ATTACHMENT A — STATEMENT OF WORK

INDEPENDENT TECHNICAL PEER REVIEW SERVICES
JOHNS LAKE ICPR4 MODEL
DEVELOPMENT, DOCUMENTATION, AND LONG-TERM SIMULATION REVIEW

I. INTRODUCTION/BACKGROUND

The SJRWMD's Minimum Flows and Levels (MFLs) Program, mandated by state water policy, is a District-wide effort to establish MFLs for priority lakes, streams and rivers, wetlands, springs, and groundwater aquifers. MFLs designate the minimum hydrologic conditions that must be maintained in these water resources to prevent significant harm resulting from permitted water withdrawals.

SJRWMD has identified Johns Lake as a priority water body. Johns Lake is located approximately 5 miles southeast of the City of Clermont and approximately 2 miles southwest of the City of Winter Garden on the border of Lake and Orange counties, Florida.

This lake receives water from direct precipitation, surface runoff, and base flow, and loses water primarily through evaporation and seepage to the Upper Floridan Aquifer.

The purpose of establishing minimum lake levels for Johns Lake is to protect this lake from significant harm due to groundwater or surface water withdrawals. SJRWMD developed a continuous simulation hydrological 2D model of Johns Lake using an interconnected channel and pond routing (ICPR4) model. The model was completed in November of 2021. Review of this ICPR4 model will occur as part of the comprehensive Central Florida Water Initiative (CFWI) peer review process.

Because minimum levels are usually based on an event-based approach associated with return periods (e.g., the recommended minimum frequent low level should be achieved once every five years, on average), MFLs assessment requires frequency analysis of lake levels. Due to the presence of short- and long-term climatic cycles (e.g. El Nino Southern and Atlantic Multidecadal Oscillations), the frequencies of lake levels could be significantly different in wet periods such as in 1960s than dry periods such as in 2000s. Thus, it is important to perform frequency analysis using long-term lake levels so that the effect of short- and long-term climatic variations on lake levels can be captured. Although observed long-term lake levels are available, the data is usually discontinuous and sometimes sparse. Thus, long-term lake levels need to be simulated for Johns Lake using the ICPR4 model developed by SJRWMD. A complete MFLs analysis includes developing a long-term simulation model, simulating no-pumping (pre-withdrawal) and current-pumping condition lake levels and performing frequency analysis to assess the current and future status of the MFLs.

II. OBJECTIVES

Consultant shall provide the District with the services of an independent technical peer review of scientific and technical data, methodologies, and assumptions related to the development and application of the Johns Lake hydrologic evaluation model including long-term simulations for the determination and/or assessment of MFLs for Johns Lake. Consultant shall participate in one or more public workshops aimed at involving interested stakeholders in the CFWI peer review process.

In the event of civil or administrative litigation in which the subject matter of the model and report are relevant, Consultant agrees that he/she will make himself/herself available during the period of such litigation as an expert witness under the direction of the District's Office of General Counsel or such other counsel as the District may employ. The District may designate Consultant as a testifying or non-testifying expert and may assert the attorney work product privilege as to the research and report during the period of such litigation. This task, if required, will be completed under a separate work order or contract and shall include coordination and cooperation with the District's Office of General Counsel.

III. SCOPE

Consultant shall review and assess the appropriateness of all scientific and technical data, specific model or relationships applied, model methodologies and analyses, and model assumptions associated with the development, calibration, and long-term simulations of the Johns Lake ICPR4 model. Consultant shall conduct a thorough review of the ICPR4 model and the associated documentation report, to assess the following:

- Adequacy and appropriateness of the data used in model development, calibration and long-term simulations
- Validity, defensibility and appropriateness of the development, calibration, and long-term simulations of the model
- Deficiencies, errors, or areas for improvements in model development, calibration, and long-term simulations
- Validity and appropriateness of all assumptions in the development of any statistical relationships used for the determination and/or assessment of MFLs

IV. TASK IDENTIFICATION

Consultant shall perform the following tasks to accomplish the Scope of Work described above.

Task A. Attend Project Kick-off Meeting and Site Visit

Consultant shall participate in a project kick-off meeting and site visit to ensure Consultant has the opportunity to observe the hydrologic features being modeled to help with their review and understands the work assignment, the peer review process, and timeframes. This meeting will be public and part of the CFWI peer review process. Additional meetings may be required. The District's Project Manager will notify all involved parties of the dates and times by e-mail.

Deliverable: Consultant shall provide the District Project Manager with a brief summary email of the meeting, including specific action items for model review and documentation.

Task B. Peer Review Johns Lake ICPR4 Model and Documentation Report

B.1. Review of Model, Long-term Simulation and Documentation: Consultant shall review all scientific and technical data, methodologies, assumptions, and recommendations related to development and calibration of the Johns Lake ICPR4 model, long-term simulations, and the following reports:

- Hydrologic Modeling for Minimum Flows and Levels Support – Johns Lake, November 2021, SJRWMD)

Consultant shall attend a public teleconference to share their initial comments and listen to comments from stakeholders. In addition, the Consultant shall read all comments provided by stakeholders and will consider all comments in the Consultant's draft technical memorandum (subtask B.2).

Deliverable: Consultant shall prepare one summary of the public teleconference, comments received, discussion items and key action items and submit to the District's Project Manager.

B.2 Draft Peer Review Technical Memorandum (TM): Consultant shall prepare a draft TM summarizing the findings and recommendations related to the peer review of the Johns Lake ICPR4 model, long-term simulations and reports and submit to the District's Project Manager.

Consultant shall include the following items in the review process and provide answers to the following questions in the TM.

1) Assess the adequacy and appropriateness of the data used in model development and calibration.
    a) Was "best information available" utilized to develop and calibrate the ICPR4 model?
    b) Are there any deficiencies regarding data availability?
    c) Was relevant information available that was discarded without appropriate justification? Would use of discarded information significantly affect results?

2) Assess the validity, defensibility and appropriateness of the model development, and calibration.
    a) Determine if the model is appropriate, defensible, and valid, given the District's MFLs approach.
    b) Evaluate the validity and appropriateness of all assumptions used in the model development and calibration.
        - Are the assumptions reasonable and consistent given the "best information available"?
        - Is there information available that could have been used to eliminate any of the assumptions? Could the use of this additional information substantially change the models results?

    c) A review of ICPR4 model input and output data will be performed. The review will include an examination of:
        - Model elevations vs collected data to verify same datum used consistently
        - Flow/stage plots to look for model instabilities
        - Output file for model warnings (full flow channels, flooded nodes, etc.) and flow classification summary
        - Continuity error and convergence data
        - Runoff and infiltration volumes to check for reasonableness
        - Values assigned to model parameters to check for reasonableness
    - How groundwater data was used in model inputs
    - Methodologies used to develop input data for long-term simulations
    - Long-term simulation results to check for reasonableness

The development of an independent water budget will be included in this subtask.

Deliverable: Consultant shall prepare a draft TM summarizing their findings and recommendations regarding the Johns Lake ICPR4 model, long-term simulations and reports and submit to the District's Project Manager.

B.3 Peer Review Public Teleconference: Consultant shall attend a public teleconference to share their draft comments and listen to comments from stakeholders. In addition, the Consultant shall read all comments provided by stakeholders and will consider all comments in the Consultant's final technical memorandum (subtask B.4).

Deliverable: Consultant shall prepare one summary of the public teleconference, comments received, discussion items and key action items and submit to the District's Project Manager.

B.4 Final Peer Review Technical Memorandum (TM): Consultant shall prepare a final TM that summarizes their findings and recommendations regarding the Johns Lake ICPR4 model and report and submit to the District's Project Manager.

Deliverable: Final TM summarizing their findings and recommendations regarding the Johns Lake ICPR4 model and report.

V. TIME FRAMES AND DELIVERABLES

The expiration date of this Work Order is August 31, 2022. Specific timeframes as they apply to tasks, milestones, deliverables, and teleconferences are included in Table 1.

Table 1. Schedule

Task	Deliverable	Expected Completion Date
A.	Project Kick-off Meeting and Site Visit Summary of Site Visit and Meeting	February 1, 2022
B.1	Peer Review Johns Lake ICPR4 model and Documentation Report Public Teleconference Public Teleconference Summary	March 7, 2022
B.2	Draft Technical Memorandum	April 4, 2022
B.3	Public Teleconference Public Teleconference Summary	April 12, 2022
B.4	Final Technical Memorandum	April 29, 2022

Consultant shall employ an internal quality review process to ensure only high quality, complete, and correct products are provided to the District. Deliverables prepared by Consultant shall be clear, concise, thorough, and grammatically correct. Consultant shall present data for technical products in a well-organized format. Findings should be based on a logical derivation from the facts and data. Consultant shall provide written confirmation by a principal of the firm that quality assurance procedures were followed prior to release of a given deliverable upon request by the District's Project Manager. References shall be appropriately cited.

Consultant shall assure that all spelling and grammar errors disclosed by the Microsoft Word spelling and grammar check functions and all tracked edits have been addressed so none are showing in the document when the tracking features and the spelling errors and grammar check are set to show on the computer screen or in the printed document.

Consultant shall submit the complete report in editable digital format, including all graphics and tables integrated with the text of the report. The District's Project Manager, at his/her discretion, also may require up to three paper copies of the final deliverables. Consultant shall provide the following digital files:

1. A Microsoft Word file of all text and any graphics that may feasibly be incorporated into the document without creating an unwieldy large file or causing printing difficulties. Adobe Acrobat files that are not convertible to Microsoft Word are not acceptable as the sole form of submission for any part of the report except appendices.
2. Separate large files of data, graphics, Geographic Information Systems (GIS) shape files and coverages and any other graphics or other report materials that are not feasible to incorporate into a Microsoft Word document. All files must be in manipulatable formats acceptable to the District.

The District's Project Manager may require non-Word files to be in their native formats. Adobe Acrobat files are not acceptable as the sole form of submission for any graphics, GIS products, data or other materials unless such material cannot be converted into another format.

Electronic submissions must meet the following specifications:

1. Deliverables may be submitted on USB, Compact Disc (CD), Digital Versatile Disc (DVD), ftp site or by e-mail.
2. E-mail submissions may not consist of more than five (5) files unless otherwise approved by the District's Project Manager.
3. Each CD or DVD must have a label including contract name, number, Consultant, submittal date, version, and file names.
4. Each CD, DVD, or ftp folder must have an obvious directory structure.
5. A read-me file listing and describing the contents by file name must be included if a USB, CD or DVD contains too many files to put on a label or if the materials are submitted on an ftp site or by e-mail.
6. The digital files for the final document (including all graphics, appendixes, tables, peer reviews, etc.) must be in their own USB, CD, DVD, ftp folder or e-mail separate from any draft or preliminary versions or data.

All report materials produced for the District under this contract shall become property of the District and may be edited by the District in consultation with Consultant for style, writing quality, and format.

VI. BUDGET/COST SCHEDULE

This Work Order is for a fixed price of **$17,278**. Consultant shall invoice the District monthly based on a percent complete per task (Table 2). Invoices shall include documentation (progress report) listing work completed and work planned.

Table 2. Budget

Task	Deliverable	Total Dollars by Task
A.	Project Kick-off Meeting and Site Visit	$2,570
B.1	Peer Review Johns Lake ICPR4 model and Documentation Report Public Teleconference	$2,322
B.2	Draft Technical Memorandum	$9,632
B.3	Public Teleconference	$1,376
B.4	Final Technical Memorandum	$1,378
	Total Budget	**$17,278**