SEWRPC Staff Memorandum

SCOPE OF WORK TO UPDATE GENEVA LAKE'S COMPREHENSIVE LAKE MANAGEMENT PLAN

June 8, 2022

To assure a lake management plan remains relevant and vital, updated data, innovative approaches, current scientific understanding, changed attitudes, user-group feedback, broad inclusion, and multiple concerns and viewpoints must periodically be infused into lake-management-related data gathering, data interpretation, communication, goal setting, and plan execution processes. The most recent comprehensive lake management plan covering Walworth County's Geneva Lake (the Lake) was published during May 2008.[1] Significant amounts and types of additional information have been collected since that time and management actions have been underway throughout the past 14 years. Furthermore, while many of the management issues facing the Lake remain vital, some have only recently gained prominence, stakeholder-perceived importance of some issues has changed, while other issues are completely new and were essentially unheard of in 2008.

Beginning in early 2020, a variety of organizations and individuals interested in the Lake's health asked the Southeastern Wisconsin Regional Planning Commission (the Commission) to help design a comprehensive scope of work addressing conditions and concerns believed to be of most interest to present-day stakeholders, most needed to protect the Lake's health, and most important to collaboratively implementing recommendations. The Commission used prominent concerns expressed as part of dozens of conversations, meetings, emails, and documents to design this draft scope of work to update the 2008 lake management plan. The Geneva Lake Conservancy (the Conservancy) subsequently volunteered to take a leading role within the stakeholder group to work with the Wisconsin Department of Natural Resources (WDNR) and the Commission to prepare a Wisconsin Administrative Code NR 193 *Surface Water Grant Program* application funding a portion of the intended comprehensive lake management plan update. The grant request was fully funded during early 2022.

The comprehensive lake plan update involves considerable long-term effort from and amongst many stakeholders. This memorandum only describes portions of this overall effort supplied by Commission staff. Techniques, budgets, schedules, and intended deliverables associated with the Commission's work are presented in the following sections. This memorandum serves as the foundation of a contractual working relationship between the Conservancy (the grant recipient) and the Commission.

Although this memorandum focusses on the scope of work to be supplied by the Commission, the reader must note that the Conservancy and its other project partners are integral to plan revision and must actively

[1] *SEWRPC Community Assistance Report Number 60, 2nd Edition*, A Lake Management Plan for Geneva Lake*, 2008*.

be involved with data gathering, plan development, issue identification and other "hands-on" issues. As grant recipient, the Conservancy is responsible for supplying significant amounts of project labor and organizing the efforts of other project partners supplying staff time, volunteers, equipment, and supplies integral to project completion. The Conservancy may need to execute other agreements to effectively work with its other partner organizations. Since the Commission's scope of work depends upon work completed by other project partners, the Commission depends upon the Conservancy to reliably supply labor and other resources from other project partners. Without these resources, the Commission may not be able to complete the scope of work described in the following sections.

BACKGROUND INFORMATION

Geneva Lake is one of Wisconsin's largest (5,262 acres) and deepest (140-foot maximum depth) lakes. The Lake is renowned for good water quality and hosts a remarkably diverse array of high-quality recreational opportunities. For this reason, Geneva Lake is one of Wisconsin's premier destinations. Located in Walworth County, it is within easy driving distance of several large metropolitan areas, offers excellent public access and use opportunities, is heavily used by residents and visitors, and is an invaluable resource to local communities. Despite being set in a highly developed landscape close to major metropolitan areas, the Lake retains good water quality and overall ecological health.

For its size, Geneva Lake has a very small watershed (less than 30 square miles). Nevertheless, human actions occurring on and near the Lake and within its watershed can negatively affect Lake health. As a result of this concern and the Lake's long-term popularity, Geneva Lake has been the subject of many studies for over a century. These studies include those completed by federal and state agencies, Walworth County, local municipalities, various universities and schools, an array of Lake-focused groups, and volunteers. Furthermore, the Commission completed numerous studies over the past decades providing valuable insight to Lake-related issues. Most salient to ongoing lake management are a 1985 water quality study and the 2008 lake management plan.[2,3]

GENERAL APPROACH

While myriad issues are integral to updating a lake management plan, energy and resources must focus on the issues most important to the broader Lake user community and that sustain or enhance overall Lake health. Carefully updating a lake management plan fosters broad-based collaboration, builds upon past initiatives, and fosters project momentum. This helps increase the likelihood for technical studies and active management projects to receive broad public support and financial backing.

A variety of factors should be considered when developing a scope of work to update a lake management plan, including the examples listed below.

- Recommendations discussed in previous studies and plans.
- Work completed in reaction to previous management plan suggestions and judgement of the relative success of these actions.
- Past, present, and future lake management goals and targets.
- Lake and watershed related data collected since publication of previous plans.

[2] *SEWRPC Community Assistance Report Number 60,* A Water Quality Management Plan for Geneva Lake, Walworth County, Wisconsin*, 1985*.

[3] *SEWRPC Community Assistance Report Number 60, 2nd Edition, op. cit.*

- Changing conditions or lack of change (e.g., watershed land use, invasive species, runoff characteristics, social norms and interests, program sponsorship/leadership, regulation, funding opportunities, lake use patterns, anecdotal observations).

- New or previously unknown entities and individuals with goals allied to or paralleling lake management objectives (e.g., a municipality considering infrastructure changes that influence waterbodies).

- Time frames for action.

An effective lake management plan relies upon up-to-date data collection and interpretation; must consider recurrent, new, and evolving issues; must evaluate past activity, opinions, and input from all stakeholders interested in a lake; must efficiently prioritize issues and allocate resources; and must capitalize upon capacity building initiatives, organizational cooperation, and community support.

In the 14 years since the existing Geneva Lake management plan was published, new data has been generated, action has been taken to address identified issues, new threats to Lake health have emerged (e.g., new invasive species and changing weather patterns), and other issues have gained prominence on account of changing conditions or changing perceptions (e.g., tributary erosion, flooding, pollutant loads, boat types and numbers). Furthermore, the sheer number and diverse interests of individuals and organizations interested in the use and health of Geneva Lake is a challenge to effective communication and collaboration. Given the new and evolving issues influencing the Lake's future health and the amount of additional work completed by various groups since 2008, the lake management plan should be updated.

COMMISSION SCOPE OF WORK

The Conservancy received a WDNR Surface Water Grant to update Geneva Lake's lake management plan. As grantee, the Conservancy is the organization ultimately responsible for executing the grant scope. Therefore, the Conservancy must actively participate in the lake management plan revision process. Nevertheless, a host of organizations and entities are integral to, and must participate in, the plan revision process. For example, the Conservancy or its delegates will search for relevant information, may direct or execute field data collection work, will compile and summarize data, and will forward relevant information to the Commission. The Commission may not be able to complete the described scope of work if the Conservancy does not actively participate in project execution or does not organize the efforts of project collaborators.

Although many organizations must contribute resources to the project, the Commission is intended to play a leading role revising the written plan. The Commission will not be the sole source of information needed to update the plan and in fact will collect little new, on-the-ground data integral to plan revision. Instead, the Commission's activities will focus on characterizing the Lake's setting and watershed, ascertaining lake management implications, developing management concepts, suggesting example applications of such concepts, and publishing the updated comprehensive lake management plan. The Commission will help identify the relative importance of recurrent, emerging, and sometimes obscure lake management issues; will update and interpret vital data sets; will develop strategic goals and a few related tactical concepts contributing to overall Lake goals; will suggest resources and action plans to carry strategies forward; will suggest actions that help foster collaboration and help avoid excessive controversy; and may contribute limited labor and collateral materials to a few events that help gather opinions from, and disseminate information to, all interested in the enjoyment and health of Geneva Lake.

To help quantify the scope of the Commission's services, the following sections describe individual tasks and subtasks component to the Commission's project involvement. Many project elements occur simultaneously. Commission labor hours and costs dedicated to complete these services is tallied in a subsequent section.

Task 1: Update In-Lake Data Sets and Evaluate Meaning and Implications.

Geneva Lake has been, and remains, the subject of considerable attention and study. Since the Lake management plan's 2008 update, new data have been generated, management effort has been directed at various in-Lake issues, and other issues have emerged or have gained prominence. The goal of this element is to assure Geneva Lake's management plan aligns with new and evolving data, concerns, and lake user interests and helps increase overall institutional capacity to achieve desired results.

Subtask 1.1: Re-evaluate Geneva Lake's aquatic plant community

Activity: The Lake's aquatic plant community has been the subject of study for many years with even more frequent/intense study since the 2018 discovery of starry stonewort in and near Trinke Lagoon. This subtask includes examining and quantifying change in the aquatic plant community including elements such as plant diversity, invasive status, and ecological health. Data will be drawn, at a minimum, from aquatic plant inventories completed in 2014, 2019, and 2020 as well as a 2021 inventory that focused exclusively on ten boat launch areas around Geneva Lake. We anticipate that aquatic plant surveys will be completed in 2022 and potentially beyond; the results of these surveys may also be examined as part of this subtask.

Methods and Data Collected: Commission staff will rely upon plant inventory data gathered by consultants, the WDNR, the Commission, and others to complete work associated with this subtask. This work does not include any new on-the-water aquatic plant inventories by the Commission. Conservancy staff will assist Commission staff with this effort by contacting local organizations (e.g., marinas, home-owner associations, riparian residents, municipalities) that may have relevant data in their possession and providing the Commission copies of such data. Relevant data may include aquatic plant inventory data, nuisance aquatic plant management practices, as well as information regarding AIS education and decontamination efforts around the Lake (e.g., organizations participating in and funding Clean Boats, Clean Waters efforts; locations and types of AIS decontamination stations; information regarding boaters traveling from other waterbodies). The Commission will use the expanded data set to compare, contrast, and ascertain trends in the Lake's native aquatic plant community population dynamics and health. To facilitate analysis, Commission staff will prepare figures, maps, and tables that help portray species richness, floristic quality index (FQI), mean conservatism value (mean C), vegetated littoral frequency of occurrence, and maximum depth of colonization. The Commission will also evaluate the Lake using the macrophyte bioassessment model. Furthermore, the information will help gage the distribution of aquatic invasive species (AIS) and the potential to introduce new AIS to Geneva Lake and for Geneva Lake AIS to be transported to other waterbodies. The Commission will evaluate the efficacy and efficiency of various feasible approaches for practical use at the Lake. The Commission will describe recommended aquatic plant management concepts in greater detail.

Deliverables: The Commission will provide tables, figures, maps, and text contrasting changes in the aquatic plant community over time and evaluating overall aquatic plant community diversity, health trends, and management implications. The data and interpretations may be presented to the stakeholder group as part of one or two virtual or casual in-person presentations hosted by the Conservancy. These meetings are a foundation for further Conservancy or alternate partner-led, action-oriented, study group analysis, including increased public education to help limit the spread of invasive species present in the lake and prevent the introduction of new invasive species. The Conservancy shall share the results of any independent follow-on meetings with the Commission.

Subtask 1.2: Re-evaluate Lake water quality data

Activity: Update Lake water quality comprehensive data sets using data generated since publication of the 2008 lake management plan, examine trends, address significance, and evaluate management implications. Using these data and possibly other information sources such as model output, prepare new Lake phosphorus, sediment, and water budgets and contrast with those from earlier studies.

Methods and Data Collected: Commission and Conservancy staff will compile recent and previously unknown sources of Lake-water physicochemical data and will integrate it with data included in the 2008 comprehensive lake plan. Examples of likely sources of new or supplemental data include the Conservancy, the Geneva Lake Environmental Agency GLEA), the United States Geological Survey, WDNR, UW-Whitewater, Walworth County, local municipalities, riparian landowners, and Lake-focused non-governmental organizations. Commission staff will collect information hosted on WDNR, USGS, and US Environmental Protection Agency (EPA) databases. Conservancy staff or Conservancy partners will be responsible for reaching out to the myriad local organizations and determining if any have access to information relevant to this study but currently undocumented in the 2008 management plan. Examples of such information could include beach water quality testing, water temperature measurements, or observation of physical factors (e.g., watercolor, clarity, elevation, etc.). The Conservancy shall provide the Commission with spreadsheets of available data that identifies data values and relevant metadata (e.g., data sources, coordinates, measurement units).[4] Commission staff will prepare relevant tables, maps, and figures to examine and explain the significance and interaction of various water quality variables and limnologic processes. As part of this work, the Commission will summarize the amount of phosphorus, sediment, and water that enters, remains within, and leaves the lake; will describe processes responsible for each and will evaluate trends in other parameters (e.g., trophic state indicators, chloride, oxythermal conditions).[5] Commission staff will also use data generated by others during the study and pre-existing data to examine the influence of certain sampled streams on Lake water quality and the performance of watershed water quality models.

Deliverables: The Commission will provide text, tables, figures, and maps to summarize water quality data and data trends and will contrast various water quality factors to the past and regional values. Commission staff will examine and explain the significance and management implication of trends and relationships. Commission staff will use data gathered by the USGS, the Conservancy, UW-Whitewater, and others to contrast land use to water quality, judge the relative load contributed by various streams, and examine the predictive efficacy of water quality models.[6] The data and interpretations will also be presented to the stakeholder group as part of up to two virtual or casual in-person presentations hosted by the Conservancy that should act as the foundation of further action-oriented Conservancy or alternate partner-led study group analysis. The Conservancy will supply the Commission with summaries of such supplemental meetings or presentations. The Commission will suggest new or revised management strategies that address past practices, current conditions, and impending threats.

[4] An alternative would be for Conservancy staff to persuade these groups to upload their own water quality data into SWIMS or another water quality database (e.g., Water Quality Portal).

[5] As available datasets allow, Commission staff will summarize pollutant loading information on a subbasin level.

[6] The Commission's ability to evaluate individual subbasins may be limited by the scarcity of water flow data for most Lake tributaries and the ephemeral nature of flow in many of these tributaries.

Subtask 1.3: Examine sediment deposition at the mouths of three prominent Lake tributaries

Activity: Concern exists regarding the amount of sediment transported to Geneva Lake by its tributary streams. Certain Lake tributary streams reportedly have pronounced delta-like sediment accumulations (sediment bars) near their mouths. The Commission will map the current extent of sediment bars, lake bottom morphology, and substrate composition near the mouths of three streams believed by lake resident observers to have heavier sediment loads.

Methods and Data Collected: Commission staff will complete an on-the-water survey using side-scan sonar or another applicable technology to map details of lake-bottom morphology near the mouths of Southwick, Shadow Lane, and Birches Creeks. Commission staff will supplement data collected by sonar or other remote sensing methods with manual sediment depth probing and tactile and/or visual estimation of bottom substrate composition. Commission staff will prepare bathymetric maps using appropriate software and professional judgement to help display the extent of sediment bars generated by the study streams. If sufficiently detailed historical bathymetric maps are readily available, Commission staff will contrast new bathymetric data to earlier bathymetric maps. Commission and Conservancy staff will also interview Lake users to provide anecdotal information concerning the historical extent and growth of sediment bar deposits.

Deliverables: Prepare new bathymetric maps detailing conditions near the mouths of Southwick, Shadow Lane, and Birches Creeks and use it to estimate sediment bar extent, volume, and lake bottom composition. These data will be an excellent benchmark for future sediment bar study, and, if sufficiently detailed historical bathymetric maps exist, will enable approximation of sediment volume deposition rates and sediment bar growth rates.

Subtask 1.4: Evaluate boat traffic characteristics

Activity: Quantitatively examine lake user concerns such as perceptions of excessive traffic, use conflict, general safety concerns, boat origin/AIS introduction, and occasionally lax boating ordinance compliance.

Methods and Data Collected: Inventory the total number of boats engaging in various pursuits during widely varying summer conditions. Quantify use concerns and ordinance compliance as possible. Commission staff will help the Conservancy organize field data collection efforts, but the Conservancy and its partners are responsible for actual field-data collection, data compilation, and delivering summarized data sets to the Commission. The Conservancy should collect boat traffic information during at least two warm-weather periods during 2022, 2023, and/or 2024. The Commission strongly advises the Conservancy to utilize unmanned aerial vehicle (drone) based video equipment and/or satellite imagery to precisely count the number of boats on the lake and their operational characteristics during heavy boating pressure time periods. If necessary, the Lake can be split into zones covered by multiple simultaneous aerial drone surveys to conduct a more accurate accounting of boat numbers and activity. In addition to on-the-water boat counts, the drone and/or satellite imagery should be used to inventory the number and origin of trailered boats and vehicles at all accessible locations around the Lake. Furthermore, Conservancy or partner organization staff should periodically visit boat launches to observe vessel cleaning procedures and note boat origin as possible. The boat inventory should cover a range of boating intensity periods. For example, the inventory should examine high boat traffic time periods (e.g., hot sunny holiday and weekend afternoons), moderate traffic conditions, as well as lower traffic periods (e.g., early morning, overcast). Additionally, Conservancy and project partner staff should count the number of boats moored or beached around the lake at private residences and marinas at least twice over the period of study. The watercraft inventory must endeavor to identify boat type, propulsion, speed, probable use, and visible occupant numbers and pursuits. Data must be collected throughout the Lake over set, equal length, time periods to illustrate changing conditions. As noted earlier, drone videography and analysis are especially important to

evaluate the entire Lake heavy boat use periods. The Conservancy should attempt to collect such information during up to four particularly heavy open water use periods.

Commission staff can help Conservancy staff compile information regarding boating-related complaints, citations, and safety incidents from local municipalities, law enforcement groups, and non-profit organizations. Additionally, buoy coordinates and types should be provided to Commission staff if readily available.

Deliverables: Quantify the number and type of boats using Geneva Lake, the types of recreational activities they support, and gage overall compliance with local ordinances (e.g., slow-no-wake speed). As feasible, use aerial drone video footage and/or satellite imagery analysis to evaluate whole-lake conditions during heavy boat traffic time periods. Quantify relevant metrics such as lake-resident and transient boat numbers and types, in-operation boat density, Lake usable area, the Lake's safe recreational carrying capacity, and examine potential for use conflict, safety concerns, and environmental damage. The Commission will compile and review existing boating ordinances and may suggest changes to concomitantly enhance recreational boating on the Lake and protect the Lake's health.

Subtask 1.5: Evaluate Bigfoot Creek water quality concerns

Activity: Past studies and observations have identified excessive nutrient levels and red-stained water near the mouth of Bigfoot Creek, a location essentially adjacent to the popular swimming beach at Bigfoot Beach State Park. This subtask will examine suspended sediment, phosphorus, iron, and anthropogenic pollutant sources to the Creek. Conditions will be contrasted to other Lake tributaries, especially those with extensive wetlands near their mouths.

Methods and Data Collected: Commission staff will use the most detailed readily available topographic information for the area to refine the extent of the Bigfoot Creek watershed. The commission will inventory the watershed's geology, hydrology, land use, surface-water and groundwater supplies, and potential pollutant contributors (e.g., landfills). Commission staff will collect relevant data from Commission and other on-line public databases (e.g., WDNR). Conservancy staff will reach out to local entities who may have relevant data beyond that available through on-line public databases (e.g., the City of Lake Geneva). Conservancy staff will be responsible to contact such entities, locate and copy information from relevant files, and forward copies of the data to the Commission.

Commission staff, accompanied by Conservancy staff, will walk identified navigable portions of Bigfoot Creek to evaluate stream and bank morphology, water sources, channel conditions, and other factors. The Commission will work with Conservancy staff to choose three monitoring sites that distinguish water quality differences between Bigfoot Creek's three primary branches. Commission staff will visit these sites at least three times over the course of the study, with visits attempting to represent high-runoff conditions, fair weather, and dry weather. Commission staff will collect stream water physicochemical data using field instruments (temperature, pH, dissolved oxygen, clarity). Conservancy staff will accompany Commission staff during these sample collection visits and will collect water samples from each of the three sampling locations for laboratory analysis (total N, TSS, TDS, alkalinity, pH, conductance, chloride, sulfate, calcium, iron, magnesium, potassium, sodium, and select heavy metals). Commission staff may assist Conservancy staff with laboratory sample collection but is not responsible for delivering samples to the laboratory or for payment of laboratory fees. Conservancy staff should independently visit the three sampling sites on additional dates to supplement the field data collected as part of the sampling regimen described above. Resultant data will help contrast probable pollutant sources to each branch of the Creek.

Commission staff will contrast Bigfoot Creek with similar local area streams with emphasis placed on streams with wetlands near their mouths. Examples include Harris Creek near Williams Bay, Jackson Creek tributary to Delavan Lake, and Turtle Creek tributary to Comus Lake.

Commission staff will examine the uniqueness of Bigfoot Creek's iron and phosphorus sources and overall contributions to the Lake and the threat of supplemental pollutants potentially identified during this study. Commission staff will identify probable conditions causing unique iron and possibly phosphorus loading in Big Foot Creek. If possible, the Commission will suggest non-treatment concepts that could help the stream deliver less iron and phosphorus to the Lake (e.g., landfill control, wetland sediment hydration). Finally, the Commission may discuss conceptual options to manage other pollutants identified as part of the study.

Deliverables: This subtask provides supplemental information to help ascertain pollutant sources, the potential presence of other pollutants, their uniqueness in the local area, their aesthetic concerns, and a quick review of some potential public safety threats posed by compromised water quality. Using these data, Commission staff will review appropriate management strategies to contend with the nature and uniqueness of the water quality issues related to Big Foot Creek. The Commission will present results using text and a series of tables, maps, and/or figures.

Subtask 1.6: Review impact of past lake management efforts

Activity: Evaluate status and impact of lake management actions suggested by previous management plans and interim management decisions.

Methods and Data Collected: Commission staff will identify actions proposed by, and taken in reaction to, the 2008 or earlier Commission Lake management plans and/or subsequent management decisions. Commission staff will use data collected as part of this management plan update to help judge relative effectiveness and reasons why the earlier endeavors succeeded, failed, or were not acted upon. If willing, Commission staff may interview current and former lake managers to better understand if and how they used the previous management plan. Commission staff will examine factors that help gage relative project success and advance overall project goals.

Deliverables: Tables, maps, figures, and text will describe suggested actions, actions taken, and relative success. This information will be used to suggest actions that help reinforce, re-introduce, re-emphasize, or terminate certain lake management processes or pursuits.

Task 2: Quantify stakeholder perceptions, needs, desires, and aspirations and foster cooperation

Geneva Lake is a highly valued resource -- myriad groups and individuals are deeply concerned with the Lake's health and vitality. The goal of this task is to deepen and update comprehension of concerns recognized by stakeholders as important to themselves and the Lake's overall health. An essential element to updating the Lake management plan is identifying and ultimately addressing topics reflecting the needs and desires of a broad array of lake users, residents, landowners, resource managers, and WDNR lake program staff. Given the size, population, diverse user profile, popularity, and political complexity of Geneva Lake and its watershed, this is almost certainly an iterative process requiring facilitated meetings. To be most effective, this process must consider the thoughts and concerns of a wide variety of diverse stakeholders. This could include identifying novel partnering opportunities with those having little direct attention focused at Lake health but still could benefit by actions taken to improve Lake health. An excellent example of such an opportunity is interfacing and potentially supporting agricultural landowners/producers within the watershed but far from the Lake itself.

Subtask 2.1: Social survey

Activity: Develop and implement a social survey of Lake residents, local community members, and Lake users with the assistance and review of DNR social scientists.

Methods and Data Collected: Commission staff have already given extensive *pro bono* advice to the Water Alliance for Preserving Geneva Lake (WAPGL) and Conservancy staff that may be used to develop and execute a Lake-focused social survey. Building on this earlier initiative, Commission staff may give limited advice to Conservancy staff as part of this subtask to better focus topics and recommendations covered by the updated Lake management plan. The Conservancy will seek advice from a WDNR social scientist to develop, distribute, and tally the results of the actual survey. The survey is anticipated to target Lake residents/users/community leaders and possibly watershed residents to gage stakeholder demographics, opinions, and awareness. Survey questions should help respondents independently express thoughts, impressions, and opinions on a variety of topics. Examples of topics include perceived lake health, opinions of greatest threats to Lake health, and thoughts regarding useful/vital communication methods. The Conservancy will provide the Commission with survey results no later than the end of 2023. The Commission will use resultant data to emphasize Lake management plan revisions so the plan addresses items of greatest concern to lake users/residents. The Commission may also provide limited advice to the Conservancy if it elects to form technical focus groups to research high priority and/or controversial items, develop concepts improving long-term Lake health, and sustain benefits provided to the stakeholder community by a healthy Lake. This could take the form of open-house events (see next subtask).

Deliverables: The Commission will provide limited advice to the Conservancy but the Conservancy and/or its partners will be responsible for social survey development, distribution, and data compilation. The Commission will use the compiled information to gage Lake resident/user sentiment, help illustrate the breadth of issues, align relative importance of each issue, and prioritize the detail dedicated to plan elements. The results may be used to help direct the focus of a Conservancy-sponsored open house event (see below). The Commission will use information from this subtask to apportion effort to the topics covered in the updated Lake management plan.

Subtask 2.2: Stakeholder education/outreach

Activity: Sponsor and facilitate a Lake open house event and focus group exercise addressing two controversial Lake management elements.

Methods and Data Collected: The Commission will provide the Conservancy advice and input that the Conservancy can use to host a focus group exercise. Additional advice and input may be available from WDNR or UWEX staff. The focus group exercise will examine two controversial issues identified by the social survey (see above). As part of the focus group exercise, Conservancy and Commission staff will facilitate a meeting where individuals representing diverse and potentially antagonistic viewpoints will attempt to develop compromise-based solutions acceptable to all. This may include arranging for subject-matter experts to present information on various aspects on each issue, answering technical questions, and giving technical or lake-management opinions. To illustrate this concept, consider the following example.

- Topic: use of chemical herbicides to control aquatic weeds.
- Approach: have experts speak regarding aquatic herbicide benefits, aquatic plant management, human and environmental welfare, and other topics provide information to help the group better understand the breadth of the topic and the underlying reasons for controversy.
- Outcome: facilitate the group's discussion to move towards compromise.

Deliverables: Develop a reproducible process engaging stakeholders to help increase stakeholder buy-in and reduce conflict during action plan formulation and implementation. This method will be illustrated by two real-world Lake management issues integral to plan revision and that can be used to manage future Lake-management controversy. To increase engagement with a broader Lake stakeholder constituency, video recordings of these meetings should be hosted on the Conservancy and other partners' websites in a format allowing refereed sharing of comments and questions.

Subtask 2.3: Enhance stakeholder cooperation and collaboration

Activity: Identify and enhance collaboration opportunities with the broader stakeholder community (e.g., municipalities, farmers, diverse lake-dependent groups, lake users). Examine stakeholder education and engagement strategies and opportunities.

Methods and Data Collected: Commission staff will assist Conservancy staff inventory groups benefiting from, influenced by, or that are instrumental to implement Lake-based decisions. Conservancy staff will be responsible for creatively inventorying, classifying, and contacting lake groups. Commission staff will examine approaches to enhance how these groups can work together in a mutually beneficial fashion. Commission staff will summarize and/or illustrate Lake-related groups, interests, relationships, goals, and initiatives. Commission staff will work with Conservancy staff to identify overlap, opportunities for cooperation (including shared funding), potential for increased efficiency and efficacy, and relevant execution/organizational strategies. Commission staff will examine implementation tools, opportunities, and challenges associated with broader cooperation.

Deliverables: List relevant contacts, interests, goals, and affiliations of groups interested in the welfare and use of Geneva Lake. Develop text and graphics displaying the breadth, interest spheres, and goals of organizations interested in the Lake and their actual or potential inter-relationships. Suggest approaches for collaborating more effectively to benefit each entity while fostering the overall good provided to the Lake and the Lake community. Develop strategies to help promote communication and collaboration between these groups. Increase awareness of these groups with one another, suggest strategies benefiting the larger goal and group, foster strategies that pursue large over-arching goals instead of individual projects.

Task 3: Inventory Watershed Conditions and Examine Its Influence on Lake Health

Subtask 3.1 Delineate and characterize the Lake's watershed

Activity: Re-examine watershed extent, physiography, hydrology, land use, land management practices, and planned land use and estimate sediment and phosphorus loads contributed to the Lake.

Methods and Data Collected: Commission staff will refine the extent of the Lake's watershed using recent, detailed, topographic information (e.g., LiDAR technology) and will field verify conditions in crucial areas. This effort will identify individual tributary watersheds to the extent practical and necessary to prosecute the study. Commission staff will examine and refine physiographic information (e.g., vegetation, geology, surface-water and groundwater hydrology, topography); develop a water budget for the Lake, a groundwatershed map, and map groundwater recharge potential for the area contributing groundwater to the Lake; and will document historical, existing, and planned land use conditions. Commission staff will use field data, Presto-Lite, STEPL, UAL, and/or potentially other models to estimate sediment and phosphorus loads under historical, current, and planned future conditions. Commission staff will use this information to

identify land uses, watersheds, and areas contributing excessive nutrient or sediment loads to the Lake and its tributaries and that may be important to address as part of Lake management plans.

Deliverables: The Commission will prepare text, tables, figures, maps, and other graphical means to summarize the data and present it in a format accessible to a wide array of stakeholders; will examine the efficacy of Presto-Lite, STEPL, UAL and/or potentially other models under differing land-use condition admixtures; and will suggest management strategies that help sustain Lake health.

Subtask 3.2: Evaluate select tributaries

Activity: Estimate bed and bank stability and quantify sediment and phosphorus loads for select streams.

Methods and Data Collected: The Commission will use existing data to further evaluate channel form, floodplain connectivity, and general stability of six streams (Southwick, Covenant Harbor, Trinke, Birches, Shadow Lane, and Brickley Creeks). The Commission will estimate sediment and phosphorus loads contributed by these streams using water quality data collected by UW-W, the USGS, and others and compare to loads estimated by models such as Presto-Lite, STEPL, and UAL and will examine 303(d) listing criteria to determine if the tributaries would be likely to meet or exceed the criteria if an appropriate monitoring regimen were implemented.

Deliverables: Data generated by this task will further understanding of the relationship between land use, modeled loads, and sediment and phosphorus fate. The Commission will review the physical condition of six tributary streams with examples of intact, degrading, and compromised channel form. These methods and results can be used to manage not only the six subject streams but also may be used as a template to evaluate and take action within the other 40+ Lake tributary watersheds.

Subtask 3.3: Windwood Creek watershed demonstration project

Activity: Windwood Creek has physical attributes and conditions typical of the numerous small streams tributary to Geneva Lake. The Commission will gather and use detailed information from this watershed to develop examples of action-oriented planning concepts that help improve stream channel condition, hydrology, and water quality and will share this information with the public. The Commission, the Conservancy, and Conservancy project partners will share findings and concepts with the public through open-house events, tours, and other means.

Methods and Data Collected: Commission staff will delineate the area contributing surface-water runoff and groundwater to Windwood Creek and will map the physiography, natural resource features, and human influence on the watershed. The Commission will also map and/or measure the location, shape, and condition of primary watercourses as well as estimated flow paths/volumes contributed by various watershed areas. Using this information, the Commission will identify highly modified, eroding, or unstable channel reaches and will be develop concepts to help stabilize and, to the extent practicable, improve channel form and function; naturalize hydrology; improve water quality reaching the Lake; and contribute to aquatic and riparian habitat diversity and function. A few examples of how these concepts can be applied to specific areas of the Windwood Creek watershed will be described in more detail. The Conservancy and its project partners will host, and Commission staff will attend, an initial open-house event sharing inventory findings and preliminary management concepts with interested parties. The Conservancy and its project partners will host, and as budget permits Commission staff will attend, a follow-on meeting to highlight executed projects and enlighten those considering similar projects.

Deliverables: The Commission will publish information inventorying watershed-specific data and remedial action concepts. The Commission will participate in an initial open-house event to share watershed-specific

data and management concepts to the public. Commission staff may also provide input on restorative designs and may participate in future tours and open-house events to help interested parties better understand how various stream management problems and remedial concepts appear on the ground.

Subtask 3.4: Examine Lake-tributary stormwater infrastructure

Activity: Conservancy or Conservancy project partner staff will collect information on engineered surface-water infrastructure/stormwater management resources. The Commission will use this information to identify concepts and examples of opportunities that help enhance the ability of infrastructure to reduce sediment and nutrient loads delivered to the Lake.

Methods and Data Collected: Conservancy or Conservancy project partner staff will inventory engineered stormwater detention features and select engineered stormwater conveyance features throughout the watershed. The Commission will provide advice and input on the data inventory process and will examine and evaluate up to ten existing stormwater detention features for ongoing maintenance needs and overall functionality. The Commission will identify portions of the watershed less likely to be served by modern stormwater infrastructure; will describe the Lake-outlet dam's configuration and operation and will examine potential alternate dam-operation concepts; will identify existing corridors providing water quality and floodwater detention benefits, will map areas conducive to stormwater infiltration/groundwater recharge; and will provide limited feedback regarding concepts designed to jointly reduce flooding and increase habitat value along lower Southwick Creek.

Deliverables: The Commission will prepare maps, tables, figures, and text summarizing stormwater infrastructure layout in the watershed as well as condition of select features and will use these data to identify opportunities to enhance stormwater detention/retention and runoff water quality.

Task 4: Publish Revised Lake Management Plan.

Activity: Share general information, technical data, interpretations, and recommendations generated as part of the lake management planning process and provide recommendations. Prepare and publish an updated written Lake management plan.

Methods and Data Collected: The Commission will present resultant data, interpretations, management implications, and recommendations as part of a written comprehensive management plan at project conclusion. The Commission will suggest management concepts addressing past practices, current conditions, and impending threats. Inventory data and recommendations will be separated by local government boundaries to better display implementing recommendations for potential stakeholders. Commission staff may develop interactive tools to display inventory data and recommendations to encourage and facilitate use of the plan.

The Commission will generate a draft written plan that will first be reviewed by Conservancy staff and other interested groups identified by the Conservancy. Comments and suggestions will be discussed with the Commission and a final draft will subsequently be submitted to the WDNR for review. After incorporating WDNR comments and edits, a final plan will be published. When published, the Commission will orally present report findings and recommendations at an event hosted by the Conservancy or its partners.

Deliverables: The plan will be readily available to the public through posting a digital copy for free download on various websites and by distributing a limited number (i.e., up to 20) of printed copies. The plan will include a short executive summary that helps convey plan content to those with a casual interest in the Lake and conveys key points to the average Lake user. The Conservancy or its partners will host a public presentation where the Commission will present a summary of plan content and will answer questions.

PROBABLE SCHEDULE

The Commission will initiate work on this project as soon as Conservancy authorizes work to proceed.[7] Many tasks will proceed concurrently. Project work is anticipated to extend to late 2024 with the revised management plan published before December 31, 2024. This project requires collaboration amongst many entities, a situation complicating project scheduling and emphasizing the need for efficient project scheduling by the Conservancy. Should additional time be needed to publish the final management plan, the Commission will assist the Conservancy in seeking a grant extension.

PROPOSED PROJECT BUDGET

The Surface Water Grant application awarded the Conservancy provides partial reimbursement for a set scope of work. In addition to the work specified in the grant application, the Conservancy wishes to complete additional work elements as part of this project (e.g., the Windwood Creek watershed demonstration project (Subtask 3.3)). To accomplish the work described in the preceding sections, the Commission proposes the following budget. As stated previously, the Conservancy and its partners are completely integrated into and vital to project execution. The Commission fully relies upon the Conservancy and its partners to complete substantial portions of work, work that is essential for Commission work to proceed. For the Commission to complete this project on budget in the time allocated, the Conservancy and its partners need to complete their tasks expeditiously and completely. If the Conservancy or its partners are unable to complete the work elements assigned to them, or if the Conservancy wishes to expand the scope of work to include additional topics or services, the Commission may be able to reallocate resources. However, supplementing Commission labor hours to make up such deficiencies and/or additions will result in higher Commission fees and potentially extended completion schedules.

Work Element	Proposed Commission Budget	
	Labor	Fee
Task 1: Update In-Lake Data Sets and Evaluate Meaning and Implications		
Subtask 1.1: Re-evaluate Geneva Lake's aquatic plant community	60	
Subtask 1.2: Re-evaluate Lake water quality data	60	
Subtask 1.3: Examine sediment deposition at the mouths of three prominent Lake tributaries	80	
Subtask 1.4: Evaluate boat traffic characteristics	60	
Subtask 1.5: Evaluate Bigfoot Creek water quality concerns	80	
Subtask 1.6: Review impact of past Lake management efforts	40	
Task 1 Total	**380**	$20,000
Task 2: Quantify Stakeholder Perceptions, Needs, Desires, and Aspirations and Foster Cooperation		
Subtask 2.1: Social survey	20	
Subtask 2.2: Stakeholder education/outreach	80	
Subtask 2.3: Enhance stakeholder cooperation and collaboration	40	
Task 2 Total	**140**	$7,000
Task 3: Inventory Watershed Conditions and Examine Its Influence on Lake Health		
Subtask 3.1 Delineate and characterize the Lake's Watershed	120	
Subtask 3.2: Evaluate select tributaries	60	
Subtask 3.3: Windwood Creek watershed demonstration project	80	
Subtask 3.4: Examine Lake-tributary stormwater infrastructure	80	
Task 3 Total	**340**	$19,000
Task 4: Publish Revised Lake Management Plan		
Task 4 Total	**240**	$14,000

[7] *A short letter agreement, with a copy of this scope of work attached, is what is generally used to retain the Commission's services for this type of project. The Commission issues this letter and the Conservancy signs it to initiate work.*

Project Total	**1100**	**$60,000**

Note: project totals do not include labor, supplies, fees provided by others but integral to project completion. For example, these estimates do not include Conservancy labor, drone services, or laboratory fees.

Geneva Lake Scope Development
#256924v6
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