

Florida Department of Environmental Protection



Indian River Lagoon Basin Management Action Plans Considerations

August 14, 2013





BMAP Considerations

- During the basin management action plan (BMAP) process, several items were identified that should be addressed to ensure that future BMAPs use the most accurate information.
- The Department will work with the stakeholders during this first iteration of the BMAPs to gather information on the considerations for use in the next iteration.
- Any additional considerations should also be identified by the stakeholders.



Overview

- The following is a list of considerations compiled from all three BMAPS. Fort Pierce area, southern IRL, is treated separately.
- Cross walk this list with Brevard County's updated SWIL model.
- Goal is to identify what else may be needed or additional updates of data sets beyond the SWIL model.



List of Considerations

- Land uses – The loading estimates in the total maximum daily loads (TMDLs) are based on land uses at a particular point in time, which allows the model to be validated and calibrated. The loading estimates for this iteration of the TMDL and BMAPs were based on year 2000 land use data. Future iterations should consider more recent land use information and whether allocations should be adjusted accordingly.
- Soil types – The Natural Resources Conservation Service released a new soil coverage for Florida in February 2010, which includes some significant changes in soil types throughout the IRL Basin. During the next iteration of the BMAP, FDEP will review the updated soil coverage and make adjustments to the Pollutant Load Screening Model (PLSM), as needed.
- Basin boundaries – Since the PLSM was developed, additional and more accurate data about the topography of the IRL Basin have been collected. During the next iteration of the BMAP, FDEP will review available data and make adjustments to the drainage basins, as needed.
 - DEP advised of changes in Volusia County.



Considerations, continued

- Areas with stormwater treatment – The PLSM incorporates a factor to represent areas with stormwater treatment. During the next BMAP iteration, FDEP will review available data and make adjustments to the treated areas in the model, as needed.
- Event mean concentrations (EMCs) and runoff coefficients (ROCs) – Subsequent to PLSM development, more accurate and extensive EMCs for pollutant concentrations in stormwater runoff and ROCs for stormwater runoff have been added to FDEP's database. During the next BMAP iteration, FDEP will review available data and make adjustments to the EMCs and ROCs in the model, as needed.
- County roads – Stakeholders expressed concern that county roads were included as part of the loading to each municipality. GIS coverages for county roads were not available for the entire basin; therefore, these roads and associated loadings could not be assigned to the appropriate county for the allocations in this iteration. If the county road coverages are available for the next iteration, FDEP will use this information to refine the allocations at that time.



Considerations, continued

- Atmospheric deposition – The TMDL assumed that no reduction in atmospheric deposition would occur over time. However, there are two power plants located in the North IRL subbasin, Cape Canaveral Power Plant and Reliant Energy Indian River Power Plant, and contributions from these sources could be reduced in the future. The Cape Canaveral Power Plant is planning to upgrade the facility, which should result in fewer emissions. For future BMAP iterations, FDEP will evaluate any changes in atmospheric deposition and adjust the estimated loading to the lagoon, as appropriate.
- Ground water loads – The TMDL states that ground water input from the Floridan aquifer does not represent a significant portion of the water budget for the IRL system but, depending on the season, surficial aquifer input could be important. The stakeholders expressed concern that the ground water loads were not sufficiently accounted for in the modeling process. In future iterations, FDEP will evaluate any available ground water data and utilize this information, to the extent possible, in the modeling.
- Progress towards seagrass depth limit targets – FDEP will continue to assess progress towards the seagrass depth limit targets for the BRL and North IRL subbasins. Adjustments will be made to the required reductions in future BMAP iterations, as needed, based on seagrass response. FDEP will also continue to assess compliance with the targets for the Central IRL subbasin. A determination as to whether reductions are needed in future BMAP iterations will be made based on seagrass response.



Considerations, continued

- Tributary water quality impairments – FDEP has identified nutrient and dissolved oxygen impairments in some of the tributaries in the IRL Basin. At the time of the BMAP, FDEP had proposed TMDLs for a few of these impairments. As a general principle when FDEP establishes upstream TMDLs, downstream water quality targets are considered. In this case, when FDEP establishes the IRL tributary TMDLs, meeting the lagoon's seagrass depth targets will be considered. Future adoption of tributary TMDLs may allow the targeting of specific watersheds for nutrient load reductions.
- Integration of new understandings – An algal superbloom occurred in the BRL and North IRL in 2011 while a secondary bloom occurred in the Central IRL. These blooms were followed by a brown algae bloom in 2012. Research is underway to understand the causes of these blooms. Any improved understanding about these bloom events obtained from this research and its implications for management of the IRL should be incorporated into the BMAP during the earliest practical timeframe.
- Allocations – During the North IRL BMAP process, stakeholders requested that FDEP remove undeveloped land use types from the allocation process. While FDEP agreed that this was the most scientific approach, when the undeveloped lands were removed from the allocations, stakeholders with mainly undeveloped lands received reduction requirements that seemed disproportionately high. For this reason, FDEP determined that the best allocation approach, based on the existing PLSM, was to assign reductions using a target load per acre approach that included all land uses, except water. In the next iteration, FDEP will consider allocating any required reductions needed to achieve the targets using an allocation approach that does not include the undeveloped land uses.



Southern IRL Considerations

- Connection Between Central and South IRL – Further investigation into the connection between WBID 3190 in the southern IRL subbasin and WBID 5003B in the Central B project zone is needed. A preliminary review of water quality data for these WBIDs found a similarity that could indicate a hydrological connection. Additional review of the water quality data, hydrological data, and depths of the lagoon in each WBID should be made to determine the extent of the connection. Based on this review, a determination can then be made as to whether WBID 3190 should be part of the Central B project zone in the future or if it should continue to be evaluated separately.
- Basin boundary – During the BMAP process, the stakeholders noted that the current basin boundary is incorrect. The area south of the C-25 drains to the south instead of to the IRL, and a small area in the northwestern part of the basin near the Turnpike is pumped to the north, outside of the IRL Basin. FDEP and SFWMD staff are reviewing the hydrology of the area and will update the basin boundaries, as needed.
 - Status of the hydrologic review.



Southern IRL Considerations, continued

- Changes in water flows – Several regional projects are planned in the southern IRL subbasin, which will reduce the amount of watershed runoff to the IRL. In addition, the feasibility of reconnecting infrastructure between the SFWMD and SJRWMD is being examined, which would further reduce the amount of water going to the lagoon from this area. Depending on the extent of the projects implemented, the amount of flow and loading from this area to the IRL could be greatly reduced in the future.
- Development of TMDLs – None of the impaired waterbodies in the southern IRL subbasin have adopted TMDLs. FDEP will work with the stakeholders as they develop targets and TMDLs for this area. Once TMDLs are adopted, a determination will be made about whether to continue to include this area in the Central IRL BMAP or if a separate BMAP will be needed to assign any necessary reductions.

Questions and Comments on the List of Considerations in the BMAPs



Status of Seagrass Evaluation

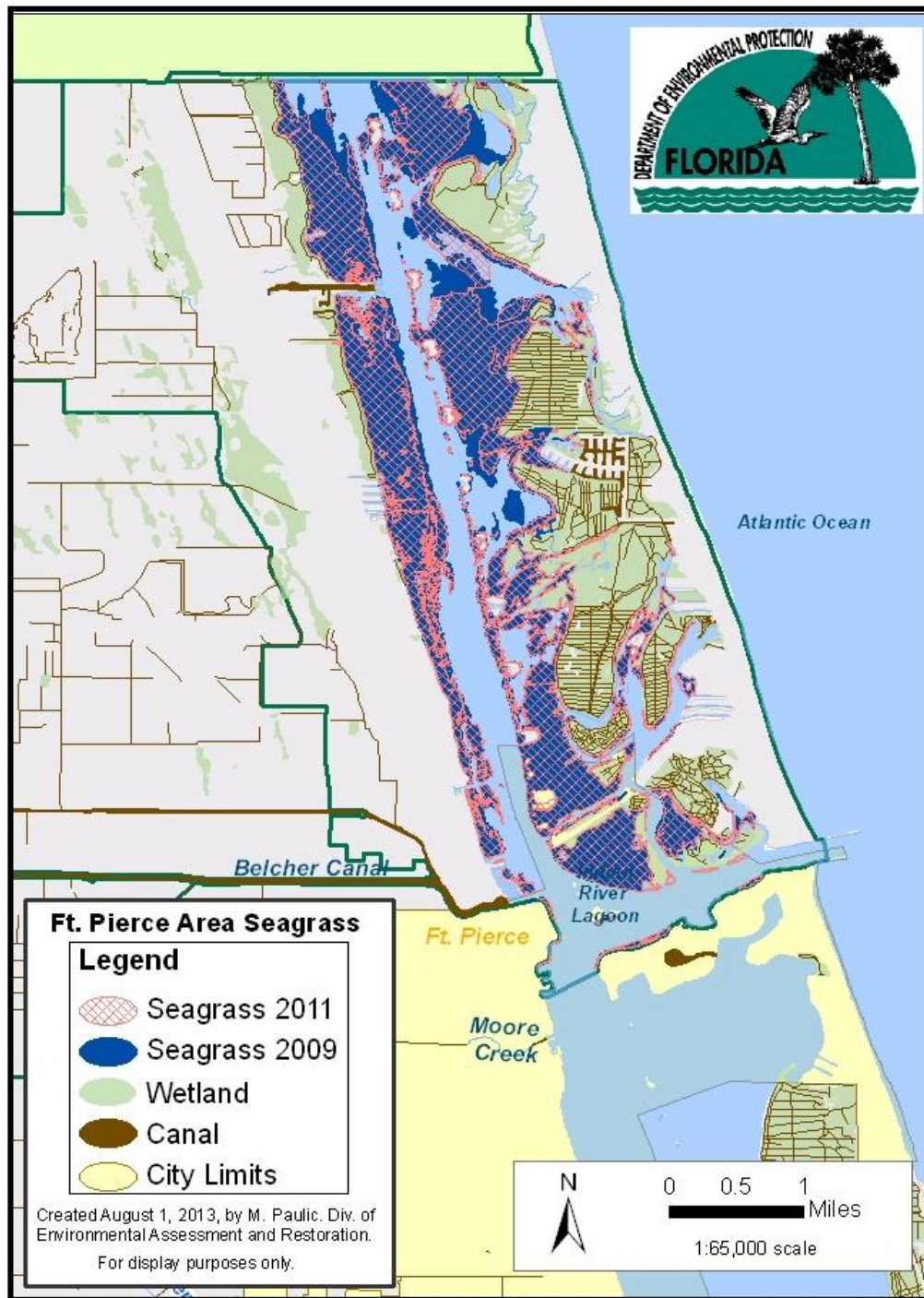
Courtesy of Robert Day



Ft. Pierce Seagrasses

Seagrass changes in the Fort Pierce area:

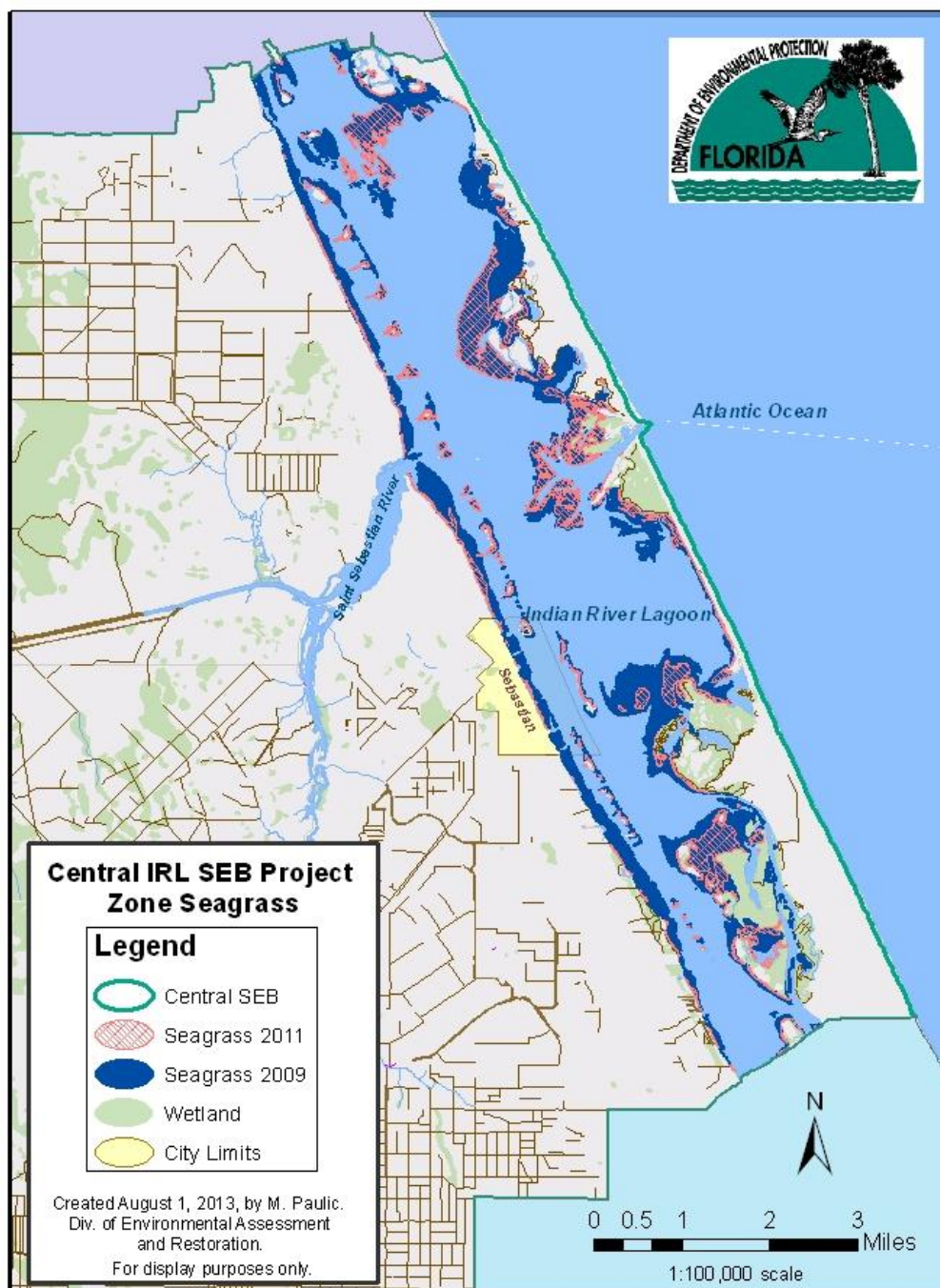
- 12.7% loss from 2009 to 2011
- What will 2013 show?



<http://www.sjrwmd.com/itsyourlagoon/index.html>

Central Project Zone Seagrass

- Large losses in Central IRL.
- Greatest Loss in Central A:
 - 90%
- Significant loss in Central B and SEB.





North IRLA

- Loss in seagrass in North A.
- About 11% between 2009 and 2011.
- Greatest loss near Titusville.
- Seagrasses surviving in north.

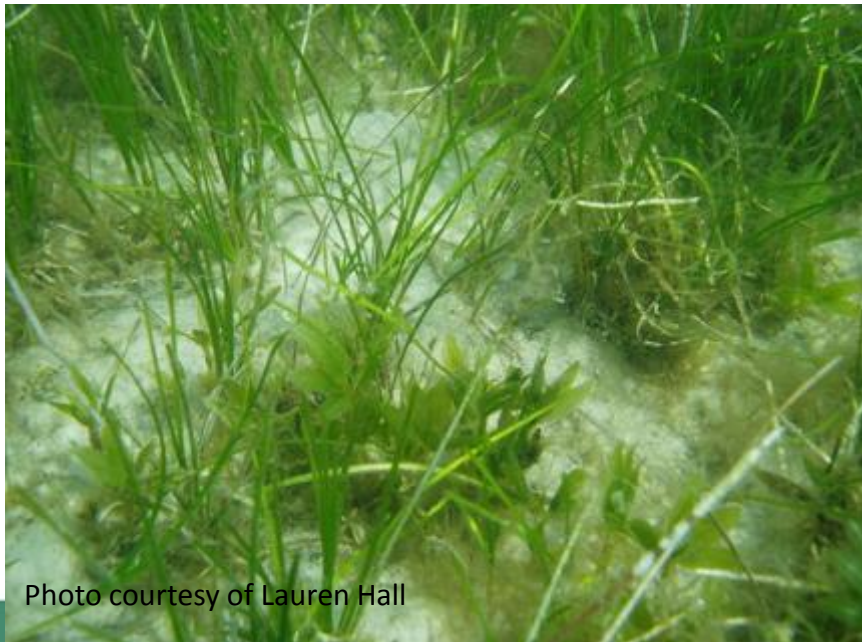
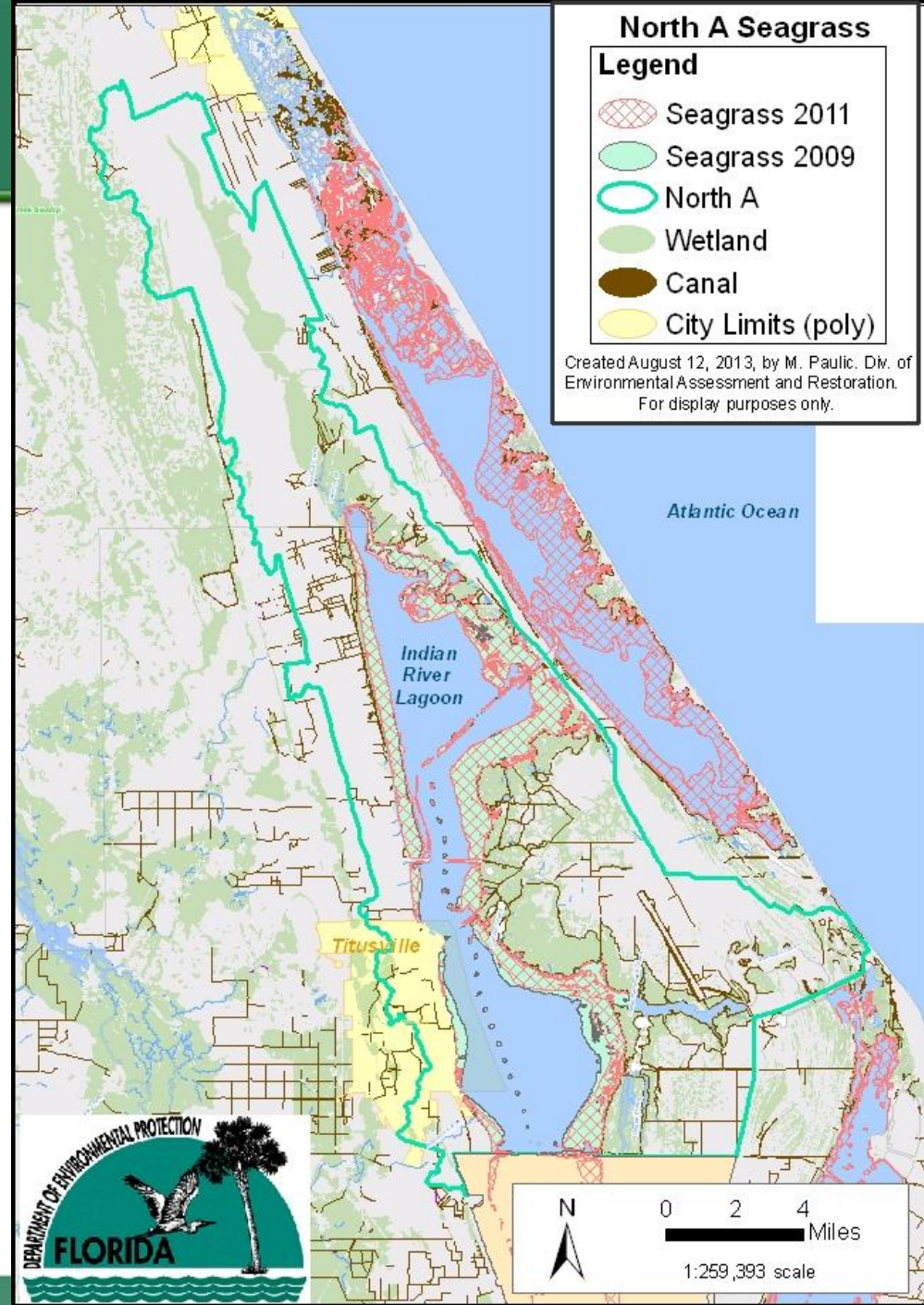


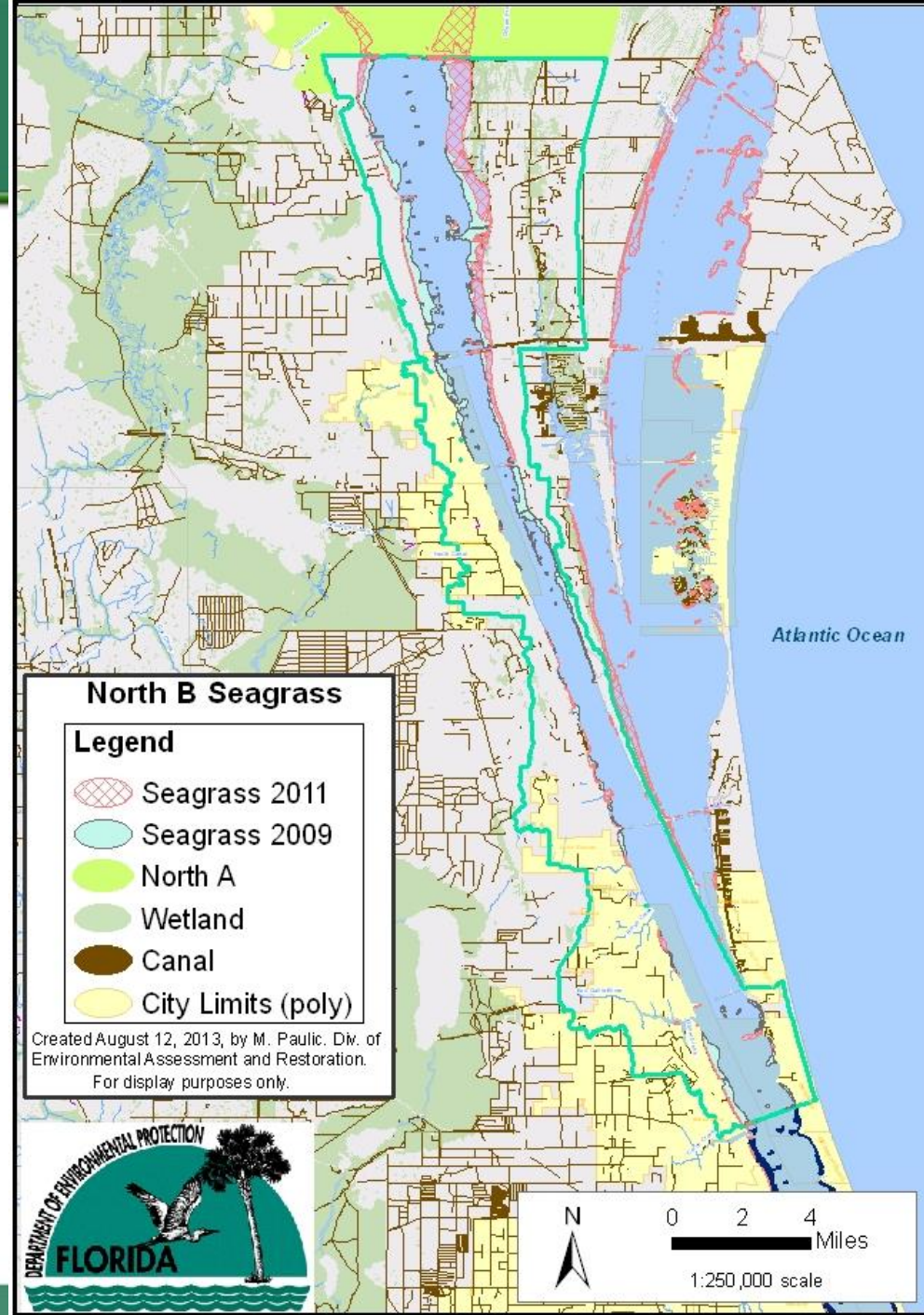
Photo courtesy of Lauren Hall





North IRL B

- Larger loss of seagrass than in North A.
- About 62% loss of acreage.





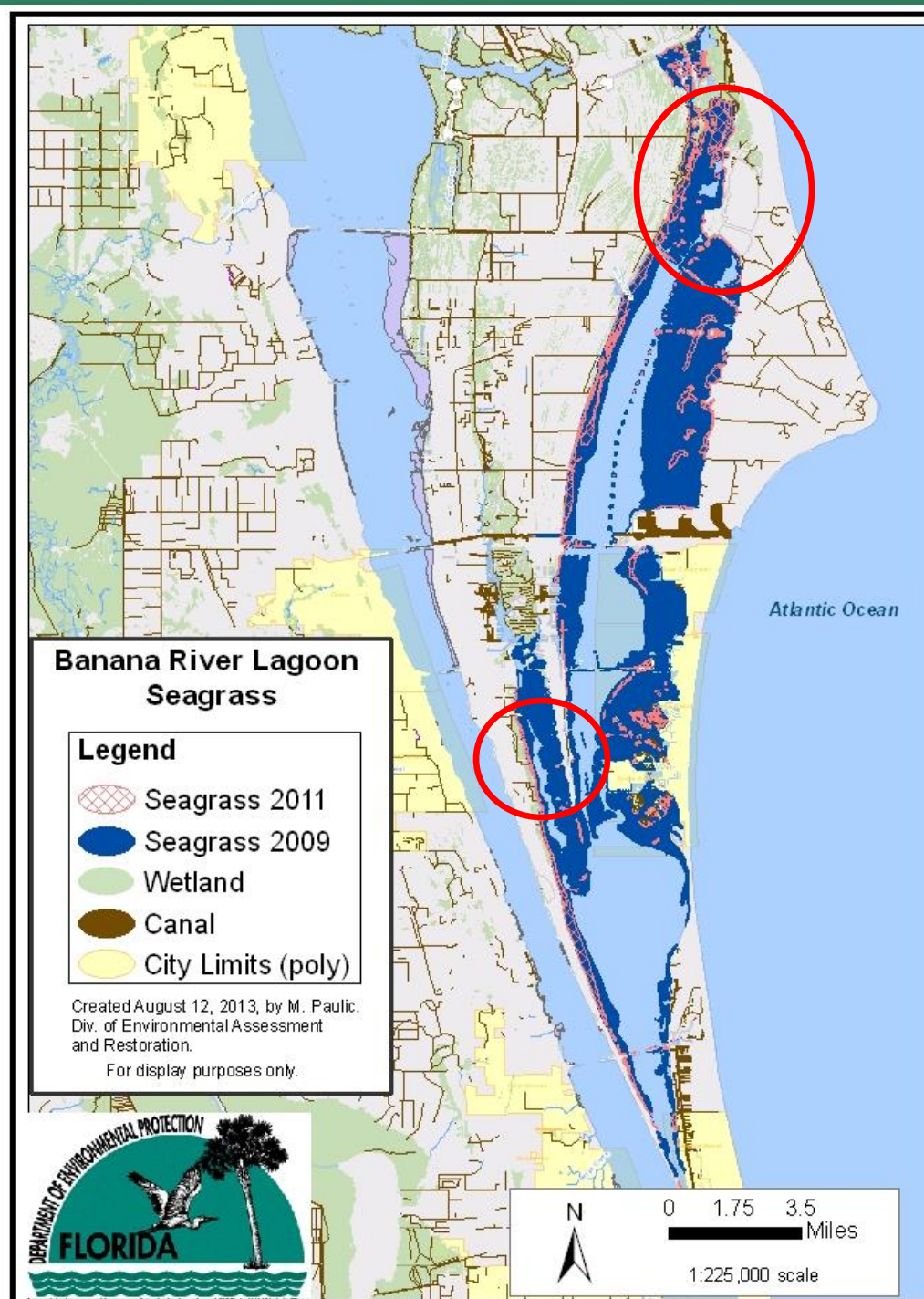
Banana River Lagoon

- Large losses in Banana River Lagoon areas!

83% Banana A

91% Banana B

- Banana A and Newfound Harbor were areas that had either met restoration targets or had well established grass beds.



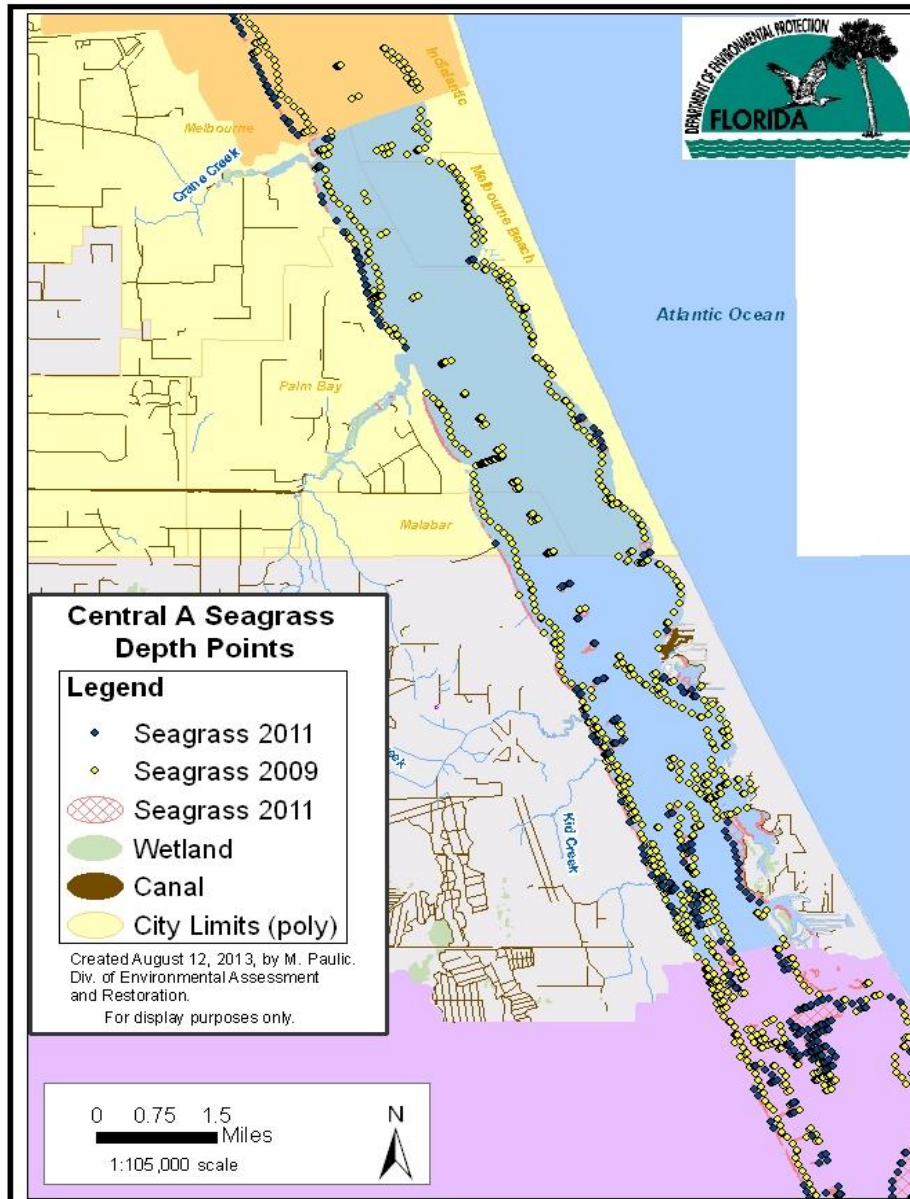


2011 Bathymetry Points

- Concern that limited seagrass in areas would interfere with defining the deep edge:
 - Not enough points
- Checked Central A for data density;
 - One of the hardest hit areas.



Comparison for Central A



- Fewer selected depth points in 2011.
- In places there are seagrass, but they are too shallow for inclusion.
 - Less than 0.5 m water not light limited.
- Data set not as small as first thought.