

Designing Cost-Effective Stormwater Systems Under Florida's Updated Rules



July 21, 2026

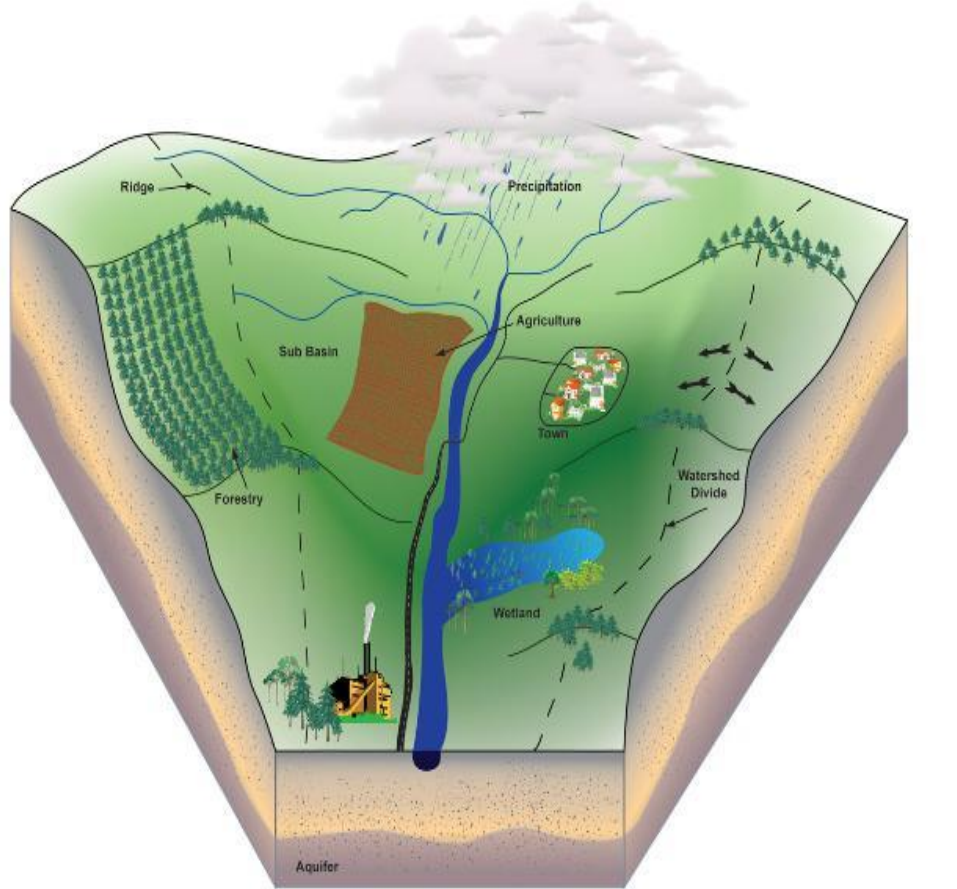
Mark Thomasson, P.E.

Session Overview

1. New Stormwater Rule
2. New Treatment Requirements
3. SB 848 – Allocations-->ERP
4. Traditional BMP Effectiveness
5. Options for Meeting New Requirements
6. FSA EF BMP Life-Cycle Costing Tool
7. Example Site 1
8. Example Site 2
9. Q&A



SB 712 – Clean Waterways Act (2020)



Graphical illustration of a watershed. Credit: Greg Means (UF/IFAS)

Directed FDEP to adopt new stormwater rules:

- Improve water quality
- Use most recent scientific information
- Address low-impact design BMPs
- Increase removal of **nutrients**
- Incorporates a **watershed approach**
- Consistent application of **Net Improvement**



ERP Stormwater Rule (2024-2025)

Nutrient
Treatment

Basic
Treatment

Quantity
Control

Key Requirements:

- Retained basic treatment, quantity and rate control requirements
- Capped nutrient loading and added specific nutrient reduction requirements
- Offered new options to meet nutrient requirements (LID, GSI, Alternative Designs)
- ★ • Expanded compensating treatment options (nutrient trading)
- Enhanced O&M, cost estimate, inspection requirements



Summary of Quality Standards



Project Scenario	TN	TP	Additional Criteria
All Sites	55	80	Or post $\leq$ pre
Upstream of OFW	80	90	Or post $\leq$ pre
Upstream of Impaired Water	80	80	And post $\leq$ pre plus net improvement for the pollutant of concern
	Or basin specific criteria and net improvement for the pollutant of concern		
Upstream Impaired + OFW	95	95	And post $\leq$ pre plus net improvement
Redevelopment	45	80	N/A
Redevelopment + OFW	60	90	N/A
Redevelopment + Impaired	45	80	And net improvement for the pollutant of concern

Adapted from: Kevin Coyne, Florida Stormwater Association, 2025



SB 848 Clarified Third-Party Treatment

Before SB 848:

- Compensating stormwater treatment only authorized in ERP rules
- RSMS authority only contained in Applicant's Handbook
- No clear tie-in for WQEA enhancement credits

After SB 848:

- Compensating stormwater treatment recognized in statute
- RSMS transfer of responsibility expressly authorized by statute
- WQEA credits and RSMS allocations both recognized as compliance options



Standard BMP Efficiencies

Standard BMP Type	Minimum Design Requirements	TN Removal Efficiency*	TP Removal Efficiency*	TN WD Train Efficiency*	TP WD Train Efficiency*
Wet Detention	1" or 2.5"*Imp	39%	65%		
Retention	0.5"	48%	48%	66%	82%
Retention	1.0"	71%	71%	80%	89%
Detention w/Sand Filtration	0.5"	12%	12%		
Detention w/B&G Filtration	0.5"	36%	46%	67%	72%

*Removal efficiencies are approximate and will vary based on location and design



Smart Pond Webinar Series

Options for Meeting New Requirements

1. Reduce Runoff
2. Standard BMPs
3. Alternative Designs
4. Green Stormwater Infrastructure (GSI)
5. Other BMPs – CMAC (i.e. Smart Ponds)
6. Offsite Compensating Treatment
7. Stormwater Nutrient Credits (SNCs™)



New Calculation Tools

Feature		
New Rule Requirements	✓	✓
Multiple Catchments	✓	✓
Multiple Outlets	✓	✓
GIS Based		✓
Includes Soil and Land Use Data		✓
Calculates Required Removal %	✓	✓
Includes Cost Analysis	✓	
Alternatives Analysis		✓
Discovery Curves	✓	
Full Water Quality Report		✓



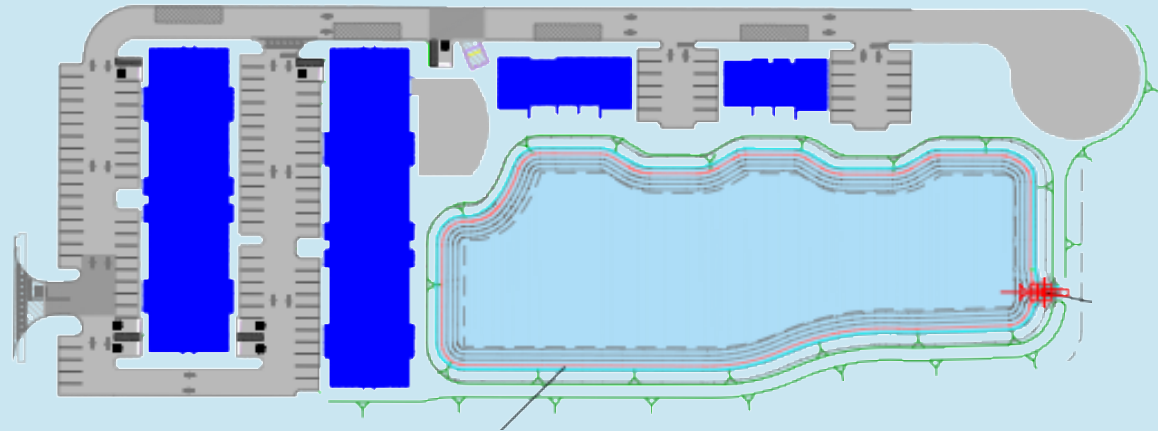
FSA EF BMP Life-Cycle Costing Tool

1. Collaborative with:
 1. WMDS
 2. FDEP
 3. FSA Partners
2. Provides a consistent procedure
3. Available to members and non-members at:
<https://www.florida-stormwater.org/research#BMP>
4. [Excel Spreadsheet](#)



Example Site 1

- Site Area: 5.51 acres developed
- Zone 2
- 51-inches/year rainfall
- Existing LU: Mix of Planted Pines and Wetlands
- Proposed LU: Multi-family
- Soils: A/D
- Existing Impervious: 0%
- Proposed Impervious: 67%
- Proposed DCIA: 67%



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Adapted from: Kevin Coyne, Florida Stormwater Association, 2025



Site 1: Nutrient Loads and Required Removal

Nutrient Reduction Requirement			
Description:	TN (kg/yr)	TP (kg/yr)	
Pre-Development Load:	2.64	0.38	
Post-Development Load:	20.44	5.78	
Minimum Required Removal (OFW):	80%	90%	AH Vol I, 8.3.2(a)
Pre/Post Required Removal:	87.1%	93.4%	AH Vol I, 8.3.2(b)
Total Required Removal:	17.81	5.40	
	87.1%	93.4%	Greater of (a) or (b)



Standard BMP Efficiencies

Can we meet:
87.1% TN and 93.4% TP?

Standard BMP Type	Minimum Design Requirements	TN Removal Efficiency*	TP Removal Efficiency*	TN WD Train Efficiency*	TP WD Train Efficiency*
Wet Detention	1" or 2.5"*Imp	39%	65%		
Retention	0.5"	48%	48%	66%	82%
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*Removal efficiencies are approximate and will vary based on location and design



BMPFast

General Site Information (License Key: BMPHA5M-YJ0K)

Help and Documentation Project Name: SG Alt 1 - WD LZ BAM

Prepared By (Name):

Select Meteorological Zone for Project: Florida Zone 2 ?

Enter the Mean Annual Rainfall: 50.8 inches

Performance Standard of Surface Discharge Analysis: All sites non-exempted ?

Analysis: No

Select Treatment Options for individual performance, not in series or in multiple catchments. Catchment: SG Alt 1 - WD LZ BAM Analysis Type: All sites non-ex...

Catchment 1 SG Alt 1 - WD LZ BAM Catchment 2

Treatment Options

Retention Basin	Greenroof
Wet Detention	Rainwater Harvesting
Exfiltration Trench/Vault	Vegetated Buffer
Permeable Pavement	Vegetated Filter Strip
Stormwater Harvesting	Rain Garden
Surface Discharge Filter	Tree Well
Swale	User Defined
BMPs in Series	BMP is Defined BMP is Used

Catchment: 1 SG Alt 1 - WD LZ BAM
Selected BMP: BMP in Use: Multiple BMP

U- User Defined

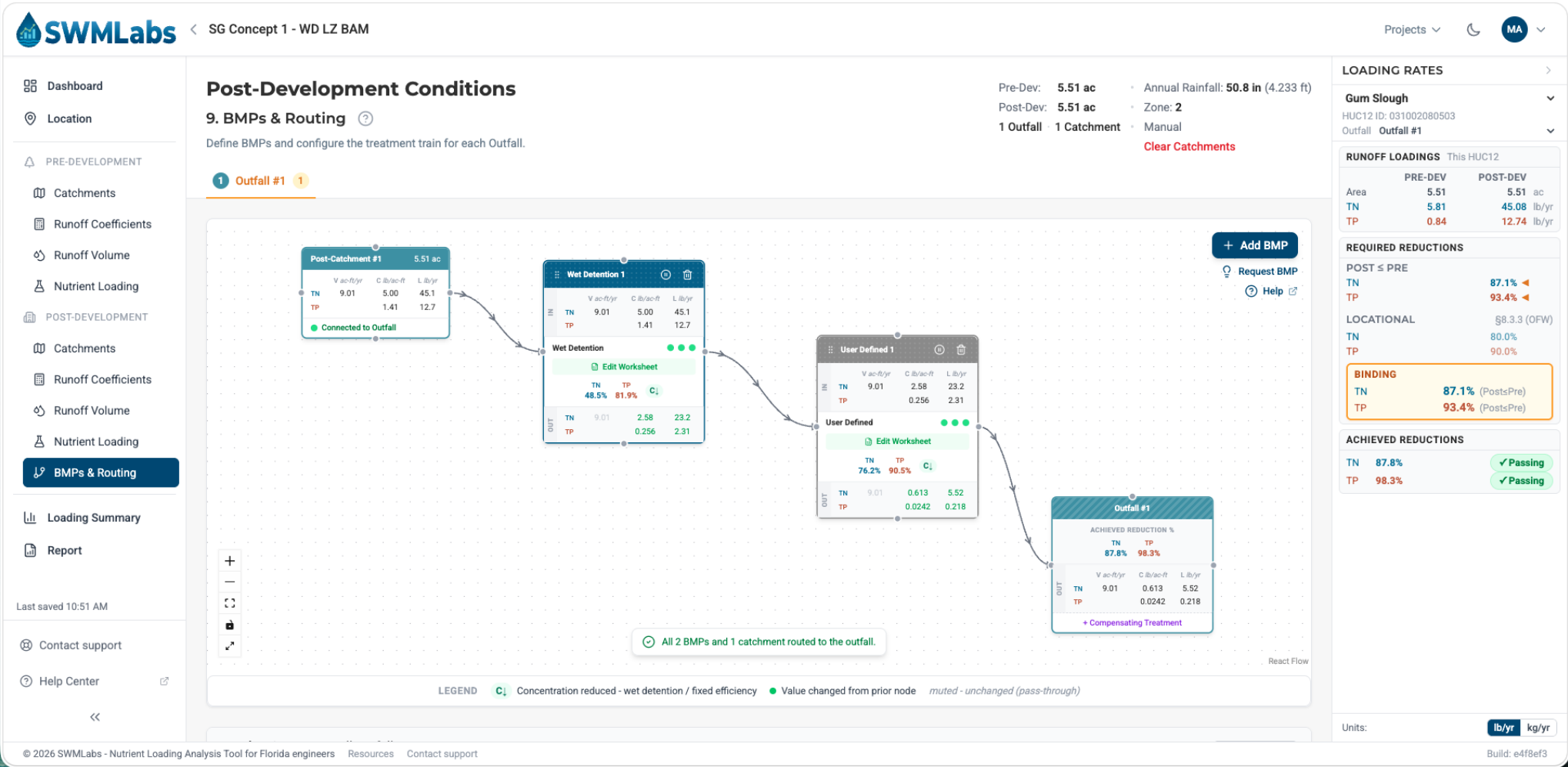
Treatment Help Tools Reset All

Catchment Cost Back

1. Enter Catchment
2. Enter Treatment
3. Configure Catchments
4. Summary Report
5. Complete Report
6. Cost Analysis
7. Discovery Plots



SWMLabs



Treatment Alternatives Considered:

1. Wet Detention with Littoral Zone and 760 lf BAM Filter
2. Wet Detention with Littoral Zone and Stormwater Harvesting @ 1.5 in/wk*
3. Pervious Pavers with Wet Detention and Stormwater Harvesting
4. Wet Detention Pond and Stormwater Nutrient Credits™



Some Notes on costs:

1. Costs presented here are based on conceptual design and are preliminary – these are not contractor costs
2. Costs will vary based on location, size of project and specific design options
3. Not all BMPs are designed the same
4. Quality of soil can significantly impact costs
5. OpEx costs are engineer's best judgement



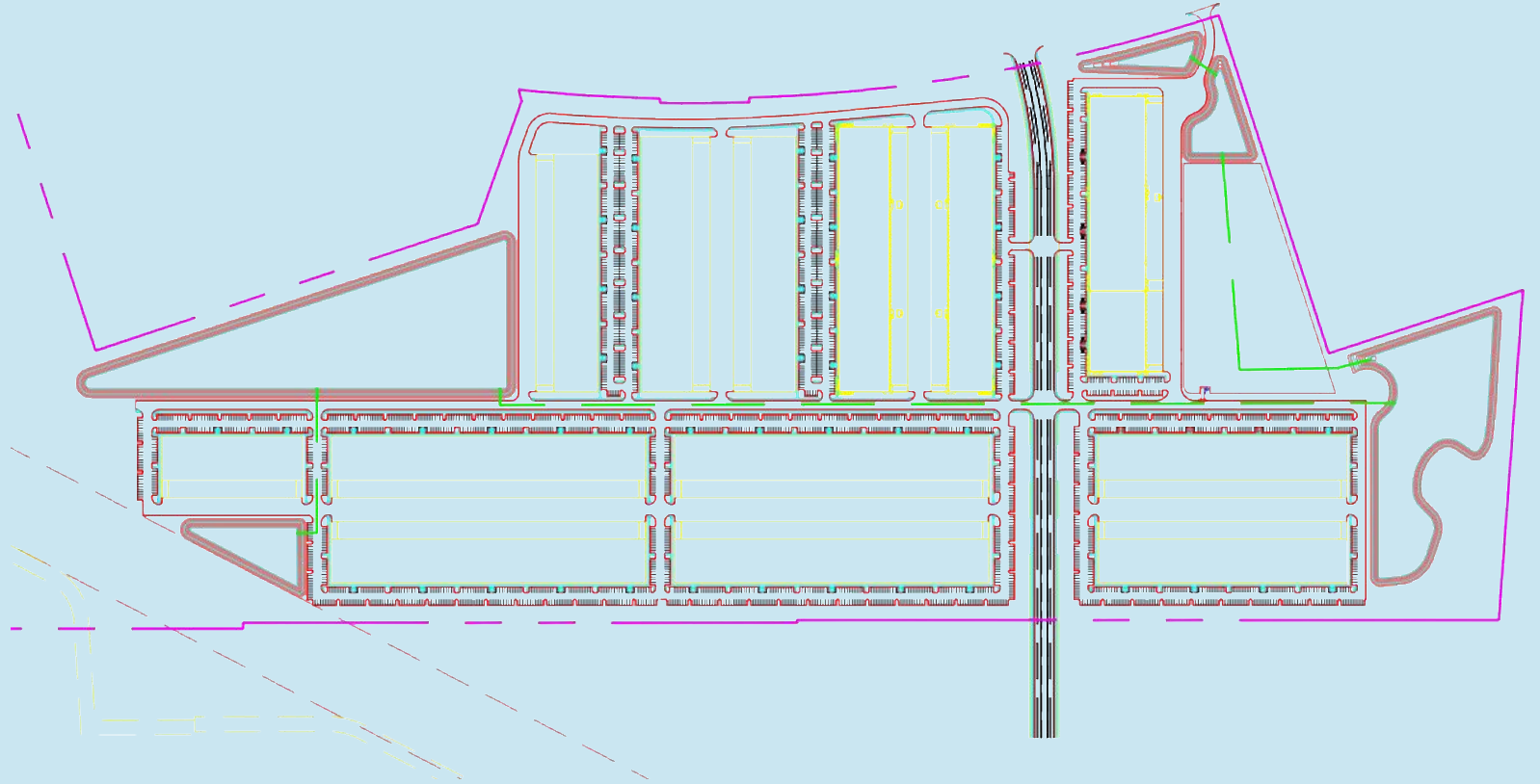
Site 1 Alternative Conceptual Cost Comparison

				Est. CapEx + 30yr OpEx		30yr \$/lb-TN		30yr \$/lb-TP	
BMP 1	BMP 2	BMP 3	Total Est. CapEx	Low	High	Low	High	Low	High
Wet Det w/LZ	760 lf BAM Filter		\$1,095,000	\$2,463,329	\$3,529,109	\$2,092	\$2,997	\$6,902	\$9,889
Wet Det w/LZ	Harvesting @1.5 in/wk*		\$657,500	\$788,772	\$788,772	\$670	\$670	\$2,210	\$2,210
Pervious Pavers	Wet Det	Harvesting @1.0 in/wk	\$1,255,000	\$2,163,707	\$3,204,190	\$1,837	\$2,721	\$6,063	\$8,978
Wet Detention	SNCs™		\$763,130	\$730,330	\$751,219	\$620	\$638	\$2,046	\$2,105



Example Site 2

- Site Area: 150 acres
- Zone 2
- 51-inches/year rainfall
- Existing LU: Mix of Upland and Wetlands
- Proposed LU: Industrial
- Existing Impervious: 0%
- Proposed DCIA: 80%
- Upstream of OFW



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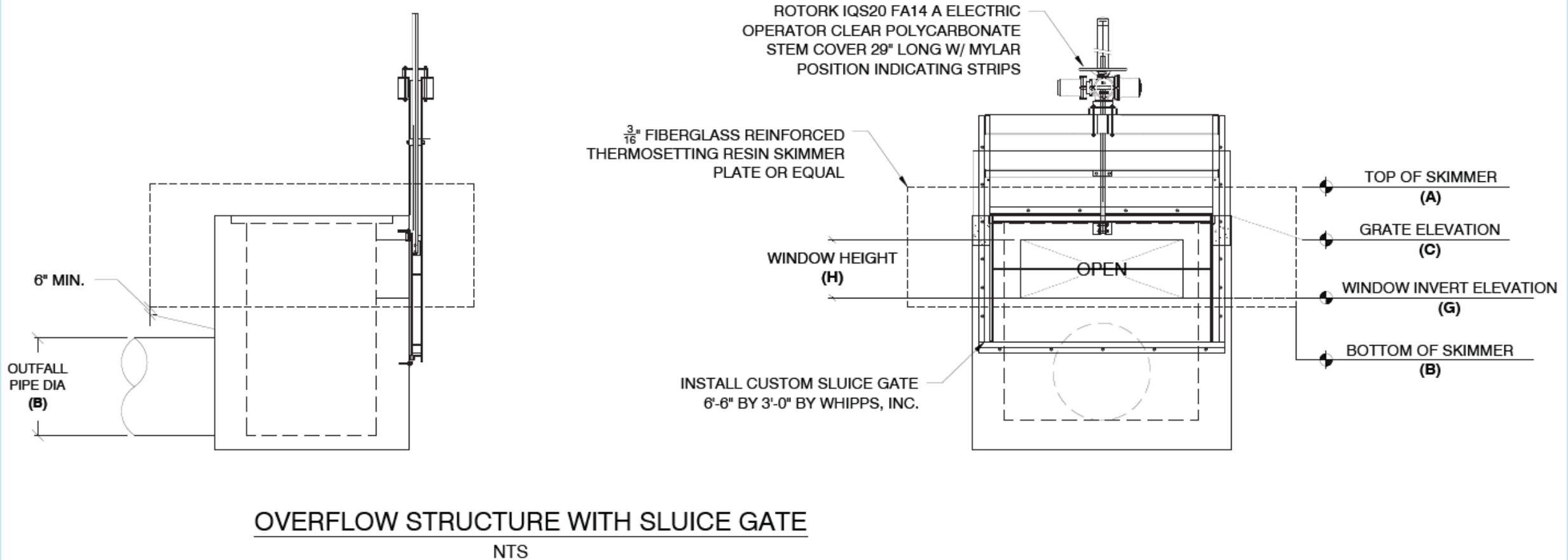


Site 2: Nutrient Loads and Required Removal

Nutrient Reduction Requirement			
Description:	TN (kg/yr)	TP (kg/yr)	
Pre-Development Load:	48.15	13.44	From BMPTrains
Post-Development Load:	511.59	110.85	From BMPTrains
Minimum Required Removal:	80%	90%	AH Vol I, 8.3.2(a)
Pre/Post Required Removal:	90.6%	87.9%	AH Vol I, 8.3.2(b)
Total Required Removal:	463.44	99.76	
	90.6%	90.0%	Greater of (a) or (b)



CMAC Structure



BMPFast

General Site Information (License Key: BMPHA5M-YJ0K)

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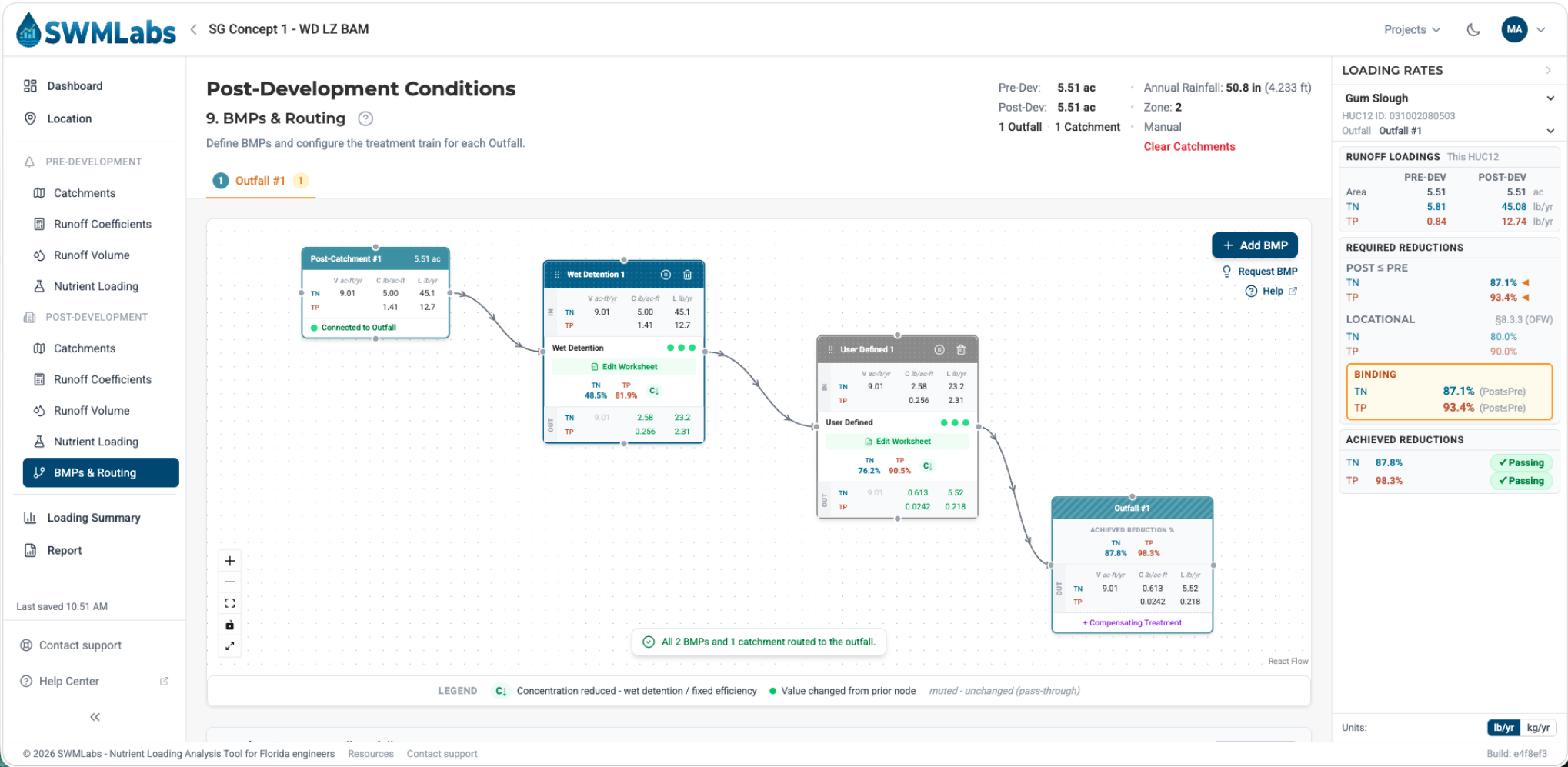
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SWMLabs



More Resources:

DISCOVER OUR WEBINAR SERIES

New Stormwater Rule: What You Need to Know — PowerPoint Slides

Explore expert insights on Florida's new stormwater rule with the official PowerPoint slides from our recent webinar featuring Mark Thomasson, P.E. Whether you attended the live session or want to review the key updates and practical guidance, this presentation is a valuable resource for engineers and project managers navigating the updated regulations.

Avoiding Offsite Impacts with Wetland Assimilative Capacity Analysis Webinar

The webinar explains how Florida's updated stormwater rule allows more design flexibility through strategies like off-site compensatory treatment and RSMS, which may involve discharging partially treated runoff to wetlands. It explores wetland assimilative capacity and its significance for demonstrating that your project

Real-Time Data, Real-World Impact: Smarter Stormwater Solutions with CMAC Technology Webinar

Watch our recent webinar with Jeff Littlejohn, P.E., as he delves into how CMAC (Continuous Monitoring and Adaptive Control) technology is transforming stormwater management. This session is packed with insights on how Smart Pond technology can save time, reduce costs, and

New Regulations & Nutrient Credits Explained Webinar

Explore the latest updates to Florida's stormwater regulations and learn how to meet the new treatment requirements using stormwater nutrient credits™ (SNCs) from regional stormwater management systems (RSMSs). Led by Mark Thomasson, P.E., the session covers the new treatment requirements, non-standard options for meeting new requirements, exemptions and

<https://nationalstormwater.com/resources/>



Smart Pond Webinar Series



Contact NST

For info on SNCs™ and CMAC:

Email

info@NationalStormwater.com

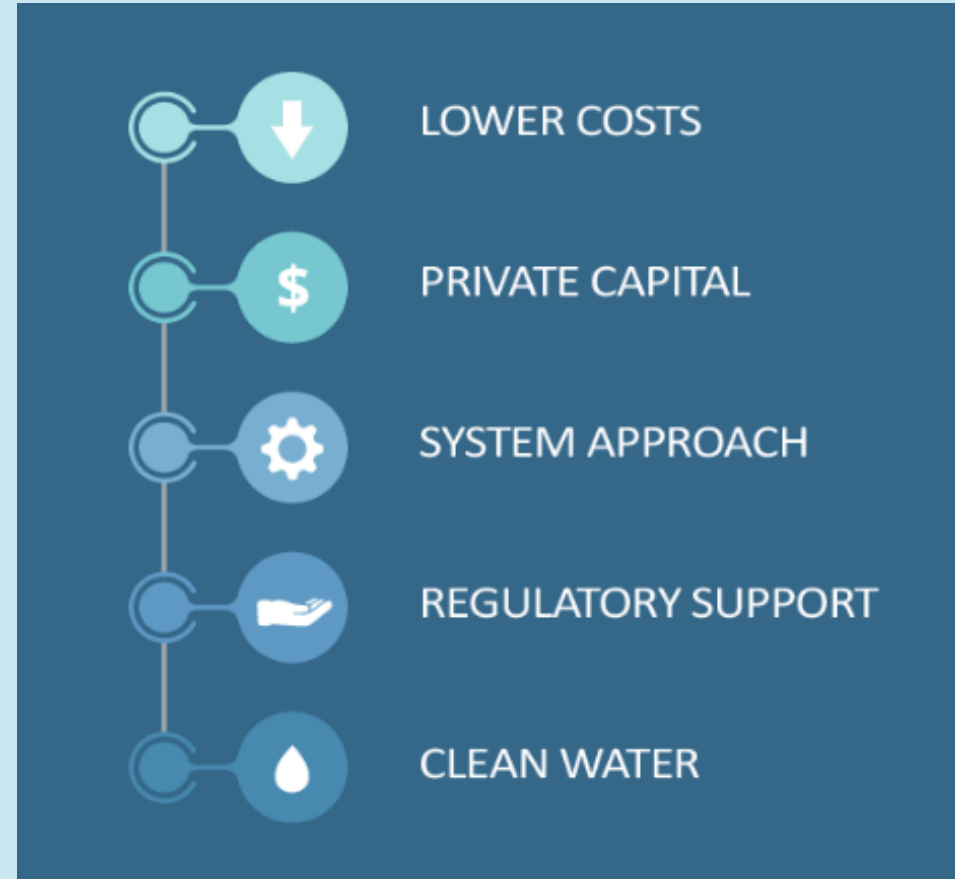
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