

Integrity • Knowledge • Service

June 11, 2024

Sean Maroney Public Works Division Manager City of Edgewater 409 Mango Tree Drive Edgewater, FL 32132

RE: Comprehensive Stormwater Master Plan Proposal Jones Edmunds Proposal Number 95880-373-23

Dear Mr. Maroney:

Jones Edmunds, and its project team, are pleased to submit this proposal to provide professional services to the City of Edgewater to develop a comprehensive stormwater master plan. We understand that the City faces several stormwater related challenges including; flooding concerns that were recently exacerbated following the widespread flooding experienced during Hurricane Ian, managing impacts of new development on the City's stormwater system, operating and maintaining an aging existing stormwater system, and meeting TMDL/BMAP nutrient reduction requirements for the Mosquito River Lagoon (MRL) and Turnbull Hammock. With these challenges in mind, our understanding of the primary goals/objectives for this master plan are to:

- Review and build upon existing city stormwater related studies and data.
- Develop a detailed citywide hydrologic and hydraulic (H&H) stormwater model to determine existing flood risk, evaluate flood protection alternatives, and manage stormwater impacts of new development. The H&H model will include the watersheds that flow into and out of the City, including, but not limited to, Gabordy Canal, Ariel Canal, and Turnbull Hammock.
- Asses the drainage level-of-service provided by the city's existing stormwater system and determine priority areas for improvement alternatives.
- Develop improvement alternatives to enhance the drainage level-of-service in priority areas.
- Identify projects to reduce the city's pollutant loading to the MRL and Turnbull Hammock to meet regulatory requirements.
- Rank and prioritize proposed water quantity and quality improvement projects and develop a 20-year capital improvement plan.
- Develop a system for evaluating/rating the condition of the individual components of the city's stormwater system (pipes, inlets, ditches, etc.).
- Develop a system for the city and the local development community to leverage the new stormwater model to asses/manage the impacts of growth on the city's stormwater system.

SCOPE OF SERVICES

Jones Edmunds will proceed with the following tasks to meet the goals/objectives of the stormwater master plan.

TASK 1 – KICKOFF MEETING, PROJECT MANAGEMENT, AND COORDINATION

Jones Edmunds and its project team will attend a kickoff meeting with the city. At least one week in advance of the kickoff meeting, Jones Edmunds will provide the city with a draft agenda. The kickoff meeting will be used, at a minimum, to confirm project goals, review the scope and schedule, discuss critical success measures, and identify data needs. Jones Edmunds will provide draft meeting minutes within 1 week of the kickoff meeting and provide final meeting minutes within 1 week after receiving the city's comments, if there are any.

Jones Edmunds project manager will direct, coordinate, and monitor the activities of the project concerning budget, schedule, and contractual obligations. The project manager will coordinate with city staff, other agencies as appropriate, and other stakeholders essential to the success of the project. This task includes coordinating meetings with staff and City Council and providing necessary support materials. Jones Edmunds will provide updates to the City Council as requested, which may be as often as once every three months.

Jones Edmunds will also schedule and provide biweekly conference calls and/or meetings with city staff to review progress, discuss project challenges and finding, and review study results.

Deliverables:

- Kickoff meeting agenda and finalized meeting minutes.
- Council update meetings and support materials.
- Bi-weekly coordination meetings with city staff and support materials.

TASK 2 – DATA COLLECTION

Jones Edmunds will gather available data required for completion of the stormwater master plan. Data will be gathered from the city and other publicly available sources and will include, but is not limited to:

- Existing city stormwater related studies and associated modeling data.
- Existing zoning map and comprehensive plan for future planned land use stormwater maps.
- Known problem areas for flooding, erosion, water quality, and maintenance.
- City stormwater plans and as-built data.
- City of Edgewater, City of New Smyrna, and Volusia County stormwater GIS asset database.
- Proposed development plans and plans on file, including those in discussion stages.

- Stormwater outfall locations.
- Topographic data, including the most recent publicly available LiDAR data.
- IFAS and NRCS SSURGO soils data.
- SJRWMD landuse data.
- Relevant TMDL and BMAP documentation.
- Most recent FDOT aerial imagery.
- Existing FEMA floodplains and floodways.
- Documentation of flooding from historic rainfall events. This will include photographs, videos, surveys, water-level data, news articles, etc..
- Relevant construction plans and/or as-builts available on the SJRWMD ERP permitting website.
- Relevant publicly available water quality data.
- Parcel information.
- Building footprints.

Jones Edmunds will summarize findings and results from the data collection task in a report chapter and will provide it to the city for review and comment.

Deliverables:

• Report chapter summarizing findings and results from the data collection task.

TASK 3 – H&H MODEL SCHEMATIC DEVELOPMENT

Jones Edmunds will develop an initial citywide H&H model schematic at the city's desired level of detail for the city's review. The model schematic will be developed in a GIS database and will consist of basin delineations, model nodes, and model links. The schematic will cover the entire City and enough of the surrounding areas to accurately characterize boundary stages and flows that impact drainage conditions in the city. As part of the model schematic development task, Jones Edmunds will review the LiDAR DEM against the most recent aerial imagery and locations of known new developments to determine where the DEM is not reflective of existing conditions. Jones Edmunds will manually update the DEM where new developments have occurred that will significantly impact model results. The model will reflect existing ground conditions in areas where the DEM is manually adjusted. Jones Edmunds will develop a naming convention for the model schematic based on the city's primary tributaries/waterbodies. Jones Edmunds will review the initial model schematic with the city in a meeting and provide the city with a GIS webmap to review the model schematic in more detail. Jones Edmunds will revise the initial model schematic based on the city's comments and provide an updated initial model schematic. It is possible that minor revisions to the initial model schematic will occur in later tasks based on additional data collection.

Deliverables:

Model schematic review meeting and webmap.

TASK 4 – H&H MODEL FIELD DATA COLLECTION

Jones Edmunds will review existing construction plans/as-builts, existing H&H models, and stormwater asset databases relative to the model schematic to determine where additional field data collection will be required to develop the H&H model. Jones Edmunds will complete field reconnaissance surveys as needed to verify hydraulic system parameters (i.e. structure locations, sizes, shapes, materials, etc.) as well as basin delineations where they are not clear from available desktop data. Where needed, Jones Edmunds will also collect vertical elevation data using high-precision GPS units or traditional survey methods. GPS units will be used where locations are relatively accessible and GPS signals can be obtained. The GPS survey will be collected at engineering grade with a vertical accuracy of ±0.2 foot for hard surfaces. For locations that are not easily accessible and/or GPS signals are not obtainable, Jones Edmunds will contract with a surveyor to collect data using traditional surveying methods. Jones Edmunds will document the data collection process in a report chapter and provide it to the city for review.

Deliverables:

Report chapter summarizing the field data collection process.

TASK 5 – H&H MODEL DEVELOPMENT

Once the model schematic is approved and field data collection is complete, Jones Edmunds will develop a fully parameterized H&H model. Jones Edmunds proposes to use the H&H modeling software StormWise, formerly known as Interconnected Channel and Pond Routing Version 4 (ICPR4), but will verify/finalize the model selection with the city prior to starting this task. The model inputs and spatial data will be developed and stored in a GIS database compatible with the selected modeling software. Jones Edmunds will develop initial inundation areas using level-pool inundation for the 25-, and 100-year 24-hour design storm events. Jones Edmunds will review the initial model results with the city and will incorporate the city's comments on the initial model results.

Jones Edmunds will select up to 2 storm events for which there is adequate data (e.g., high water marks or photos of flooding) to perform a model validation. Jones Edmunds will use NEXRAD-derived rainfall or local rainfall gauge data for the validation events. Jones Edmunds will review the model validation results with the city and will incorporate the city's comments on the model validation results.

Jones Edmunds will simulate the mean-annual, 10-, 25-, 100-, and 500-year 24-hour design storm events for existing conditions and create inundation areas using level-pool and/or slope-water-surface mapping methods where necessary for each of the storm events. Jones Edmunds will review the design storm results with the city. We will incorporate the city's comments on the design storm results.

Using the existing conditions model as a starting place, Jones Edmunds will develop future conditions model scenarios for 2040, 2070, and 2100 conditions. Jones Edmunds will update the model boundary conditions based on NOAA's 2022 intermediate-low and intermediate sea-level-rise projections for each planning horizon. Jones Edmunds will also make adjustments to modeled hydrologic parameters to account for future development based on available future landuse data. Adjustments to hydrologic parameters to account for soil storage reduction from projected sea-level-rise will be made and rainfall depths will be increased using published future rainfall change factor values.

Jones Edmunds will document the existing and future conditions model development process in a report chapter and provide it to the city for review.

Deliverables:

- Fully developed existing and future conditions H&H model files and associated GIS database.
- Existing and future conditions inundation mapping for the mean-annual, 10-, 25-, 100-, and 500-year 24-hour design storm events.
- Meetings with city staff to review initial model results, model validation results, and final existing/future conditions model results.
- Report chapter summarizing the model development process.

TASK 6 – FLOOD PROTECTION LEVEL-OF-SERVICE ANALYSIS (FPLOS) AND PROBLEM AREA IDENTIFICATION

Jones Edmunds will review the City's drainage design standards and develop a suggested FPLOS criteria (if it doesn't already exist) for the city's review. The criteria will primarily consider projected depths of flooding on city roadways and/or depths of structure flooding for each of the design storm events. We will incorporate the city's comments into the final FPLOS criteria.

We will apply the FPLOS criteria to the existing conditions model results from Task 5 to determine where flood protection deficiencies exist. The FPLOS criteria will be applied at each location of structure and/or roadway flooding identified, and results will be aggregated to assign a FPLOS grade to each model sub-basin. We will review the FPLOS results to identify problem areas with the most severe FPLOS deficiencies. We will develop a scoring matrix to rank/prioritize the problem areas to determine where improvement alternatives should be developed.

Jones Edmunds will meet with city staff to review results of the FPLOS analysis, review the proposed scoring matrix, and review the problem area prioritization results. We will document the FPLOS analysis and results in a report chapter and provide it to the city for review and comment.

Deliverables:

- Meetings with city staff to review results of the FPLOS analysis, review the proposed scoring matrix, and review the problem area prioritization results.
- Report chapter summarizing the FLPOS analysis and results.

TASK 7 – SURFACE WATER RESOURCE ASSESSMENT

7.1 WATER QUALITY DATA REVIEW

Environmental Science Associates (ESA) will identify and obtain water quality data from the Florida Department of Protection's (FDEP) Impaired Waters Rule database and the St. Johns River Water Management District's water quality database for waterbodies within the City. Using these data, an assessment of potential impairments for each WBID will be conducted following the methods utilized by FDEP to identify impairments to obtain the current status of these waterbodies. The focus of the analyses will be nutrients. An analysis of potential temporal trends in the observed water quality data will also be completed.

7.2 WATER QUALITY REGULATORY REVIEW

Several WBIDs that intersect the City's boundary are currently listed as impaired as determined by the last evaluation completed by FDEP. This task includes reviewing the data used to identify the various impairments. This task also includes identification and review of any existing documents dealing with either an impairment assessment or TMDL development and will include recommended appropriate actions to address any impairment assessments or TMDL.

Deliverables: A technical memorandum summarizing the available data, any impairments, and temporal trends in water quality.

7.3 POLLUTANT LOADING ESTIMATES

ESA will obtain and review the available pollutant loading estimates used in the development of the Mosquito Lagoon Reasonable Assurance Plan. The pollutants of concern will include nutrients (total nitrogen (TN) and total phosphorus (TP)) and biochemical oxygen demand (BOD). For any portions of the City outside the area modeled by the Mosquito Lagoon RAP, we will utilize the Spatial Watershed Iterative Loading (SWIL) model developed for the Indian River Lagoon Basin Management Action Plan. The loading estimates will be basin specific and used to determine areas with the highest area-weighted loads.

Deliverable: A technical memorandum summarizing pollutant loading estimates from previously generated models and basin-specific updated pollutant loading estimates for the City.

7.4 IDENTIFICATION OF WATER QUALITY PROBLEM AREAS

ESA will use the results from tasks 7.1 - 7.3 to identify areas contributing to water quality impairments, especially those that may be attributed to stormwater sources. Working with

other members of the team, the information will be used to recommend management actions, both structural and non-structural, to address the existing water quality issues.

Deliverable: A technical memorandum describing the methods used to identify locations that contribute to water quality issues along with the results.

7.5 PREPARE SWRA REPORT CHAPTER

ESA will prepare the SWRA chapter for inclusion in the City of Edgewater Stormwater Master Plan.

Deliverable: SWRA Chapter for inclusion in the Master Plan.

TASK 8 – IMPROVEMENT ALTERNATIVES AND 20-YEAR STORMWATER CAPITAL IMPROVEMENT PLAN

This task will be led by Mead & Hunt and Pond. The following will be performed under this task:

- Perform a comprehensive model review developed under Task 5. This includes two days of field review focused on problem areas. No topographic survey, surface utility exploration (SUE) or geotechnical evaluations will be conducted.
- Hold a workshop (1st) with city staff to identify improvements (for both flood protection and water quality improvements) for up to 15 problem areas where improvement alternatives should be developed as identified under Task 6. For the problem areas potentially with more than one improvement alternative, up to three alternatives will be identified, evaluated and compared.
- Update model scenarios to include the proposed improvements; simulate the models under the FPLOS criteria developed in Task 6. Model scenarios will include individual improvements and all improvements within the watershed.
- Refine improvements and simulate models under the FPLOS criteria and three larger storms conditions. This may take multiple iterations.
- Summarize initial model results in maps and tables.
- Hold a workshop (2nd) with city staff to review initial model results and refine improvements for each problem area and discuss improvements ranking and prioritization criteria.
- Update models, simulate models under the FPLOS criteria, and summarize final model results in maps and tables.
- Estimate pollutant loadings (by JEA & ESA).
- Prepare conceptual cost estimates for the improvements.
- Rank and prioritize improvements preliminarily.
- Hold a workshop (3rd) with city staff to review final model results, finalize and prioritize improvements for each problem area.
- Formulate an initial 20-year capital improvement plan at 5-year increments. The improvement projects will be grouped into implementation phases:
 - Phase 1: 0-5 years (2025-2030)

- Phase 2: 6-10 years (2031-2035)
- Phase 3: 11-15 years (2036-2040)
- Phase 4: 16-20 years (2041-2045).
- Update and simulate models for 30 of the following conditions to assess incremental benefits of improvements under various conditions outlined in the tables below. The 30 simulations will be determined later.

Existing Land Cover			
Phase 1 (2025-2030) Capital Improvements			
Patial Vulnerability Assessment Adaptation Plan			
Existing TailwaterExisting TailwaterCondition 1Condition 2			
Existing Storm event 1	Simulation 1	Simulation 6	
Existing Storm event 2	Simulation 2	Simulation 7	
Existing Storm event 3	Simulation 3	Simulation 8	
Existing Storm event 4	Simulation 4	Simulation 9	
Existing Storm event 5	Simulation 5	Simulation 10	

Existing Land Cover			
Phases 1+2 (2025-2035) Capital Improvements			
Partial Vulnerability Assessment Adaptation Plan			
2035 Tailwater Condition 2035 Tailwater Condition 1 2			
Existing Storm event 1	Simulation 11	Simulation 16	
Existing Storm event 2	Simulation 12	Simulation 17	
Existing Storm event 3	Simulation 13	Simulation 18	
Existing Storm event 4	Simulation 14	Simulation 19	
Existing Storm event 5	Simulation 15	Simulation 20	

Existing Land Cover			
Phases 1+2+3 (2025-2040) Capital Improvements			
Partial Vulnerability Assessment Adaptation Plan			
2040 Tailwater Condition 2040 Tailwater Condit 1 2			
2040 Storm event 1	Simulation 21	Simulation 26	
2040 Storm event 2	Simulation 22	Simulation 27	
2040 Storm event 3	Simulation 23	Simulation 28	
2040 Storm event 4	Simulation 24	Simulation 29	
2040 Storm event 5	Simulation 25	Simulation 30	

Existing Land Cover				
Phases 1+2+3+4 (2025-2045) Capital Improvements				
Full Vulnerability Assessment Adaptation Plan				
	2070 Tailwater Condition 2070 Tailwater Condition 2			
2070 Storm event 1	Simulation 31	Simulation 36		
2070 Storm event 2	Simulation 32	Simulation 37		
2070 Storm event 3	Simulation 33	Simulation 38		
2070 Storm event 4	Simulation 34	Simulation 39		
2040 Storm event 5	Simulation 35	Simulation 40		

Existing Land Cover			
Phases 1+2+3+4 (2025-2045) Capital Improvements			
Full Vulnerability Assessment Adaptation Plan			
2100 Tailwater Condition 1 2100 Tailwater Condition			
2100 Storm event 1	Simulation 41	Simulation 46	
2100 Storm event 2	Simulation 42	Simulation 47	
2100 Storm event 3	Simulation 43	Simulation 48	
2100 Storm event 4	Simulation 44	Simulation 49	
2100 Storm event 5	Simulation 45	Simulation 50	

- Finalize the 20-year capital improvement plan.
- Present at a meeting/workshop (4th) the 20-year capital improvement plan to city council.
- Develop capital improvement project sheets showing project description, project sketch(es), photo(s), proposed implementation year, and conceptual construction cost for each project. For problem areas with more than one alternative evaluated, only the final recommended projects will have project sheets developed.
- Prepare report chapter describing the development of the 20-year capital improvement plan and process of its development.

Deliverables:

- One workshop with city staff to identify improvements for up to 15 problem areas.
- Two workshops with city staff to review and finalize improvements for each problem areas.
- One city council meeting to present the 20-year capital improvement plan.
- Inundation mapping for 30 model simulations and individual Improvements.
- Tables and maps/drawings of capital improvement projects.
- Capital improvement project sheets showing project description, project sketch(es), photo(s), proposed implementation year, and conceptual construction cost for each project.

- Report chapter describing the development of the 20-year capital improvement plan and process of its development.
- Summaries of above listed workshops and city council meeting.

TASK 9 – OPERATIONS AND MAINTENANCE (O&M) REVIEW AND CONDITION ASSESSMENT CRITERIA

Jones Edmunds will review the city's existing O&M program and develop recommendations for improving the city's stormwater infrastructure, maintainable ditches and waterways, and drainage easements. Jones Edmunds will meet with and interview city stormwater O&M staff to determine how the system is currently being maintained and operated. Jones Edmunds will also collect and review existing documentation and/or tracking that has been developed by the city for its O&M program. The city's spatial stormwater asset data and other GIS data will be used to characterize the stormwater system and determine locations that will to be included in the plan. Jones Edmunds will review the GIS data for completeness and make minor updates where significant data gaps exist. Jones Edmunds will summarize the city's existing O&M program and identify opportunities/recommendations for improvement. This review may consider:

- Inspection/maintenance frequency by system component type.
- Inspection/Maintenance activities by system component type.
- Inspection/maintenance tracking systems.
- O&M budget estimates.

Jones Edmunds will also develop recommended scoring system templates for assessing the condition of the city's stormwater infrastructure. These templates will be used by the city to complete condition assessments and identify/prioritize locations where system maintenance and/or rehabilitation is needed. Jones Edmunds will provide draft templates for each type of drainage system component (pipes, inlets, channels, etc.) to the city for review and comment. We will incorporate the city's comments on the templates.

Deliverables:

- Report chapter summarizing the city's O&M program and opportunities/ recommendations for improvement.
- Drainage system condition assessment templates.

TASK 10 – DRAFT AND FINAL STORMWATER MASTER PLAN

Jones Edmunds will compile a comprehensive draft report summarizing the tasks completed and submit four printed copies and one digital copy in PDF format to the city for review and comment. At a minimum, the report will include:

- An executive summary.
- Colored maps that are clear, easy to understand, and of professional quality. The figures will identify deficiencies in the city's stormwater system and proposed improvements, including optimal locations of proposed facilities.

- Summary of the existing stormwater system.
- Population projections and stormwater demand summary.
- Documentation of modeling methods and assumptions.
- Technical information; analysis and discussion of results for each task, making use of charts, graphs, and figures of professional quality to clearly and effectively convey the information, findings, and conclusions.
- Justification for recommended work to be accomplished.
- Stormwater system capital improvement plan.
- Recommended standard procedures and methods for updating the stormwater model for evaluating impacts of new developments.
- Other supporting documentation.
- Identification of potential grant funding opportunities for recommended capital improvement projects.

Jones Edmunds will present the report in draft format at two public meetings involving feedback from the City Council and members of the public.

Upon approval of the draft Plan from the city, Jones Edmunds will produce the final report and submit ten printed copies and one digital copy in PDF format. Jones Edmunds will provide all maps in GIS format compatible with existing city GIS formats. We will submit the H&H model geodatabase and all H&H model files as usable via the selected software. We will incorporate city review comments on the draft material and resubmit for additional review until final city approval of the draft materials.

Deliverables:

- Four hard copies and a PDF copy of the Draft Stormwater Master Plan Report.
- Up to two public meetings to present the draft Report.
- Ten hard copies and a PDF copy of the Final Stormwater Master Plan Report.
- GIS maps compatible with city GIS formats.
- Final H&H model geodatabase and H&H model files.

TASK 11 – H&H MODEL MAINTENANCE

Upon completion of the Stormwater Master Plan Report, Jones Edmunds will complete one round of updates to the H&H model to account for significant new developments or other significant changes in hydrologic or hydraulic conditions that occurred since the model was finalized. Inundation mapping will be updated as needed for the design storm events included in Task 5.

Deliverables:

- Updated H&H model geodatabase and H&H model files.
- Updated inundation GIS files.

SCHEDULE

The table below shows the anticipated schedule by task from Notice to Proceed (NTP).

Task No.	Task Title	Start Month from NTP	End Month from NTP
1	Kickoff Meeting, Project Management, and Coordination	1	18
2	Data Collection	1	3
3	H&H Model Schematic Development	2	5
4	H&H Model Field Data Collection	5	7
5	H&H Model Development	7	10
6	FPLOS Analysis and Problem Area Identification	10	12
7	Surface Water Resource Assessment	3	10
8	Improvement Alternatives and 20-Year Stormwater Capital Improvement Plan	10	15
9	O&M Review and Condition Assessment Criteria	12	14
10	Draft and Final Stormwater Master Plan Report	15	18
11	H&H Model Maintenance	18	20

COMPENSATION

This scope of services will be completed for a lump-sum fee of \$1,198,360 according to the task breakdown in the table below:

Task No.	Task Title	Fee
1	Kickoff Meeting, Project Management, and Coordination	\$69,857
2	Data Collection	\$58,750
3	H&H Model Schematic Development	\$83,120
4	H&H Model Field Data Collection	\$118,110
5	H&H Model Development	\$250,230
6	FPLOS Analysis and Problem Area Identification	\$86,721
7	Surface Water Resource Assessment	\$39,657
8	Improvement Alternatives and 20-Year Stormwater Capital Improvement Plan	\$360,145
9	O&M Review and Condition Assessment Criteria	\$37,190
10	Draft and Final Stormwater Master Plan Report	\$54,380
11	H&H Model Maintenance	\$40,200
	Total	\$1,198,360

ASSUMPTIONS AND EXCLUSIONS

 Nutrient removal benefits for water quality improvement projects will be calculated based on results from existing water quality models that cover the City. Updates to the existing water quality models are not included.

If you have any questions regarding this proposal, please contact me. Thank you for the opportunity to serve the City of Edgewater.

Sincerely,

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