

# Restoration Strategies Science Plan Progress

Long-Term Plan  
Communications Meeting  
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# Current Science Plan Studies

Study	Updates since last quarter
Use of Soil Amendments/Management to Control P Flux	No new updates; awaiting implementation of soil inversion in STA-1W
Development of Operational Guidance for FEB/STA Regional Operational Plans	No new updates; final reports by April 2017
Investigation of STA-3/4 Periphyton-based Stormwater Treatment Area (PSTA) Performance, Design and Operational Factors	Interim reports completed; data analysis and additional testing are ongoing
Evaluation of the Influence of Canal Conveyance Features on STA and FEB Inflow and Outflow P Concentrations	No new updates; final report in 2017
Evaluation of Sampling Methods for TP	No new updates; follow-up study is planned for 2018
Evaluation of Inundation Depth and Duration for Cattail Sustainability	In situ results on water depth ,cattail biomass, and density in STA-1W Cell 2A and STA-3/4 Cell 2A
Investigation of Rooted Floating Aquatic Vegetation (rFAV) in STAs	Ongoing sampling to evaluate differences between rFAV + SAV patches & SAV only patches
Evaluate Phosphorus Sources, Forms, Flux, & Transformation Processes in the STAs	Ongoing field activities and data analyses
STA Water and P Budget Improvements	Improvements in flow data is continuing; water

## Use of Soil Amendments/Management to Control Phosphorus Flux

*Can STA soil P flux be reduced with soil amendments/management techniques?*

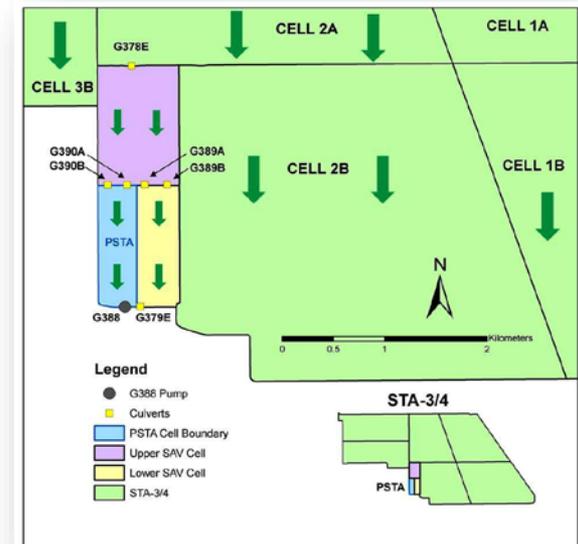
- Final report on technology review completed
- Evaluate effectiveness of soil inversion in lowering water TP
  - Will be performed at STA-1W Expansion Area
  - Expected to commence in early 2019



## STA-3/4 Periphyton-based Stormwater Treatment Area (PSTA) Performance, Design & Operational Factors

*Determine factors that contribute to superior treatment performance in PSTA Cell in STA-3/4 are being assessed*

- PSTA cell consistently achieved FWM outflow TP <13  $\mu\text{g}/\text{L}$  (2008-2016)
- Increased hydraulic & TP loading in the pulse test did not adversely effect treatment performance
- Lower outflow TP observed during the wet season
- When TP inflow to the PSTA cell was > 22  $\mu\text{g}/\text{L}$ , outflow TP from the PSTA cell was generally > 13  $\mu\text{g}/\text{L}$
- Higher seasonal flow and higher TP concentrations effect performance



## Evaluation of the Influence of Canal Conveyance Features on STA & FEB Inflow & Outflow P Concentrations

*Determine whether P changes when conveyed through STA inflow & outflow canals*

Canal behaved as a P sink	STA-1E Discharge Canal	STA-3/4 Supply/Inflow Canal
Canal behaved as a P source	STA-1 Inflow Basin Canal	
Canal source or sink for TP?	STA-2 Supply/Inflow Canal	
Canal ongoing analysis	STA-1W Discharge Canal	STA-2 Discharge Canal

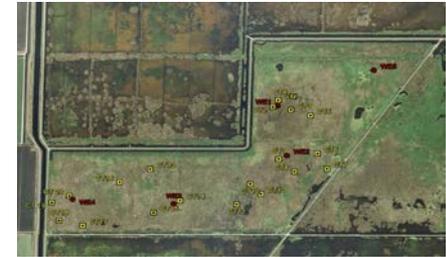


# Evaluation of Inundation Depth and Duration for Cattail Sustainability

*Determine inundation depth & duration threshold to sustain cattail in the STAs*

## In-situ study

- STA 1W Cell 2A
  - Water depth 38 - 61 cm 59%, >76 cm only 8.5%
- STA-3/4 Cell 2A
  - Water depth at inflow 61 - 76 cm 52%, >76 cm 42%
  - Water depth at outflow 38 - 61 cm 78%, >76 cm only 3%



- Cattail biomass in all plots not significantly different
- Cattail density STA-1W Cell 2A low compared to other studies as this cell is in decline
- Cattail density from STA-3/4 Cell 2A considerably higher & healthier than in STA-1W Cell 2A, but not significantly different from inflow to outflow despite differences in water depth



**Cattail grow-in for the test cells will in 2017**

## Investigation of Rooted Floating Aquatic Vegetation (rFAV) in STAs

*Can rooted FAV further reduce STA phosphorus discharge?*

- rFAV species in low P areas in WCAs and in some STAs
- Comparing surface water quality in **rFAV+SAV** to **SAV-only** areas
- To evaluate effects of the rFAV on surface water quality
- Initial sampling has been completed; study is continuing in 2017



## Evaluate Phosphorus Sources, Forms, Flux, & Transformation Processes in the STAs

*Characterize P sources, speciation, cycling, & transport in STAs, and understand mechanisms and factors influencing P reduction in low P environment.*

Tasks	Status
Data mining	Completed
Surface water quality <ul style="list-style-type: none"> <li>• <b>Transect sampling *</b></li> </ul>	Ongoing
<b>Soil characterization *</b>	Baseline completed; additional analyses ongoing
Vegetation assessment	Baseline completed; continuing
Fauna surveys	Ongoing
Particle dynamics	Ongoing
Organic P speciation	Ongoing
Microbial activity assays	Ongoing
Data synthesis & integration	Planning phase



**\* Today's presentation**

# Summary

- Restoration Strategies Science Plan Developed to optimize STA treatment performance to meet WQBEL
- Nine initial studies in various stages of implementation
- Science Plan updates and subsequent results presented in the annual SFER (Chapter 5C)

[www.sfwmd.gov/restorationstrategies/](http://www.sfwmd.gov/restorationstrategies/)