Florida Department of Environmental Protection

St. Lucie River and Estuary Basin Management Action Plan (BMAP) Meeting

August 21, 2013





Presentation Overview

- **Allocation Model**
- **Second Phase Planning**
  - Proposed Schedule
  - Future Projects
- **Monitoring**

Allocation Model

Allocation Model

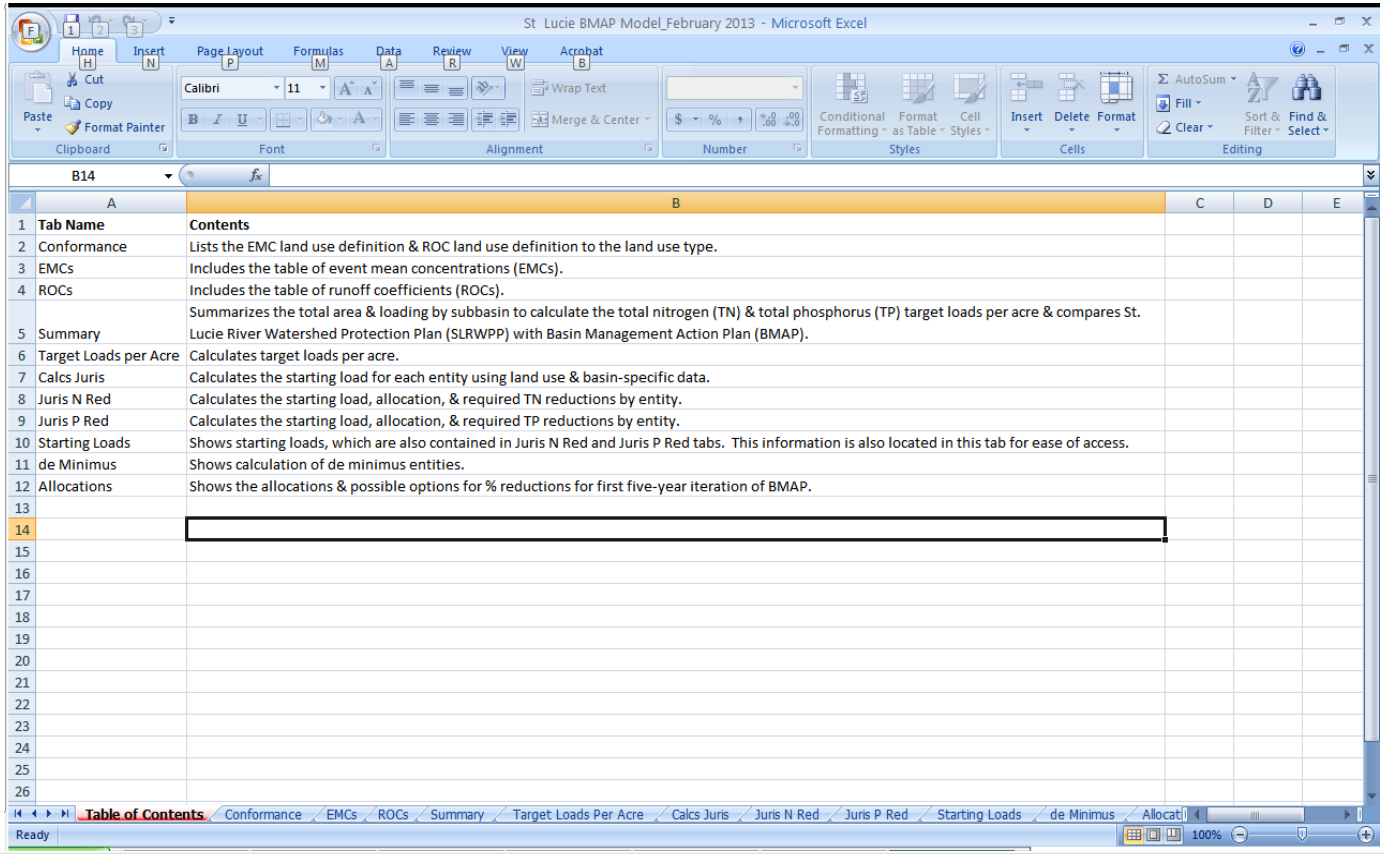
- A spreadsheet model was created for the St. Lucie River and Estuary BMAP to calculate starting loads, allocations, and required reductions to achieve water quality standards.

- The model was refined in 2012 to include information consistent with the 2012 St. Lucie River Watershed Protection Plan (SLRWPP) Update.

- The period of record for data used in the model was 1996–2005.

Allocation Model

- The most current version of model is located here: http://publicfiles.dep.state.fl.us/DEAR/BMAP/StLucie/Model/MOST CURRENT VERSION.



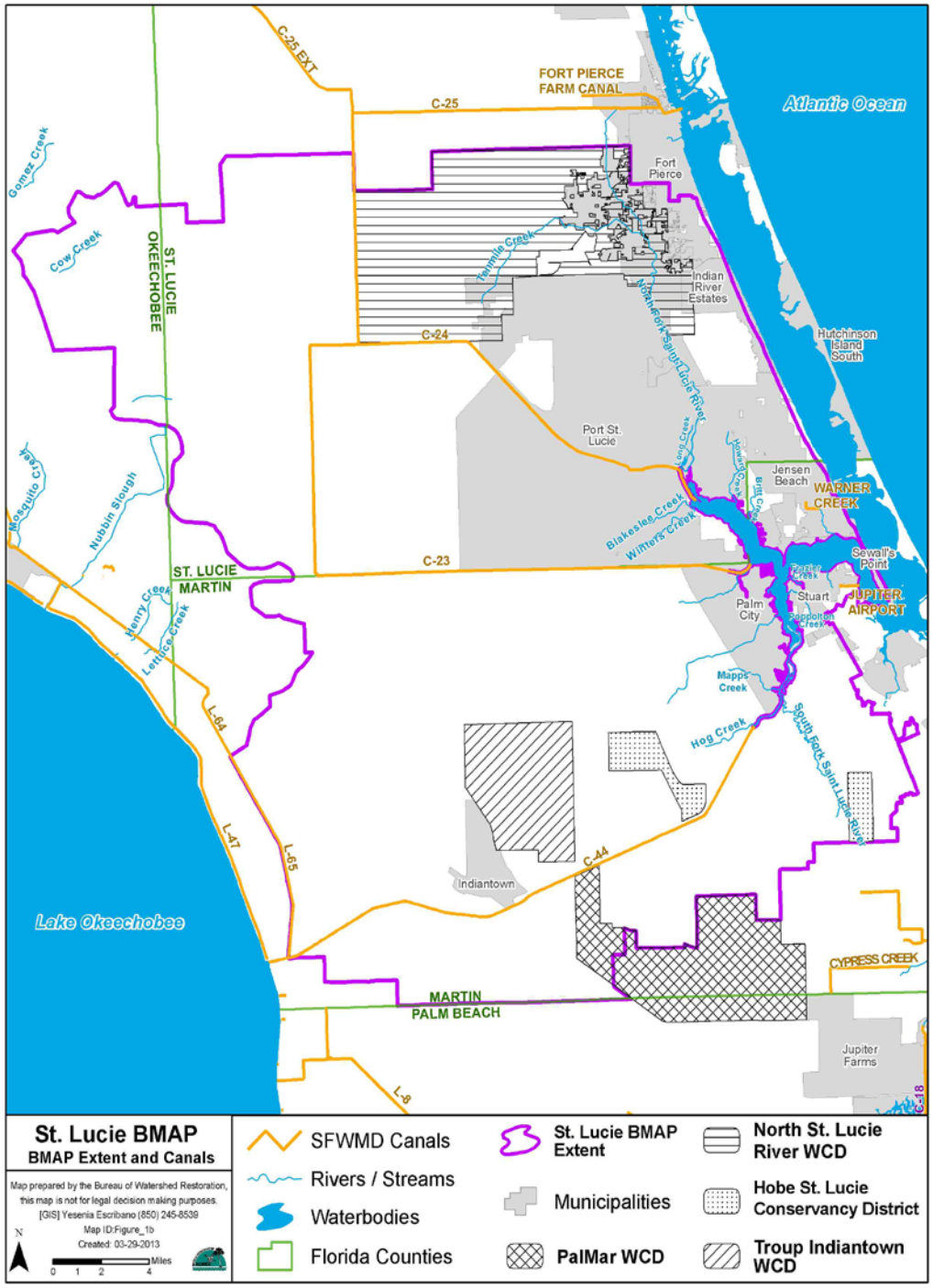
	A	B
1	**Tab Name**	**Contents**
2	Conformance	Lists the EMC land use definition & ROC land use definition to the land use type.
3	EMCs	Includes the table of event mean concentrations (EMCs).
4	ROCs	Includes the table of runoff coefficients (ROCs).
5	Summary	Summarizes the total area & loading by subbasin to calculate the total nitrogen (TN) & total phosphorus (TP) target loads per acre & compares St. Lucie River Watershed Protection Plan (SLRWPP) with Basin Management Action Plan (BMAP).
6	Target Loads per Acre	Calculates target loads per acre.
7	Calcs Juris	Calculates the starting load for each entity using land use & basin-specific data.
8	Juris N Red	Calculates the starting load, allocation, & required TN reductions by entity.
9	Juris P Red	Calculates the starting load, allocation, & required TP reductions by entity.
10	Starting Loads	Shows starting loads, which are also contained in Juris N Red and Juris P Red tabs. This information is also located in this tab for ease of access.
11	de Minimus	Shows calculation of de minimus entities.
12	Allocations	Shows the allocations & possible options for % reductions for first five-year iteration of BMAP.

BMAP Model Considerations

- **Land Uses**
  - The Florida Department of Environmental Protection (FDEP) will update the land uses to use the most updated coverage.
- **Jurisdictional Boundaries**
  - Martin County/Stuart
  - Martin County/St. Lucie County
- **Community Development District (CDD) Responsibilities**
  - Discussions will continue with Port St. Lucie and the FDEP.

BMAP Model Considerations

- **Basin Boundaries**
  - Evaluate South Coastal and Mid-Coastal sub-basins for possible addition to the BMAP basin boundary (BMAP study area).
    - South Coastal sub-basin did not receive allocations due to lack of nutrient loading data.
    - Mid-Coastal sub-basin is tidally connected to the St. Lucie Estuary and was included in the total maximum daily load (TMDL) document as part of the coastal planning unit.
  - Evaluate whether a portion of the C-25 East sub-basin should be added.
  - Identify areas included in the South Florida Water Management District's (SFWMD's) St. Lucie River sub-watershed boundary improvements study (February 2013) for possible inclusion.

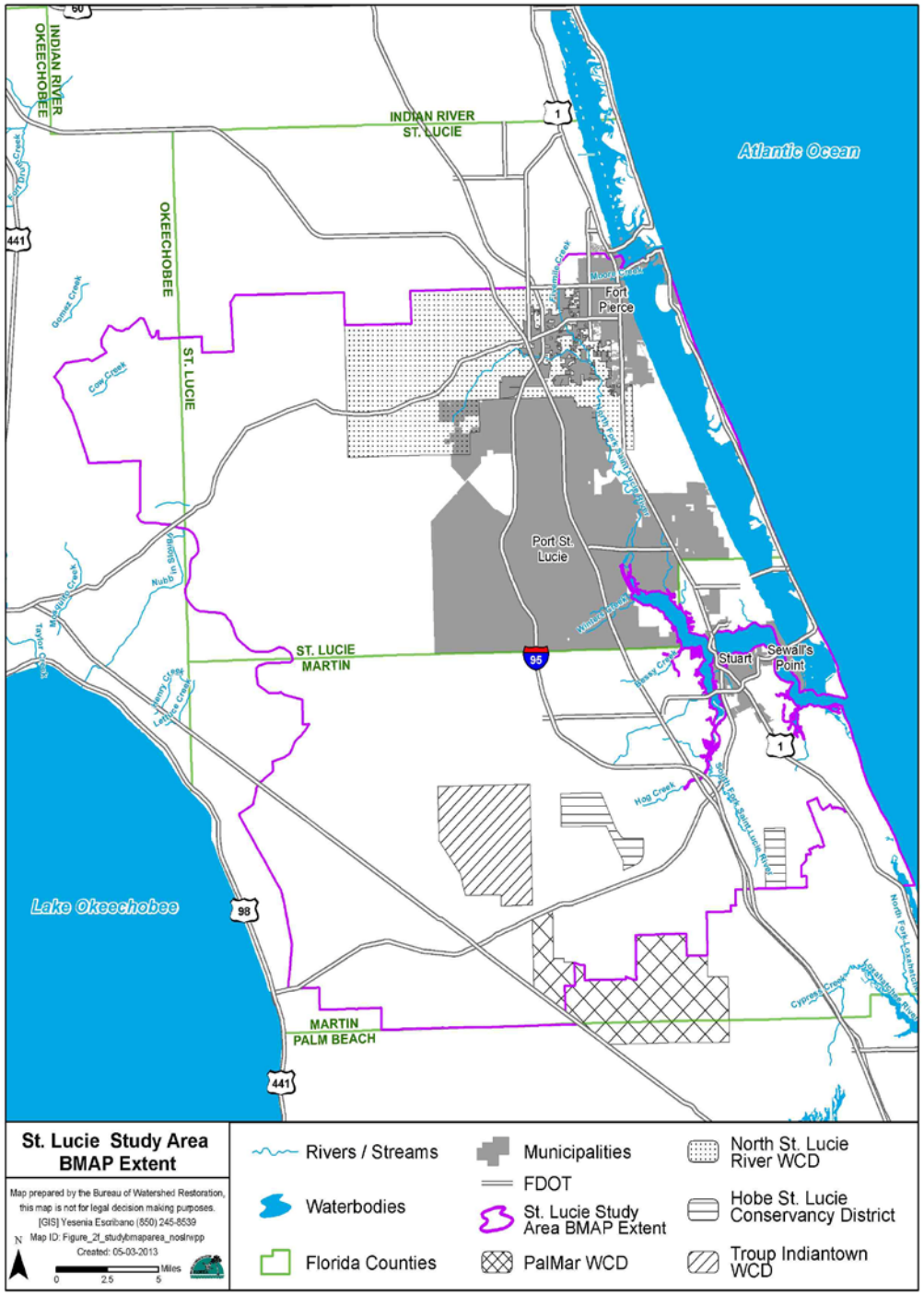


St. Lucie River and Estuary BMAP Area

Includes 6 sub-basins:

- Basins 4, 5, and 6;
- C-23;
- C-24;
- C-44 and S-153;
- North Fork; and
- South Fork.

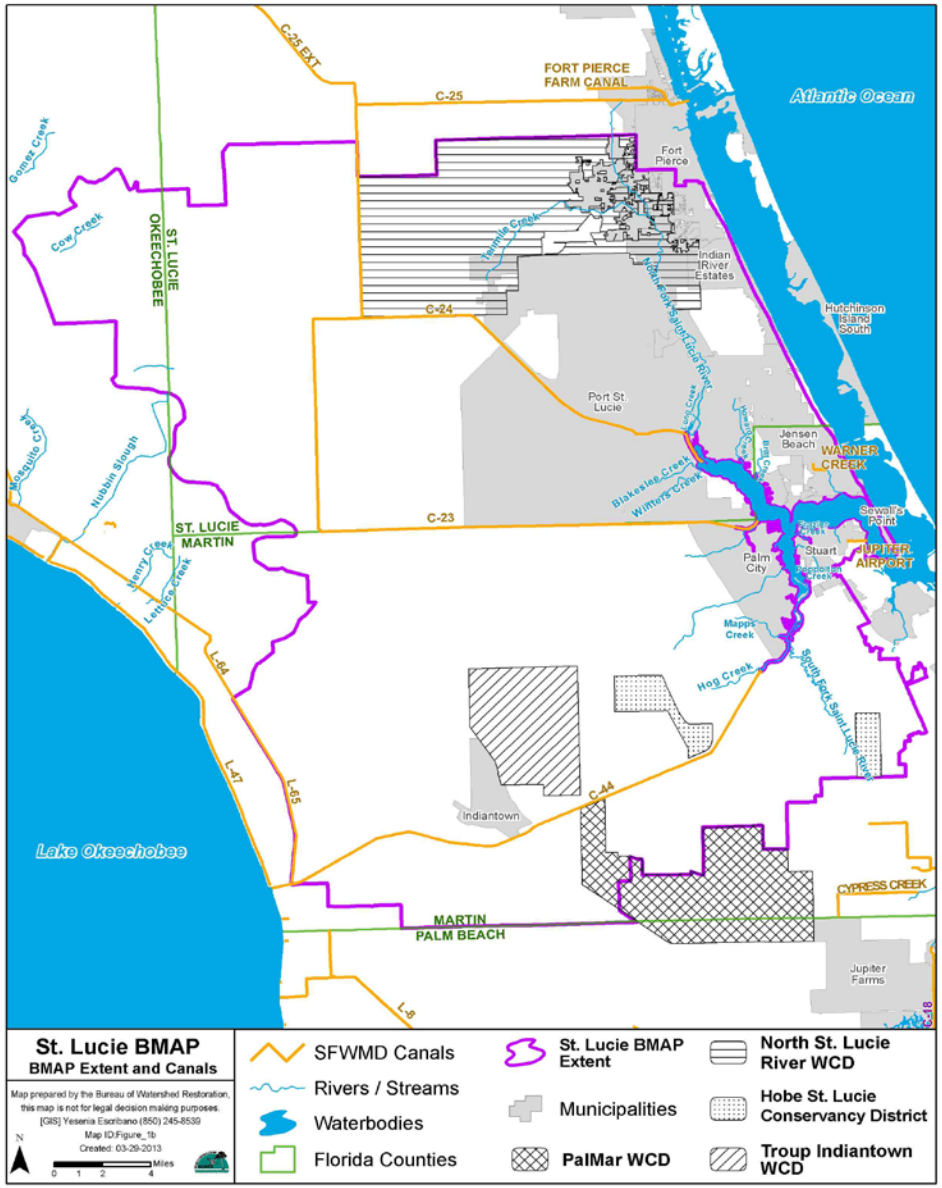
St. Lucie River and Estuary BMAP Study Area



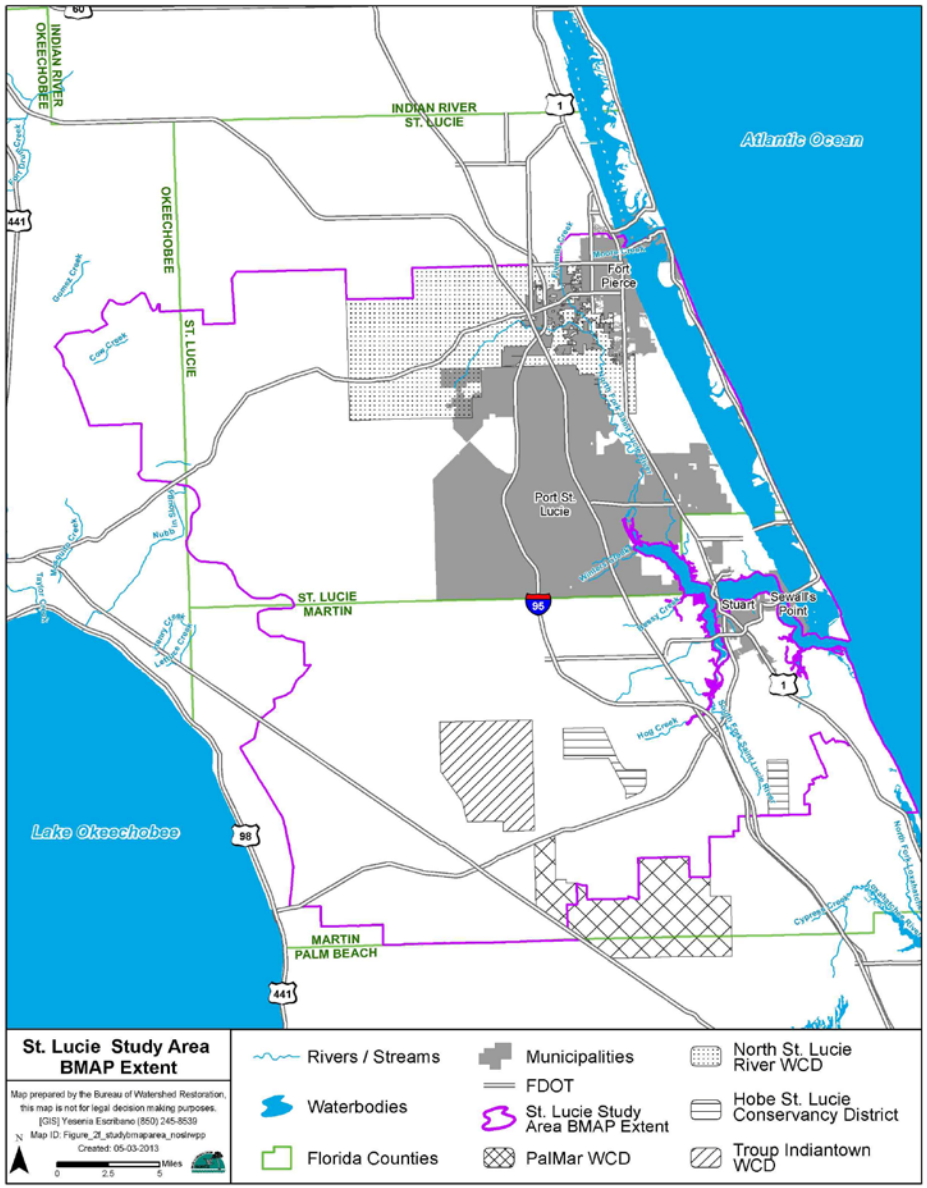
Includes 8 sub-basins:

- Basins 4, 5, and 6;
- C-23;
- C-24;
- C-44 and S-153;
- North Fork;
- South Fork;
- Mid Coastal; and
- South Coastal.

St. Lucie River and Estuary BMAP Area



St. Lucie River and Estuary BMAP Study Area



BMAP Model Considerations

- **Event Mean Concentrations (EMCs)/Runoff Coefficients (ROCs)**
  - The FDEP will review the available data and make adjustments to the EMCs and ROCs in the model as needed.
  - Please provide any information you may have **by December 31, 2013**.
  - The FDEP plans to work with stakeholders to incorporate EMCs for both treated and untreated stormwater in future iterations of the model, to the extent practicable.

BMAP Model Considerations

- **Legacy Loads**
  - Nutrient loads may still be present in the soils and waterbodies throughout the basin as a result of historical uses.
  - Please provide any legacy load information you may have **by December 31, 2013**.

- **Atmospheric Deposition**
  - Please provide any atmospheric deposition information you may have **by December 31, 2013**.

- **C-23/C-24 Sub-basin Runoff**
  - The actual runoff that enters the St. Lucie Estuary from these two sub-basins will be calculated, where possible, and a factor added to the model as was done for the C-44/S-153 sub-basin.

BMAP Model Options

- **Option 1:** Current model with refinements.
- **Option 2:** Watershed (WaSH) model/Estuarine model combination.
- **Option 3:** Another model.

Option 1: Current Model with Refinements Pros/Cons

- **Pros:**
  - Used in development of BMAP allocations.
  - Relatively simple model.

- **Cons:**
  - Various revisions needed.
  - Basin-specific data for some revisions, e.g., EMCs and ROCs, are lacking.
  - Relatively simple model.

Option 2: Watershed (WaSH) model/Estuarine Model Combination Pros/Cons

- **Pros:**
  - Capable of simulating attenuation of flows, water quality constituent cycling, effects of best management practices (BMPs), and compliance w/ TMDL at Roosevelt Bridge.
  - Stakeholders have some familiarity w/model.

- **Cons:**
  - Could significantly change allocations and required reductions.
  - WaSH model needs upgrading to ArcGIS 10.1.
  - Water quality component needs additional work.

Option 3: Another Model Pros/Cons

- **Pros:**
  - More capabilities than current model.

- **Cons:**
  - Will likely change allocations and required reductions.
  - Unknown model at this time.
  - Unknown timeframe for development of model.

Comments and Questions on Allocation Model Options

Second Phase Planning: Proposed Schedule

Tentative Overall Schedule

- **February 2014-**Stakeholder meeting.
- **August 2014-**Annual report meeting.
- **Fall 2014**-Stakeholder meeting (if needed).
- **Spring 2015-**Stakeholder meeting (if needed).
- **August 2015-**Annual report meeting.
- **Fall 2015-**Stakeholder meeting (if needed).
- **Spring 2015-**Stakeholder meeting (if needed).
- **August 2016-**Annual report meeting.
- **Fall 2016-**Stakeholder meeting (if needed)/Finish modeling.

Tentative Overall Schedule, Continued

- **Spring 2017-**Stakeholder meeting.*
- **August 2017-**Annual report meeting/water quality assessment.
- **Fall 2017-**Stakeholder meeting/kickoff five-year update planning.
- **Spring 2018-**Stakeholder meeting/five-year update planning.
- **August 2018-**Five-year update meeting.

Project Identification Timeline

- **Step 1:** Identify additional projects to meet remaining 40% second phase reductions (**2013 - January 2017**).
- **Step 2:** Work with other stakeholders to develop collaborative projects **(2014-2016)**.
- **Step 3:** Brief management on these projects **(by end of 2016)**.
- **Step 4:** Work with the Department as needed, e.g., discuss funding eligibility **(2013-2018)**.
- **Step 5:** Brief councils and/or commissions **(by end of 2018)**.
- **Step 6:** Adopt the new list of projects for the second phase BMAP.

Comments and Questions on Proposed Schedule

Second Phase Planning: Future Projects

Assessment of Stakeholder Projects and Activities Information

- **Goals**
  - Transparent assessment process.
  - Realistic estimates of nutrient load reductions.
- **Process**
  - Stakeholders complete the spreadsheet for their individual projects.
  - FDEP evaluates completeness of the project information submitted.
  - FDEP calculates the initial estimate of reductions.
  - Stakeholders review the initial reduction estimates.
  - FDEP and the stakeholders determine what additional projects and activities are needed.

Types of Projects

- Standard stormwater treatment BMPs include:
  - Retention BMPs.
  - Wet detention ponds.
  - Treatment trains.
  - Dry detention.
  - Baffle boxes (1st generation).
  - Nutrient (2nd generation) baffle boxes.
  - Swales.
  - Alum injection.
  - Stormwater reuse.
  - Stormceptor devices.
  - Continuous deflective separation (CDS) units.
  - Street sweeping.
  - Catch basin inserts/inlet filters.
  - Septic tank phase outs.

Types of Projects, Continued

- Provisional BMPs include:
  - Public education and outreach efforts.
  - Floating islands/ managed aquatic plant systems (MAPS).
  - Muck removal/restoration dredging.
  - Aquatic vegetation harvesting.
  - Water control structures.

Project Requirements

- Only projects that have treatment above and beyond any permitted requirements will be assessed.
- All projects must reduce total nitrogen (TN) and/or total phosphorus (TP).
- All projects must be within the St. Lucie River and Estuary BMAP area.

Comments and Questions on Future Projects

Monitoring

Objective and Network

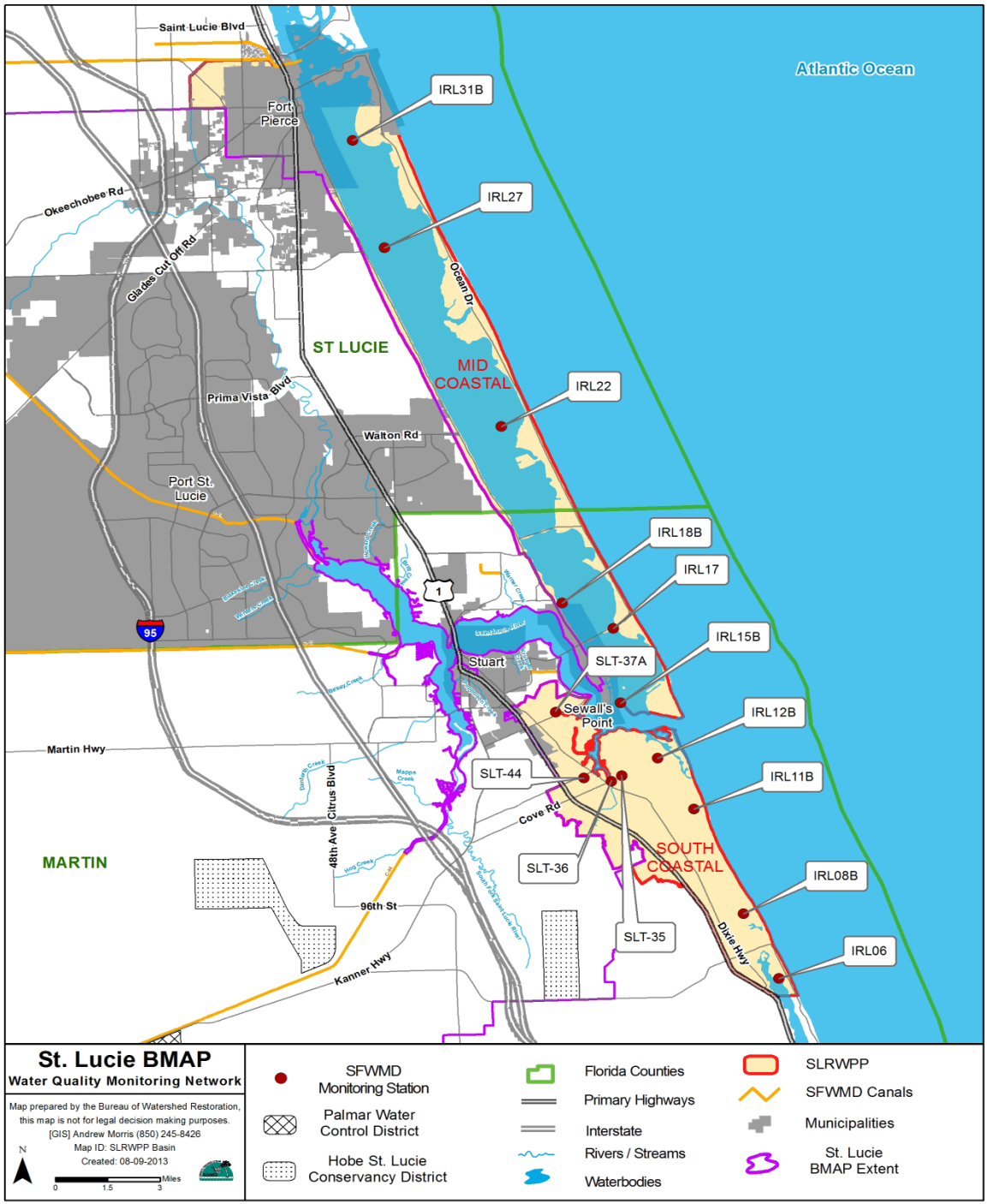
- **Primary Objective –** Track trends in TN and TP loads in the major canals and tributaries, as well as the St. Lucie River and Estuary.

- Will be determined through the existing network:
  - Hobe St. Lucie Conservancy District – 1 annual station.
  - North St. Lucie River WCD – 9 quarterly stations.
  - Port St. Lucie – 21 stations sampled 1 or 2 times/year.
  - SFWMD – 51 stations at various frequencies.
  - St. Lucie County – 4 tri-weekly stations.
  - St. Lucie West Services District – 8 stations.
  - U.S. Geological Survey – 8 daily flow gages.

South Coastal/Mid Coastal Sub-basin Monitoring

- What stations currently exist?

- Where do the stakeholders believe additional stations, if any, should be added?



Water Quality Monitoring Network for Mid Coastal and South Coastal Sub-basins

Water Quality Monitoring

- **IRL Stations**
  - IRL06
  - IRL08B
  - IRL11B
  - IRL12B
  - IRL15B
  - IRL17
  - IRL18B
  - IRL22
  - IRL27
  - IRL31B

- **Parameters Sampled (7x/yr)**
  - Ammonia-N
  - Chlorophyll-a
  - Chlorophyll-b
  - Color
  - Total depth
  - Dissolved oxygen
  - Total Kjeldahl nitrogen
  - Nitrate+nitrite, N
  - Nitrate-N
  - Nitrite-N
  - Field pH
  - Pheophytin-A
  - Orthophosphate as P
  - Total orthophosphate as P
  - Salinity
  - Secchi disk depth
  - Specific conductance, field
  - Temperature
  - Total suspended solids
  - Turbidity
  - Volatile suspended solids

Water Quality Monitoring

- **Tributary Stations**
  - SLT-35
  - SLT-36
  - SLT-37A
  - SLT-44
- **Parameters Sampled (biweekly)**
  - Ammonia-N
  - Total Kjeldahl nitrogen
  - Nitrate+nitrite, N
  - Orthophosphate as P
  - Total orthophosphate as P
  - Specific conductance, field

Comments and Questions on Monitoring

Stakeholder Action Items

- **Send information on:**
  - EMCs/ROCs.
  - Atmospheric deposition literature/numbers.
  - Legacy load numbers.
  - Second phase projects.

Please send comments to Katie Hallas (Katie.Hallas@dep.state.fl.us) **by December 31, 2013**.

Questions