RESOLUTION NO. 2011-___9_____

A RESOLUTION BY THE BOARD OF COUNTY COMMISSIONERS OF ST. JOHNS COUNTY, FLORIDA, AUTHORIZING THE COUNTY ADMINISTRATOR, OR DESIGNEE, TO DIRECT COUNTY STAFF TO SUBMIT AN APPLICATION ON BEHALF OF THE COUNTY WITH THE DEPARTMENT OF ENVIRONMENTAL PROTECTION REGARDING THE TMDL WATER QUALITY RESTORATION GRANT.

RECITALS

WHEREAS, The Florida Department of Environmental Protection (FDEP) receives documentary stamp funding for the implementation of projects to reduce urban nonpoint source pollution discharged to impaired waters. These funds are restricted to projects that reduce stormwater pollutant loadings from lands that were developed without stormwater treatment which discharge to water bodies on the state's verified list of impaired waters, to water bodies with a DEP proposed or adopted Total Maximum Daily Load (TMDL), or water bodies with a DEP proposed or adopted Basin Management Action Plans (BMAPs); and

WHEREAS, by participating in the St. Johns River Water Management District's Algal Initiative, St. Johns County has committed to identifying and implementing projects that will reduce nutrients discharged to the Lower St. Johns River as adopted by FDEP in LSJR BMAP; and

WHEREAS, St. Johns County has identified the Master's Regional Stormwater Treatment Facility as a cost effective project to reduce nutrients discharged to the LSJR and is eligible for TMDL Water Quality Restoration Grant funding from FDEP, and

WHEREAS, FDEP grant funds are used for urban stormwater retrofitting projects undertaken by local governments, water management districts, or other government entities. Grant funds may not be used to provide stormwater treatment for new development or redevelopment activities. All projects will require a minimum of 50% matching funds with at least 25% of the match coming from the local government (if applicable). Priority for TMDL Water Quality Restoration Grant funds is given to those projects that are ready for construction within the next six months; and

WHEREAS, County staff will complete an application based on the criteria found within the TMDL Water Quality Restoration Grant Rule and develop a project scope of work and administer the contract if awarded; and

NOW, THEREFORE BE IT RESOLVED BY THE BOARD OF COUNTY COMMISSIONERS OF ST. JOHNS COUNTY, FLORIDA, as follows:

Section 1. The above Recitals are incorporated by reference into the body of this Resolution and such Recitals are adopted as finds of fact.

Section 2. The County Administrator, or designee, is hereby authorized to direct County staff to submit an application on behalf of the County for the purposes mentioned above, and to execute all required documents to DEP associated with the TMDL Water Quality Restoration Grant.

Section 3.   To the extent that there are typographical and/or administrative errors that do not change the tone, tenor, or concept of this Resolution, then this Resolution may be revised without subsequent approval by the Board of County Commissioners.

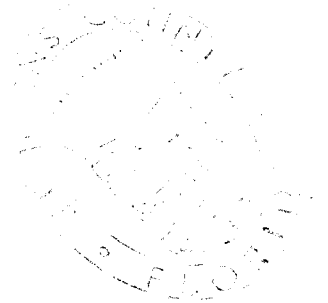**PASSED AND ADOPTED** by the Board of County Commissioners of St. Johns County, Florida, this _18th_ day of ___January___, 2011.

**BOARD OF COUNTY COMMISSIONERS
OF ST. JOHNS COUNTY, FLORIDA**

By: _____
   Chair

ATTEST: Cheryl Strickland, Clerk

By: _____
   Deputy Clerk

RENDITION DATE _1/20/11_

TMDL WATER QUALITY RESTORATION GRANT PROPOSAL APPLICATION

PROJECT NAME:

PROJECT FUNDING:

TMDL Grant	$		____%
Matching Funds	$		____%
Total Project Cost	$		____%

LEAD ORGANIZATION:
    End of Fiscal Year:
    FEID Number:

CONTACT PERSON:
ADDRESS:
PHONE:
FAX:
EMAIL:

COOPERATING ORGANIZATIONS AND CONTACT PERSON (THOSE PROVIDING FUNDING OR IN-KIND SERVICES):

PROJECT ABSTRACT:

PROJECT LOCATION AND WATERSHED CHARACTERISTICS:

Water Body Name:
Hydrologic Unit Code(HUC):
Project Latitude:
Project Longitude:

Land Uses within the Watershed (acres and percentages of total):

Land Use	Acres	%
Land Use Totals (Acreage and %)		

TMDL STATUS OF WATER BODY AND PROJECT:
    Name of Impaired Water:
    Status of Impaired Water:

1

Status of BMAP:

POLLUTION REDUCTION STRATEGY:

PROJECT OBJECTIVE(S):

PROJECT DESCRIPTION (PLEASE LIST ALL TASKS AND DELIVERABLES):
NOTE: Typical tasks will include: Land acquisition, design, permitting, bidding, BMP construction, BMP monitoring, grant administration, quarterly progress reports, draft final report, final report.

TASK 1:

DELIVERABLES:
SCHEDULE:

TASK 2:

DELIVERABLES:
SCHEDULE:

TASK 3:

DELIVERABLES:
SCHEDULE:

TASK 4:

DELIVERABLES:
SCHEDULE:

ETC

ESTIMATED POLLUTANT LOAD REDUCTION:

BMP's Installed		TSS kg/yr	TP kg/yr	TN kg/yr	BOD kg/yr	Other kg/yr	Other kg/yr
Pollutant Loads	Pre-Project						
	Post-Project						
	Load Reduction						
	% Reduction						
		TSS kg/yr	TP kg/yr	TN kg/yr	BOD kg/yr	Other kg/yr	Other kg/yr
nt	Pre-Project						
	Post-Project						

		TSS kg/yr	TP kg/yr	TN kg/yr	BOD kg/yr	Other kg/yr	Other kg/yr
	Load Reduction						
	% Reduction						
Pollutant Loads	Pre-Project						
	Post-Project						
	Load Reduction						
	% Reduction						
		TSS kg/yr	**TP kg/yr**	**TN kg/yr**	**BOD kg/yr**	**Other kg/yr**	**Other kg/yr**
Pollutant Loads	Pre-Project						
	Post-Project						
	Load Reduction						
	% Reduction						

MODEL USED: Allowable models include Spreadsheet Tool for Estimating Pollutant Load (STEPL, 2007), Nonpoint Source Loading Management Model (NPSLMM, 2008) and Watershed Management Model (WMM, 2006). The STEPL model is available for download at http://it.tetratech-ffx.com/stepl/ while the other models are on the TMDL Grant web site.

EMCS USED IN MODEL: Please use the Event Mean Concentrations (EMCs) listed in Attachment 1 in the model to estimate pre- and post-project pollutant loads and load reductions.

PROJECT MILESTONES:

Task	Activity	Start	Complete

PROJECT BUDGET:

Project Funding Activity	Grant Amount	Matching Contribution	Match Source *
Land Acquisition			
Staff			
Travel			
Equipment			
Supplies			
Contractual			
BMP Implementation			
Monitoring			
Public Education			
Other:			
Total:			
Total Project Cost:			

*If a stormwater utility or other dedicated recurring fee is contributing, put that information in the following table.

DEDICATED STORMWATER FUNDING INFORMATION:

Match Source Name	Description	ERU/Fee

BUDGET BY TASK (Task should correspond to those listed earlier in the application)

Project Funding Activity	Grant Amount	Matching Contribution	Match Source
Total:			
Total Project Cost:			

OTHER FUNDING (Not Match):

4

Agency	Activity	Amount
	Total:	

REFERENCES CITED:

NOTE: PLEASE SUBMIT ALL APPENDICES IN A SEPARATE WORD DOCUMENT. THIS MAY INCLUDE MAPS, FIGURES OR ANY OTHER INFORMATION YOU WOULD LIKE TO INCLUDE WITH YOUR APPLICATION

ATTACHMENT 1 - EMC VALUES FOR MODELING POLLUTANT LOADS

LAND USE CATEGORY	TYPICAL RUNOFF CONCENTRATION (mg/l)						
	TOTAL N	TOTAL P	BOD	TSS	COPPER	LEAD	ZINC
Low-Density Residential[1]	1.61	0.191	4.7	23.0	0.008[4]	0.002[4]	0.031[4]
Single-Family	2.07	0.327	7.9	37.5	0.016	0.004	0.062
Multi-Family	2.32	0.520	11.3	77.8	0.009	0.006	0.086
Low-Intensity Commercial	1.18	0.179	7.7	57.5	0.018	0.005	0.094
High-Intensity Commercial	2.40	0.345	11.3	69.7	0.015	--	0.160
Light Industrial	1.20	0.260	7.6	60.0	0.003	0.002	0.057
Highway	1.64	0.220	5.2	37.3	0.032	0.011	0.126
Agricultural Pasture Citrus Row Crops General Agriculture[2]	 3.47 2.24 2.65 2.79	 0.616 0.183 0.593 0.431	 5.1 2.55 -- 3.8	 94.3 15.5 19.8 43.2	 -- 0.003 0.022 0.013	 -- 0.001 0.004 0.003	 -- 0.012 0.030 0.021
Undeveloped / Rangeland / Forest	1.15	0.055	1.4	8.4	--	--	--
Mining / Extractive	1.18	0.15	7.6[3]	60.0[3]	0.003[3]	0.002[3]	0.057[3]

1. Average of single-family and undeveloped loading rates
2. Mean of pasture, citrus, and row crop land uses
3. Runoff concentrations assumed equal to industrial values for these parameters
4. Value assumed to be equal to 50% of single-family concentration

APPENDIX 2. MONITORING TO DETERMINE TREATMENT EFFECTIVENESS

If this project is approved for funding, the applicant will be required to monitor the effectiveness of the stormwater BMP. BMP effectiveness data is required to demonstrate the environmental benefits of a project. The general monitoring requirements are set forth below. Please note that the final scope of work in the contract may include more specifics on particular monitoring requirements.

Within six months before the completion of the project, the applicant will submit a detailed monitoring plan to the department for review and comment. The monitoring plan will specify the sampling locations, sampling instruments, and parameters to be sampled. The monitoring will include sampling of from seven to ten (10) storm events as described below. If possible, monitored events will be discrete rainfall events generally consisting of greater than 0.20 inches and less than 1.5 inches or rain. However, we want to monitor the real world to determine true efficiency. Therefore, remember this is a GENERAL guideline with respect to the storm event. Actual rainfall may vary depending on the type of BMP, the contributing drainage area, the amount of impervious area, and the time of concentration.

Monitoring will be conducted at two locations: inflows and outflows.

Monitoring will include the following parameters:

- Daily rainfall (to nearest 0.01 inch) measured at the sampling location with verification from the local weather station. Rainfall data should be provided for at least the week proceeding monitoring and day(s) of monitoring.

- Flow using approved flow activated flow meters

  - Parameters as specified below

Parameter	Detection Limit	Method
Total Cadmium	1 ug/l	Composite*
Total Chromium	5 ug/l	Composite*
Total Copper	5 ug/l	Composite*
Total Zinc	10 ug/l	Composite*
NO2+NO3	0.1 mg/l	Composite*
TKN	0.3 mg/l	Composite*
Total Ammonia	0.05 mg/l	Composite*
Or Total N		Composite*
Total Phosphorus	0.05 mg/l	Composite*
Ortho Phosphate	0.05 mg/l	Composite*
TSS	1 mg/l	Composite*
Oil/Grease	1 mg/l	Composite*
Fecal coliform	N/A	Grab** if possible

7

*Flow weighted composite samples will be taken over the storm hydrograph. Typically, the samples will be composited over the inflow hydrograph at the inflow and for up to a 36 hour period at outflow station, depending upon the time of concentration and flow into and out of the BMP. Each composite will include at least six evenly distributed sub-samples.

**Grab samples to be collected within the drainage area time of concentration at influent and effluent stations described above.

The applicant should estimate the pollutant removal efficiency of the stormwater BMP by calculating the percent reduction in the event mean concentration (EMC) for the period of record [1-(Average Inflow EMC/Average Outflow EMC)]. For BMPs with multiple inflow (and/or outflow) points, the pollutant contributions for each inflow should be flow weighted. See the National Stormwater Best Management Practice database at http://www.bmpdatabase.org/ and Development of Performance Measures, Determining Urban Stormwater Best Management Practice Removal Efficiencies, 1999 by URS Greiner Woodward Clyde, ASCE and EPA at http://www.bmpdatabase.org/task3_1.pdf

From ASCE Data base
3.1 Efficiency Ratio
Definition
The efficiency ratio is defined in terms of the average event mean concentration (EMC) of pollutants over some time period:

$$ER = 1 - \frac{\text{Average outlet EMC}}{\text{Average inlet EMC}} = \frac{\text{average inlet EMC} - \text{average outlet EMC}}{\text{average inlet EMC}}$$

EMCs can be either collected as flow weighted composite samples in the field or calculated from discrete measurements. The EMC for an individual event or set of field measurements, where discrete samples have been collected, is defined as:

$$EMC = \sum ViCi / \sum Vi$$

where,
        V: volume of flow during period i
        C: average concentration associated with period i
        n: total number of measurements taken during event

The arithmetic average EMC is defined as,

$$averageEMC = \sum EMCj / m$$

where,
m: number of events measured
In addition, the log mean EMC can be calculated using the logarithmic transformation of each EMC. This transformation allows for normalization of the data for statistical purposes.

Mean of the Log EMCs = $\sum Log(EMCj) / m$

Estimates of the arithmetic summary statistics of the population (mean, median, standard deviation, and coefficient of variation) should be based on their theoretical relationships (Appendix A) with the mean and standard deviation of the transformed data. Computing the mean and standard deviation of log transforms of the sample EMC data and then converting them to an arithmetic estimate often obtains a better estimate of the mean of the population due to the more typical distributional characteristics of water quality data. This value will not match that produced by the simple arithmetic
average of the data. Both provide an estimate of the population mean, but the approach utilizing the log-transformed data tends to provide a better estimator, as it has been shown in various investigations that pollutant, contaminant and constituent concentration levels have a log-normal distribution (NURP, 1983). As the sample size increases, the two values converge.

Assumptions
This method
- Weights EMCs from all storms equally regardless of relative magnitude of storm. For example a high concentration/high volume event has equal weight in the average EMC as a low concentration/low volume event. The logarithmic approach tends to minimize the difference between the EMC and mass balance calculations.
- Is most useful when loads are directly proportional to storm volume. For work conducted on nonpoint pollution (i.e., inflows), the EMC has been shown to not vary significantly with storm volume. This lends credence to using the average EMC value for the inflow but does not provide sufficient evidence that outflows are well represented by average EMC. Accuracy of this method will vary based on the BMP type.
- Minimizes the impacts of smaller/cleaner storm events on actual performance calculations. For example, in a storm by storm efficiency approach, a low removal value for such an event is weighted equally to a larger value.
- Allows for the use of data where portions of the inflow or outflow data are missing, based on the assumption that the inclusion of the missing data points would not significantly impact the calculated average EMC.

Comments
This method
- Is taken directly from nonpoint pollution studies and does a good job characterizing inflows to BMPs but fails to take into account some of the complexities of BMP design. For example, some BMPs may not have outflow EMCs that are normally distributed (e.g., a media filter that treats to a relatively constant level that is independent on inflow concentrations).
- Assumes that if all storms at the site had been monitored, the average inlet and outlet EMCs would be similar to those that were monitored.

ATTACHMENT 3 - GRANT APPLICATION INSTRUCTIONS

The DEP Bureau of Watershed Restoration administers state funds allocated to the TMDL program for the reduction of urban nonpoint source pollutant loadings to impaired waters. These grant funds are used to implement projects (Best Management Practices or BMPs) to reduce urban stormwater pollutant loadings from existing drainage systems without treatment and from lands developed before the implementation of the state's stormwater treatment rules. Nonpoint source pollution is the biggest cause of water pollution in Florida today, and reducing stormwater pollutant loadings is critical to meeting Total Maximum Daily Loads (TMDLs) established for impaired waters.

1. Project Name: Provide the name of the project. For example, Lake Greenwood Urban Wetland Stormwater Retrofit

2. Project Funding: Provide the total project costs, the matching funds, and the amount of TMDL grant funding requested. Provide the % for matching funds and TMDL grant funds.

3. Lead Organization: This is the entity that is applying for the grant funds and with which DEP will enter into a contract for the project. Also, provide the date on which the Lead Organization's Fiscal Year ends (i.e., December 31, September 30, June 30) and the Lead Organization's Federal Employment Identification Number (FEID)

4. Contact Person: Provide the name and contact information for the person from the Lead Organization that will serve as the project/contract manager.

5. Cooperating Organizations: Provide the name and contact person for any entities that are providing matching funds or in-kind services on the project.

6. Project Abstract: Provide an abstract of the project that includes the name of the water body to which the stormwater BMP discharges, the status of the impaired water body (i.e., BMAP adopted, TMDL adopted, verified list), the number of acres in the drainage area to be treated, the BMPs to be implemented, and the anticipated load reductions.

7. Project Location and Watershed Characteristics: Provide the requested information for the drainage area that will contribute stormwater to the retrofit project.

8. TMDL Status of Water Body: Provide the requested information. Status of impaired water body means one of the following, as applicable: TMDL Adopted, on Adopted Verified List of Impaired Waters, on Planning List of Impaired Waters, on 1999 Consent Decree list. Status of Basin Management Action Plan (BMAP) means one of the following, as applicable: BMAP Adopted, BMAP in development, no BMAP

9. Pollution Reduction Strategy: Summarize the actions, both structural and nonstructural, that will be undertaken as part of the project to reduce stormwater pollutant loadings to impaired waters. Please state if the project is specifically listed in a

Surface Water Improvement and Management (SWIM Plan), National Estuary Program Comprehensive Conservation and Management Plan (CCMP), BMAP, or other watershed or stormwater master plan.

10. Project Objectives: Provide the objectives of the project. For example, the objective of this project is to reduce stormwater pollutant loads to Dirty Lake, an impaired water body with an adopted TMDL, and to educate the public about effective stormwater treatment.

11. Project Description: Provide a brief, but complete, description of each task to be undertaken as part of the project. For each task, include the specific deliverables that will result from the task, and the start date and end date for the task. Some tasks may actually occur before the grant application is submitted such as land acquisition, project design, permitting, etc.

12. Estimated Pollutant Load Reduction: Using the models listed and the Event Mean Concentrations listed in Attachment 1, provide stormwater pollutant load estimates for the existing condition, the condition after the BMP is installed, and the resulting load reductions.

13. Project Milestones: List your tasks from Number 11 and their start and end dates.

14. Project Budget by Category: Provide your budget, for both grant funds and matching funds, by the categories listed. You may add additional categories, as needed.

15. Dedicated Stormwater Funding Information: If matching funds are being provided by a dedicated stormwater funding source, such as a stormwater utility fee, MSBU, MSTU, or infrastructure sales tax, please provide the requested information.

16. Budget by Task: Provide your budget, for both grant funds and matching funds, by task. Tasks should correspond to those listed in Items 11 and 13.

17. Other Funding: List other funding sources that do not serve as matching funds.

18. References Cited: Please list any references cited in your project description

JONES EDMUNDS

GRAPHIC SCALE

SCALE IN FEET
1" = 800'

0   200   400   800

-N-

HUB BAILEY ROAD

CR 13 S

STORMWATER
IRRIGATION FIELD
(30.42 AC)

WETLAND
CELL 1
(28.98 AC)

CANAL 4N

WETLAND
CELL 2
(18.03 AC)

WETLAND
CELL 3
(15.39 AC)

CANAL 4

LITTORAL
ZONE
(6.03 AC)

WET POND
(41.48 AC)

PUMP
STATION

BYPASS
CANAL /
FOREBAY

LEGEND

MASTERS TRACT (272 AC)

JANUARY 2009 DISTRICT CONCEPTUALLY
APPROVED BOUNDARY

30' WIDE EASEMENT

PROPOSED FLOW-WAY ENHANCEMENT AREAS
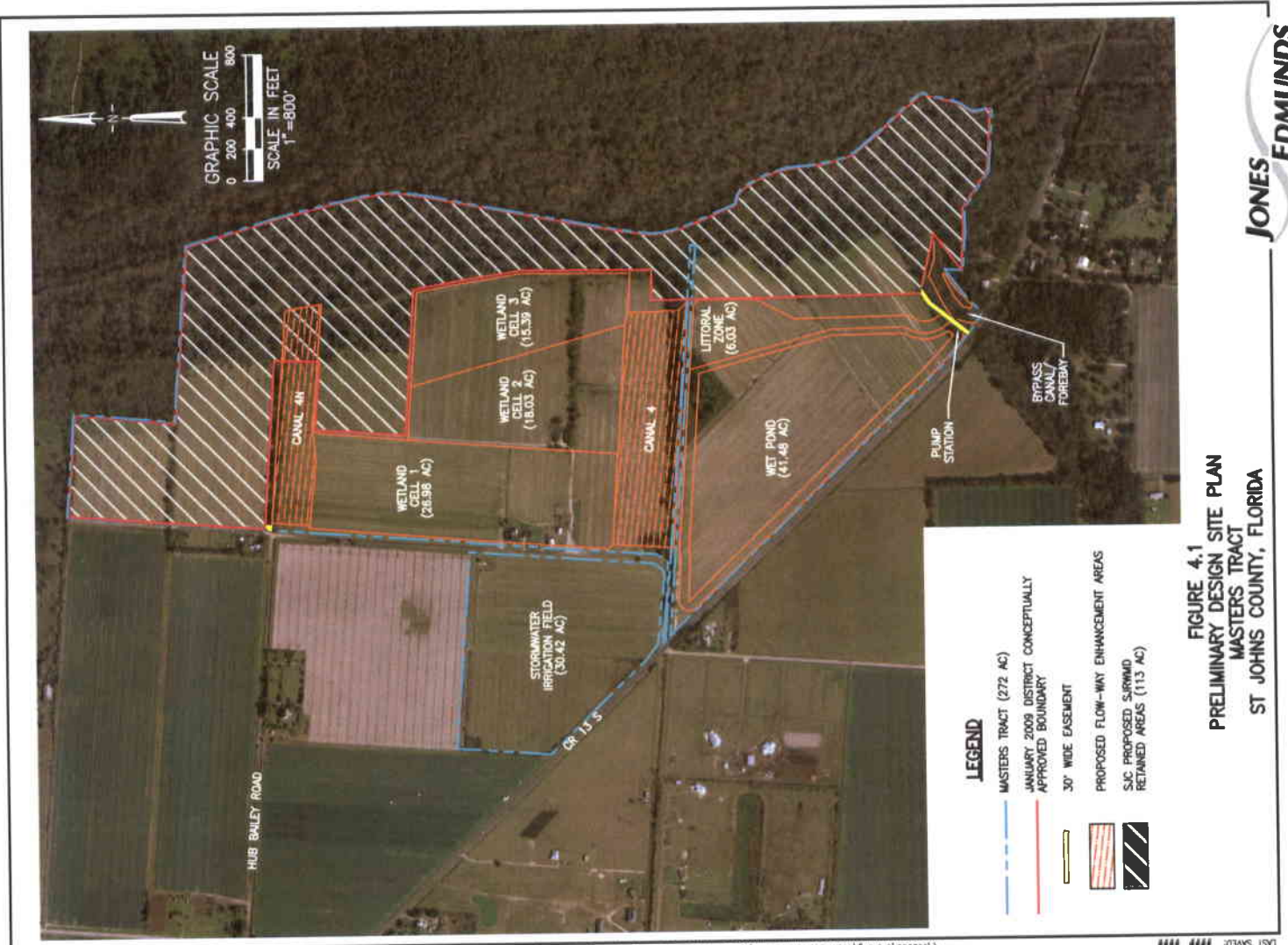
SJC PROPOSED SJRWMD
RETAINED AREAS (113 AC)

FIGURE 4.1
PRELIMINARY DESIGN SITE PLAN
MASTERS TRACT
ST JOHNS COUNTY, FLORIDA