



*Florida Department of
Environmental Protection*

Central Indian River Lagoon Basin Management Action Plan

Policy Briefing
January 30, 2012





Meeting Overview

1. Welcome
2. Indian River Lagoon Basin Total Maximum Daily Loads (TMDLs)
3. Central Indian River Lagoon (IRL) Basin Management Action Plan (BMAP)
4. BMAP Progress to Date
5. Next Steps





Contacts for Indian River Lagoon BMAPs

Mary Paulic

Basin Coordinator

Mary.Paulic@dep.state.fl.us

850-245-8560

Tom Frick, Chief

Bureau of Watershed Restoration

Thomas.Frick@dep.state.fl.us

850-245-7518

Dr. Xueqing Gao

Environmental Manager

Xueqing.Gao@dep.state.fl.us

850-245-8464

John Abendroth

Environmental Administrator

John.Aabendroth@dep.state.fl.us

850-245-8555





Economic Value of the Lagoon

- Lagoon is a valuable economic, recreational, and ecological asset for state and local governments
- To quantify its value an economic study was prepared in 2008 by Hazen and Sawyer, P.C.
- Study supported by IRL Estuary Program, SJRWMD, and SFWMD





Economic Study

- Study included sub-lagoons (Mosquito, Banana River, and IRL) and tributaries
- Covered 5 counties:
 - Brevard, Volusia, Indian River, St. Lucie, and Martin
- Results given in 2007 dollars and based on environmental condition of Lagoon in 2007
- Data collected from visitor intercept surveys and resident telephone surveys





Economic Value

- The IRL provided \$3.725 billion in benefits to residents and visitors for 2007
- This is broken out to the county level as:

County	Value
Volusia	\$658,000,000
Brevard	\$934,000,000
Indian River	\$438,342,000
St. Lucie	\$545,041,000
Martin	\$370,240,000





Economic Value continued

Indian River Lagoon Related	Value
Recreational Expenditures	\$1,302,000,000
Recreational Use Value	\$762,000,000
Non-use Value of Lagoon	\$3,400,000
Real Estate Value, annualized	\$934,000,000
Income Generated in Counties	\$629,700,000
Restoration, Research, Education Expenditures	\$91,000,000
Commercial Fishing Dockside Value	\$3,800,000
Total Annual Value	\$3,725,900,000





Economic Value of Seagrasses, Wildlife, and Water Quality

- Seagrass value estimated as \$329 million (for 72,400 acres in 2007)
- Seagrasses are important part of Lagoon's ecology; foundation of food web for many of the animals that live in the Lagoon
- Recreational and non-use value would increase by \$80 million per year with significant increase in diversity of wildlife on lagoon and improved water quality in the basin





Economic Contribution

- Lagoon related activities generate close to \$630 million in income for local residents
- Contribute almost \$112 million in state and local fee and tax revenue
- Supports 15,000 full and part-time jobs





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Indian River Lagoon Basin

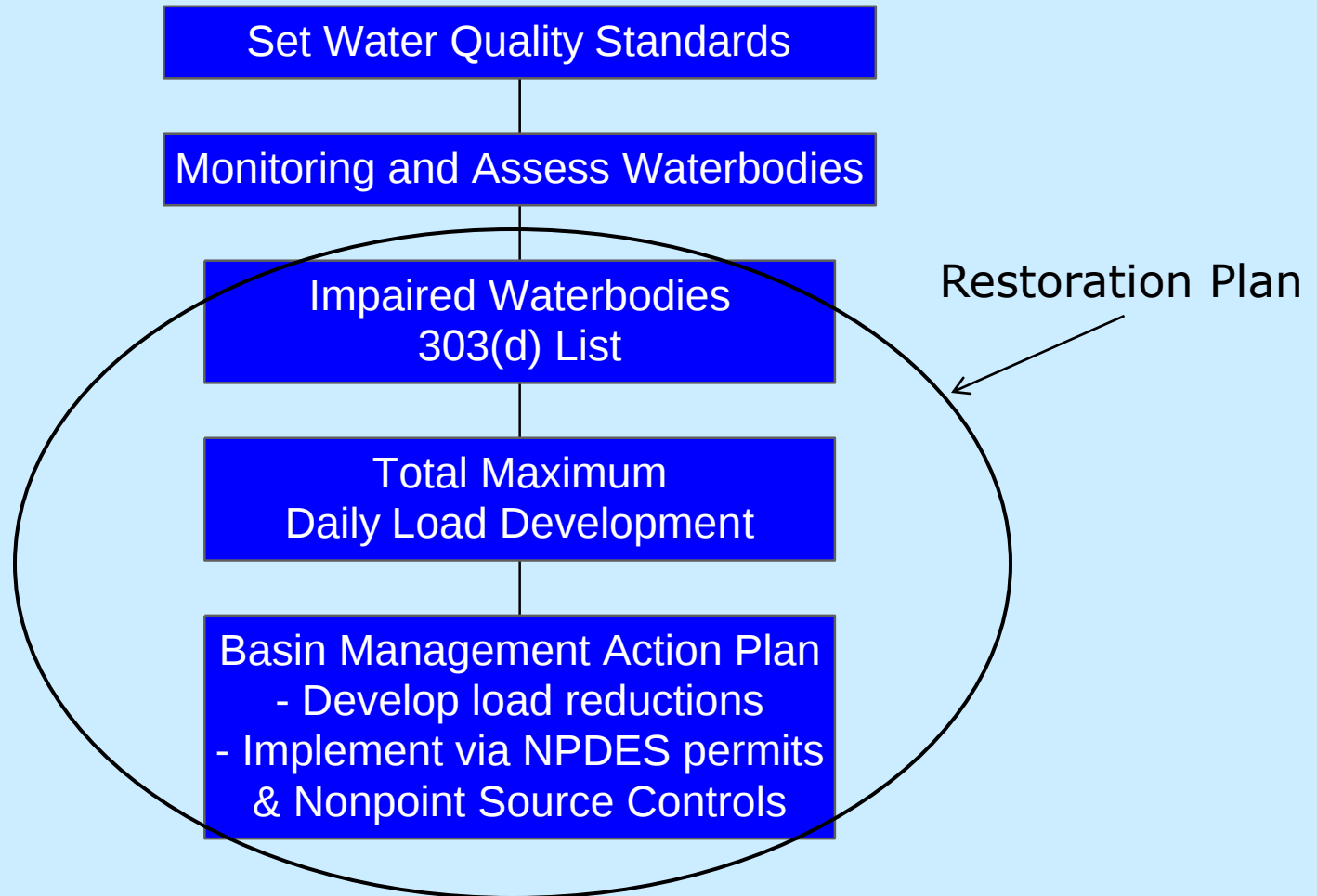


<http://www.sjrwmd.com/itsyourlagoon/index.html>





CWA/TMDL Process





Regulatory Framework for TMDLs

- Under Section 303(d) of the federal Clean Water Act, every two years each state must identify its “impaired” waters that do not meet their designated uses.
- The Florida Department of Environmental Protection (FDEP) is responsible for developing this “303(d) list” of impaired waters.
- FDEP develops and adopts TMDLs for the waterbody segments it identifies as impaired.





Regulatory Framework, continued

- The processes for listing impaired waters and establishing TMDLs are found in:
 - Section 403.067, Florida Statutes (F.S.), known as the Florida Watershed Restoration Act (FWRA); and
 - Florida's Identification of Impaired Surface Waters Rule (IWR), Rule 62-303, Florida Administrative Code (F.A.C.).





Numeric Nutrient Criteria and TMDLs

- TMDLs become the nutrient criteria for a waterbody.
- Adopted as site specific alternative criteria.





Enforcement of BMAP Activities

- For point sources, wastewater treatment facilities (WWTFs) and municipal separate storm sewer systems (MS4s), enforcement is through the National Pollutant Discharge Elimination System (NPDES) permits.
- For nonpoint sources, enforcement is through the FDEP Secretarial-adopted BMAP.
- Agricultural producers are required to implement appropriate best management practices (BMPs) for their commodities or implement FDEP designed water quality monitoring to show they are not having an impact.





TMDL and Verified Impairment

- TMDL – What is a **T**otal **M**aximum **D**aily **L**oad?
 - ❖ *The maximum amount of a pollutant that a waterbody can assimilate and still meet water quality standards.*
- Developing TMDLs for impaired waters verified by the State is a legal requirement
 - ❖ *Clean Water Act Section 303(d)*
 - ❖ *Florida Watershed Restoration Act (403.067, F.S.)*
- Nutrient impairment verification for the basin was conducted using the procedures defined in the **Identification of Impaired Surface Water (Chapter 62-303, F. A. C.)** based on nutrient criteria





Florida Nutrient Criteria

- The nutrient criteria defined in the Surface Water Quality Standard (62-302, F. A. C.):

In no case shall nutrient concentrations of a body of water be altered so as to cause an imbalance in natural populations of aquatic flora or fauna.





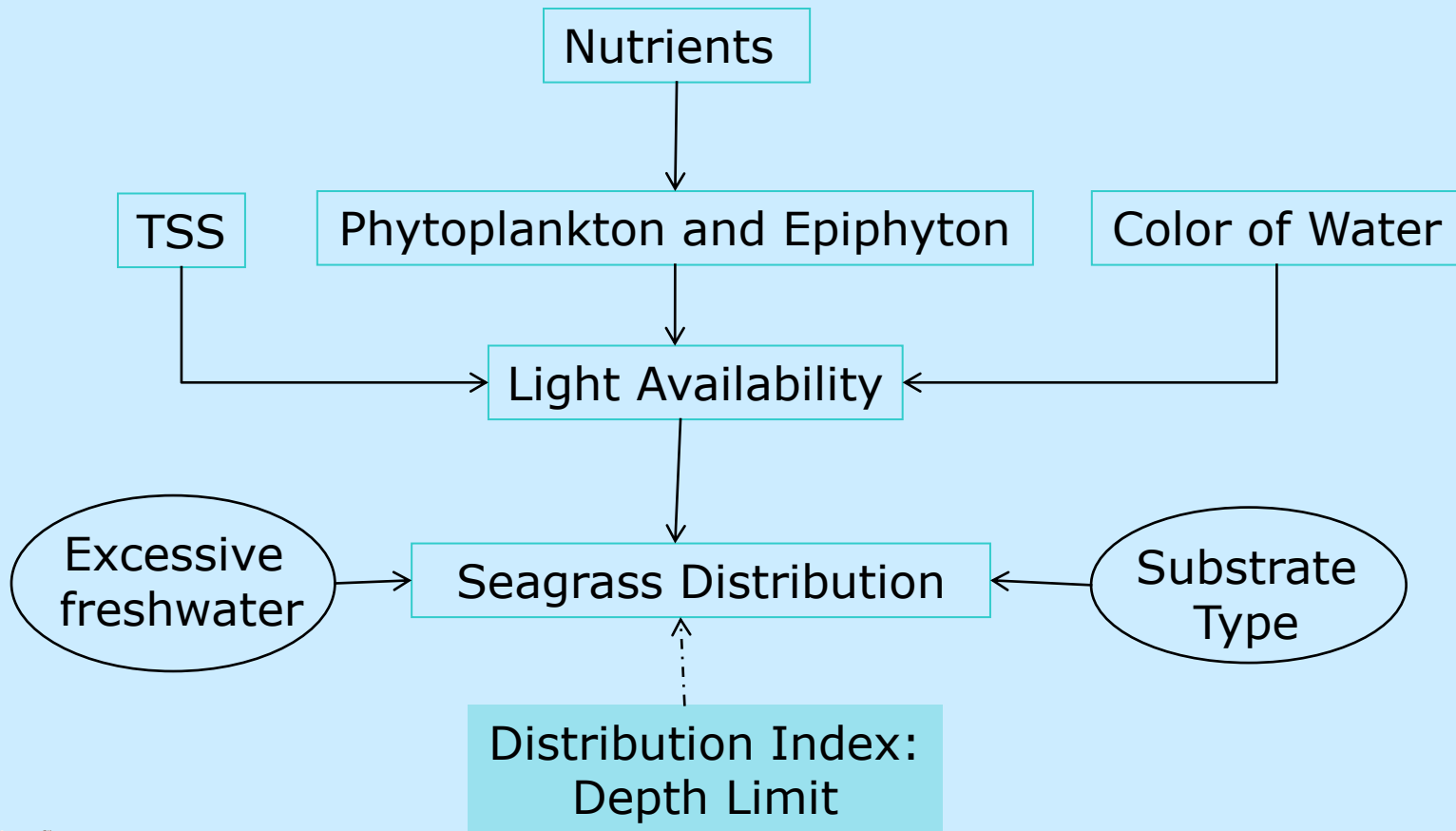
Imbalance of Seagrass Communities

- Seagrass habitat plays an important ecological role (Hanisak 2001) in the IRL.
- All seven species of seagrass found in Florida appear in the Central Indian River (IR) and four species in North IR and Banana River (BR) Lagoon areas (Dawes, et al. 1995).
- The seagrass distribution in many IR and BR lagoon segments has declined since the 1950s (Haddad 1985).
- A high management priority for IR and BR lagoons is to attain and maintain a functioning macrophyte-based ecosystem (IRLNEP 1993, Steward et al. 1994).





Seagrass and Nutrient Impairment



North Indian River Lagoon (IR1-3 to IR9-11)

== SJRWMD Segment Boundary

□ Department WBID Boundary

IR1-3

IR4

IR5

IR6-7

IR8

IR9-11

BR1-2

BR3-5

BR6

BR7

IR12

IR13A

IR13B

IR14

IR15

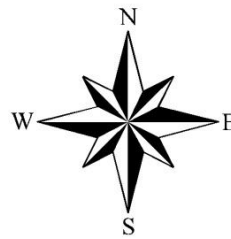
IR16-20

IR21

Banana River Lagoon (BR1-2 to BR7)

Central Indian River Lagoon (IR12 to IR21)

0 5,000 10,000 20,000 30,000 40,000 Meters



Maximum Achievable Depth-Limit

- Lagoon segmentation
- Seagrass depth-limit as the index
- Seagrass maps for 1943, 1986, 1989, 1992, 1994, 1996, and 1999 were used.
- Maximum achievable depth-limit obtained based on the deep boundary of the combined seagrass maps.



Maximum Achievable Depth-Limit Targets

Sub-lagoon	Median Seagrass Maximal Achievable Depth-Limit (m)
North Indian River Lagoon	1.5-1.8
Central Indian River Lagoon	1.2-1.7
Banana River Lagoon	1.4-1.8





TN and TP Targets

- Establish relationship between watershed loading and seagrass depth limit
 - ❖ *Per acre TN and TP watershed loading simulated using the PLSM/HSPF and log transformed*
 - ❖ *Seagrass depth-limit converted to percent deviation from the maximum achievable depth-limit*
 - ❖ *Regress log transformed per acre TN and TP loadings against seagrass percent deviation*
- Target per acre TN and TP loads identified as the loads that result in the depth-limit 10% shallower than the maximum achievable depth-limit



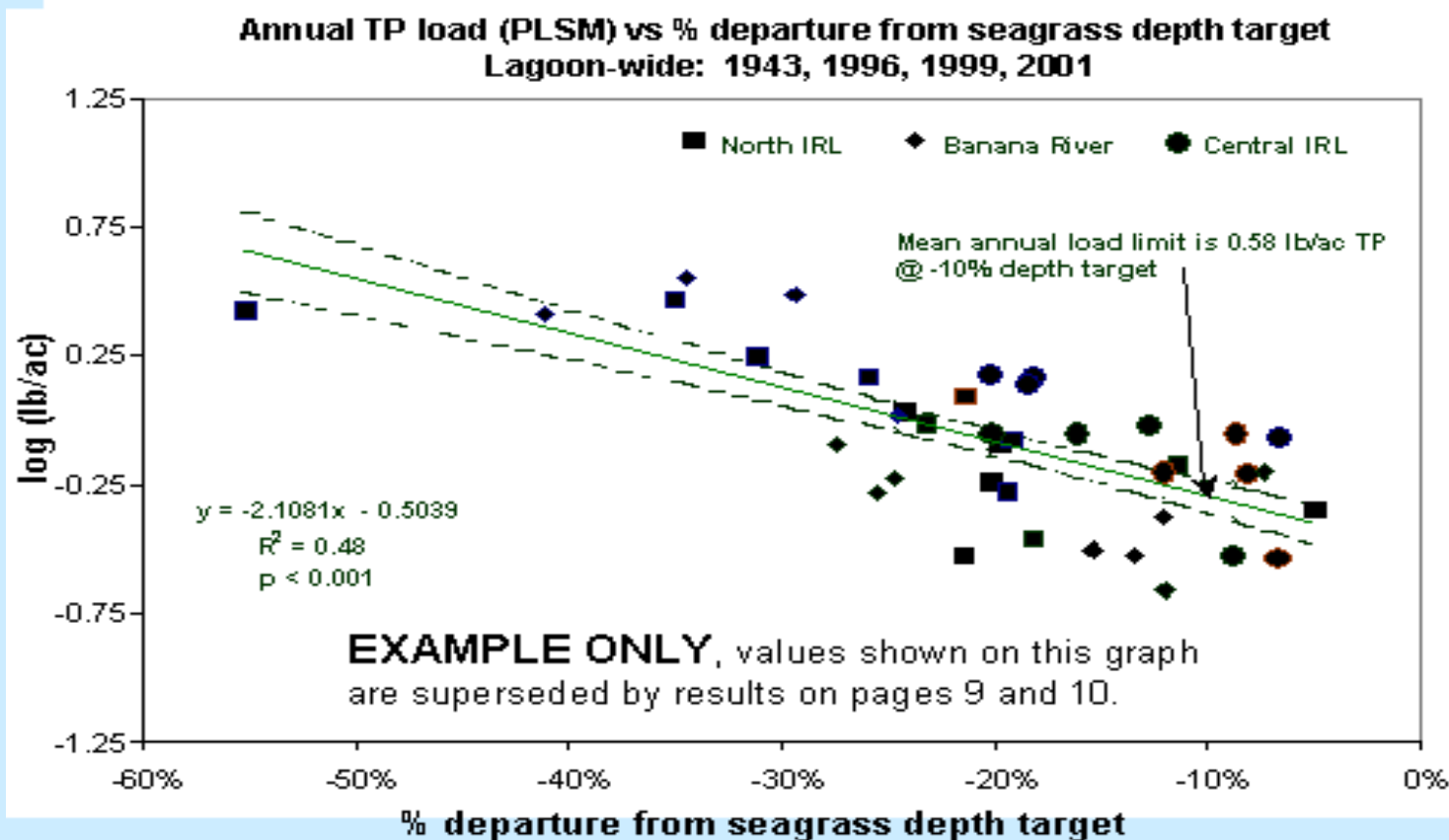


Figure 2. An example of a loading (TP) vs. seagrass depth regression plot along with its correlation and significance statistics, and the 80% confidence interval (----). The annual loading limits are based on the -10% departure from the depth target.

Lagoon-wide		
PLSM regressions	TN lb/ac/yr	TP lb/ac/yr
Based on 1943, 96, 99, and 2001 data	3.34 (R ² = 0.49 p < 0.01)	0.546 (R ² = 0.53 p < 0.01)
North IRL		
PLSM regressions	TN lb/ac/yr	TP lb/ac/yr
Based on 1943, 96, and 99 data	2.88 (R ² = 0.49 p < 0.01)	-----
HSPF regressions		
Based on 1943, 96, and 99 data	-----	0.368 (R ² = 0.47 p = 0.003)
Central IRL		
PLSM regressions	TN lb/ac/yr	TP lb/ac/yr
Based on 1996, 99, and 2001 data	2.90 (R ² = 0.87 p < 0.001)	0.574 (R ² = 0.65 p = 0.001)
Banana River Lagoon		
PLSM regressions	TN lb/ac/yr	TP lb/ac/yr
Based on 1943, 96, and 99 data	2.18 (R ² = 0.74 p = 0.001)	0.374 (R ² = 0.61 p = 0.004)



Sources of Nutrients

- Point source discharges:
 - ❖ **16** NPDES permitted facilities located in the IRL
 - ❖ **23** MS4 permits identified in the IRL and BRL
- Nonpoint sources of nutrient loads:
 - ❖ Agriculture
 - ❖ Natural lands
 - ❖ Atmospheric deposition directly onto the surface of lagoons
 - ❖ Considered a natural source
 - ❖ Ground water contribution





TMDL Allocation

- $TMDL = \sum WLA + \sum LA - MOS$ ((waste load allocation +load allocation)-margin of safety)
- WLAs for the wastewater facilities were established using the following rules:
 - ❖ *For facilities with AWT discharge concentrations (TN $\leq$ 3.0 mg/L and TP $\leq$ 1.0 mg/L) or discharging relatively small quantity: 95th percentile of existing load was granted as WLA.*
 - ❖ *For facility not reaching AWT, existing long-term annual average was granted as the WLA.*
- WLAs for MS4 permitted areas and LAs were calculated as the difference between the total TMDLs and WLAs for each segment.

MOS: Margin of Safety





TN TMDL Components for Nutrient Impaired WBIDs of Indian River Lagoon and Banana River Lagoon Main Stem

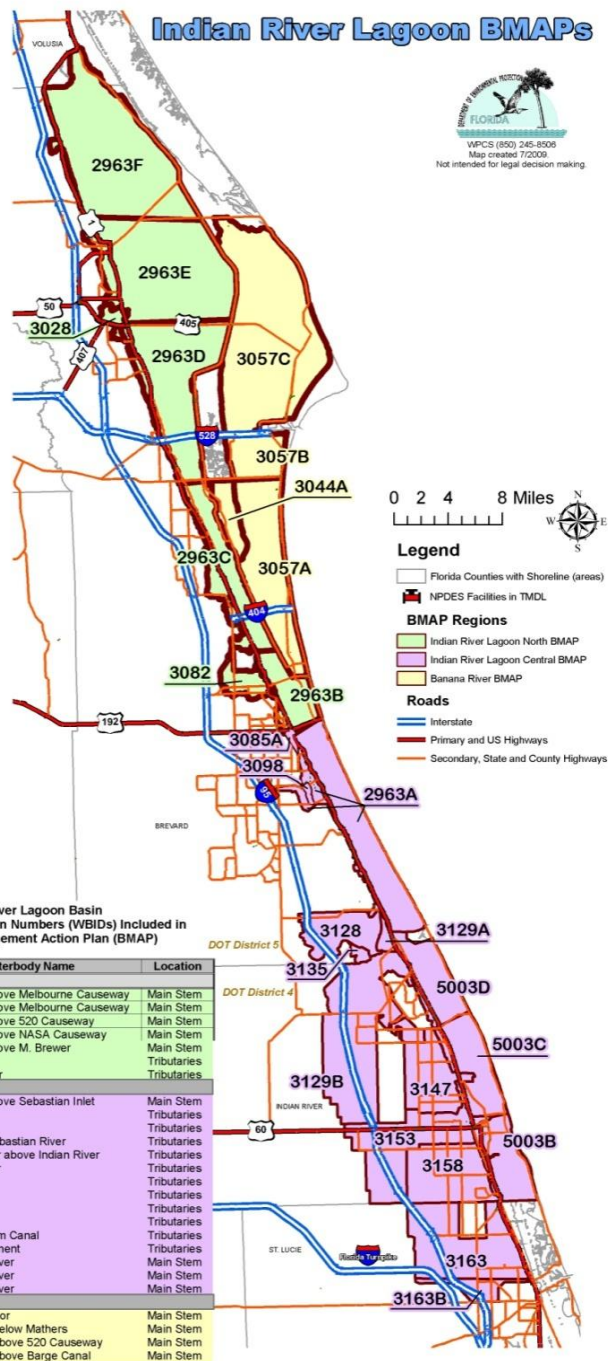
WBID	Parameter	TMDL (lb/yr)	WLA _{NPDES} wastewater (lb/yr)	WLA _{NPDES} Stormwater [*]	LA (lb/yr)	MOS
2963F	TN	177,220	N/A	21%	21%	Implicit
2963E	TN	173,232	N/A	23%	23%	Implicit
2963D	TN	147,524	8,111	23%	23%	Implicit
2963B+2963C	TN	189,068	9,200	26%	26%	Implicit
5003D+2963A	TN	684,715	831	51%	51%	Implicit
5003B+5003C	TN	278,273	25391	52%	52%	Implicit
3057C	TN	116,314	1214	43%	43%	Implicit
3057A+3057B	TN	144,780	6173	33%	33%	Implicit
3044A	TN	30,661	N/A	50%	50%	Implicit



TP TMDL Components for Nutrient Impaired WBIDs of Indian River Lagoon and Banana River Lagoon Main Stem

WBID	Parameter	TMDL (lb/yr)	WLA_{NPDES} wastewater (lb/yr)	WLA_{NPDES} Stormwater	LA (lb/yr)	MOS
2963F	TP	9,320	N/A	41%	41%	Implicit
2963E	TP	14,793	N/A	44%	44%	Implicit
2963D	TP	11,845	1609	49%	49%	Implicit
2963B+2963C	TP	20,592	225	46%	46%	Implicit
5003D+2963A	TP	111,594	122	48%	48%	Implicit
5003B+5003C	TP	53,599	1949	48%	48%	Implicit
3057C	TP	7,825	302	66%	66%	Implicit
3057A+3057B	TP	12,181	1221	59%	59%	Implicit
3044A	TP	3,247	N/A	68%	68%	Implicit





- TMDLs adopted March 2009.
- Cover the IRL from just south of Ponce de Leon inlet in Volusia County to just north of Fort Pierce Inlet, and the Banana River Lagoon.
 - This area includes 13 waterbody identification (WBID) numbers.
- The Central IRL portion extends from the Melbourne Causeway to just north of the Fort Pierce Inlet.





Questions on the TMDLs

- **BMAP Stakeholders:**

- Brevard County
- Indian River County
- St. Lucie County
- City of Fellsmere
- City of Fort Pierce
- City of Melbourne
- City of Palm Bay
- City of Sebastian
- City of Vero Beach
- City of West Melbourne
- Town of Grant-Valkaria
- Town of Indialantic
- Town of Indian River Shores
- Town of Malabar

- Town of Melbourne Beach
- Town of Melbourne Village
- Town of Orchid
- FDOT District 4
- FDOT District 5
- Turnpike Authority
- Patrick Air Force Base
- Fellsmere WCD
- Fort Pierce Farms WCD
- Indian River Farms WCD
- Melbourne-Tillman WCD
- Sebastian River ID
- Vero Lakes
- Agriculture

- **Other Interested Parties**





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Central Indian River Lagoon BMAP



Courtesy of Robert Day





BMAPs

- A BMAP is developed collaboratively with stakeholders to meet provisions in Section 403.067(7), Florida Statutes (F.S.).
- BMAPs are adopted by FDEP Secretarial Order.
- BMAPs are enforceable.





Key BMAP Components

- TMDLs being addressed; Define BMAP area;
- Assumptions and considerations;
- Future growth;
- Allocations to responsible sources (as needed);
 - Allocations can also be made to basin
- Projects to meet the TMDL;
- Monitoring plan;
- Process to assess progress towards the TMDL;
- Implementation timeline and commitments; and
- Appendices with supporting information.





Basic BMAP Approach

- TMDL reductions will be phased over a 15-year period.
- The first iteration of the BMAP will cover a 5-year period. For the Central IRL
 - **Approximately end-2012 through end-2017.**
 - **Detailed allocations not part of this cycle**
- This iterative approach allows for projects that achieve reductions while monitoring occurs to better understand seagrass response to the nutrient reductions.





Project Zones

- The IRL Basin was divided into three subbasins with separate BMAPs:
 - **Central IRL;**
 - **North IRL; and**
 - **Banana River Lagoon.**
- Within each subbasin, there are hydrological differences that affect how the lagoon responds to nutrient loads.
- To address these differences, the subbasins were divided into “project zones.”

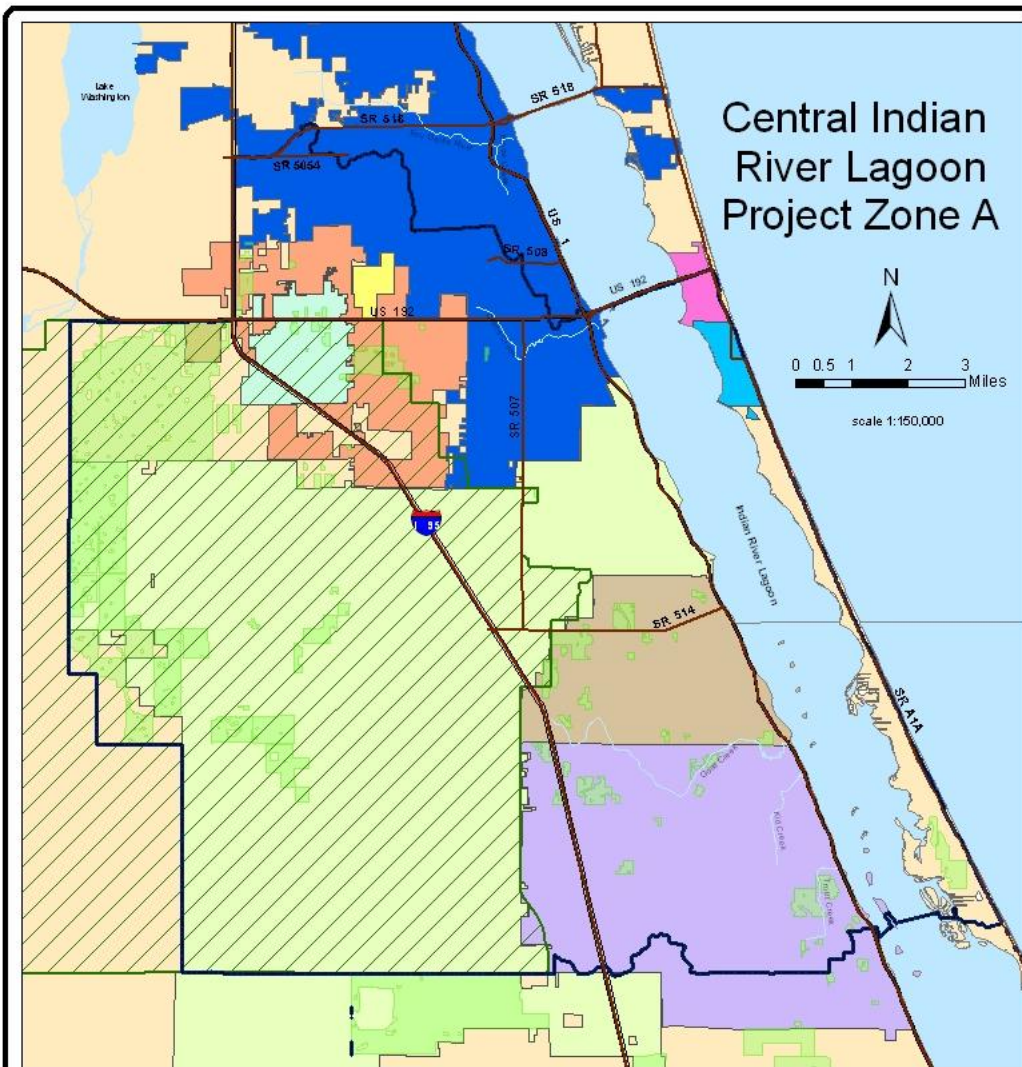




Project Zones, continued

- The Central IRL was divided into three project zones:
 - Central IRL A - from the Melbourne Causeway to Grant Farm Island;
 - Central IRL SEB - from Grant Farm Island to Wabasso Causeway (CR 510); and
 - Central IRL B - from the Wabasso Causeway to the St. Lucie / Indian River County line.





Legend

- | | | |
|--|----------------|-------------------|
| Central Project Zone A | Palm Bay | Malabar |
| Melbourne Tillman Water Control District | Melbourne | Melbourne Beach |
| Agriculture | West Melbourne | Melbourne Village |
| | Grant-Valkaria | June Park CDP * |
| | Indianalantic | Brevard County |

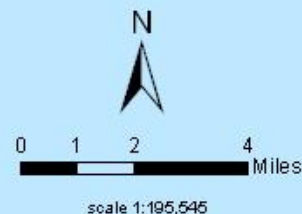
*CDP- census designated place



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Central Indian River Lagoon Project Zone SEB



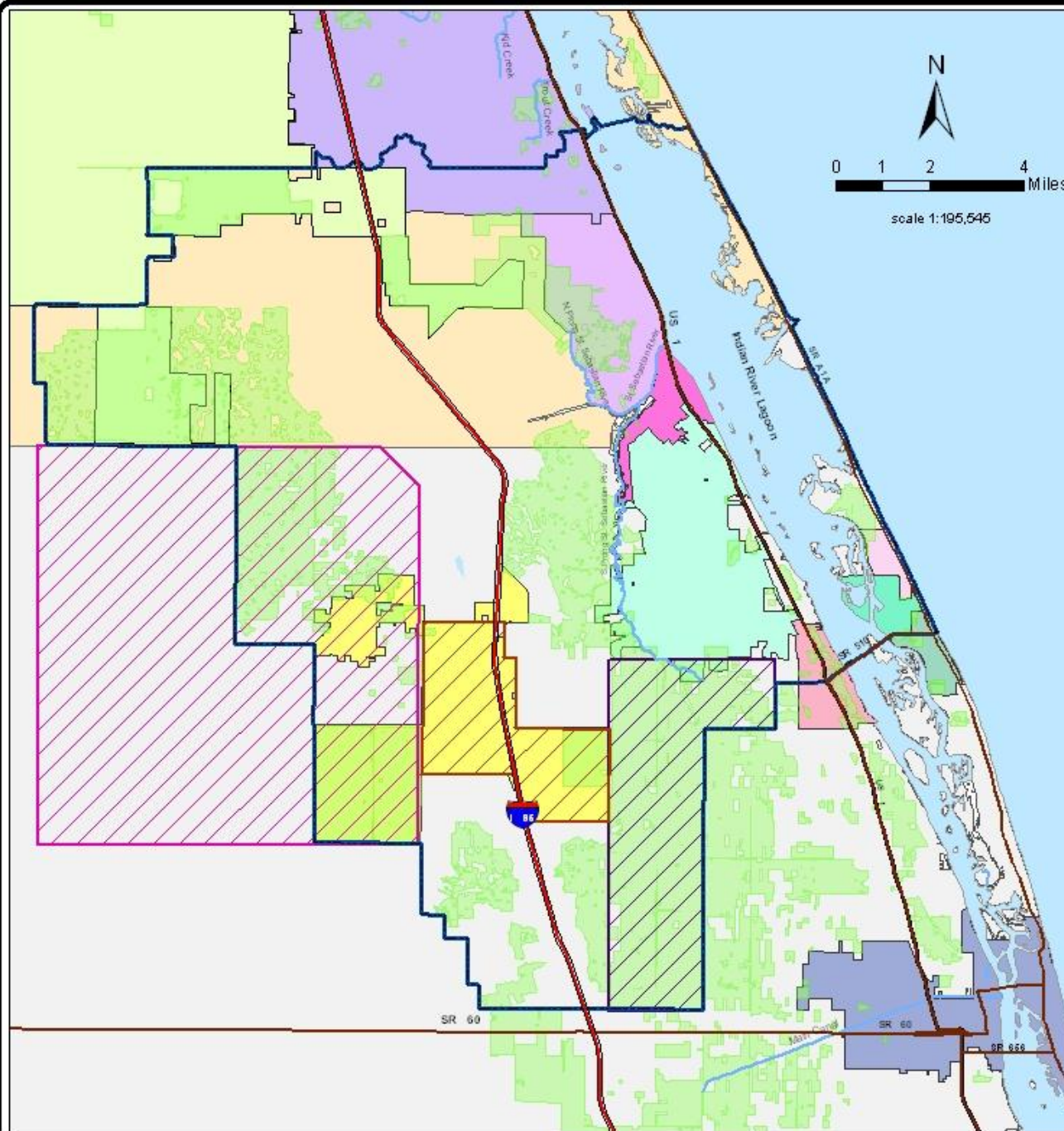
Legend

- Central Project Zone SEB
- Fellsmere Water Control District
- Sebastian River Improvement District
- Vero Lakes Water Control District
- Agriculture
- Palm Bay
- Grant-Valkaria
- Wabasso Beach CDP*
- Wabasso CDP*
- Fellsmere
- Micco CDP*
- Orchid
- Roseland CDP*
- Sebastian
- Windsor CDP*
- Vero Beach
- Brevard County
- Indian River County

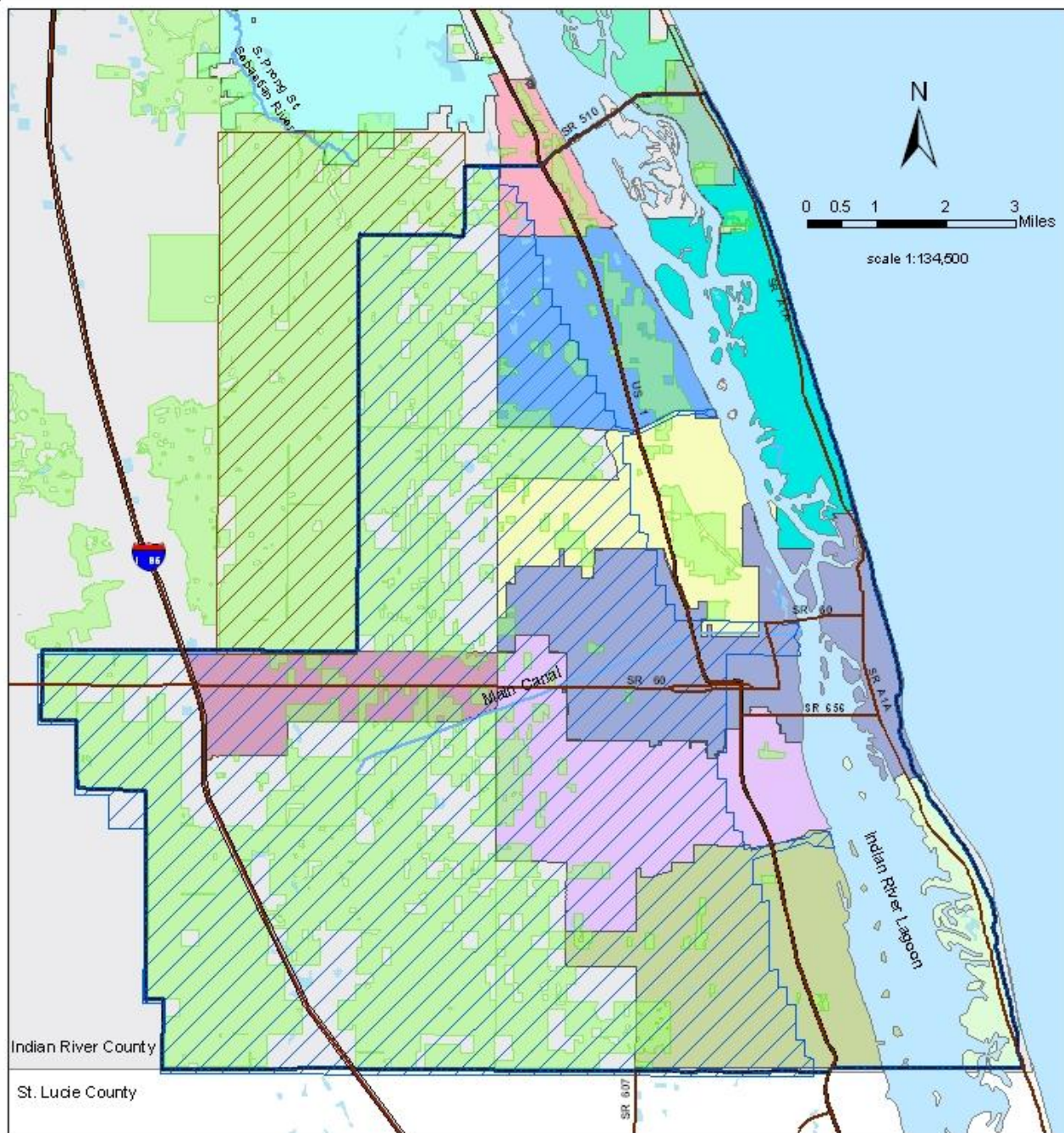
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Central Indian River Lagoon Project Zone B



Legend

- Central Project Zone B
- Indian River Farms Water Control Dist.
- Sebastian River Improvement Dist.
- Agriculture
- Orchid
- Sebastian
- Wabasso CDP *
- Wabasso Beach CDP *
- Vero Beach
- Florida Ridge CDP*
- Gifford, CDP*
- Indian River Shores
- South Beach CDP*
- Vero Beach South CDP*
- West Vero Corridor CDP*
- Winter Beach CDP*
- Indian River County

*CDP-census designated place



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Stakeholders in the Central IRL BMAP

• **WWTFs**

- Barefoot Bay
- Brevard County South Beaches
- Indian River County Hobart RO
- Indian River County South RO
- Indian River County West Regional
- Melbourne
- Vero Beach
- Vero Beach RO

• **MS4s:**

- Brevard County
- Indian River County
- St. Lucie County
- City of Fort Pierce
- City of Melbourne
- City of Palm Bay
- City of Sebastian
- City of Vero Beach
- City of West Melbourne
- Town of Indialantic
- Town of Indian River Shores
- Town of Malabar
- Town of Melbourne Beach
- FDOT Districts 4 and 5
- Turnpike Authority





Stakeholders, continued

- **Non-MS4s**

- City of Fellsmere
- Town of Grant-Valkaria
- Town of Melbourne Village
- Town of Orchid
- Patrick Air Force Base

- **Agriculture**

- **Environmental Interests**

- **Water Control Districts (WCDs):**

- Fellsmere WCD
- Fort Pierce Farms WCD
- Indian River Farms WCD
- Melbourne-Tillman WCD
- Sebastian River Improvement District
- Vero Lakes WCD





Seagrass Depth Limit Target

- Goal of TMDLs is to recover the deeper-water seagrass habitats. There are water depth targets for each project zone.
- Response of seagrasses to reductions in nutrient loadings is the most important factor for evaluating the success of the TMDLs.
- Success of TMDL is based on growth of seagrass at target depths. Success can be attained without meeting full nutrient loading reductions specified in TMDLs.





Questions on the BMAP Approach

- BMAP Stakeholders:

- Brevard County
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- St. Lucie County
- City of Fellsmere
- City of Fort Pierce
- City of Melbourne
- City of Palm Bay
- City of Sebastian
- City of Vero Beach
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- Town of Indialantic
- Town of Indian River Shores
- Town of Malabar

- Town of Melbourne Beach
- Town of Melbourne Village
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Central IRL BMAP Progress to Date



<http://www.irclibrary.org/>





Scale for Seagrass Target Evaluation

- Success in meeting the TMDL depth limit targets is assessed at a project zone scale.
- While FDEP desires to have the entire Central IRL achieve seagrass recovery, it is possible to have success in smaller assessment areas.
- Because project zones are hydrologically connected areas, incoming nutrient loads would be expected to affect the entire area.

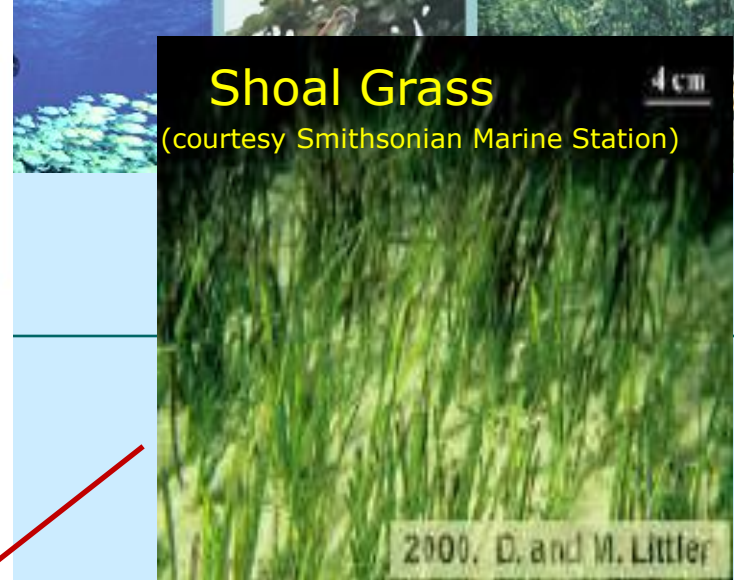
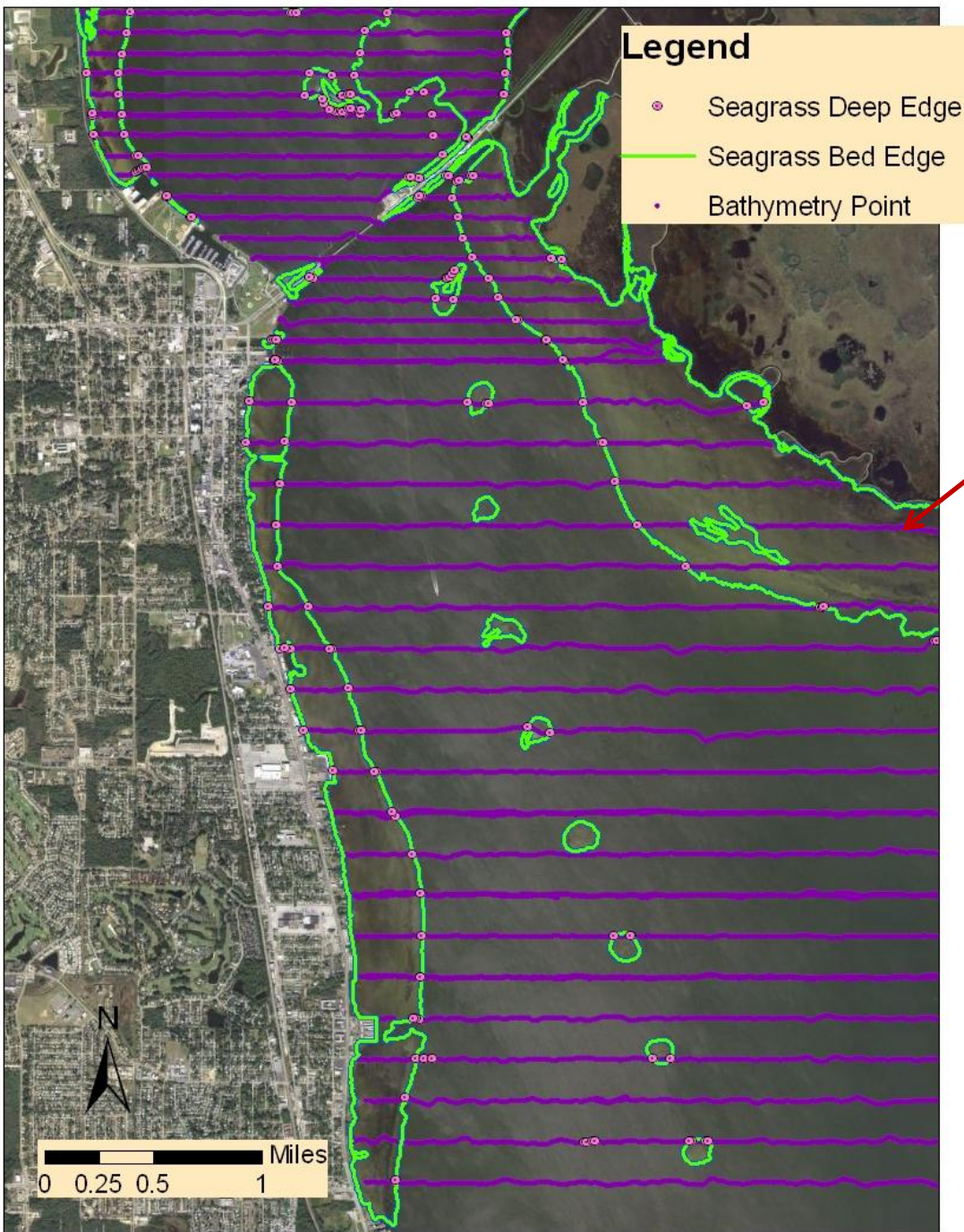




Establishing the Deep Edge of Seagrass Beds

- The four most recent mapped seagrass datasets (2003, 2005, 2006, and 2007) were joined to create a combined map or coverage in Geographic Information Systems (GIS).
- A 15 meter buffer zone was applied to the perimeter of the coverage to create the deep edge of the seagrass beds.
- The buffered coverage shows the deepest edge that seagrass grew at for each project zone.
 - Not species specific





*What is
the
Deep Edge
of Seagrass?*

**Dataset of bathymetry
points that intersect
seagrass bed**



Evaluation Steps for TMDL Compliance

- The determination of TMDL compliance is a two-step evaluation method:
 - **Step 1:** For each project zone, a cumulative frequency distribution of the deep edge depth of seagrass beds is created.
 - **Step 2:** From the frequency distribution, the seagrass mapping year median depth limit value is determined.





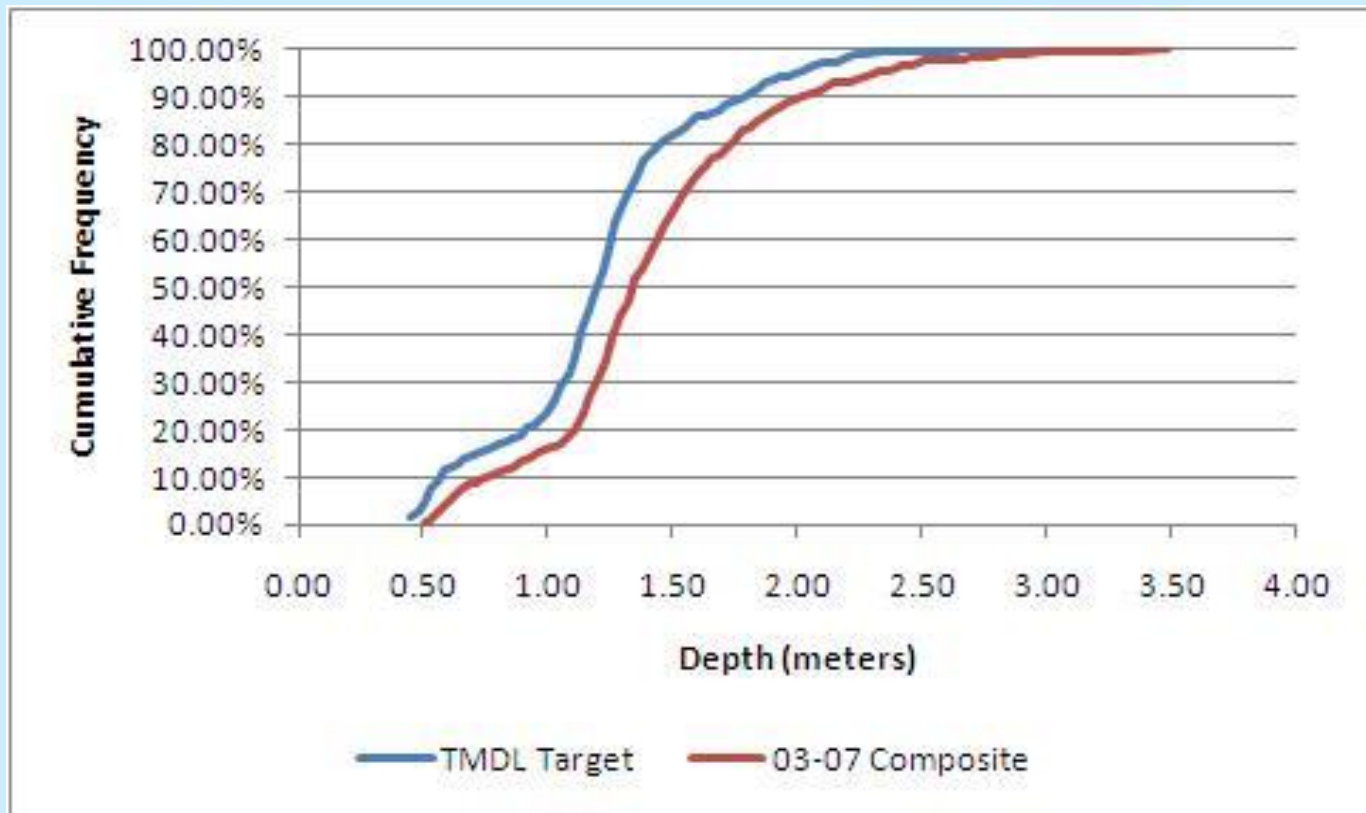
TMDL Compliance: Step 1

- Compare cumulative frequency distribution for the TMDL years (1943-1999) to the combined dataset for the evaluation years (2003-2007):
 - Consistent with the method used to develop the depth-limit targets.
 - **More than 50%** of the combined evaluation year's distribution curve must lie on or to the right of the TMDL curve to meet Step 1 compliance.





Project Zone Central A

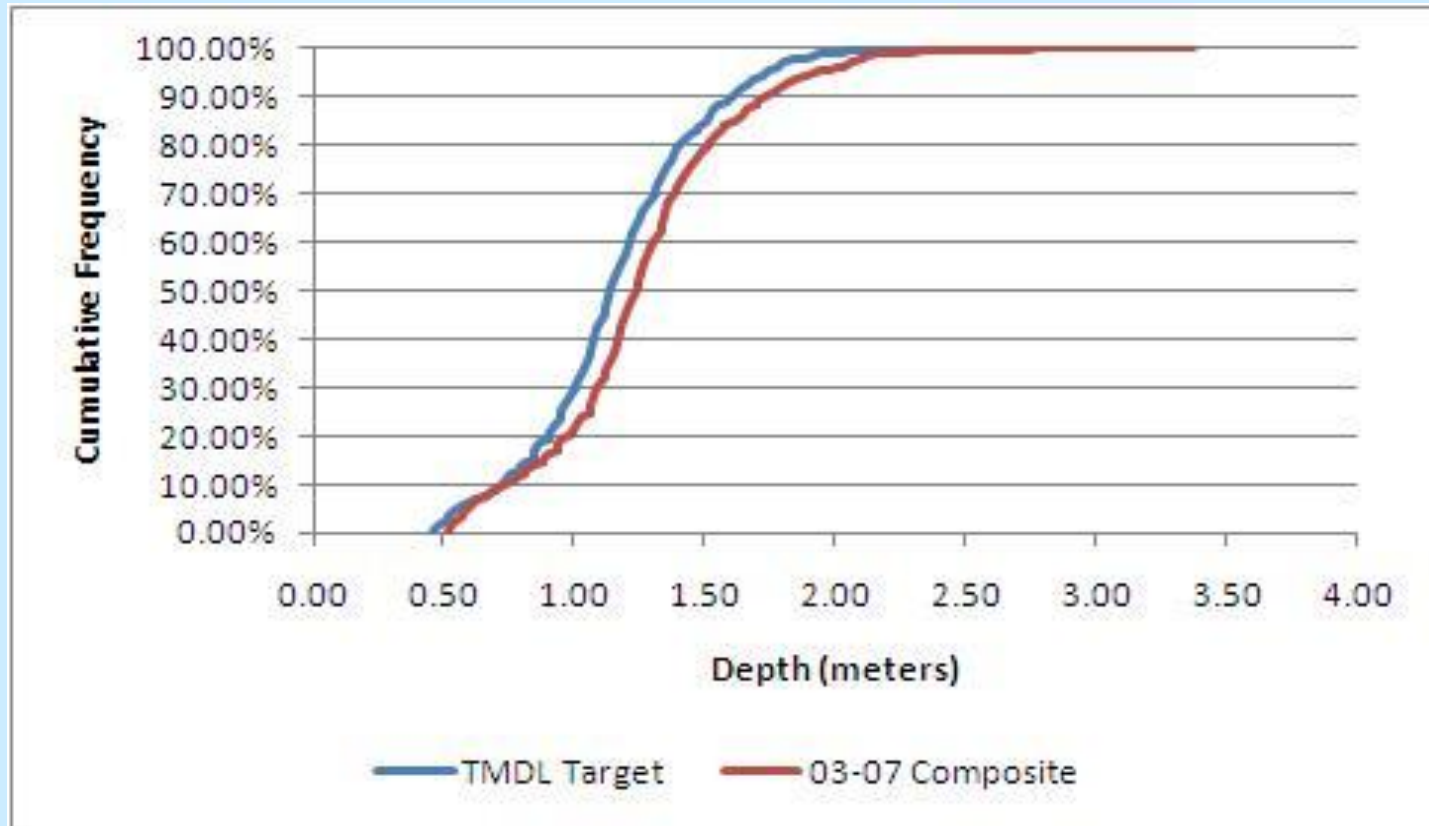


The 2003-2007 curve (red line) is on or to the right of the TMDL curve (blue line) more than 50% of the time. Therefore, Central Project Zone A is Step 1 compliant.





Project Zone Central SEB

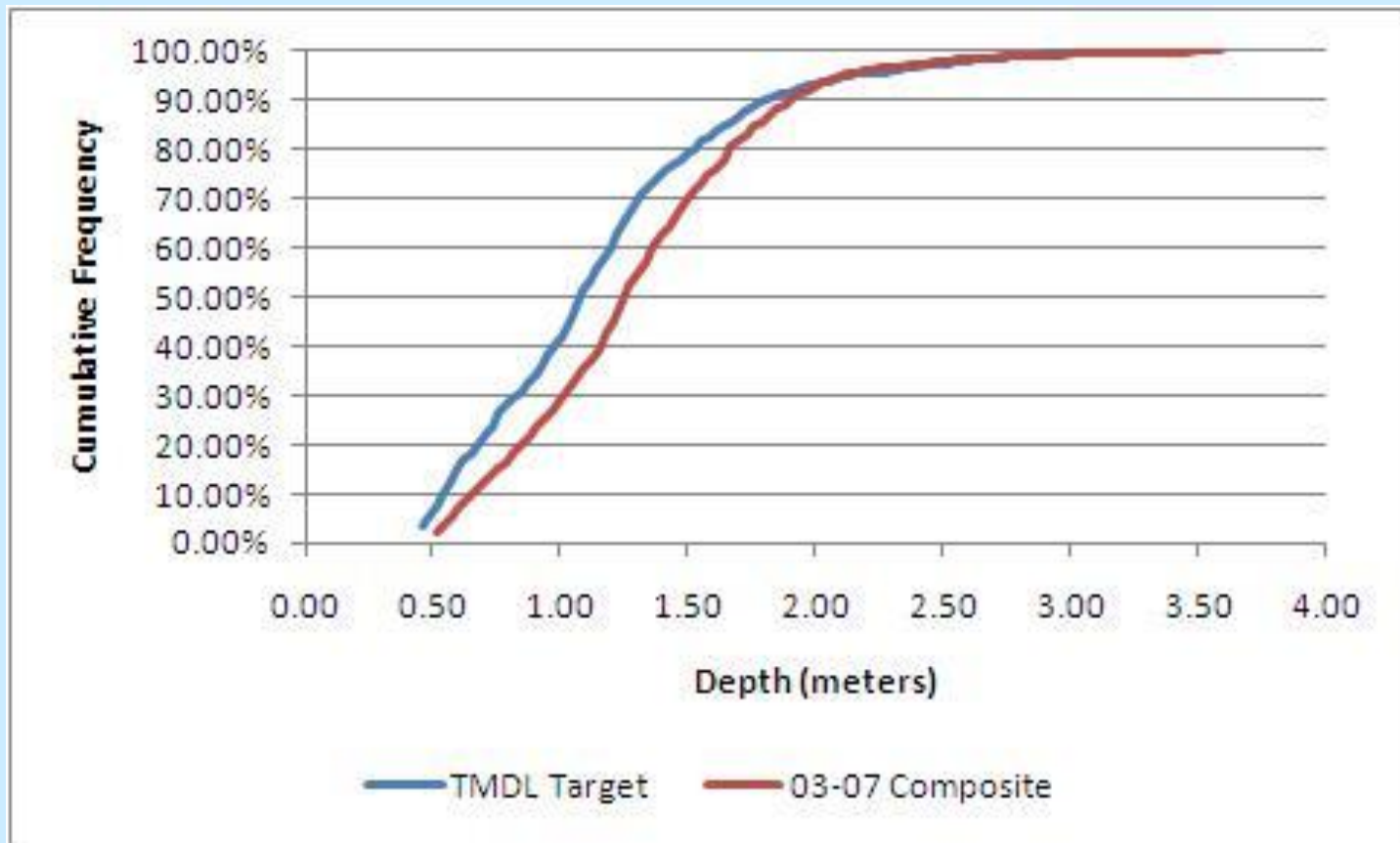


The 2003-2007 curve (red line) is on or to the right of the TMDL curve (blue line) more than 50% of the time. Therefore, Central Project Zone SEB is Step 1 compliant.





Project Zone Central B



The 2003-2007 curve (red line) is on or to the right of the TMDL curve (blue line) more than 50% of the time. Therefore, Central Project Zone B is Step 1 compliant.





TMDL Compliance: Step 2

- Each mapping year's median depth:
 - Must meet or exceed the TMDL median depth limit target to meet the Step 2 requirement.
 - This ensures that one exceptional year does not overpower other years. Or conversely one year with less seagrass does not prevent compliance.
- Three of the four annual medians must meet or exceed the median TMDL depth limit target for a project zone to be Step 2 compliant.





Step 2 Compliance Summary

- The years where the median exceeds the TMDL median are highlighted and a determination of Step 2 compliance is included.
- Three out of the four mapping years in each project zone meet or exceed the TMDL median. All of Central IRL is Step 2 compliant.

Year	Central A	Central SEB	Central B
TMDL Median	1.22	1.15	1.09
2003	1.23	1.12	1.12
2005	1.20	1.15	1.12
2006	1.23	1.18	1.12
2007	1.32	1.21	1.24
Step 2 Compliant?	Yes	Yes	Yes





Evaluating Compliance in the Future

- FDEP will use the 2009 and 2011 seagrass mapping data to reassess whether the Central IRL project zones remain compliant.
- If project zones continue to meet the TMDL depth limit targets there will be six mapping years or nine calendar years (2003 – 2011) indicating a continuing trend of success.
- If during this assessment the project zones no longer meet Step 1 and Step 2 compliance, FDEP will ask for stakeholders to make nutrient reductions in a second iteration of the BMAP.





Project Collection

- TMDL depth limit targets are being met, so stakeholders will not receive allocations for reductions for this first iteration of the BMAP.
- FDEP asked stakeholders to provide completed and planned projects to characterize TN and TP reductions that have already occurred and will be achieved during the first BMAP cycle.
- Documenting known load reductions will further the understanding of how compliance was achieved and maintained.





Types of Projects Eligible for Credit

- Projects completed since January 1, 2000 are eligible for credit, because the TMDL is based on land uses mapped circa 2000.
 - Benefits of management actions taken since January 1, 2000 were not reflected in the TMDL model.
- Projects were only given credit for the load reduction that was over and above any permit requirements for that project.
 - Permit conditions are established to maintain the current condition (prevent further impacts from the development) and do not contribute to the improvement of water quality in the lagoon.





Types of Projects, continued

- Standard stormwater treatment best management practices (BMPs):
 - Retention BMPs;
 - Wet detention ponds;
 - Dry detention;
 - Baffle boxes;
 - Nutrient (2nd generation) baffle boxes;
 - Catch basin inserts/inlet filters;
 - Swales;
 - Alum injection;
 - Stormwater reuse;
 - Stormceptor units;
 - Continuous deflective separation (CDS) units;
 - Street sweeping; and
 - Treatment trains using a combination of BMPs.





Types of Projects, continued

- Provisional credit is assigned for:
 - Floating islands/ managed aquatic plant systems (MAPS); and
 - Public education and outreach efforts.
- Other potential projects:
 - Muck/sediment removal;
 - Vegetation and algal harvesting; and
 - Tilting weir gates in canals





Credit for Submitted Projects

Entity	TN Credit (lbs/yr)	TP Credit (lbs/yr)
Brevard County	359	102.8
Indian River County	14,999	3,388.8
St. Lucie County	664	299.1
City of Fellsmere	104	31.8
City of Fort Pierce	6,671	2,700.6
City of Melbourne	37	92.4
City of Palm Bay	TBD	TBD
City of Sebastian	TBD	TBD
City of Vero Beach	TBD	TBD
City of West Melbourne	982	261.4
Town of Grant-Valkaria	0	0.0
Town of Indialantic	0	0.0
Town of Indian River Shores	0	0.0
Town of Malabar	0	0.0

Draft-Data collection in progress





Credit for Submitted Projects, con't

Entity	TN Credit (lbs/yr)	TP Credit (lbs/yr)
Town of Melbourne Beach	792	135.0
Town of Melbourne Village	1	0.8
Town of Orchid	TBD	TBD
FDOT District 4	729	387.9
FDOT District 5	434	239.8
Turnpike Authority	26	17.3
Fellsmere WCD	83	24.8
Fort Pierce Farms WCD	TBD	TBD
Indian River Farms WCD	TBD	TBD
Melbourne-Tillman WCD	TBD	TBD
North St. Lucie River WCD	TBD	TBD
Sebastian River Improvement District	TBD	TBD
Vero Lakes WCD	0	0.0

Draft-Data collection in progress





Project Quantification

- Large public works projects still need to be included.
- Not all of the projects can be quantified.
 - Public education and outreach credit is based on the starting loads, which were not available because there are no allocations in this BMAP.
- Some of the water control and improvement district projects could not be quantified.
 - DEP is working with the districts to determine methods to quantify credit for these non-typical projects.





Project Quantification, continued

- Several stakeholders project reduction are in the calculation stage:
 - Brevard County;
 - City of Palm Bay;
 - City of Sebastian; and
 - City of Vero Beach.
- Still expecting additional projects to be submitted.





Costs and Benefits of the BMAP

- IRL has an economic value of \$3.725 billion.
- IRL provides goods and services, income, jobs, and tax revenue to local and state governments (numbers are for 2007).
- Table gives IRL economic contribution.

County	Goods & Services	Income	Jobs	Tax Revenue
Brevard	\$215 million	\$100 million	3,112	\$13.7 million
Indian River	\$90 million	\$43 million	1,232	\$5.7 million



Cost and Benefits of the BMAP, continued

- Difficult to assign a \$ per pound to TN or TP removal to estimate cost of projects that will improve water quality.
 - Land costs vary
 - Construction costs vary
 - Costs differ from county to county or even by city
 - Benefits from outreach/education do work, but are hard to quantify





Costs and Benefits of BMAP, continued

- The BMAP does have benefits
 - Gives priority for DEP grant funding.
 - DEP has provided 319 and TMDL monies for projects
 - Since 2004, \$9.3 million to Brevard County-wide
 - And \$2.45 million to Indian River County-wide
 - Provides a management plan that helps leverage other grant/loan dollars





Questions on the BMAP Progress

- Allocation Stakeholders:
 - Brevard County
 - Indian River County
 - St. Lucie County
 - City of Fellsmere
 - City of Fort Pierce
 - City of Melbourne
 - City of Palm Bay
 - City of Sebastian
 - City of Vero Beach
 - City of West Melbourne
 - Town of Grant-Valkaria
 - Town of Indialantic
 - Town of Indian River Shores
 - Town of Malabar
- Town of Melbourne Beach
- Town of Melbourne Village
- Town of Orchid
- FDOT District 4
- FDOT District 5
- Turnpike Authority
- Patrick Air Force Base
- Fellsmere WCD
- Fort Pierce Farms WCD
- Indian River Farms WCD
- Melbourne-Tillman WCD
- Sebastian River ID
- Vero Lakes
- Agriculture
- Other Interested Parties





Meeting Overview

1. Welcome
2. Indian River Lagoon Basin Total Maximum Daily Loads (TMDLs)
3. Central Indian River Lagoon (IRL) Basin Management Action Plan (BMAP)
4. BMAP Progress to Date
5. Next Steps





Next Steps



Courtesy of Robert Day



Southern Extension of Basin

- **Extension of southern boundary to Ft. Pierce Inlet is under consideration.**
 - This change will formally add St. Lucie County, Ft. Pierce, Ft. Pierce Farms WCD, and SFWMD as jurisdictions within basin.
 - Agriculture is a large component of the extended area.





Southern Extension of Basin, continued

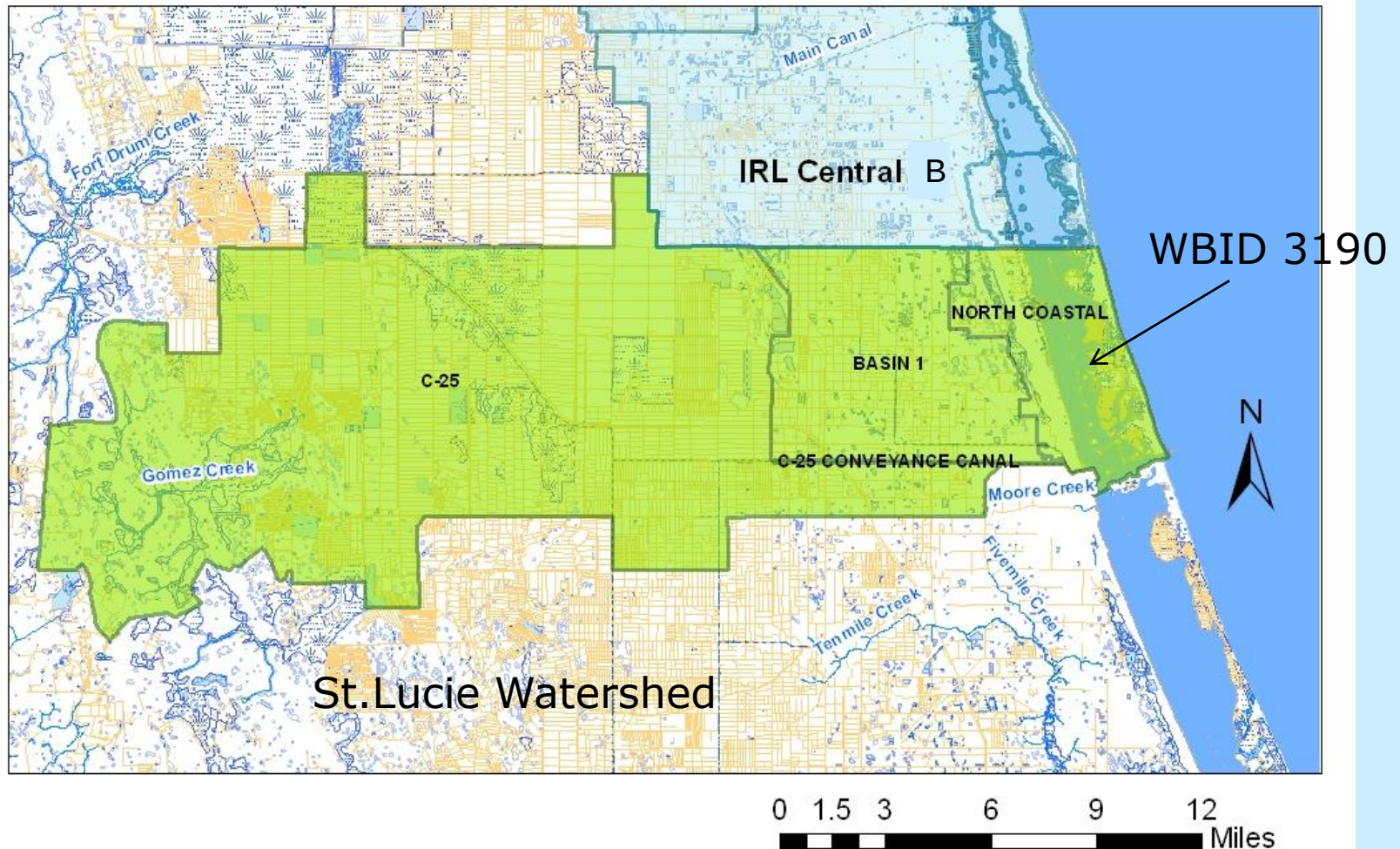
- **Reasons for Extension**

- Indian River Lagoon WBID 3190 listed as impaired.
- Current boundary not a complete hydrologic divide.
- Water quality protection for Central IRL.
- TMDLs in development for C-25 and Ft. Pierce Farms Canal. Adding area allows stakeholders to be more engaged in the TMDL process.





Southern Boundary Extension Area





Monitoring Plan Development

- BMAP requires a monitoring plan.
- Plan identifies how we will measure success in achieving TMDLs.
 - **Goals and objectives** for monitoring
 - Identifies **sampling locations** and **analytes measured**
- Seagrass mapping is major component of monitoring plan.
 - DEP 2013 mapping of IRL seagrasses
 - Mapping requires aerial photography
 - Considering remote sensing techniques
- DEP and SJRWMD preparing strawman.





Production of the BMAP Document

- Time line for completion of key tasks
 - Southern boundary decision – **March 2012**
 - Finish project collection – **March/April 2012**
 - Determine crediting of Other type projects – **May/June 2012**
 - Draft monitoring plan – **June-July 2012**
- Drafting of BMAP document
 - Goals and objectives – **spring 2012**
 - Draft document – **summer/fall 2012**
 - **Final Draft – end of 2012**





BMAP Adoption Process

- Opportunity for **review of BMAP** – 30 days
- **Support of plan** by stakeholders
 - Letter/ statement of commitment
 - Resolution from local government
- **Future Public briefings/meetings***
 - Today's meeting is the first
 - At least one more policy briefing
 - Public meeting / Workshop on BMAP
 - Individual presentations to local governments or others as requested.



*there are minimum requirements in Statute



BMAP Adoption, continued

- Adoption of plan by Secretarial Order.
- Follows Chapter 120, F.S. requirements for noticing of DEP action.
- Final Order noticed for 21 days.
 - Allows for public comment and challenge
 - Publicized in each county's local paper





Questions on the Next Steps

- Allocation Stakeholders:
 - Brevard County
 - Indian River County
 - St. Lucie County
 - City of Fellsmere
 - City of Fort Pierce
 - City of Melbourne
 - City of Palm Bay
 - City of Sebastian
 - City of Vero Beach
 - City of West Melbourne
 - Town of Grant-Valkaria
 - Town of Indialantic
 - Town of Indian River Shores
 - Town of Malabar
 - Town of Melbourne Beach
 - Town of Melbourne Village
 - Town of Orchid
 - FDOT District 4
 - FDOT District 5
 - Turnpike Authority
 - Fellsmere WCD
 - Fort Pierce Farms WCD
 - Indian River Farms WCD
 - Melbourne-Tillman WCD
 - Sebastian River ID
 - Vero Lakes
 - Agriculture
- Other Interested Parties





Public Comment



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





Contacts for Indian River Lagoon BMAPs

Mary Paulic

Basin Coordinator

Mary.Paulic@dep.state.fl.us

850-245-8560

Tom Frick, Chief

Bureau of Watershed Restoration

Thomas.Frick@dep.state.fl.us

850-245-7518

Dr. Xueqing Gao

Environmental Manager

Xueqing.Gao@dep.state.fl.us

850-245-8464

John Abendroth

Environmental Administrator

John.Aabendroth@dep.state.fl.us

850-245-8555

