



*Florida Department of
Environmental Protection*

Everglades West Coast BMAP Technical Meeting

December 15, 2011

South Florida Water Management District
2301 McGregor Boulevard, Ft. Myers Florida



Agenda

1. Welcome and Opening Remarks
2. Status of BMAP Management Activities
 - Conservation Lands
 - Education and Ordinances
 - BMP Projects
3. Status of Groundwater Monitoring Program
4. Status of BMAP Monitoring Plan
5. Status of BMAP Documentation





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Everglades West Coast BMAP

Status of BMAP

Management Activities



BMP Project List

- Each Stakeholder Provided Project List
- Based on Information Provided to Date
- Projects Considered:
 - Conservation Land Purchases (Change in Land Use to Lower Loading)
 - Education/Fertilization Restriction Ordinances
 - BMPs





Conservation Land Purchases

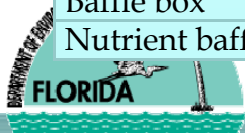
- From Coverage of Lands Purchased, Determined Area, Land Uses and Loading
- Converted Urban and Agricultural Land Use Loading to Background Loading
- Difference in Loading = Credit





Removal Efficiencies for BMPs

BMPs	TP % Reduction	TN % Reduction
Off-line Retention 0.25 treatment volume	40	40
Off-line Retention 0.50 treatment volume	62	62
Off-line Retention 0.75 treatment volume	75	75
Off-line Retention 1.00 treatment volume	84	84
On-line Retention 0.25 treatment volume	30	30
On-line Retention 0.50 treatment volume	52	52
On-line Retention 0.75 treatment volume	65	65
On-line Retention 1.00 treatment volume	74	74
Grass swales with swale blocks or raised culverts	Use on-line retention BMPs above	Use on-line retention BMPs above
Grass swales without swale blocks or raised culverts	50% of value for grass swales with swale blocks or raised culverts	50% of value for grass swales with swale blocks or raised culverts
Wet detention ponds	$\% \text{ Removal} = 44.53 + 6.146 * \ln(t_d) + 0.145 * (\ln(t_d))^2$ where t_d is the mean annual residence time	$\% \text{ Removal} = (43.75 * t_d) / (4.38 + t_d)$ where t_d is the mean annual residence time
BMP treatment trains using a combination of BMPs	Use BMP Treatment Train (TT) equation: $\text{BMP TT Efficiency} = \text{Eff}_1 + ((1 - \text{Eff}_1) * \text{Eff}_2)$	Use BMP Treatment Train (TT) equation: $\text{BMP TT Efficiency} = \text{Eff}_1 + ((1 - \text{Eff}_1) * \text{Eff}_2)$
Dry detention	10	10
Baffle box	2.3	0.5
Nutrient baffle box (2 nd generation)	15.5	19.05





Removal Efficiencies, continued

BMPs	TP % Reduction	TN % Reduction
Catch basins/inlet filters	Determine kg of materials removed and multiply by 300.8 mg/kg (commercial), 423.4 mg/kg (residential), or 536.97 mg/kg (highway)	Determine kg of materials removed and multiply by 467.2 mg/kg (commercial), 773.8 mg/kg (residential), or 785.4 mg/kg (highway)
Street sweeping	Determine kg of materials removed and multiply by 381.2 mg/kg (commercial), 374.9 mg/kg (residential), or 349.7 mg/kg (highway)	Determine kg of materials removed and multiply by 429.6 mg/kg (commercial), 832.4 mg/kg (residential), or 546.4 mg/kg (highway)
Alum injection	90	50
Stormwater reuse	Estimate amount water not discharged annually because used for irrigation.	Estimate amount water not discharged annually because used for irrigation.
Stormceptor	13	2
Continuous deflection separation (CDS) units	10	Not applicable
Floating islands	20	20
Public education & Ordinances	1-6, depending on extent of program	1-6, depending on extent of program
Low impact development practices	Cannot quantify	Cannot quantify



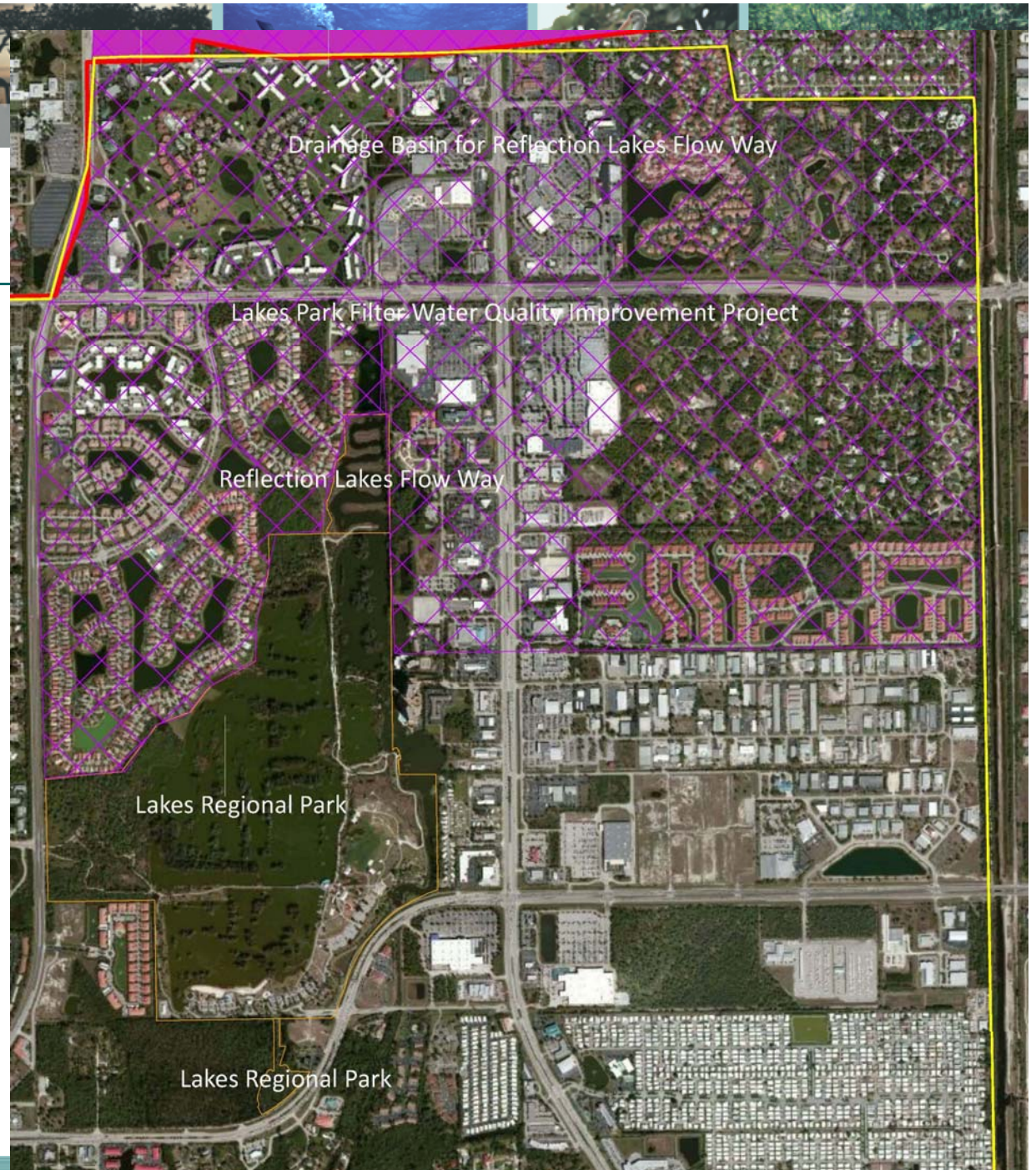


BMP Percent Reductions

- If Stakeholder Documented Percent Reduction of BMP, This Was Used.
- If Stakeholder Did Not Document Percent Reduction, or Reduction Presented Not Justified, Table Used.



- Superimpose Boundary of BMP
- Identify Land Uses





Calculate Area and Loading

Project	Land Uses	Area (ac)	Loading (lb/yr)
Lakes Park Filter Water Quality Improvement Project			
	A. Forest/Rural Open	216.8	352.2
	D. Low Density/Residential	260.6	852.3
	E. Medium Density/Residential	1.4	8.9
	F. High Density/Residential	453.6	4,704.1
	G. Commercial	341.1	4,275.5
	H. Industrial	0.6	7.3
	I. Highways	94.9	341.7
	J. Water/Wetland	110.1	707.0
Subtotal Lake Park		1,479.2	11,248.9





Example Credit

- Information:
 - 1,479 acres for Drainage Area to BMP
 - Type – Filter Marsh ($\Rightarrow$ 40% Reduction Allowed)
 - Total Load w/o BMP = 11,249 lb/yr TN (Based on Land Uses in Drainage Area)
- Calculation of Credit
 - $11,249 \text{ lb/yr} \times 40\% = 4,533 \text{ lb/yr Credit}$





Summary Results

Hendry Creek		
Stakeholder	TMDL 1st 5-Year Target	Current Credits
Catalina	0	0
Lee County	3,361	6,540
FDOT	21	125

Imperial River		
Stakeholder	TMDL 1st 5-Year Target	Current Credits
Bonita Springs	3,301	2,058
Lee County	519	1,552
FDOT	32	22





Agricultural BMP Enrollment

- In a BMAP, agricultural operations are required to either enroll in applicable FDACS BMP program(s) or conduct water quality monitoring at their own expense
- Agricultural acres according to 2004 land use:

Hendry Creek Basin	Imperial River Basin
98 acres	11,593 acres





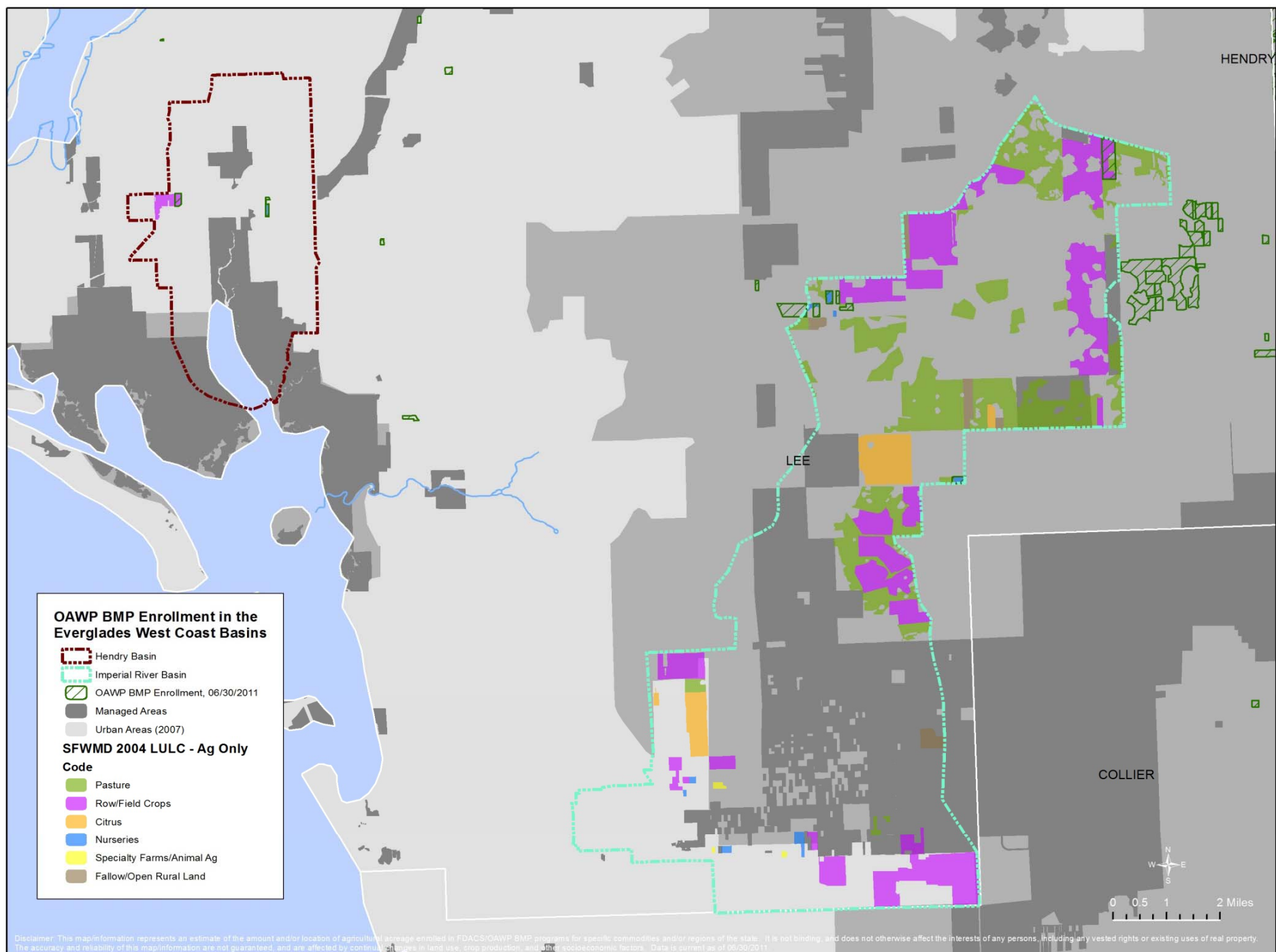
Agricultural BMP Enrollment

BMP Enrollment in the Everglades West Coast BMAP Area

Hendry Creek Basin	Imperial River Basin
37 acres	268 acres

- FDACS working on acreage adjustments/credits in the Imperial River basin
 - 2008 land use shows 36% decrease in pasture acres and 51% decrease in row/field crops
- FDACS will focus on row crop, citrus, and cow calf operations for enrollment



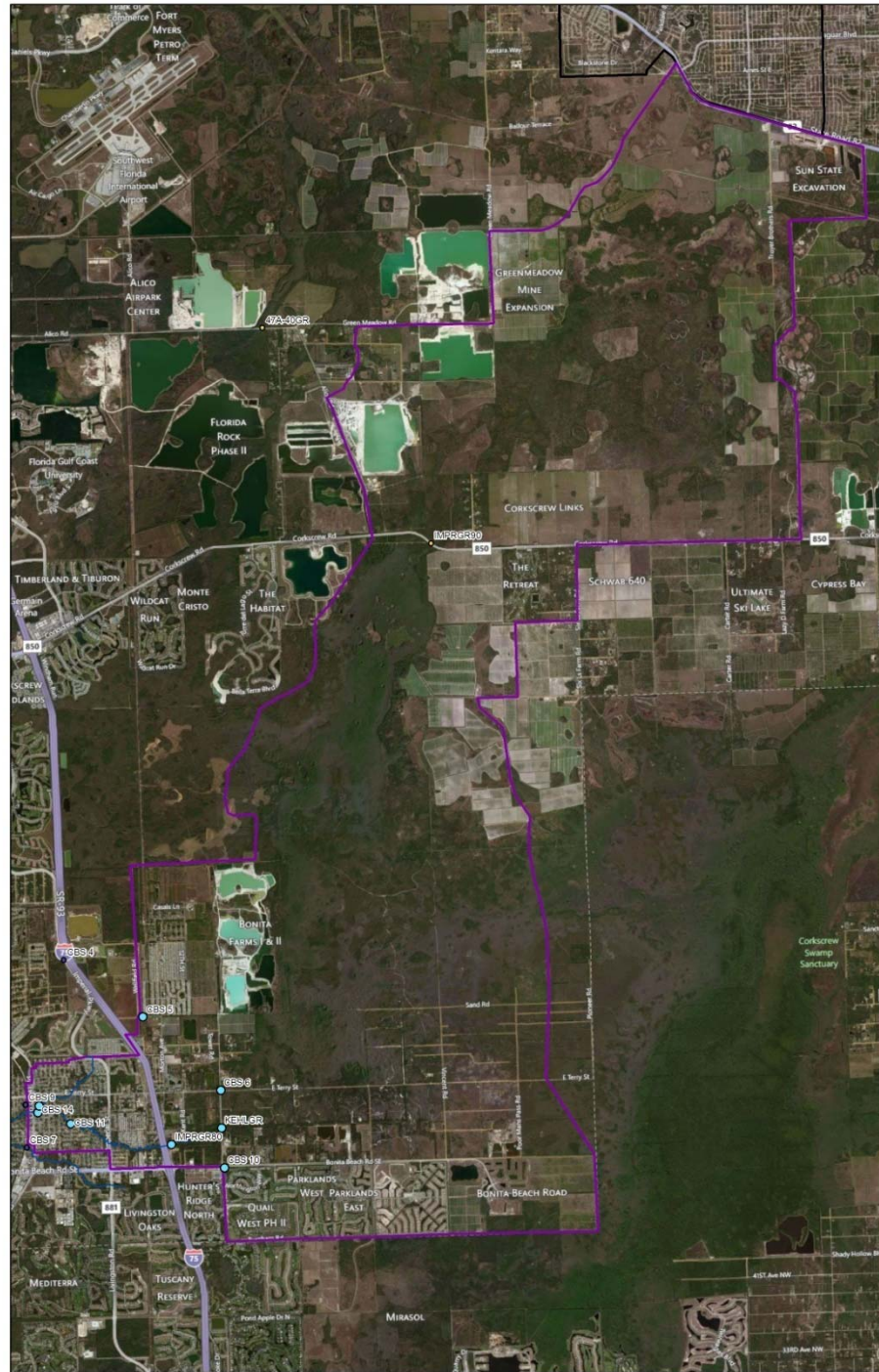


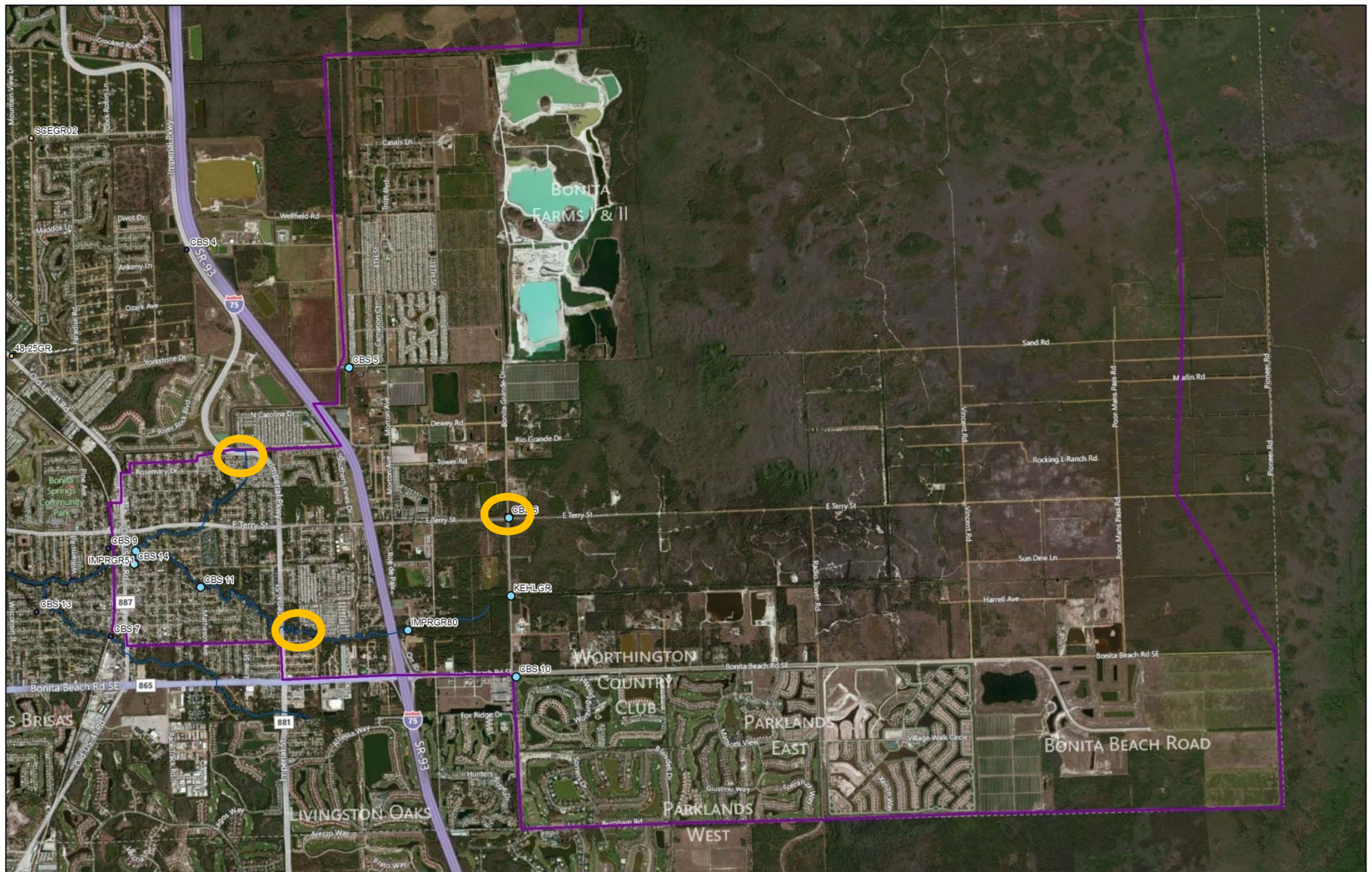


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Everglades West Coast BMAP

Monitoring Program

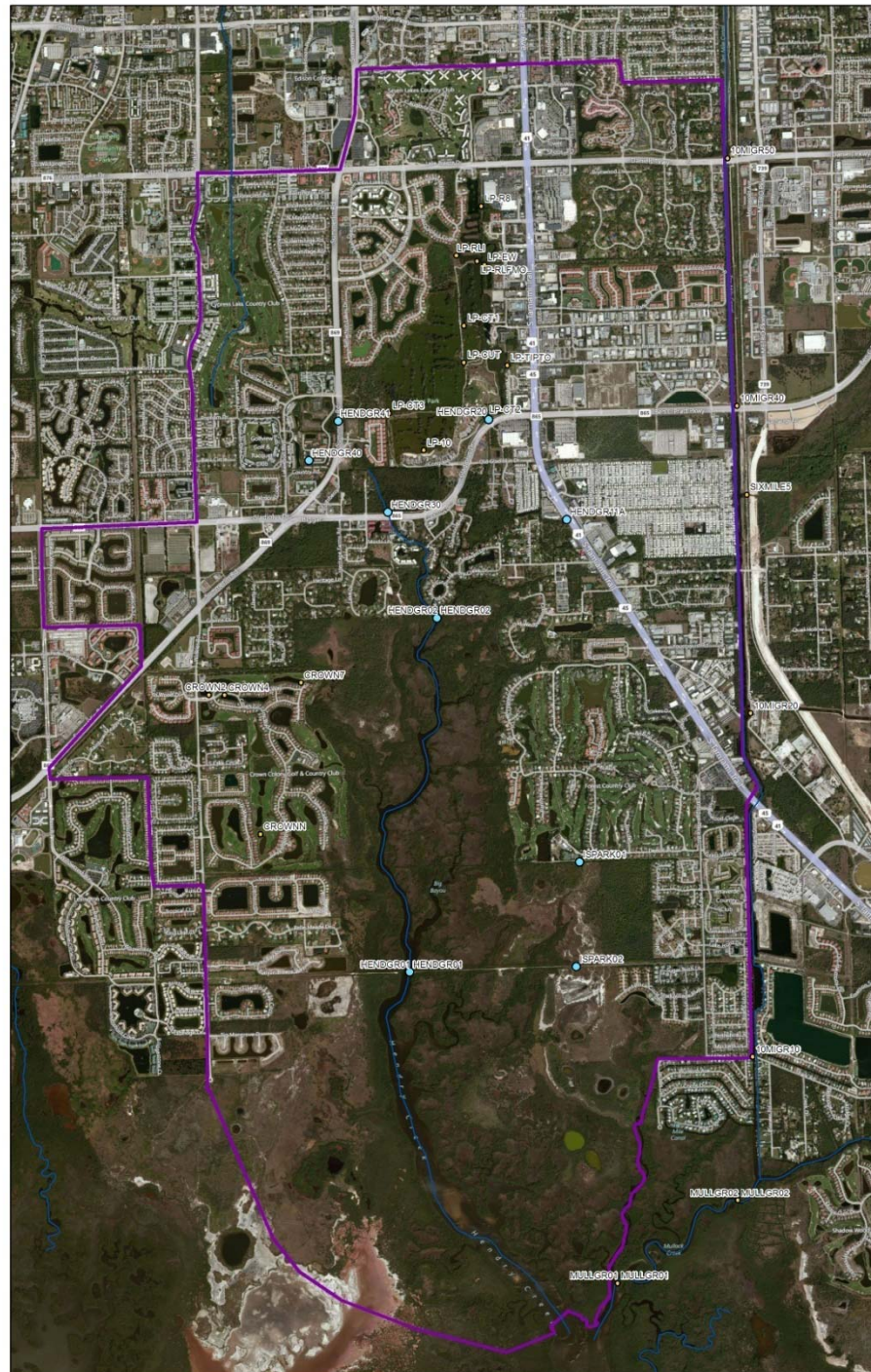


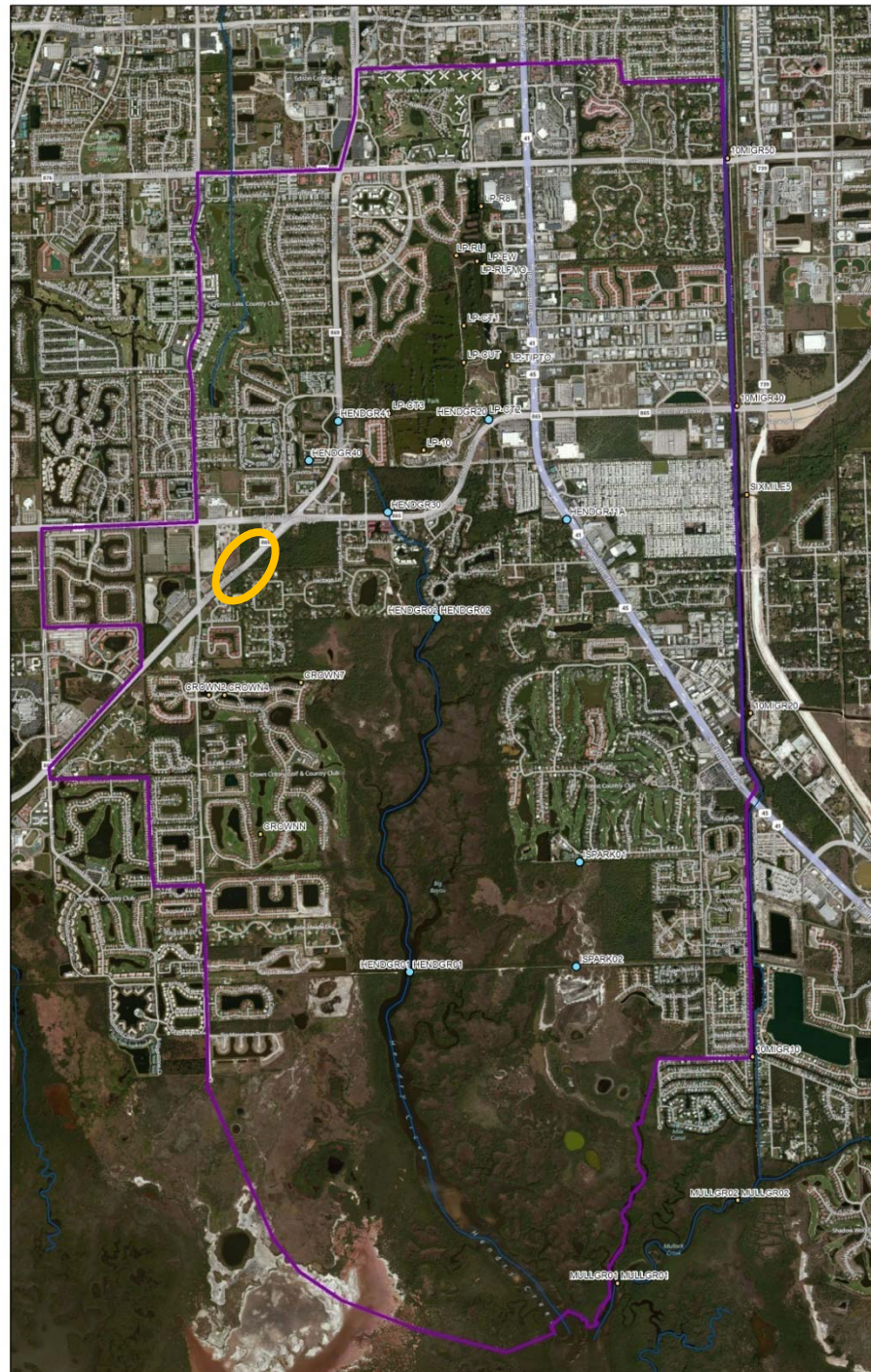




	Basin	Agency	Label	Lat	Long
1	Imperial	Bonita Springs	CBS 5	26.360597	-81.755036
2	Imperial	Bonita Springs	CBS 6	26.346186	-81.738575
3	Imperial	Bonita Springs	CBS 10	26.331186	-81.738111
4	Imperial	Bonita Springs	CBS 11	26.340214	-81.771017
5	Imperial	Bonita Springs	CBS 14	26.342506	-81.777969
6	Imperial	Lee County	KEHLGR	26.338885	-81.738526
7	Imperial	Lee County	IMPRGR51	26.343744	-81.777744
8	Imperial	Lee County	IMPRGR80	26.335865	-81.749360









	Basin	Agency	Label	Lat	Long
1	Hendry	FDEP/Lee	HENDGR01	26.487611	-81.882200
2	Hendry	FDEP/Lee	HENDGR02	26.513306	-81.879472
3	Hendry	Lee County	ISPARK02	26.487800	-81.868667
4	Hendry	Lee County	ISPARK01	26.495382	-81.868251
5	Hendry	Lee County	HENDGR30	26.521056	-81.883313
6	Hendry	Lee County	HENDGR20	26.527671	-81.875002
7	Hendry	Lee County	HENDGR01	26.487611	-81.882167
8	Hendry	Lee County	HENDGR02	26.513306	-81.879472
9	Hendry	Lee County	HENDGR11A	26.520320	-81.868830
10	Hendry	Lee County	HENDGR40	26.524912	-81.889642
11	Hendry	Lee County	HENDGR41	26.527736	-81.887210





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Everglades West Coast BMAP

BMAP

Documentation



BMAP Write Up on Load Allocations

Paragraph 403.067(7)(a)1., F.S., authorizes the Department to adopt BMAPs that provide for phased implementation of the strategies necessary to ultimately achieve the associated TMDL. Phased BMAPs are re-evaluated every five years as part of the Department's rotating basin approach. This BMAP provides for such phased implementation.

In the five-year, first phase of this BMAP, the required activities are not expected to achieve the TMDL. Rather, this BMAP only calls for projects and other activities necessary to achieve reductions of _____ TN by the end of the first phase. During this time, the Department anticipates amending the TMDLs to reflect updated modeling. Future revisions to this BMAP may require implementation of additional management strategies to achieve the TMDL, as amended.





BMAP Report

- Preliminary Template Developed
- TMDL Information Inserted (October)
- Outline Handout
- Next Steps:
 - Add Allocations and Monitoring
 - Add Projects and Load Reductions





*Questions
&
Comments?*

