symptoms.
- Report blooms: #DEP (mobile) or FDEP (407) 894-7555. Report suspected illness: FDOH (407) 858-1400.

A.2 Lawn and Landscape

- Use phosphorus-free fertilizers (look for a zero as the middle number, e.g., 15-0-15). Florida soils rarely need added phosphorus.
- Comply with Orange County's Fertilizer Ordinance: no nitrogen or phosphorus applications June 1–September 30.
- Keep grass clippings, leaves, and debris out of streets and storm drains. Bag or compost leaves during fall season.
- Establish a 10–15 ft native plant buffer at the shoreline in place of turf grass.

A.3 Wildlife and Waterfowl

- Do not feed waterfowl. Muscovy ducks and domestic birds concentrate nutrient-rich waste directly in the lake. Feeding exotic waterfowl is prohibited under Florida Statute 379.231.
- Report nuisance alligators: FWC hotline (888) 404-3922.
- Always collect pet waste.

A.4 Stormwater

- Keep the curb in front of your property clear of debris before anticipated rain events.
- Wash cars at a commercial car wash, or on an unpaved lawn area — not on driveways where runoff reaches storm drains.

- Report suspicious discharges (chemical odors, sewage odors, colored water) from storm drains to City of Orlando (407) 246-2314 or #DEP.

Appendix B. KEY AGENCY CONTACTS

Agency	Contact	Role
Florida DEP Central District	(407) 894-7555 / #DEP	HAB registration, NNC assessment, Section 319, enforcement
Florida Dept. of Health — Orange County	(407) 858-1400	Cyanotoxin illness, health advisories
St. Johns River WMD	(800) 725-7267	SWIM funding, basin assessments, cost-share
FWC — Aquatic Habitat Restoration	(850) 488-4066	Fish surveys, aeration funding, plant restoration, APMP
City of Orlando Public Works	(407) 246-2314	Stormwater program, lake management, capital projects
FWC — Nuisance Wildlife	(888) 404-3922	Alligator and exotic waterfowl management

Lake Cherokee Neighborhood Association • Orlando, Florida • March 2026

Data source: City of Orlando Ambient Surface Water Quality Program (WIN_21FLORL) • Orange County Water Atlas