Florida Department of Environmental Protection

Division of Environmental Assessment and Restoration

# *Lake Jesup Basin Management Action Plan (BMAP) Technical Conference Call*

***September 21, 2017***





# Agenda

1. Modifications Since Last Meeting
2. Revised Allocations
3. Project Credits
4. Monitoring Plan/Network
5. Next Steps
6. Questions/Comments

# Modifications Since Last Meeting

# Need for TN Reductions

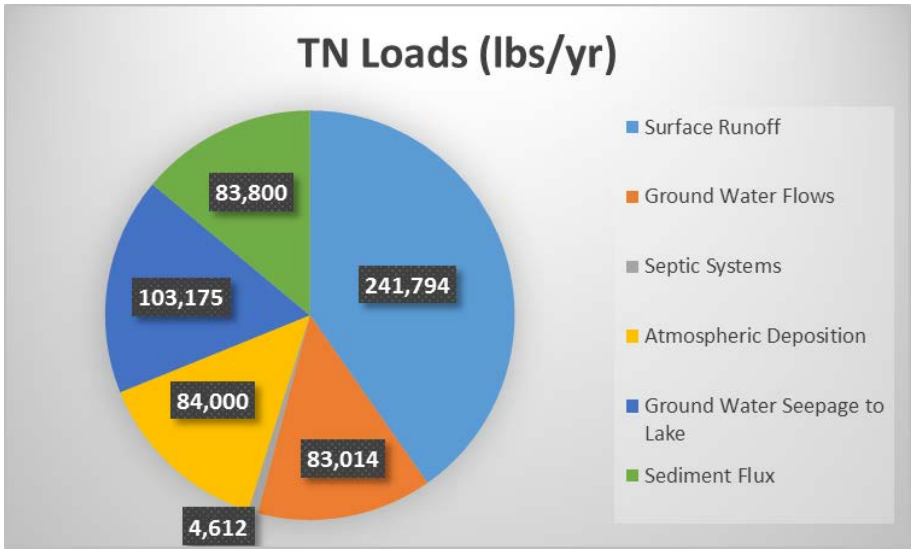
- TMDL includes TN reduction requirements.
- BMAP Section 2.4: Technical Uncertainties Addressed Through Modification of TMDL Information and BMAP Assumptions
  - "At the time of the TMDL, information on the rate of nitrogen-fixation in Lake Jesup was not available…Due to this uncertainty, this BMAP focuses on external TP load reductions. Upon recalculation of the TMDL, the need to modify the BMAP to include external TN load reductions will be evaluated."
- BMAP Section 2.5.1: Rationale for the TP Focus
  - "In order to move forward with efforts to improve the lake water quality, this BMAP focuses only on the TP reductions. Concurrent with the BMAP process and implementation, studies to determine the effects of nitrogen-fixation have been completed and are being conducted. The information from these studies will be utilized to refine the TMDL and BMAP, as necessary, and to guide future project implementation efforts."

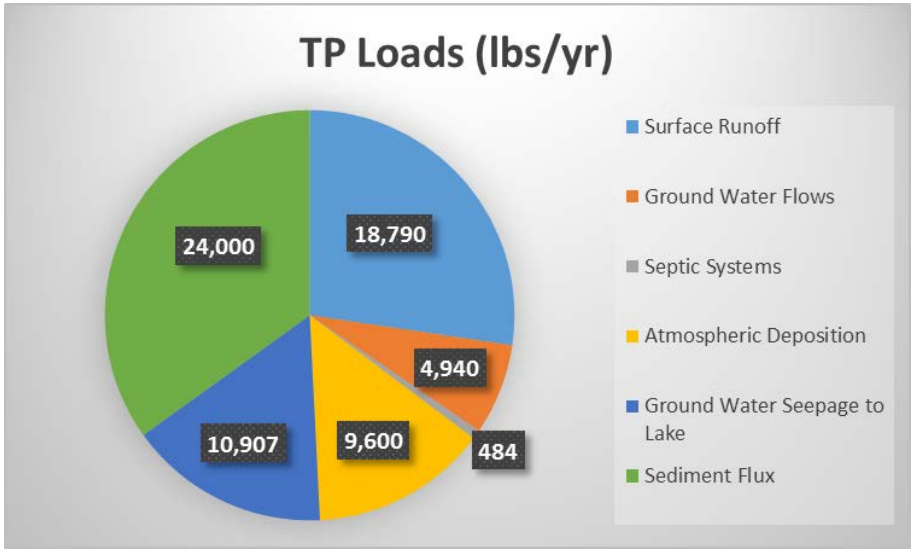
# TN Reductions

- Questions about amount of TN reductions needed:
  - Scenario presented at last meeting required reductions beyond what were needed to achieve the TN TMDL.
- Several scenarios were run to determine reductions needed.
- Updated allocations with new percent required reductions.
  - TN required reductions are now much less.

# Details on Loads by Source

| Parameter | Surface Runoff (lbs/yr) | Ground Water Flows (lbs/yr) | Septic Systems (lbs/yr) | Atmospheric Deposition (lbs/yr) | Ground Water Seepage to Lake (lbs/yr) | Sediment Flux (lbs/yr) |
|---|---|---|---|---|---|---|
| TN | 241,794 | 83,014 | 4,612 | 84,000 | 103,175 | 83,800 |
| TP | 18,790 | 4,940 | 484 | 9,600 | 10,907 | 24,000 |



# Seminole County Monitoring

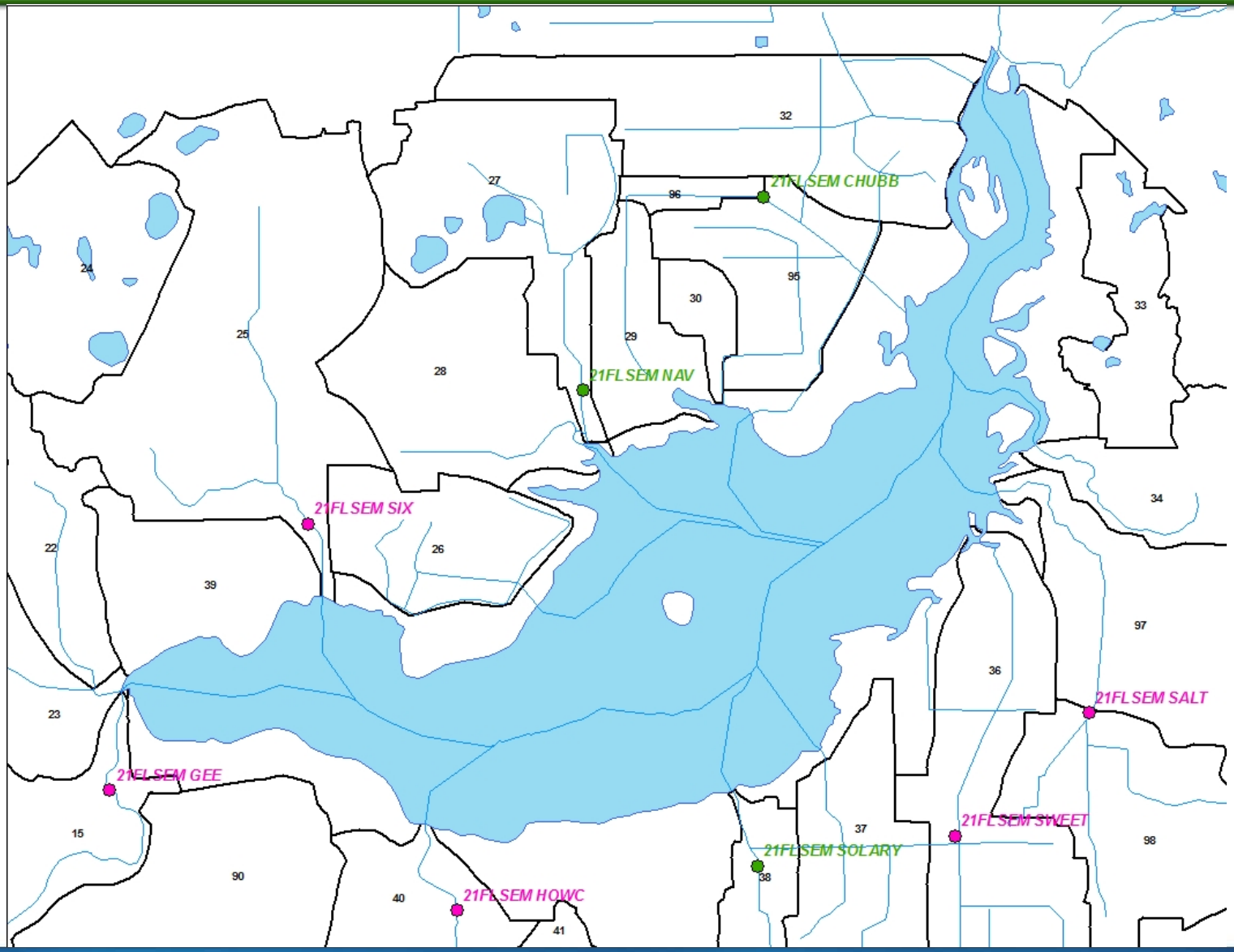
## Stations Used in Model Calibration and Validation

| Waterbody/Seminole County Station | TN % Difference in Medians | TP % Difference in Medians |
|---|---|---|
| Navy Canal (subwatershed 27)/ | 4% | 23% |
| 21FLSEM NAV | Very Good | Very Good |
| Solary Canal/ Sweetwater Creek (subwatershed 38)/ | 8% | -58% |
| 21FLSEM SOLARY | Very Good | Fair |
| Chub Creek (subwatershed 96)/ | 12% | -8% |
| 21FLSEM CHUBB | Very Good | Very Good |

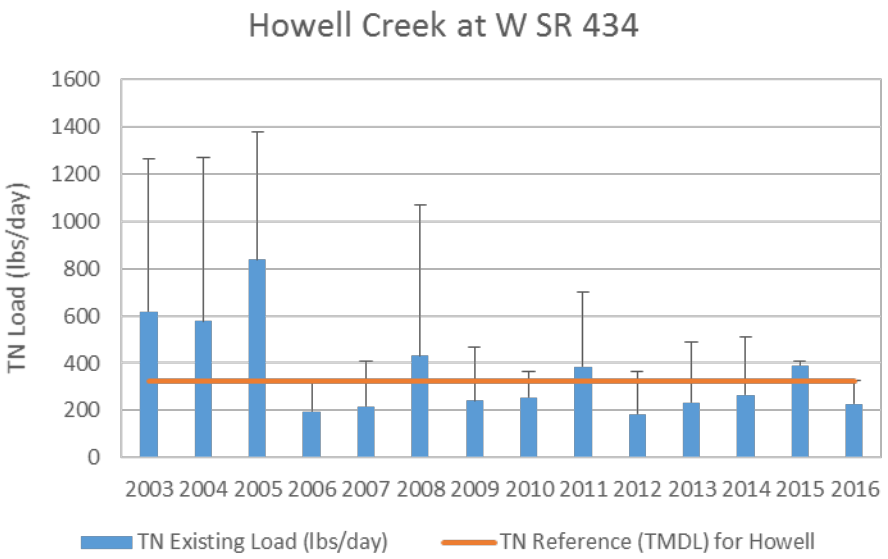
## Other Seminole County Stations Near Lake Jesup

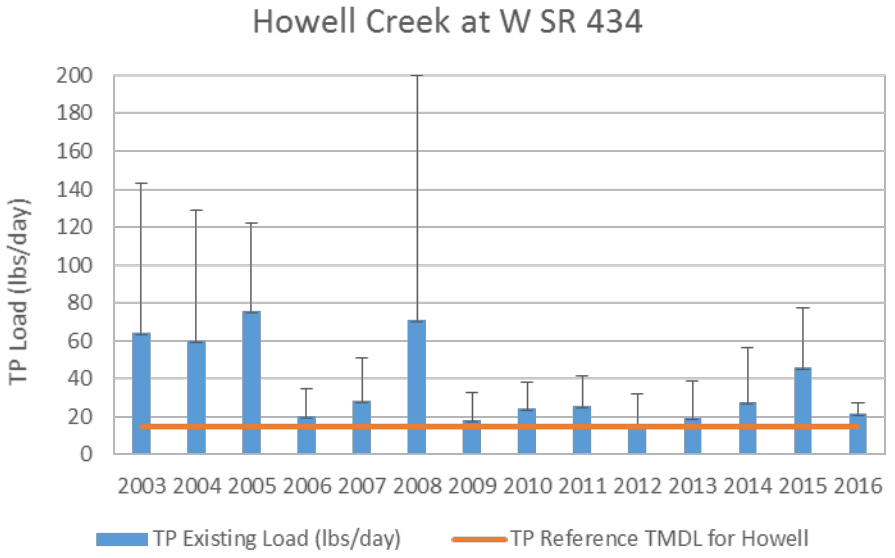
| Waterbody/Seminole County Station | TN % Difference in Medians | TP % Difference in Medians |
|---|---|---|
| Gee Creek (subwatershed 15)/ | 13.0% | -63.3% |
| 21FLSEM GEE | Very Good | Poor |
| Soldiers Creek (subwatershed 23)/ | 44.3% | -29.4% |
| 21FLSEM SOL | Good | Very Good |
| Six Mile Creek (subwatershed 25)/ | 37.4% | -60.0% |
| 21FLSEM SIX | Good | Fair |
| Sweetwater Creek (subwatershed 36)/ | -3.3% | -81.7% |
| 21FLSEM SWEET | Very Good | Poor |
| Howell Creek (subwatershed 40)/ | 76.8% | -16.9% |
| 21FLSEM HOWC | Poor | Very Good |
| Salt Creek (subwatershed 98)/ | -31.3% | -4.4% |
| 21FLSEM SALT | Good | Very Good |

# Seminole County Monitoring



# Concentration vs. Load



# Missing BMPs

- Compared stakeholder coverage to BMP coverage in model and added credit for missing BMPs.
- Revised credits to assign Seminole County credit for their BMPs that are in incorporated areas.
- Added credit for the Solary project to the Seminole County, Oviedo, and Winter Springs project tables.
- Separated out Site 10 and calculated reductions from existing onsite stormwater system.

# Other Updates

- Provided loads at the source and within the subwatershed, in addition to loads to Lake Jesup.
- Updated individual GIS files with calculations.
- Added/updated projects based on information received.

# Revised Allocations

# Acres and Starting Loads

| Entity | Area (Acres) | TN Load (lbs/yr) | TP Load (lbs/yr) |
|---|---|---|---|
| Agriculture | 5,733 | 36,797 | 2,813 |
| City of Altamonte Springs | 235 | 289 | 11 |
| City of Casselberry | 3,257 | 14,643 | 986 |
| City of Lake Mary | 2,091 | 4,966 | 325 |
| City of Longwood | 2,064 | 5,550 | 326 |
| City of Maitland | 1,229 | 3,200 | 247 |
| City of Orlando | 3,814 | 282 | 26 |
| City of Oviedo | 2,504 | 23,309 | 1,866 |
| City of Sanford | 3,997 | 21,286 | 2,399 |
| City of Winter Park | 3,981 | 4,616 | 309 |
| City of Winter Springs | 5,540 | 43,969 | 2,994 |
| FDOT District 5 | 1,030 | 4,645 | 402 |
| Orange County | 1,680 | 3,648 | 126 |
| Seminole County | 14,432 | 96,303 | 6,300 |
| Town of Eatonville | 112 | 95 | 9 |
| Turnpike Authority | 668 | 5,107 | 466 |
| Site 10 | 532 | 3,835 | 266 |
| Natural Lands | 32,360 | 56,881 | 4,347 |
| ***Total*** | ***85,261*** | ***329,420*** | ***24,214*** |

# Required Reductions

- TMDL in rule (62-304.505[1], F.A.C.) is a load:
  - 545,203 lbs/yr of TN and 41,888 lbs/yr of TP.
- To determine if these loads are being met, need to achieve in-lake concentrations (not part of rule):
  - 1.32 mg/L of TN and 0.094 mg/L of TP.
- TMDL estimates a 95% reduction in nitrogen fixation associated with reducing watershed loading to TMDL target:
  - Decrease in nutrient loading will decrease the phytoplankton and nitrogen fixer biomass.
  - Decrease in TP loading into the system may make the system less nitrogen limited.

# Required Reductions, cont.

- To meet TMDL, other sources (both watershed and in-lake) need to achieve reductions of 16.7% TN and 45.5% TP.

| Source | TN Existing Load (lbs/yr) | TP Existing Load (lbs/yr) | TN % Reduction | TP % Reduction | TN Allowable Load (lbs/yr) | TP Allowable Load (lbs/yr) |
|---|---|---|---|---|---|---|
| Watershed | 329,420 | 24,214 | 16.7% | 45.5% | 274,407 | 13,197 |
| Ground Water Seepage to Lake | 103,175 | 10,907 | 16.7% | 45.5% | 85,945 | 5,944 |
| Atmospheric Deposition | 84,000 | 9,600 | 0.0% | 0.0% | 84,000 | 9,600 |
| Nitrogen Fixation | 633,894 | 0 | 95.0% | 0.0% | 31,695 | 0 |
| Sediment Flux | 83,800 | 24,000 | 16.7% | 45.5% | 69,852 | 13,080 |
| Total Load | ***1,234,289*** | ***68,721*** | ***N/A*** | ***N/A*** | ***545,774*** | ***41,821*** |

# Required Reductions, cont.

- Ran model scenarios to confirm that these load reductions would achieve in-lake TMDL concentrations.
- Reductions are required from both anthropogenic watershed sources and in-lake sources.
- Stakeholders are providing projects to address watershed load reductions.
- SJRWMD study to evaluate potential in-lake treatment options is ongoing.
  - In-lake projects will be added to BMAP as feasible options are determined.

# Allowable Loading to Meet the TMDL

| Parameter | Watershed Starting Load (lbs/yr) | TMDL % Reduction | Allowable Watershed Load (lbs/yr) |
|---|---|---|---|
| TN | 329,420 | 16.7% | 274,407 |
| TP | 24,214 | 45.5% | 13,197 |

| Load Source | TN Load (lbs/yr) | TP Load (lbs/yr) |
|---|---|---|
| TMDL Allowable Load | 274,407 | 13,197 |
| Natural Areas Load | 56,881 | 4,347 |
| Anthropogenic Target | 217,526 | 8,850 |

# Allocations

- Required reductions were assigned to stakeholders based on the percentage of each stakeholder's starting load.
- If a stakeholder is 10% of the anthropogenic starting load, then that stakeholder received 10% of the required reductions.
- This approach keeps the loading from each entity in the same proportion so each entity receives the same percent reduction requirement.

# Draft Required Reductions

| Entity | TN Starting Load (lbs/yr) | TN Reduction Required (lbs/yr) | % TN Reduction | TP Starting Load (lbs/yr) | TP Required Reduction (lbs/yr) | % TP Reduction |
|---|---|---|---|---|---|---|
| Agriculture | 36,797 | 7,428 | 20.2% | 2,813 | 1,560 | 55.5% |
| City of Altamonte Springs | 289 | 58 | 20.2% | 11 | 6 | 55.5% |
| City of Casselberry | 14,643 | 2,956 | 20.2% | 986 | 547 | 55.5% |
| City of Lake Mary | 4,966 | 1,002 | 20.2% | 325 | 180 | 55.5% |
| City of Longwood | 5,550 | 1,120 | 20.2% | 326 | 181 | 55.5% |
| City of Maitland | 3,200 | 646 | 20.2% | 247 | 137 | 55.5% |
| City of Orlando | 282 | 57 | 20.2% | 26 | 14 | 55.5% |
| City of Oviedo | 23,309 | 4,705 | 20.2% | 1,866 | 1,035 | 55.5% |
| City of Sanford | 21,286 | 4,297 | 20.2% | 2,399 | 1,330 | 55.5% |
| City of Winter Park | 4,616 | 932 | 20.2% | 309 | 171 | 55.5% |
| City of Winter Springs | 43,969 | 8,875 | 20.2% | 2,994 | 1,660 | 55.5% |
| FDOT District 5 | 4,645 | 938 | 20.2% | 402 | 223 | 55.5% |
| Orange County | 3,648 | 736 | 20.2% | 126 | 70 | 55.5% |
| Seminole County | 96,303 | 19,439 | 20.2% | 6,300 | 3,493 | 55.5% |
| Town of Eatonville | 95 | 19 | 20.2% | 9 | 5 | 55.5% |
| Turnpike Authority | 5,107 | 1,031 | 20.2% | 466 | 258 | 55.5% |
| Site 10 | 3,835 | 774 | 20.2% | 266 | 147 | 55.5% |
| ***Total*** | ***272,539*** | ***55,013*** | **N/A** | ***19,867*** | ***11,017*** | ***N/A*** |

# Draft BMAP Reductions

- Proposal to achieve at least 50% of the required reductions during the next five years.

| Entity | TN BMAP Iteration Required Reductions (lbs/yr) | TN BMAP Iteration Required Reductions (lbs/yr) |
|---|---|---|
| Agriculture | 3,714 | 780 |
| City of Altamonte Springs | 29 | 3 |
| City of Casselberry | 1,478 | 273 |
| City of Lake Mary | 501 | 90 |
| City of Longwood | 560 | 90 |
| City of Maitland | 323 | 69 |
| City of Orlando | 29 | 7 |
| City of Oviedo | 2,353 | 517 |
| City of Sanford | 2,148 | 665 |
| City of Winter Park | 466 | 86 |
| City of Winter Springs | 4,438 | 830 |
| FDOT District 5 | 469 | 111 |
| Orange County | 368 | 35 |
| Seminole County | 9,720 | 1,747 |
| Town of Eatonville | 10 | 2 |
| Turnpike Authority | 515 | 129 |
| Site 10 | 387 | 74 |

# Project Credits

# Project Eligibility

- Education efforts and non-structural projects are eligible, regardless of when they were implemented.
  - These efforts are not in the HSPF model.
- Urban structural projects completed since January 1, 2013 and future projects are eligible for BMAP credit.
- Agricultural BMPs are eligible, regardless of when they were implemented.
  - These BMPs are not in the HSPF model.

# Project Credits to Date

| Entity | TN Required Reduction (lbs/yr) | TN Project Credits (lbs/yr) | % of TN Reductions Achieved | TP Required Reduction (lbs/yr) | TP Project Credits (lbs/yr) | % of TP Reductions Achieved |
|---|---|---|---|---|---|---|
| Agriculture | 7,428 | 12,928 | 174.1% | 1,560 | 941 | 60.3% |
| City of Altamonte Springs | 58 | 51 | 86.6% | 6 | 13 | 208.7% |
| City of Casselberry | 2,956 | 2,217 | 75.0% | 547 | 733 | 134.0% |
| City of Lake Mary | 1,002 | 592 | 59.1% | 180 | 97 | 53.6% |
| City of Longwood | 1,120 | 1,634 | 145.9% | 181 | 338 | 186.6% |
| City of Maitland | 646 | 48 | 7.4% | 137 | 4 | 2.7% |
| City of Orlando | 57 | 80 | 140.5% | 14 | 48 | 329.6% |
| City of Oviedo | 4,705 | 2,449 | 52.0% | 1,035 | 421 | 40.6% |
| City of Sanford | 4,297 | 13,667 | 318.1% | 1,330 | 2,848 | 214.1% |
| City of Winter Park | 932 | 743 | 79.8% | 171 | 321 | 187.7% |
| City of Winter Springs | 8,875 | 6,079 | 68.5% | 1,660 | 1,470 | 88.5% |
| FDOT District 5 | 938 | 1,807 | 192.8% | 223 | 902 | 404.9% |
| Orange County | 736 | 745 | 101.1% | 70 | 40 | 56.9% |
| Seminole County | 19,439 | 43,018 | 221.3% | 3,493 | 5,468 | 156.5% |
| Town of Eatonville | 19 | 1 | 5.2% | 5 | 0 | 2.1% |
| Turnpike Authority | 1,031 | 1,002 | 97.2% | 258 | 131 | 50.7% |
| Site 10 | 774 | 1,151 | 148.6% | 147 | 146 | 99.2% |

# Monitoring Plan/Network

# Monitoring Plan/Network

- Designed to:
  - Enhance the understanding of basin loads.
  - Track project implementation.
  - Identify long-term water quality trends.

- This information will:
  - Measure progress toward achieving the TN and TP TMDLs.
  - Recalculate BMAP allocations in next update, if needed.
  - Provide a foundation for continued improvement in cost-effective project implementation.

# BMAP Monitoring Network

- Sampling stations, parameters, frequency, and other elements of this strategy may be modified as appropriate to match changing environmental conditions and funding resources.

- Continue with…
  - Water quality monitoring on a monthly basis to asses conditions in the watershed and within Lake Jesup?
    - Information helps determine changes in water quality from the actions implemented as part of the BMAP.

  - Flow stations taking measurements every 15 or 60 minutes throughout the basin?

  - Storm event sampling?
    - Provides information on what pollutant loads are entering the tributaries due to high runoff conditions.

# Monitoring Plan Supplemental Information

- Entities in the basin also conduct sampling that provides supplemental data to meet the monitoring strategy objectives
  - This information was emailed prior to the meeting.

- Research studies
  - Provide information to address the current unknowns in the basin.
  - Provide information that will be utilized in an adaptive management context in next BMAP update.

# Next Steps

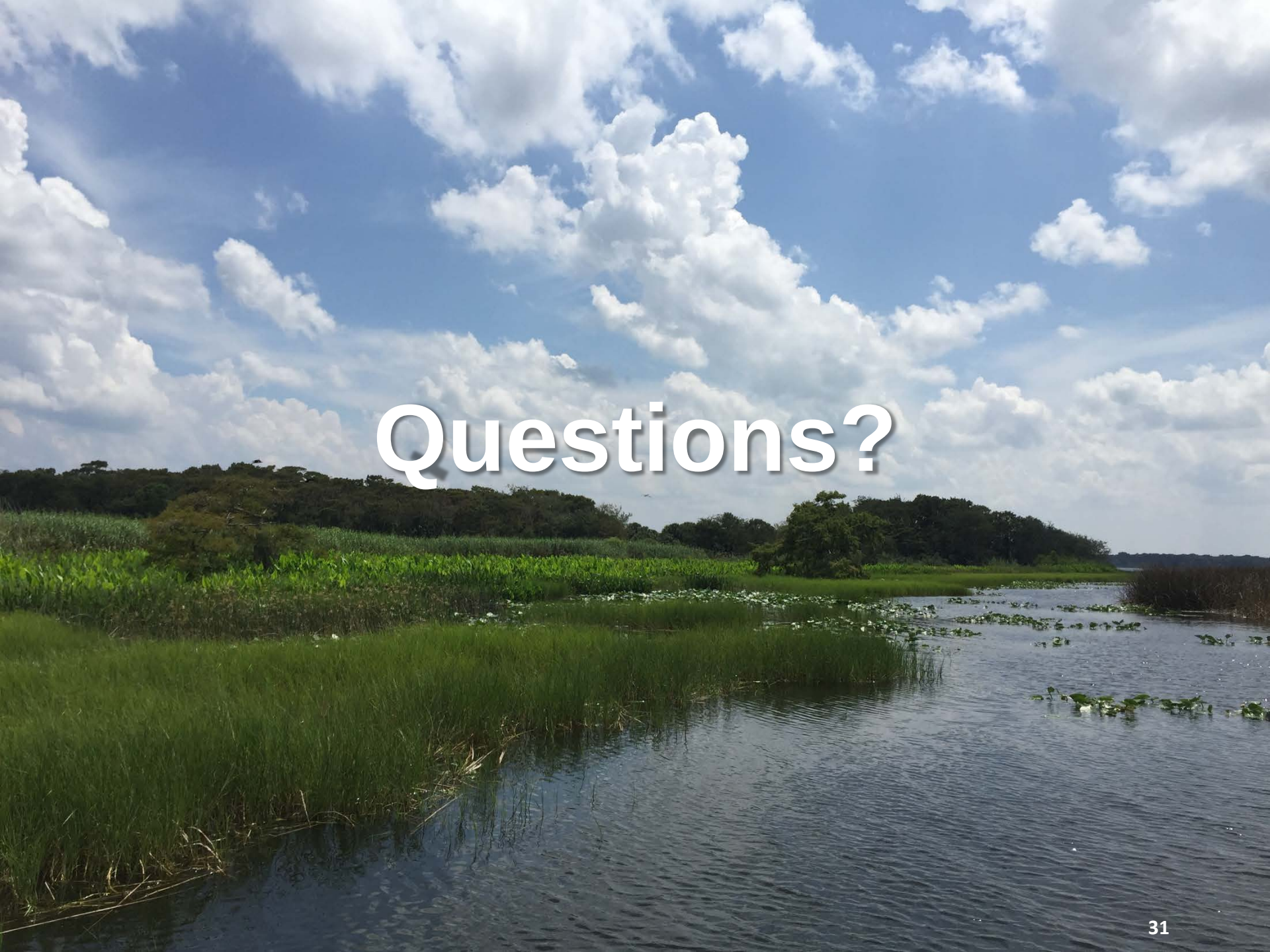
# Supplemental Report

- Supplemental Report will:
  - Present allocations or assignment of loading reductions for TP and TN (new).
  - Identify management actions/strategies to meet reductions.
  - Set target goal reduction of 50% in next five years.
  - Set deadline for achieving load reductions – 20 years after initial adoption of BMAP?

- Extension of 2010 BMAP.

# Next Steps

- Still time to add projects or revise credit calculations.
  - Provide comments/feedback/submit projects by October 6th.
- Draft Supplemental Report late-October/early-November.
- BMAP meeting mid-November.
- Adoption of Supplemental Report December/January.


Questions?