Final

2016 Progress Report for the Lake Okeechobee Basin Management Action Plan

Division of Environmental Assessment and Restoration
Water Quality Restoration Program
Florida Department of Environmental Protection

with participation from the
Lake Okeechobee Stakeholders

June 2017

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Acknowledgments

This *2016 Progress Report for the Lake Okeechobee Basin Management Action Plan* (BMAP) was prepared as part of a statewide watershed management approach to restore and protect Florida's water quality. It was prepared by the Florida Department of Environmental Protection with participation from the Lake Okeechobee stakeholders listed in the table on the next page.

For additional information on the watershed management approach in the Lake Okeechobee Basin, contact:

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List of Lake Okeechobee BMAP Participants

Type of Governmental or Private Entity	Participant
Counties	Glades Highlands Martin Okeechobee Orange Osceola Polk
Municipalities	City of Avon Park City of Kissimmee City of Edgewood City of Okeechobee City of Orlando City of Sebring
Special Districts	Okeechobee Utility Authority Istokpoga Marsh Watershed Improvement District Reedy Creek Improvement District Spring Lake Improvement District
Agencies	Florida Department of Agriculture and Consumer Services Florida Department of Environmental Protection South Florida Water Management District Southwest Florida Water Management District St. Johns River Water Management District Florida Department of Transportation District 1 Florida Department of Transportation District 4 Florida Department of Transportation District 5
Other Interested Parties	Agriculture Archbold Biological Station Audubon of Florida Conservancy of Southwest Florida Everglades Foundation Florida Fruit and Vegetable Association Florida Farm Bureau Lee County Board of County Commissioners Lykes Ranch U.S. Department of Agriculture Natural Resources Conservation Service One Florida Foundation Soil Water Engineering Technology, Inc. Southeast Milk, Inc. Sugar Cane Growers Cooperative of Florida

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List of Acronyms and Abbreviations

ACF	Flow Proportional Composite Autosampler
ac-ft	Acre-Feet
ac-ft/yr	Acre-Feet Per Year
ACT	Autosampler Composite Time Proportional
BCC	Board of County Commissioners
BMAP	Basin Management Action Plan
BMP	Best Management Practice
CDS	Continuous Deflective Separation (Unit)
CERP	Comprehensive Everglades Restoration Plan
cfs	Cubic Feet Per Second
CIB	Curb Inlet Basket
CY	Calendar Year
DEP	Florida Department of Environmental Protection
DWM	Dispersed Water Management
EAA	Everglades Agricultural Area
EAAEPD	Everglades Agricultural Area Environmental Protection District
ERP	Environmental Resource Permit
F.A.C.	Florida Administrative Code
FAVT	Floating Aquatic Vegetation Tilling
FDACS	Florida Department of Agriculture and Consumer Services
FDOT	Florida Department of Transportation
FEMA	Federal Emergency Management Agency
FRESP	Florida Ranchlands Environmental Services Project
F.S.	Florida Statutes
FY	Fiscal Year
FYN	Florida Yards and Neighborhoods
GIS	Geographic Information System
HWTT	Hybrid Wetland Treatment Technologies
IDS	Integrated Delivery Schedule
kg/yr	Kilograms Per Year
KRRP	Kissimmee River Restoration Project
lbs/yr	Pounds Per Year
LET	Load Estimation Tool
LOPP	Lake Okeechobee Protection Plan
LOW	Lake Okeechobee Watershed
LOWCP-P2TP	Lake Okeechobee Watershed Construction Project Phase II Technical Plan
MAPS	Managed Aquatic Plant Systems
MOU	Memorandum of Understanding
MS4	Municipal Separate Storm Sewer System
MSTU	Municipal Services Taxing Unit
mt	Metric Tons
mt/yr	Metric Tons Per Year
NEEPP	Northern Everglades and Estuaries Protection Program
NE-PPP	Northern Everglades Public Private Partnership

NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRP	Nutrient Reduction Plan
NSBB	Nutrient Separating Baffle Box
OAWP	Office of Agricultural Water Policy
O&M	Operations and Maintenance
PES	Payment for Environmental Services
POR	Period of Record
PSA	Public Service Announcement
QA/QC	Quality Assurance/Quality Control
SFER	South Florida Environmental Report
SFWMD	South Florida Water Management District
SLID	Spring Lake Improvement District
SR	State Road
SRF	State Revolving Fund
STA	Stormwater Treatment Area
STORET	Storage and Retrieval (Database)
SWET	Soil and Water Engineering Technology, Inc.
SWFWMD	Southwest Florida Water Management District
TBD	To Be Determined
TMDL	Total Maximum Daily Load
TN	Total Nitrogen
TP	Total Phosphorus
UF–IFAS	University of Florida Institute of Food and Agricultural Sciences
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USGS	U.S. Geological Survey
WAM	Watershed Assessment Model
WBID	Waterbody Identification (Number)
WCD	Water Control District
WMA	Water Management Alternative
WY	Water Year

Summary

Total Maximum Daily Load (TMDL)

In 2001, the Florida Department of Environmental Protection (DEP) adopted a total phosphorus (TP) TMDL for Lake Okeechobee after 9 segments in Lake Okeechobee were identified as impaired by TP. The TMDL is a total annual phosphorus load to Lake Okeechobee of 140 metric tons per year (mt/yr), of which 35 mt/yr fall directly on the lake through atmospheric deposition. The remaining 105 mt/yr of TP are allocated to the entire Lake Okeechobee Watershed (LOW), which consists of 9 sub-watersheds (**Figure S-1**). The attainment of the TMDL will be calculated using a 5-year rolling average of the monthly loads calculated from measured flow and concentration values. As DEP refines its load estimation model, sub-watershed expectations may be developed for future basin management action plan (BMAP) iterations.

Activities During the Reporting Period

During the second year following BMAP adoption, numerous efforts to improve water quality in the LOW have progressed. In addition to site-specific projects, the Coordinating Agencies—DEP, the South Florida Water Management District (SFWMD), and the Florida Department of Agriculture and Consumer Services (FDACS)—have continued work on other initiatives that will achieve nutrient reductions in the LOW.

During the reporting period (January 1, 2016, to December 31, 2016), Okeechobee County completed 2 projects: Oak Park (OK-2) and Lock 7 Bypass Culvert System (OK-7). Orange County completed the Lake Down Alum Treatment Facility (OC-28) and Lake Glen Mary study (OC-38), and the Spring Lake Improvement District (SLID) completed the construction of a Stormwater Treatment Area (STA) (SLID-1). The Florida Department of Transportation (FDOT) also began construction on 4 projects in the LOW.

In addition, the reduction potential for agricultural BMP program enrollment of 100 % of eligible acres was updated based on the September 2016 enrollment information provided by FDACS. Counties, municipalities, and other stakeholders continued to plan and implement water quality projects and management strategies in the watershed. **Figure S-2** shows progress towards the TP TMDL load reductions based on projects submitted for the six northern sub-watersheds.

Summary of Load Reductions

Phase I of the Lake Okeechobee BMAP will be carried out over a 10-year period. Load reductions are currently considered for projects located in the six northern sub-watersheds and this report reflects activities only 2 years into the 10-year phase. Much of the progress tracked over the first years of BMAP implementation has been on larger-scale initiatives and projects.

Water Quality Monitoring

Local entities (Osceola County, Orange County, City of Orlando, and City of Kissimmee) continued water quality monitoring consistent with the BMAP. The SFWMD also continued monitoring at stations in the BMAP monitoring plan (**Appendix D**).

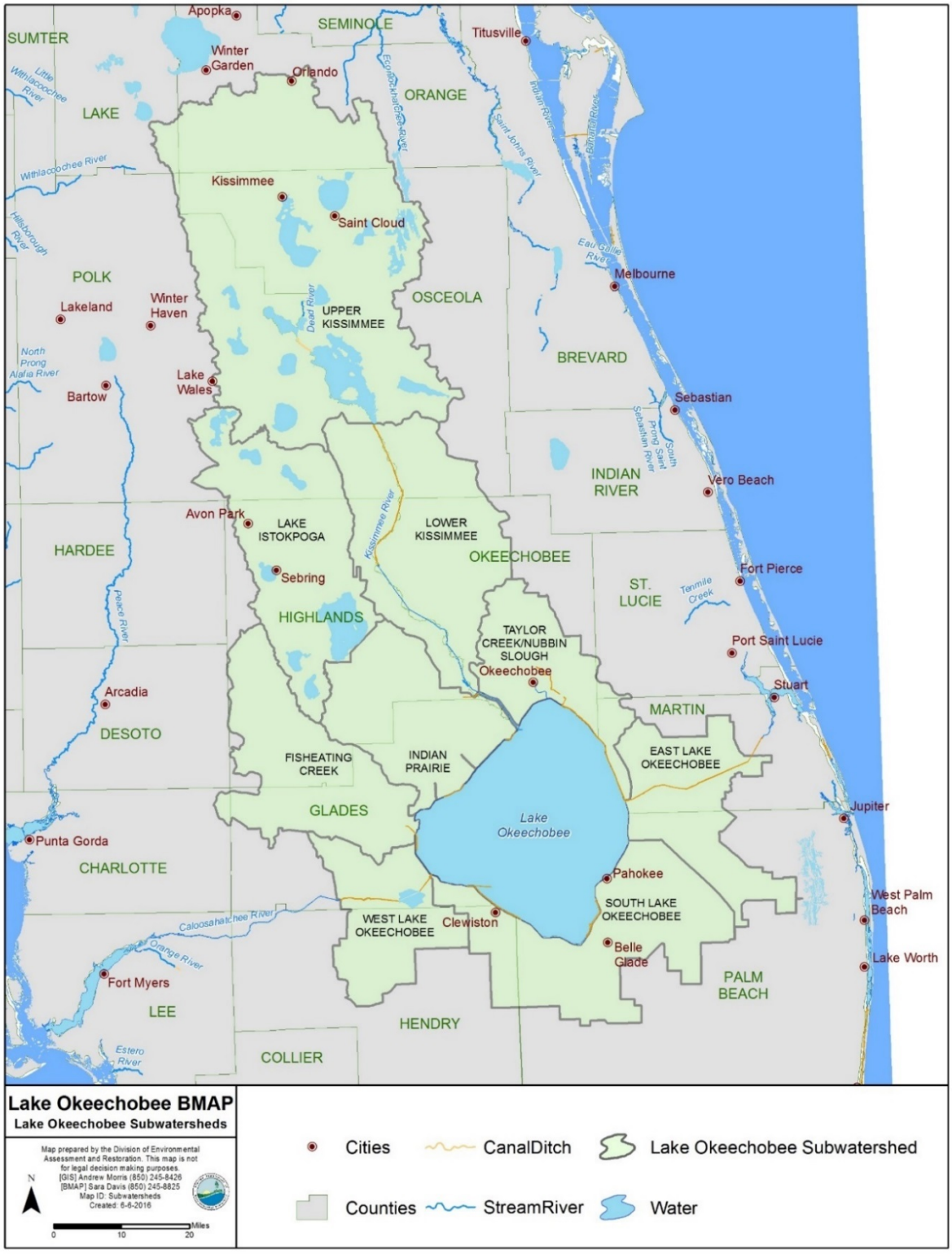

Figure S-1. Lake Okeechobee Sub-watersheds

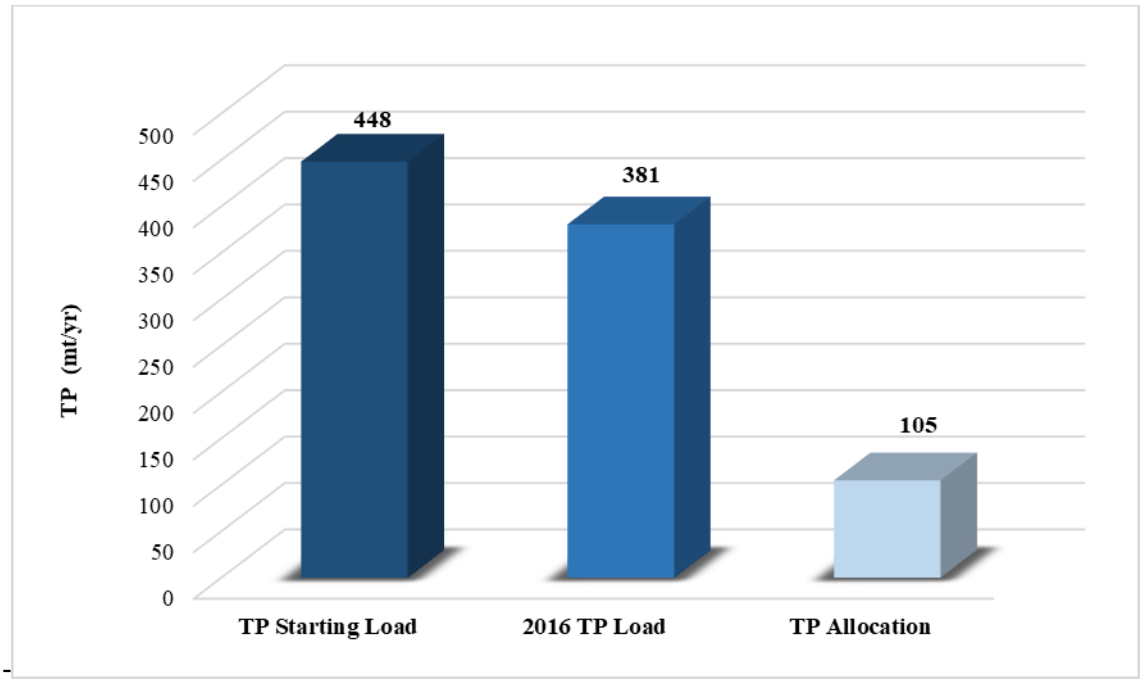

Figure S-2. Progress towards the TMDL through December 31, 2016

Section 1: Introduction

1.1 Purpose of the Report

This is the second annual progress report for the Lake Okeechobee Basin Management Action Plan (BMAP). **Section 2** describes the activities that occurred during the reporting period from January 1, 2016, through December 31, 2016. **Section 3** describes the water quality monitoring that occurred during the reporting period. **Section 4** describes other initiatives and projects in the Lake Okeechobee Watershed (LOW) that aim to reduce nutrient loading to the lake, and **Section 5** summarizes the status of projects that each entity has committed to in the BMAP and annual reports.

1.2 Total Maximum Daily Load (TMDL) for the Lake Okeechobee Basin

The Florida Department of Environmental Protection (DEP) adopted a total phosphorus (TP) TMDL for Lake Okeechobee in 2001, after 9 segments with waterbody identification (WBID) numbers in Lake Okeechobee were identified as impaired by TP: WBIDs 3212A, 3212B, 3212C, 3212D, 3212E, 3212F, 3212G, 3212H, and 3212I. The TMDL is an annual TP load to Lake Okeechobee of 140 metric tons per year (mt/yr), of which 35 mt/yr are estimated to fall directly on the lake through atmospheric deposition. The remaining 105 mt/yr of TP are allocated to the entire LOW, which consists of 9 sub-watersheds. The attainment of the TMDL will be calculated using a 5-year rolling average using the monthly loads calculated from measured flow and concentration values. As DEP refines its load estimation model, sub-watershed expectations may be developed for future BMAP iterations.

1.3 Responsible Parties and Key Stakeholders

The BMAP process engages local stakeholders and promotes coordination and collaboration to address TP reductions. In February 2013, DEP initiated the BMAP development process and held a series of technical meetings involving stakeholders and the general public. DEP requested that stakeholders provide information on activities and projects that would reduce nutrient loading. For this first BMAP phase, the reductions are to occur over a 10-year period for the Coordinating Agencies—DEP, the South Florida Water Management District (SFWMD), and the Florida Department of Agriculture and Consumer Services (FDACS)—to develop additional projects to help meet the TMDL. Periodic updates to the BMAP will be conducted during the 10-year time frame, as necessary and appropriate.

This report includes projects in the six northern sub-watersheds that have been completed, planned, or ongoing since 2009. However, DEP recognizes that stakeholders throughout the watershed have implemented stormwater management projects as well as statutorily mandated diversions away from Lake Okeechobee prior to 2009 and that these efforts have benefited water quality. Additional reductions will be included in future BMAP updates as DEP continues to work with stakeholders to identify new projects. **Appendix A** lists projects that will be or have been implemented under this first phase of the BMAP.

1.4 Assumptions and Considerations Regarding TMDL Implementation

The water quality impacts of BMAP implementation are based on several fundamental assumptions about the pollutants targeted by the TMDLs, modeling approaches, waterbody response, and natural processes. In addition, there are important considerations about the nature of the BMAP and its long-term implementation. More details on these assumptions and considerations can be found in the Lake Okeechobee BMAP.

Section 2: Activities During the Reporting Year

Section 2.1 through **Section 2.6** describe the accomplishments over the past year. Many of the activities that occurred during this second annual reporting period focused on projects and initiatives listed in the BMAP. In each annual report, newly identified projects are added to the project tables. Several individual projects have been added since BMAP adoption; stakeholders and the Coordinating Agencies continue work on the individual projects listed in the tables in **Appendix A**.

2.1 Coordinating Agency Projects and Initiatives

During the reporting period, a host of restoration work in the LOW moved forward. In addition to site-specific projects, the Coordinating Agencies continued work on other initiatives to achieve nutrient reductions in the LOW. **Table 1** contains updates on those initiatives listed in the Lake Okeechobee BMAP.

Table 1. Coordinating agency initiatives

Initiative	Explanation	Start Date	Update
Comprehensive Everglades Restoration Plan (CERP) Planning	SFWMD is reinitiating the formulation of storage components of the LOW Project, with the U.S. Army Corps of Engineers (USACE; federal partner).	Summer 2016	The LOW Project is a component of CERP that will identify regional-scale features north of Lake Okeechobee to improve the quantity, timing, and distribution of flows to better manage lake water levels and reduce undesirable discharges to downstream estuaries. Since the Lake Okeechobee BMAP was adopted, the LOW Project Implementation Report was identified as one of the next CERP feasibility studies to be conducted as identified in the USACE Integrated Delivery Schedule (IDS). Work by the USACE and SFWMD on this planning effort commenced in June 2016. The initial stage of the planning effort included identifying the initial array of alternatives, which are being developed into the overall scope for the plan. The planning process is anticipated to take three years to complete. After the planning process, future work is contingent on future congressional authorization and appropriations. The LOW Construction Project Phase II Technical Plan (LOWCP-P2TP) relies heavily on the LOW Project to help achieve the plan goals of maintaining the lake within an ecologically desirable range and minimizing undesirable discharges to the northern estuaries.
Owner-Implemented BMP Verification	FDACS and DEP are developing a plan for best management practice (BMP) verification.	Spring 2015	FDACS is currently working with DEP to identify possible sites that have implemented owner-implemented and cost-shared BMPs. DEP is currently evaluating possible sites for monitoring.

Initiative	Explanation	Start Date	Update
Cost-Share BMP Effectiveness Verification	FDACS and DEP are developing an approach to evaluate the effectiveness of various types of cost-share projects.	Fall 2015	In late 2015, FDACS contracted with Soil Water Engineering Technology, Inc. (SWET) to assess the treatment efficiencies (TP and total nitrogen [TN] reductions in concentration and loads) as well as the storage capacities of various common cost-share BMPs in the LOW. The TP and TN reductions for the evaluated cost-share BMPs will be provided to DEP, so revised nutrient-reduction benefits can be attributed to cost-share BMPs included in this BMAP. FDACS will also use the TP and TN reductions and storage capacities to review future cost-share applications and maximize the nutrient reduction potential that can be achieved with the available cost-share dollars. The report was finalized in summer 2016 and includes expected nutrient reductions and cost ranges. FDACS and DEP will coordinate on how to apply the report findings to current cost-share projects in the LOW.
Watershed Assessment Model (WAM) Revisions	In November 2016, the SFWMD and FDACS executed an amended agreement in support of WAM revisions. The planned completion date is 2017. DEP will work to develop targets based on this information.	Fall 2014	In early 2015, FDACS contracted with SWET to revise the WAM, which was used as the basis for the BMAP Load Estimation Tool (LET). This effort was jointly funded by the SFWMD and DEP. Under this contract, SWET updated the model datasets and extended the WAM simulation period through 2013 for all six sub-watersheds north of Lake Okeechobee. A literature review and draft work plan for the sensitivity and uncertainty analyses were also developed, as well as a work plan for the expansion of the WAM to include the three southern sub-watersheds. In late 2015, the contract was amended to allow SWET to complete model validation and a final sensitivity analysis and uncertainty analysis. The model will then be recalibrated for the six northern sub-watersheds. In addition to the work in the northern sub-watersheds, DEP and FDACS are funding the expansion of the WAM to include the East, South, and West Lake Okeechobee Sub-Watersheds. The WAM revisions are expected to be completed in 2017. DEP will use the revisions to refine the LET and to incorporate the East, South, and West Lake Okeechobee Sub-Watersheds into the tool.
Water Quality Monitoring	As DEP develops a monitoring plan for the BMAP, consideration is being given to areas with on-the-ground projects/BMPs to evaluate water quality improvements.	In progress	BMAP monitoring plan stations have been verified, with data providers and locations confirmed, and appropriate updates made to the revised monitoring network in **Appendix B**. DEP is working with additional potential data providers to evaluate the possible inclusion of new monitoring sites. Based on the mapped locations of projects and BMPs, the Coordinating Agencies are working to optimize monitoring efforts.
Alternative BMP Nutrient Reduction Projects	North of Lake Okeechobee	Winter 2014/2015	The Coordinating Agencies have set up a team to identify possible new strategies. Quarterly meetings began in summer 2016, and will continue to ensure that information on potential new strategies is shared between the agencies.

Initiative	Explanation	Start Date	Update
In-Lake Strategies: Muck Scraping and Tilling	In Lake Okeechobee	Fall 2014	Potential for inclusion as BMAP project(s) during low lake levels if drought conditions occur and if project logistics (e.g., planning, permitting, contracting) can be implemented in a timely fashion for work to be conducted. The SFWMD Low Water Level Habitat Enhancement Plan drafted for the lake in November 2015 may inform this initiative. The SFWMD draft plan (November 2015) was submitted to DEP in March 2016.

Table 2 lists projects under development with the Coordinating Agencies. The projects are in various stages of planning, but the Coordinating Agencies will continue to work to gather details and implement these projects during the first BMAP phase.

Table 2. Projects under development by the Coordinating Agencies

Project Name	Sub-watershed	Status	Schedule
Istokpoga Marsh Watershed Improvement District (IMWID) – Phase II	Indian Prairie	An agreement between the SFWMD, IMWID/Highlands County and FDACS has been executed for the implementation of the project (Phase I and Phase II). The acquisition of 401 acres for the project footprint and geotechnical activities, environmental site assessments, and the remediation of agrochemicals on those lands have been performed. The design is 90 % complete, a cultural resources survey is under way, and the acquisitions of additional easements for a flow path between Phase I and Phase II are pending.	Construction activities are tentatively planned to begin in 2018 and are expected to last 12 months. Operations are anticipated to begin by 2020.
Lakeside Ranch Stormwater Treatment Area (STA) Phase II	Taylor Creek/ Nubbin Slough	This phase includes a southern STA and a second pump station (S-191A) to manage rim canal levels during periods of high water flow and potentially to recirculate lake water back to the STA for additional TP removal. The construction of the southern STA is under way. However, the construction of the S-191A pump station is contingent on future legislative funding.	The southern STA is anticipated to be completed by 2018. Once funded, the pump station is estimated to be completed in three years.

Project Name	Sub-watershed	Status	Schedule
Brighton Valley – Lykes	Indian Prairie	The SFWMD issued an Environmental Resource Permit (ERP) as well as a right-of-way permit for the project. A USACE 404 permit has been applied for, and the application is currently under review. Under FDACS cost-share funding, this new Northern Everglades Public Private Partnership (NE-PPP) project is under design/permitting. The project will store 34,000 acre-feet (ac-ft) of water via a pass-through system.	Upon receipt of permits, construction will begin, with completion expected in late 2018/early 2019.
Latt Maxcy Dispersed Water Management (DWM)	Lower Kissimmee	Under FDACS cost-share funding, this NE-PPP project is under design/permitting. The project will store an estimated 27,068 ac-ft of water via a pass-through system.	Construction is anticipated to begin in 2018, with completion expected in 2019.
Rolling Meadows Wetland Restoration – Phase II	Upper Kissimmee	Land has been acquired and planning started. Phase II of this project, which involves the further restoration of 580 acres of wetlands, is contingent on future legislative funding.	Once funded, project work is estimated to be completed in two to three years.
Inactive Dairies – Lagoon Remediation	Taylor Creek/ Nubbin Slough and Indian Prairie	FDACS worked with a dairy in the LOW to partially remediate its lagoon. The soil was spread on the field for crops to use the nutrients from the excavated soil. The stormwater is routed back to the remediated pond to minimize discharges, and it is reused to reduce groundwater withdrawals. In the future, the dairy will finish the excavation and remediation of the entire site. For now, this project is complete.	1. Identify areas that need remediation activities/talk to landowners. (Winter 2014/2015–Summer 2015) 2. Procure contractors/ conduct work. (Winter 2015/2016–Spring 2016) 3. Analyze data. (as necessary)

Project Name	Sub-watershed	Status	Schedule
PL-566 Funded/ Fisheating Creek Structure	Indian Prairie	The USACE was working with the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) to develop various alternatives. After some staffing and priority changes at the USACE, the NRCS took the lead on this effort. Currently, a scope of work has been developed to contract with the original contractor on this effort. Once the scope of work is approved and the necessary contractual paperwork is in place, the contractor can begin this effort again. The start date is to be determined.	1. The NRCS plans to reapply for different funding. (Fall 2014) 2. If funding is obtained, work will be conducted. (To be determined) 3. Water quality benefit calculations will be done. (To be determined)
SR 710 Regional Project	Taylor Creek/ Nubbin Slough and Indian Prairie	The feasibility study was completed. The Florida Department of Transportation (FDOT) is reviewing several conceptual designs. The Coordinating Agencies are also reviewing to determine whether multiple program initiatives can be aligned for a greater project impact.	1. The final feasibility study was completed on October 22, 2014. 2. If funding is obtained, work will be conducted. (To be determined)
Legislative Cost-Share Appropriation Program ($10 million annually for seven years)	All	FDACS conducted three rounds of solicitations for dairy project proposals. The first solicitation occurred in fall 2014. Seven projects have been funded, of which one is still under construction. The second solicitation for dairy projects occurred in fall 2015. Four projects were selected. FDACS sent out a third solicitation for dairy project proposals with a submission deadline in fall 2016. A total of 10 project proposals were received from 6 different dairy producers. FDACS formed a committee with internal staff and staff from DEP to review and formally rank the submitted proposals. Eight projects were approved, with funding requests totaling $4,002,527.35. FDACS has signed cost-share agreements for all 8 projects approved for funding. The amount allocated for the third round of projects to date is $3,766,997.80.	1. Develop plan and present to DEP annually. 2. Implement projects once funds are available. 3. Conduct the same exercise annually.

2.2 SFWMD Activities

During the reporting period, the SFWMD was involved in numerous restoration activities in the LOW. The following sections describe highlights and advancements made in key SFWMD-led projects in the LOW during the reporting period. Further information on progress in the LOW is also reported in the 2017 South Florida Environmental Report (SFER) – Volume I, Chapters 8A and 8B, and Volume III, Appendix 4-1.

Taylor Creek/Nubbin Slough Sub-watershed Projects

Lakeside Ranch STA (LR-STA). Expedited under the Northern Everglades and Estuaries Protection Program (NEEPP), this project is a 2,700-acre STA in western Martin County on lands adjacent to Lake Okeechobee. The LR-STA Project was designed in two phases. Phase I (SFWMD-03) included a northern STA and an inflow pump station, which began operating in 2012. Phase II included a southern STA and a second pump station (S-191A) to manage rim canal levels during high water flow periods and potentially to recirculate lake water back to the STA for additional TP removal. Under Phase II, the construction of the southern STA is currently under way. However, the construction of the S-191A pump station is contingent on future legislative funding. During Calendar Year (CY) 2016, LR-STA Phase I removed 10.2 metric tons (mt) of TP, or 50 % of the total load received, exceeding its designed average removal rate of 9 mt/yr.

Taylor Creek STA (TC-STA). This STA (SFWMD-01) is located on the SFWMD-owned Grassy Island Ranch along the banks of Taylor Creek. As part of the Lake Okeechobee Critical Restoration Projects, the purpose of the TC-STA is to remove TP loads from the Taylor Creek drainage basin. The TC-STA facility was constructed in 2006, and flow-through operation began in 2008. In CY 2016, the STA retained 1.8 mt/yr of TP, or 51 % of the load received.

Nubbin Slough STA (NS-STA). This STA (SFWMD-02) is located on SFWMD-owned lands at the New Palm Dairy site along the banks of Nubbin Slough. As part of the Lake Okeechobee Critical Restoration Projects, the purpose of the NS-STA is to remove TP loads from the Nubbin Slough drainage basin. Construction was completed in 2006, but the STA remained inoperable until needed construction modifications and repairs were completed. In March 2015, the USACE transferred the STA to the SFWMD. After approximately nine months of consistent sampling, the start-up monitoring requirement for TP reduction was achieved in June 2016, however levee seepage was observed. Flow-through activities commenced in September 2016 at reduced rates as additional repairs need to be made for the STA to operate at full capacity. SFWMD is working with the USACE to determine next steps.

Upper and Lower Kissimmee Sub-watershed Projects

Kissimmee River Restoration and Kissimmee River Headwaters Revitalization. The main goal of the Kissimmee River Restoration Project (KRRP) (SFWMD-05) is to restore ecological integrity to one-third of the river and its floodplain that existed before the Kissimmee River was channelized in the 1960s. The project involves acquiring more than 102,000 acres of land in the

river's floodplain and headwaters, backfilling 22 miles of the C-38 Canal, reconnecting remnant sections of the original river channel, removing 2 water control structures, modifying portions of the river's headwaters, and implementing the Headwaters Regulation Schedule to meet the project hydrologic criteria needed to meet the KRRP ecological goals. The first 3 construction phases of restoration were completed between 2001 and 2009, and 3 major construction phases remain: Phase II and III backfilling and the S-69 Weir. Reach II and III were awarded in Fiscal Year (FY) 2015 and FY 2016, respectively. All construction is currently scheduled to be completed by 2020.

During 2016, real estate acquisition for the Kissimmee River Headwaters Revitalization Project (SFWMD-22) also progressed. This project, a major component of the overall KRRP restoration effort, will increase regulatory stages and change the operating schedule on three major waterbodies in the Kissimmee Chain of Lakes. It is designed to increase storage in the headwater lakes to provide appropriate flow patterns to the restored Kissimmee River floodplain upon the completion of restoration construction and land acquisition (expected date 2020). The increased storage is also expected to improve the quantity and quality of littoral habitat in the headwater lakes. Further details on Kissimmee River Restoration efforts are available in the 2017 SFER – Volume I, Chapter 9.

Rolling Meadows – Phases I and II. The purpose of this project is to restore the historical Lake Hatchineha floodplain wetlands and habitat in the Rolling Meadows property, which was purchased jointly by the SFWMD and DEP as part of the Kissimmee Headwaters Revitalization Project. The project will also provide ancillary water quality, timing, and distribution benefits. In 2015, Phase I (SFWMD-06) design and permitting were finalized. Construction began in November 2015 and was completed in December 2016. It included the installation of water control structures throughout the Rolling Meadows property. These will facilitate the hydration and restoration of 1,900 acres of previously impacted floodplain on Lake Hatchineha. Phase II of the project, which involves the further restoration of 580 acres of wetlands, is contingent on future legislative funding.

DWM Program

During the reporting period, efforts continued to expand opportunities for DWM in the northern Everglades watersheds. There is 1 DWM project in construction and 12 operational DWM projects in the Lake Okeechobee BMAP (includes the Dixie Ranch project which consists of Projects SFWMD-14 [Lower Kissimmee] and SFWMD-15 [Taylor Creek/Nubbin Slough], as shown in **Appendix A**). Additionally, 2 large NE-PPP projects (Brighton Valley-Lykes and Latt Maxcy Ranch DWM) were added and are both in the design/permitting phase (see **Table 2**). Together, these NE-PPP projects will add another 61,000 ac-ft per year of surface storage to the existing suite of DWM projects. Further information on individual Lake Okeechobee BMAP DWM projects is available in **Appendix A** (under construction or in operation) and in the 2017 SFER – Volume I, Chapter 8A (available on the SFWMD website).

Other Restoration Strategies

CERP LOW Project. CERP provides a framework and guide to restore, protect, and preserve the water resources of central and southern Florida, including the Everglades. The USACE is the federal partner, and the SFWMD is the local sponsor. The LOW Project, a component of CERP, will identify regional-scale features north of Lake Okeechobee to improve the quantity, timing, and distribution of flows to better manage lake water levels and reduce undesirable discharges to downstream estuaries.

Since the Lake Okeechobee BMAP was adopted, the LOW Project Implementation Report was identified as one of the next CERP feasibility studies to be conducted as identified in the USACE IDS. Work by the USACE and SFWMD on this planning effort commenced in June 2016. The initial stage of the planning effort included developing the identification of the initial array of alternatives, which are being developed into the overall scope for the plan. The planning process will take three years to complete. After the planning process, future work is contingent on future congressional authorization and appropriations. The LOWCP-P2TP relies heavily on the LOW Project to help achieve the plan goals of maintaining the lake within an ecologically desirable range and minimizing undesirable discharges to the northern estuaries.

2.3 FDOT Activities

District 1

FDOT District 1 continued work on the State Road (SR) 70 roadway improvement projects (FDOT1-01 and FDOT1-02) to construct a total of nine wet detention ponds and three dry retention ponds. Construction is expected to be completed in 2017. FDOT District 1 continues to implement its street sweeping program on sections of curb and gutter roadways located in the LOW. **Appendix A** includes updated street sweeping calculations for 2016.

District 5

During the reporting period, FDOT District 5 began construction on Projects FDOT5-8, FDOT5-9, FDOT5-10, and FDOT5-11, which will create 4 wet detention ponds along U.S. Highway 17-92 in 2019. FDOT District 5 continued construction on Projects FDOT5-1, FDOT5-2, FDOT5-3, FDOT5-4, FDOT5-12, FDOT5-28, FDOT5-29, and FDOT5-30, which include the construction of 4 wet detention ponds along SR 15 (Hoffner Rd./Ave.), 1 wet detention pond along SR 600 (U.S. Highway 17-92), and 4 wet detention ponds along SR 482. In addition, the construction of 2 wet detention ponds associated with the widening of SR 500 from Eastern Ave. to Nova Road (Projects FDOT5-26 and FDOT5-27) continued and are projected to be completed in fall 2017. FDOT calculates that these ponds will reduce TP by a total of 0.024 mt/yr (23.91 kilograms per year [kg/yr]). FDOT District 5 continues to implement its street sweeping program on sections of curb and gutter roadways located in the LOW. **Appendix A** includes updated street sweeping calculations for 2016.

2.4 Agricultural Activities

In early 2016, the FDACS Office of Agricultural Water Policy (OAWP) adopted a dairy manual targeting dairies without DEP-issued National Pollutant Discharge Elimination System (NPDES) permits. In summer 2016, the OAWP adopted a manual for poultry operations. To date, FDACS has BMP manuals for cow/calf, citrus, vegetable and agronomic crops, nurseries, equine, sod, dairy, poultry, and specialty fruit and nut operations. The FDACS BMP manuals are located here. Currently, the OAWP is revising the sod and cow/calf manuals and developing a small farms manual. The adoption of these three manuals is expected in 2017.

FDACS field staff work with producers in the LOW on activities such as initial BMP notice of intent (NOI) enrollment, follow-up technical assistance, BMP cost-share, BMP implementation assurance visits, the management of water quality and water supply projects and contracts, and coordination with the SFWMD on agriculture-related permitting questions.

Agricultural BMPs and Enrollment Efforts

Landowners who sign NOIs are agreeing to implement applicable BMPs on their enrolled properties. In the LOW, FDACS has a total of 1,892,521 acres enrolled in the FDACS BMP Program for citrus, cow/calf, dairy, equine, fruit/nut, nursery, row/field crop, and sod, based on the entire parcel acreage. Of this area, 1,262,657 acres are located in the 6 northern sub-watersheds. Of this acreage in the northern sub-watersheds, 876,629 acres are enrolled on lands classified as agriculture in the Lake Okeechobee BMAP LET. **Table 3** through **Table 8** summarize the agricultural acres in the northern sub-watersheds. **Appendix C** provides further detail on how agricultural enrollments and reduction calculations are considered in the Lake Okeechobee BMAP. **Figure C-1** shows the parcels enrolled in BMP programs as of September 30, 2016, for the LOW, and **Figure C-2** shows the acres enrolled on lands classified as agriculture in the Lake Okeechobee BMAP LET as of September 30, 2016.

In spring 2015, DEP asked FDACS to commence an effort in the LOW to ensure that agricultural landowners know their statutory responsibility to implement BMPs in the BMAP area. FDACS began this effort in the Taylor Creek/Nubbin Slough Sub-watershed. The Florida Department of Revenue parcel data and 2008–09 SFWMD land use were used to generate a list of unenrolled properties. FDACS sent a letter to 118 property owners in May 2015. FDACS sent a second letter in January 2016 to 24 landowners who did not respond to the first letter. These letters resulted in 66 new enrollments covering 34,237 acres. Of the 24 landowners who received the second letter from FDACS, 12 landowners failed to respond and were sent letters by DEP. FDACS has enrolled 5 of these 12 landowners and determined that 1 landowner is not eligible to enroll in the FDACS BMP Program. DEP sent a second letter to the remaining 6 landowners, and 2 have since enrolled.

In August 2015, FDACS commenced a compliance assistance effort in the Indian Prairie Sub-watershed. Letters were sent to 94 property owners. Of these property owners, 35 responses (a 37 % response rate) were received and resulted in an additional 14 new NOIs covering 14,900 acres. A second letter was then sent to the nonresponders. Of the landowners who received the second

letter from FDACS, 5 failed to respond and were sent letters by DEP in fall 2016. One landowner is no longer in production, and DEP sent the other 4 a second letter in January 2017. All 4 have responded to DEP, and landowner contact information has been provided to FDACS to complete enrollments.

In July 2016, FDACS sent 85 letters to landowners in the Fisheating Creek Sub-watershed. This letter resulted in 9 new enrollments covering 2,497 acres. A second letter was sent to the nonresponders in October 2016.

FDACS is currently working on concentrated efforts to identify property owners and producers operating on unenrolled acres in these sub-watersheds. FDACS will continue enrolling producers in the Lake Okeechobee BMAP area in the FDACS BMP Program, and will provide documentation of unenrolled acres to DEP on a case-by-case basis for a determination as to issuance of a notice of violation regarding the provisions of Paragraph 403.067(7)(b)2g, F.S.

Project Updates

In addition to enrollment activities, BMP cost-share, and coordination with the SFWMD on agriculture-related permitting questions, FDACS is involved in the management of water quality and water supply projects and contracts in the LOW. **Table 1** and **Table 2** contain information on the status of many of these projects.

Hybrid Wetland Treatment Technology (HWTT). HWTT is a water treatment technology that comprises both biological and chemical processes to remove nutrients such as TP and TN, as well as other chemical constituents, from the water. Currently, there are 5 existing HWTT facilities in the LOW. For the 2016 reporting period, the TP load reductions at the 5 HWTT facilities in the LOW ranged from 78 % to 92 %.

Floating Aquatic Vegetation Tilling (FAVT). FAVT is a water treatment technology that uses biological processes to remove nutrients. Shallow wetland systems are created and are stocked with native floating aquatic vegetation. Nutrients are removed as the plants grow, and further nutrient reduction takes place in submerged aquatic vegetation cells. During the 2016 reporting period, construction was completed on the 100-cubic-feet-per-second (cfs) Fisheating Creek FAVT facility, which is expected to provide removal rates of 80 % for TP.

WAM Updates

In early 2015, FDACS contracted with SWET to revise the WAM, which was used as the basis for the BMAP LET. This effort was jointly funded by the SFWMD and DEP. Under this contract, SWET updated the model datasets and extended the WAM simulation period through 2013 for all six sub-watersheds north of Lake Okeechobee. A literature review and draft work plan for the sensitivity and uncertainty analyses were also developed, as well as a work plan for the expansion of the WAM to include the three southern sub-watersheds.

In late 2015, the contract was amended to allow SWET to complete model validation and a final sensitivity analysis and uncertainty analysis. The model was then recalibrated for the six northern

sub-watersheds. In addition to the work in the northern sub-watersheds, DEP and FDACS are funding the expansion of the WAM to include the East, South, and West Lake Okeechobee Sub-watersheds.

The WAM revisions are expected to be completed in summer 2017. DEP will use the revisions to refine the LET and to incorporate the East, South, and West Lake Okeechobee Sub-watersheds into the tool.

Table 3. BMP enrollment and future enrollment requirements for the Fisheating Creek Sub-watershed

Category	Acres
Acreage Enrolled as of December 31, 2008	37,918
Acreage Enrolled January 1, 2009–September 30, 2016	270,823
Total Acreage Enrolled (as of September 30, 2016)	308,741
LET Agricultural Acres	174,561
LET Enrolled Agricultural Acres	145,940
LET Remaining Agricultural Acres To Enroll	28,621

Table 4. BMP enrollment and future enrollment requirements for the Indian Prairie Sub-watershed

Category	Acres
Acreage Enrolled as of December 31, 2008	8,604
Acreage Enrolled January 1, 2009–September 30, 2016	198,667
Total Acreage Enrolled (as of September 30, 2016)	207,271
LET Agricultural Acres	218,216
LET Agricultural Acres within Enrolled Acres	166,194
LET Remaining Agricultural Acres To Enroll	52,022

Table 5. BMP enrollment and future enrollment requirements for the Lake Istokpoga Sub-watershed

Category	Acres
Acreage Enrolled as of December 31, 2008	73,501
Acreage Enrolled January 1, 2009–September 30, 2016	133,207
Total Acreage Enrolled (as of September 30, 2016)	206,708
LET Agricultural Acres	130,523
LET Agricultural Acres within Enrolled Acres	92,077
LET Remaining Agricultural Acres To Enroll	38,446

Table 6. BMP enrollment and future enrollment requirements for the Lower Kissimmee Sub-watershed

Category	Acres
Acreage Enrolled as of December 31, 2008	155,862
Acreage Enrolled January 1, 2009–September 30, 2016	193,338
Total Acreage Enrolled (as of September 30, 2016)	349,200
LET Agricultural Acres	216,284
LET Agricultural Acres within Enrolled Acres	159,084
LET Remaining Agricultural Acres To Enroll	57,200

Table 7. BMP enrollment and future enrollment requirements for the Taylor Creek/Nubbin Slough Sub-watershed

Category	Acres
Acreage Enrolled as of December 31, 2008	51,903
Acreage Enrolled January 1, 2009–September 30, 2016	107,084
Total Acreage Enrolled (as of September 30, 2016)	158,987
LET Agricultural Acres	140,921
LET Agricultural Acres within Enrolled Acres	113,446
LET Remaining Agricultural Acres To Enroll	27,475

Table 8. BMP enrollment and future enrollment requirements for the Upper Kissimmee Sub-watershed

Category	Acres
Acreage Enrolled as of December 31, 2008	22,037
Acreage Enrolled January 1, 2009–September 30, 2016	176,503
Total Acreage Enrolled (as of September 30, 2016)	198,540
LET Agricultural Acres	275,034
LET Agricultural Acres within Enrolled Acres	124,240
LET Remaining Agricultural Acres To Enroll	150,794

2.5 City, County, and Special District Activities

City of Avon Park

No information was provided by the city for this progress report.

City of Edgewood

The city continued its quarterly newsletter, which contains articles on water quality to heighten awareness of the topic.

City of Kissimmee

During the reporting period, the city started construction on the Emory Ave. Stormwater Management Pond (KS-07), an offline stormwater pond that will provide extra storage to help alleviate flooding. The pond is also designed to catch the first flush during rain events and help provide water quality treatment to the West City Ditch. DEP funding was provided under Contract S0725 for this project. The city continued its street sweeping and community education and outreach programs.

City of Orlando

The city continued to perform public education, street sweeping, and routine removal of debris from numerous inlet baskets. City staff continued to inspect private stormwater systems to ensure the facilities are operating at design standards for optimal pollutant removal.

City of Sebring

Through its street sweeping program, the city collected 273,489 kg/yr of material for an estimated TP reduction of 50.90 kg/yr (.05 mt/yr). The city continued its public education program during the reporting period.

Glades County

No information was provided by the county for this progress report.

Highlands County

Construction bids for the Lake June-in-Winter stormwater BMPs project (HC-05) were opened in early 2017. In the project agreement between Highlands County, the Southwest Florida Water Management District (SWFWMD), and FDOT, construction is scheduled to be complete by March 2018.

Okeechobee County

The county completed 2 projects during the reporting period. The Oak Park Project (OK-2) resulted in the construction of roadside swales and raised inlets with 2 hydrodynamic separators to achieve an estimated TP reduction of 2.2 kg/yr (.002 mt/yr). The Lock 7 Bypass Culvert System Project (OK-7) resulted in the installation of a parallel culvert system along the Rim Canal to improve conveyance. In addition, the county began Phase III of the Southwest Drainage Area Improvements Project (OK-6), which will result in Whidden Ditch improvements and culvert upgrades to improve stormwater conveyance to the Rim Canal.

Orange County

The county completed the Lake Down Alum Treatment Facility Project (OC-28) in 2016, in which an offline alum injection facility was installed on the upstream portion of the Butler Chain of Lakes to address phosphorus loading to the chain and downstream. The county also completed a study of Lake Glen Mary (OC-38) that identified impairment sources and BMP

recommendations. The county continued to perform public education, street sweeping, and the routine removal of debris from its expansive number of inlet baskets.

Osceola County

The Lake Toho Regional Water Storage Facility (Judge Farms) Project (OSC-20) is under way with an estimated completion date of 2018. This project will result in stormwater retention and treatment through the construction of three regional stormwater ponds. The county continued its public education and street sweeping programs.

Polk County

The county continued its public education program and does not have new projects planned in the basin, since most of the land is agricultural.

Spring Lake Improvement District (SLID)

SLID completed the construction of an STA (SLID-1) that will treat 3,016 acres for an estimated TN reduction of 88.8 kg/yr and a TP reduction of 69.83 kg/yr. SLID is planning to add a bypass weir (SLID-2) to direct more water to the STA.

Istokpoga Marsh Watershed Improvement District (IMWID)

IMWID is in the process of completing a DWM project (IMWID-01) on 308 acres that will result in the construction of an above-ground impoundment with a storage capacity of 1,200 ac-ft/yr. The anticipated estimated TP reduction associated with this project is 850 kg/yr.

2.6 Summary of Accomplishments

During the reporting period, SFWMD-led BMAP projects and other restoration initiatives progressed, including DWM projects (see **Section 2.2**). Okeechobee County completed 2 projects during the reporting period: the Oak Park Project (OK-2) and the Lock 7 Bypass Culvert System Project (OK-7). Orange County completed the Lake Down Alum Treatment Facility Project (OC-28) and Lake Glen Mary study (OC-38), and SLID completed the construction of an STA (SLID-1). In addition, the reduction potential for agricultural BMP program enrollment of 100 % of eligible acres was updated based on the September 2016 enrollment information provided by FDACS.

Table 9 lists the projects completed during the reporting period.

Table A-1 through **Table A-6** include the status of the Lake Okeechobee BMAP projects that have been completed, or are under way or planned. Efforts on the projects and initiatives in **Table A-7** and **Table A-8** will continue to follow the schedules set out in the BMAP, and project details will be updated as information becomes available.

Figure 1 shows the progress towards the TP TMDL load reductions. The first bar shows the starting load for urban and agricultural stormwater runoff. The starting load is the long-term average calculated with the WAM LET. This is calculated using information only for the six northern sub-watersheds, although the TMDL applies to all nine sub-watersheds. The starting load will be updated to include all sub-watersheds once the WAM updates are complete. The second bar shows the current estimated loading based on those projects shown as completed in the BMAP, those completed as part of the 2015 Progress Report, and those listed above. Further details on these projects and their estimated load reductions are listed in **Appendix A**. The third bar shows the total allocation for stormwater runoff to meet the TMDL. The 105 MT/yr applies to all the sub-watersheds and is not an allocation to any collection of sub-watersheds.

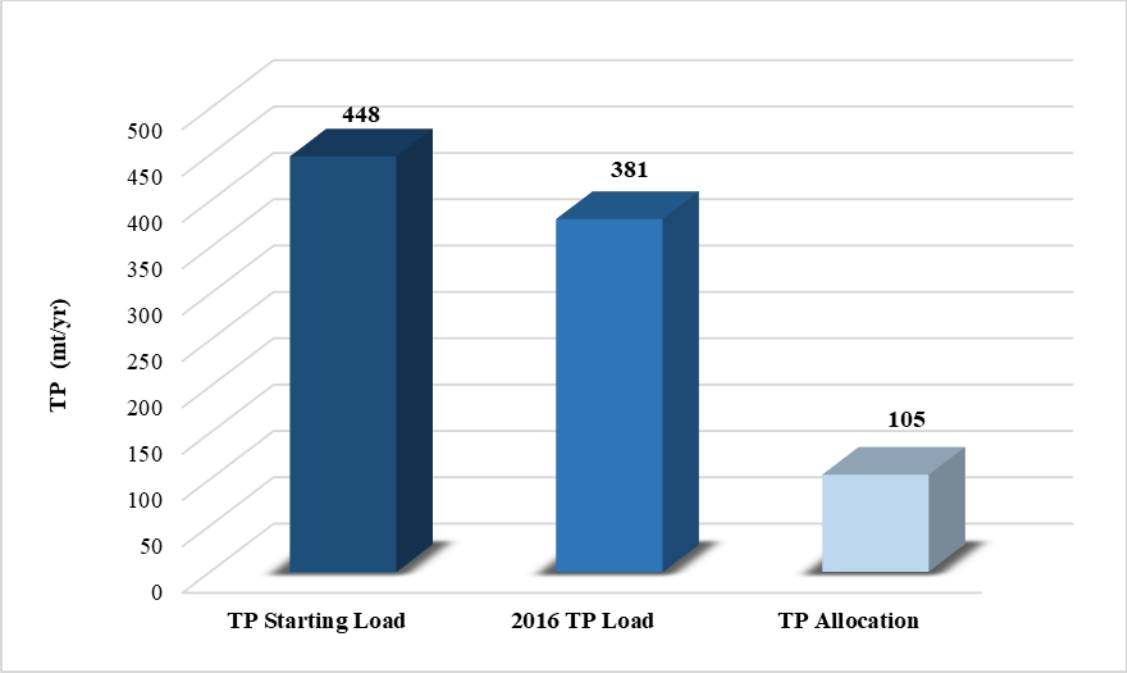

Figure 1. Progress towards the TMDL through December 31, 2016

Table 9. Projects completed during the reporting period

TBD = To be determined

Lead Entity	Project Number	Project Name	Project Description	TP Reduction (kg/yr)	TN Reduction (kg/yr)
Okeechobee County	OK-02	Oak Park	Roadside swales with raised inlets and two hydrodynamic separators.	2	14
Okeechobee County	OK-07	Lock 7 Bypass Culvert System	Installation of parallel culvert system along the Rim Canal to improve conveyance.	0	0
Orange County	OC-28	Lake Down Alum Treatment Facility	Installation of offline alum injection facility on the upstream portion of the Butler Chain of Lakes to address phosphorus loading to the chain and downstream.	21	555
SFWMD	SFWMD-06	Phase I Rolling Meadows	Restoration of historical Lake Hatchineha floodplain wetlands and habitat in the Rolling Meadows property.	65	TBD
SLID	SLID-01	SLID Phases 1-3	Treatment of runoff through an STA	70	88
			Total	**158**	**657**

Section 3: Water Quality Monitoring

The Lake Okeechobee BMAP monitoring plan was designed to enhance the understanding of basin loads, identify areas with high nutrient concentrations, and track water quality trends. The information gathered through the monitoring plan will measure progress towards achieving the TMDL and provide a better understanding of watershed loading. The BMAP monitoring plan is designed to be flexible enough to account for new information as it becomes available, and efforts are under way to improve the monitoring plan according to the following schedule:

- Identify areas with regional projects already in place. (Complete)
- Evaluate areas where additional water quality data are needed. (Once WAM complete)
- Identify lead entity for monitoring efforts. (Spring 2017–Summer 2017)
- Finalize monitoring plan. (During BMAP Phase I, Fall 2018)

Efforts are also under way to incorporate additional stations not already included in the monitoring network, and to update existing monitoring network station names and locations where necessary. **Appendix D** provides an updated BMAP monitoring plan.

3.1 Water Quality Monitoring

Monitoring Objectives

The primary objective of the monitoring strategy for the LOW is to continue to track trends in TP loads and concentrations by sub-watershed. Secondary objectives are tracking trends in TN loads and concentrations by sub-watershed, identifying areas in the watershed with elevated TP loading to better focus management efforts, and measuring the effectiveness of individual or collective projects in reaching TMDL target-pollutant loadings. The stations included in the BMAP monitoring network are not specifically BMAP stations, i.e., the data they generate are also used for other purposes, but the data collected at these sites will be used to monitor the effectiveness of the BMAP.

Data Management and Assessment

The Florida STOrage and RETrieval (STORET) Database serves as the primary repository of ambient water quality data for the state. DEP impaired waters evaluations are based on water quality data from STORET. Ambient water quality data collected as part of the BMAP will be uploaded into STORET for long-term storage and availability. All BMAP data providers have agreed to upload ambient water quality data to STORET at least once every six months, upon completion of the appropriate quality assurance/quality control (QA/QC) checks. The SFWMD uploads its data into STORET at least once a year. In 2017, the primary repository of ambient water quality data for DEP is switching from STORET to the Watershed Information Network

(WIN). Data providers have begun working to transition to WIN, and after 2017 all data will be uploaded to WIN rather than STORET.

As required by NEEPP, the SFWMD monitors water quality and flow (inflows to and outflows from Lake Okeechobee) at SFWMD-operated control structures and maintains a long-term water quality monitoring network in the LOW. The SFWMD continued its water quality sampling program throughout the watershed during the 2016 reporting period. Local entities (Osceola County, Orange County, City of Orlando, and City of Kissimmee) also continued water quality monitoring consistent with the BMAP. **Table D-1** shows the latest sample date within the reporting period with available phosphorus data in STORET. U.S. Geological Survey (USGS) stations are included in the monitoring network for available flow data, and the most recent flow data available in the reporting period are listed for USGS stations.

Water Quality Analyses

After each year of BMAP implementation, DEP will analyze the water quality data to complement other analyses already under way in the LOW. The selection of an appropriate data analysis method depends on the frequency, spatial distribution, and period of record (POR) available from existing data. Specific statistical analyses were not identified during BMAP development, and thus commonly accepted methods of data analysis will be used that are consistent with the TMDL model.

For this progress report, trend analyses were conducted on available data from stations in the Lake Okeechobee BMAP network using a variation of temporal and spatial attributes from an overall POR of January 1, 2009, to December 31, 2016. TP and TN concentration data available in STORET were retrieved and processed for all stations monitored by local entities. TP loading data for SFWMD individual stations were obtained from SFWMD staff and draft trend analysis were completed. Analyses for SFWMD stations in the BMAP monitoring network will be included in future reports.

Table 10 lists the stations used for trend analyses, including their respective sampling entity and available POR (within the overall POR). **Appendix E** provides further details on the analyses.

Table 10. Local entity stations used in trend analyses

AGM = Annual geometric mean.
N/A = Data were insufficient to perform test.

Sampling Entity	Station ID	POR Start	POR End	Number of Quarters for Seasonal Analyses		Number of Years (AGMs) for Trend		Number of Total Samples	
				TP	TN	TP	TN	TP	TN
Orange County	BCA	2/4/2009	2/1/2016	19	19	8	8	23	23
Osceola County	ETO5253114	9/15/2011	5/11/2016	26	N/A	6	6	70	21
Osceola County	JUDGES_DCH	9/13/2011	3/30/2016	16	N/A	6	N/A	21	N/A
Osceola County	PARTIN_CNL	9/13/2011	5/11/2016	20	N/A	6	N/A	38	N/A
Osceola County	RUNNYMEADE	9/19/2011	12/1/2015	17	17	5	5	27	26
Orlando/ Orange County	SCC	3/11/2009	3/10/2016	23	24	8	8	28	29
Orange County	XLKEHS62	2/2/2012	2/11/2016	15	15	5	5	73	37

In addition to the BMAP, further information on the SFWMD monitoring and data results from the Lake Okeechobee Watershed Protection Program are reported in the 2017 SFER – Volume I, Chapter 8B. The 2017 SFER includes some water quality analyses and long-term water quality trend analyses at the sub-watershed level in the Lake Okeechobee BMAP area. These analyses are based on water year (WY) (WY2016 is May 1, 2015, through April 30, 2016) rather than the BMAP reporting period (January 1, 2016, through December 31, 2016). Some of these analyses relate to the primary and secondary objectives of the LOW monitoring strategy, and some analyses are consistent with the method for calculating the attainment of the TMDL (i.e., a five-year rolling average).

Individual Station Seasonal Kendall and Mann-Kendall (AGM) Trend Results

Individual stations were first analyzed for trends using Seasonal Kendall trend analysis, and data were mostly distributed quarterly. If sufficient quarterly data were not available, then the data were analyzed using Mann-Kendall test without season as a factor. All stations were also analyzed for Mann-Kendall using AGMs.

Table 11 and **Table 12** summarize the trend analysis results for TP and TN concentrations, respectively. For TP concentration, none of the Mann-Kendall trend analyses (AGMs) showed significant trends. Based on the Seasonal Kendall analyses, only one of the seven stations showed a statistically significant increasing trend for TP, and two stations showed decreasing trends. One of the seven stations showed decreasing trends in TN concentrations based on both the Mann-Kendall (AGM) and Seasonal Kendall trend analyses. **Appendix E** provides further detail on these analyses and figures showing trend analysis results for each station.

Table 11. Summary of trend analysis results for TP concentrations (mg/L)

Note: Bolded P-values indicate statistical significance (p<0.05).

Trend Test	Data Type	Period	Station	Tau	P-value	Slope	Trend Test Interpretation
Seasonal Kendall	Quarterly	CY	BCA	-0.149	0.474	-0.000006	No significant trend overall
Mann-Kendall	Geometric Mean	WY	BCA	-1.113	0.266	-0.000003	No significant trend overall
Seasonal Kendall	Quarterly	CY	ETO5253114	-0.212	**0.018**	-0.000003	Decreasing trend overall
Mann-Kendall	Geometric Mean	WY	ETO5253114	-0.389	0.175	-0.000003	No significant trend overall
Seasonal Kendall	Quarterly	CY	JUDGES_DCH	0.021	1.000	0.000032	No significant trend overall
Mann-Kendall	Geometric Mean	WY	JUDGES_DCH	0.000	1.000	0.002740	No significant trend overall
Seasonal Kendall	Quarterly	CY	PARTIN_CNL	-0.047	0.755	-0.000003	No significant trend overall
Mann-Kendall	Geometric Mean	WY	PARTIN_CNL	-0.200	0.707	-0.001650	No significant trend overall
Seasonal Kendall	Quarterly	CY	RUNNYMEADE	-0.538	**0.001**	-0.000019	Decreasing trend overall
Mann-Kendall	Geometric Mean	WY	RUNNYMEADE	-0.400	0.462	-0.005151	No significant trend overall
Seasonal Kendall	Quarterly	CY	SCC	0.418	**0.011**	0.000014	Increasing trend overall
Mann-Kendall	Geometric Mean	WY	SCC	0.500	0.108	0.000012	No significant trend overall
Seasonal Kendall	Quarterly	CY	XLKEHS62	0.092	0.300	0.000004	No significant trend overall
Mann-Kendall	Geometric Mean	WY	XLKEHS62	0.800	0.086	0.000006	No significant trend overall

Table 12. Summary of trend analysis results for TN concentrations (mg/L)

Note: Bolded P-values indicate statistical significance (p<0.05).

Trend Test	Data Type	Period	Station	Tau	P-value	Slope	Trend Test Interpretation
Seasonal Kendall	Quarterly	CY	BCA	-0.642	**0.001**	-0.00044	Decreasing trend overall
Mann-Kendall	Geometric Mean	WY	BCA	-0.643	**0.035**	-0.00024	Decreasing trend overall
Mann-Kendall	Geometric Mean	WY	ETO5253114	-0.667	0.308	-0.00018	No significant trend overall
Mann-Kendall	Geometric Mean	WY	JUDGES_DCH	0.333	1.000	0.25384	No significant trend overall
Mann-Kendall	Geometric Mean	WY	PARTIN_CNL	0.333	0.734	0.05254	No significant trend overall
Seasonal Kendall	Quarterly	CY	RUNNYMEADE	-0.139	0.455	-0.00005	No significant trend overall
Mann-Kendall	Geometric Mean	WY	RUNNYMEADE	-0.200	0.806	-0.00559	No significant trend overall
Seasonal Kendall	Quarterly	CY	SCC	-0.129	0.452	-0.00001	No significant trend overall
Mann-Kendall	Geometric Mean	WY	SCC	-0.429	0.174	-0.00011	No significant trend overall
Seasonal Kendall	Quarterly	CY	XLKEHS62	-0.233	0.088	-0.00020	No significant trend overall
Mann-Kendall	Geometric Mean	WY	XLKEHS62	-0.400	0.462	-0.00020	No significant trend overall

Section 4: Other Efforts

In addition to the activities described in **Section 2** and **Section 3,** other efforts towards water quality improvement were carried out in the LOW during the reporting period.

4.1 Lake Tohopekaliga Nutrient Reduction Plan (NRP)

Within the Lake Okeechobee BMAP boundary, restoration efforts have been ongoing under the Lake Tohopekaliga NRP. This plan, accepted by DEP in December 2011, includes many efforts that parallel those in the Lake Okeechobee BMAP, and some that benefit Lake Okeechobee in addition to benefiting Lake Tohopekaliga. Details on the Lake Tohopekaliga NRP can be obtained by contacting the DEP Division of Environmental Assessment and Restoration, Watershed Assessment Section.

4.2 Management Strategies for the Southern Sub-watersheds

Although this phase of the BMAP focuses on the northern sub-watersheds, the three southern sub-watersheds are included in the BMAP. The latter contribute a comparatively smaller percentage of overall loadings to Lake Okeechobee, and flow from these sub-watersheds is largely diverted in directions other than towards the lake. The three southern sub-watersheds have implemented BMPs in the BMAP area, and other management strategies have been implemented and will continue under this BMAP. Once the WAM is refined to incorporate the three southern sub-watersheds, the BMAP will take into account the specific benefits of pollutant load reductions achieved by these BMPs and management strategies.

Urban Stormwater

Entities in the three southern sub-watersheds are implementing various urban BMPs. The Cities of Clewiston, Belle Glade, South Bay, and Pahokee, as well as Hendry and Palm Beach Counties (and other entities such as FDOT and the Northern Palm Beach County Improvement District) are in compliance with the NPDES Municipal Separate Storm Sewer System (MS4) Stormwater Program.

Agricultural BMPs

In the first phase of the BMAP, enrollment in agricultural BMPs is documented through participation in the SFWMD Everglades Program per Chapter 40E-63, Florida Administrative Code (F.A.C.), or the FDACS BMP Program. **Figure C-1** identifies the lands enrolled.

Public Education and Outreach

The Everglades Agricultural Area Environmental Protection District (EAAEPD), in coordination with the University of Florida Institute of Food and Agricultural Sciences (UF–IFAS), special districts, and the SFWMD, continued to provide regularly scheduled producer-specific educational programs in the southern sub-watersheds for the implementation of agricultural BMPs. During the BMAP reporting period, the EAAEPD hosted Everglades Agricultural Area

(EAA) phosphorus BMP training on April 14, 2016; Spanish language EAA phosphorus BMP training on September 22, 2016; and EAA phosphorus BMP training on September 29, 2016. More information on these programs can be found on the Everglades Research and Education Center website.

Sediment Removal/Canal Cleaning

The cost-share pilot project with the SFWMD has been completed. The original project scope envisioned the cleaning of 11 miles of canals within the East Beach Water Control District. At the end of the 3-year period, sediments were removed from 14.1 miles of canals and floating aquatic vegetation was removed from 3.7 miles of canals for a total of 17.8 miles of operations, exceeding the scope by 58 %.

Bolles Cross Canal Improvements

In August 2015, the SFWMD approved the construction of canal upgrades to enhance flexibility for moving stormwater from the EAA into the STAs to improve the quality of water before it reaches the Everglades. The SFWMD completed Segment 1 (1.2 miles) in September 2016. Construction on Segment 2 (1 mile) was started in July 2016, and completion is expected by April 2017. The design for Segment 3 (3.2 miles) is ongoing (as of November 2016), and construction is expected to start by June 2017. The Duda Rd. bridge replacement was also completed in 2016. This project will allow water managers to optimize the use of the new A-1 Flow Equalization Basin, reducing the potential need for the emergency pumping of stormwater into the lake.

Section 5: Compliance

DEP annually reviews each entity's progress towards completing projects in the BMAP. **Table 13** lists the number of projects that local entities have committed to in the BMAP and annual reports, along with the status of those projects as of December 31, 2016. **Table 14** lists the status and number of state agency-led projects in the BMAP as of December 31, 2016.

Table 13. Local entity projects to achieve the TMDL

Lead Entity	Completed	Under Way	Planned	Total
City of Avon Park	1	2		3
City of Edgewood	1			1
City of Kissimmee	5	2		7
City of Orlando	15		1	16
City of Sebring	2			2
Glades County	2			2
Highlands County	5	1		6
IMWID		1		1
Okeechobee County	6	1		7
Orange County	40	5	2	47
Osceola County	31	1		32
Polk County	4			4
SLID	1		1	2
Town of Windermere		1		1
Total	**113**	**14**	**4**	**131**

Table 14. State agency projects to achieve the TMDL

Lead Entity	Completed	Under Way	Planned	Total
FDACS	11	1		12
FDOT District 1	1	2		3
FDOT District 5	16	14		30
SFWMD	20	3		23
Coordinating Agencies	2	10	4	16
Total	**50**	**30**	**4**	**84**

Appendices

Appendix A: Projects To Achieve the TMDL

The tables below set forth the required projects and time frames for implementation in this BMAP. Additional reductions will be necessary in future BMAP updates to meet the TMDL. The tables provide information on the attenuated nutrient reductions attributed to each individual project, listed in mt/yr and kg/yr. These projects and activities were submitted to DEP with the understanding that they would be included in the BMAP, thus setting the expectation for each entity to implement the proposed projects and activities to achieve the assigned load reductions in the specified time frames. Any change in listed projects and activities, or the deadline to complete these actions, must first be approved by DEP. Substituted projects must result in equivalent or greater nutrient reductions than expected from the original projects.

Table A-1. Projects in the Fisheating Creek Sub-watershed

Notes: These attenuated project reductions are calculated specifically to estimate the reductions at the inflow to Lake Okeechobee. See Table 12 of the 2014 BMAP for basin-specific attenuation factors.
TBD = To be determined; O&M = Operations and maintenance; FYN = Florida Yards and Neighborhoods; PSA = Public service announcement
For DWM projects, the start date reflects the year construction began. The completion date is the construction completion date, at which time the project is considered complete and operational.

Lead Entity	Project Number	Project Name	Project Description	Project Type	Start Date	Completion Date	Project Status	Acres Treated	Cost	Cost Annual O&M	Funding Source	TP Reduction (kg/yr)	TP Reduction (mt/yr)	TN Reduction (kg/yr)	TN Reduction (mt/yr)
FDACS	Agriculture BMPs	Fisheating Creek	Landowner implementation of BMPs	Agricultural BMPs	2009		Completed	TBD	TBD			6,980.00	6.98	67,754.00	67.75
FDACS	FDACS-04	Fisheating Creek	Floating aquatic vegetation treatment.	Floating Islands/ Managed Aquatic Plant Systems (MAPS)	TBD		Under way	TBD	TBD		FDACS	8,594.90	8.59	29,174.30	29.17
Glades County	GC-01	Education and Outreach	FYN; landscaping, irrigation, and fertilizer ordinances; PSAs, pamphlets, website, and illicit discharge program.	Public Education	TBD		Under way	TBD	TBD		Glades County	13.70	0.01	79.10	0.08
Highlands County	HC-01	Education and Outreach	FYN, landscaping and irrigation ordinances, PSAs, and pamphlets.	Public Education	TBD		Under way	TBD	TBD		Highlands County	29.50	0.03	362.30	0.36
SFWMD	SFWMD-18	XL Ranch (Lightsey)	Storage of 887 ac-ft of water through above ground impoundment and pasture.	DWM	2011	2012	Completed	TBD	$61,396.00	$137,000.00	SFWMD	70.90	0.07	TBD	TBD
SFWMD	SFWMD-20	Blue Head Ranch	Storage of 3,462 ac-ft of water through pasture.	DWM	2013	2017	Under way	TBD	$193,750.00	$361,200.00	SFWMD	724.20	0.72	TBD	TBD
SFWMD	SFWMD-21	Nicodemus Slough	Storage of 33,860 ac-ft of water through above ground impoundment and pasture.	DWM	2011	2015	Completed	TBD	$4,900,000.00	$2,500,000.00	SFWMD	3,248.50	3.25	TBD	TBD
Coordinating Agency	Project under Development	Legislative Cost-Share Appropriation Program (Dairy Projects)	See Table A-7 in BMAP Annual Report.	Dairy Remediation	2014		Under way	TBD	TBD		FDACS	TBD	TBD	TBD	TBD

Table A-2. Projects in the Indian Prairie Sub-watershed

Notes: These attenuated project reductions are calculated specifically to estimate the reductions at the inflow to Lake Okeechobee. See Table 12 of the 2014 BMAP for basin-specific attenuation factors.
TBD = To be determined
For DWM projects, the start date reflects the year construction began. The completion date is the construction completion date, at which time the project is considered complete and operational.

Lead Entity	Project Number	Project Name	Project Description	Project Type	Start Date	Completion Date	Project Status	Acres Treated	Cost	Cost Annual O&M	Funding Source	TP Reduction (kg/yr)	TP Reduction (mt/yr)	TN Reduction (kg/yr)	TN Reduction (mt/yr)
FDACS	Agriculture BMPs	Indian Prairie	Landowner implementation of BMPs	Agricultural BMPs	2009		Under way	TBD	TBD			6,724.00	6.72	121,328.00	121.33
Glades County	GC-02	Education and Outreach	FYN; landscaping, irrigation, and fertilizer ordinances; PSAs, pamphlets, website, and illicit discharge program.	Public Education	TBD		Under way	TBD	TBD		Glades County	29.60	0.03	415.20	0.42
Highlands County	HC-02	Education and Outreach	FYN, landscaping and irrigation ordinances, PSAs, and pamphlets.	Public Education	TBD		Under way	TBD	TBD		Highlands County	29.60	0.03	415.20	0.42
Istokpoga Marsh Watershed Improvement District	IMWID-01*	IMWID Phase I (DWM Project in Two Phases)	Construct above-ground impoundment with storage capacity of 1,200 acre-feet/year (ac-ft/yr).	DWM	2015		Under way	308.0	TBD		DEP/SFWMD/ FDACS	850.00	0.85	TBD	TBD
SFWMD	SFWMD-10	West Waterhole Marsh	Storage of 4,848 ac-ft of water through above ground impoundment.	DWM	2006	2006	Completed	TBD	$50,000.00	$470,238.00	Florida Ranchlands Environmental Services Project (FRESP)	4,166.40	4.17	20,619.50	20.62
SFWMD	SFWMD-12	Buck Island Ranch (NEPES-1)	Storage of 1,573 ac-ft of water through pasture.	DWM	2011	2012	Completed	TBD	$1,725.00	$173,600.00	SFWMD	1,087.20	1.09	TBD	TBD
SFWMD	SFWMD-23	Buck Island Ranch WMA (NEPES-2	Storage of 620 ac-ft of water through pasture.	DWM	2014	2015	Completed	TBD	$624,600.00	$163,500.00	SFWMD	710.00	0.71	TBD	TBD
Coordinating Agency	Project under Development	IMWID Phase II (STA)	See Table A-7 in BMAP Annual Report	STA	2014		Under way	411.0	TBD		FDACS	1,150.00	1.15	TBD	TBD
Coordinating Agency	Project under Development	Brighton Valley DWM	See Table A-7 in BMAP Annual Report	DWM	TBD		Under way	TBD	TBD		FDACS	7,720.00	7.72	TBD	TBD
Coordinating Agency	Project under Development	Inactive Dairies – Lagoon Remediation	See Table A-7 in BMAP Annual Report	Dairy Remediation	TBD		Completed	TBD	TBD		FDACS	TBD	TBD	TBD	TBD
Coordinating Agency	Project under Development	PL-566 Funded/ Fisheating Creek Structure	See Table A-7 in BMAP Annual Report	Control Structure	TBD		Planned	TBD	TBD			883.00	0.88	TBD	TBD
Coordinating Agency	Project under Development	SR 710 Regional Project	See Table A-7 in BMAP Annual Report	TBD	TBD		Planned	TBD	TBD		FDOT	TBD	TBD	TBD	TBD
Coordinating Agency	Project under Development	Legislative Cost-Share Appropriation Program (Dairy Projects)	See Table A-7 in BMAP Annual Report	Dairy Remediation	2014		Under way	TBD	TBD		FDACS	TBD	TBD	TBD	TBD

Table A-3. Projects in the Lake Istokpoga Sub-watershed

Notes: These attenuated project reductions are calculated specifically to estimate the reductions at the inflow to Lake Okeechobee. See Table 12 of the 2014 BMAP for basin-specific attenuation factors.
TBD = To be determined.
. For DWM projects, the start date reflects the year construction began. The completion date is the construction completion date, at which time the project is considered complete and operational.

Lead Entity	Project Number	Project Name	Project Description	Project Type	Start Date	Completion Date	Project Status	Acres Treated	Cost	Cost Annual O&M	Funding Source	TP Reduction (kg/yr)	TP Reduction (mt/yr)	TN Reduction (kg/yr)	TN Reduction (mt/yr)
City of Avon Park	AP-01	Avon Park Street Sweeping	Street sweeping	Street Sweeping	TBD		Under way	TBD	TBD		City of Avon Park	4.50	0.00	11.20	0.01
City of Avon Park	AP-02	Lake Tulane Stormwater Improvement Project	Runoff will be captured in a series of swales that will allow the runoff to percolate into the sandy soils, preventing further degradation of Lake Tulane.	Grass Swales without Swale Blocks or Raised Culverts	TBD		Under way	32.1	TBD		City of Avon Park/ SWFWMD	1.70	0.00	16.20	0.02
City of Avon Park	AP-03	Lake Isis Stormwater Improvement Project	Runoff will be captured in a lakeside swale and a redesigned pond that will allow the runoff to percolate into the sandy soils, preventing further degradation of Lake Isis.	Wet Detention Pond	TBD		Under way	37.1	TBD		City of Avon Park/ SWFWMD	0.50	0.00	4.90	0.00
FDACS	Agriculture BMPs	Lake Istokpoga	Landowner implementation of BMPs	Agricultural BMPs	2009		Under way	TBD	TBD			1,716.00	1.72	120,385.00	120.39
Highlands County	HC-03	Education and Outreach	FYN, landscaping and irrigation ordinances, PSAs, and pamphlets.	Public Education	TBD		Under way	TBD	TBD		Highlands County	155.20	0.16	6,580.70	6.58
Highlands County	HC-05	Lake June Stormwater Project	Installation of 450 feet of 24-inch French drain in 4 contributing basins.	Online Retention BMPs	2014	2018	Under way	43.3	$440,000.00		SWFWMD and Highlands County	TBD	TBD	TBD	TBD
Highlands County	HC-06	Lake Clay Stormwater Project	600 feet of 24-inch online French drain for parking lot subbasin; 300 feet of 24-inch online French drain will treat the street subbasin.	Online Retention BMPs	TBD	2013	Completed	26.6	$330,000.00	$1,973.00	SWFWMD and Highlands County	1.30	0.00	24.10	0.02
Polk County	PC-01	Education and Outreach	FYN, fertilizer ordinance, PSAs, pamphlets, website, and illicit discharge inspection program.	Public Education	TBD		Under way	TBD	TBD		Polk County	38.80	0.04	1,086.90	1.09
City of Sebring	SEB-01	Little Lake Jackson Off-line Alum Injection Stormwater Treatment	Stormwater diverted through underground culvert, alum injected and the water settles for seven days in a detention pond. Treated water is released to Little Lake Jackson.	Alum Injection System	TBD	2011	Completed	TBD	$231,494.00	$18,500.00	DEP/ SWFWMD/ City of Sebring/ Highlands County	TBD	TBD	TBD	TBD
City of Sebring	SEB-02	Street Sweeping	Street sweeping to collect 602,940 lbs/yr of material.	Street Sweeping	TBD		Under way	TBD	TBD	$35,000.00	City of Sebring	50.90	0.05	118.40	0.12

Lead Entity	Project Number	Project Name	Project Description	Project Type	Start Date	Completion Date	Project Status	Acres Treated	Cost	Cost Annual O&M	Funding Source	TP Reduction (kg/yr)	TP Reduction (mt/yr)	TN Reduction (kg/yr)	TN Reduction (mt/yr)
SFWMD	SFWMD-11	Rafter T Ranch	Storage of 1,298 ac-ft of water through above-ground impoundment and pasture.	DWM	2014	2014	Completed	TBD	TBD	$162,736.00	SFWMD	89.80	0.09	TBD	TBD
SLID	SLID-01	SLID Improvements Phases 1-3	Treatment of runoff through an STA.	STA	2015	2016	Completed	3,016.0	$3,308,079.22	$60,000.00	SLID/DEP	69.83	0.03	88.80	0.04
SLID	SLID-02	SLID Improvements Phase 4	Modification of the existing STA (SLID-1) to include a bypass weir to direct more water to the STA.	STA	TBD		Planned	2,308.0	TBD		SFWMD Local Cooperative Funding Program and SRF	TBD	TBD	TBD	TBD
Coordinating Agency	Project under Development	Legislative Cost-Share Appropriation Program (Dairy Projects)	See Table A-7 in BMAP Annual Report	Dairy Remediation	2014		Under way	TBD	TBD		FDACS	64.00	0.06	TBD	TBD

Table A-4. Projects in the Lower Kissimmee Sub-watershed

Notes: These attenuated project reductions are calculated specifically to estimate the reductions at the inflow to Lake Okeechobee. See Table 12 of the 2014 BMAP for basin-specific attenuation factors.
TBD = To be determined.
For DWM projects, the start date reflects the year construction began. The completion date is the construction completion date, at which time the project is considered complete and operational.
Dixie Ranch is listed in SFWMD-14 (Lower Kissimmee Sub-watershed) and SFWMD-15 (Taylor Creek/Nubbin Slough Sub-watershed) since it extends over both sub-watersheds. Combined costs and TP reduction are shown in SFWMD-14 for both projects.

Lead Entity	Project Number	Project Name	Project Description	Project Type	Start Date	Completion Date	Project Status	Acres Treated	Cost	Cost Annual O&M	Funding Source	TP Reduction (kg/yr)	TP Reduction (mt/yr)	TN Reduction (kg/yr)	TN Reduction (mt/yr)
FDACS	Agriculture BMPs	Lower Kissimmee	Landowner implementation of BMPs	Agricultural BMPs	2009		Under way	TBD	TBD			6,590.00	6.59	94,395.00	94.40
Highlands County	HC-04	Education and Outreach	FYN, landscaping and irrigation ordinances, PSAs, and pamphlets.	Public Education	TBD		Under way	TBD	TBD		Highlands County	136.00	0.14	538.60	0.54
Osceola County	OSC-11	Education and Outreach	FYN; landscaping, irrigation, fertilizer, and pet waste management ordinances; PSAs; pamphlets; website; and illicit discharge program.	Public Education	TBD		Under way	TBD	TBD			2.50	0.00	24.40	0.02
Polk County	PC-02	Education and Outreach	FYN, fertilizer ordinance, PSAs, pamphlets, website, and illicit discharge inspection program.	Public Education	TBD		Under way	TBD	TBD		Polk County	22.70	0.02	408.90	0.41
SFWMD	SFWMD-04	Otter Slough Restoration	This project included 5 ditch plugs and removal of 2 berms. It helps attenuate regional stormwater runoff, as well as providing nutrient reductions because of plant uptake from overland flows. In 2011 LOPP, it created 71 ac-ft of storage.	Hydrologic Restoration	2008	2009	Completed	500.0	TBD		SFWMD	5.60	0.01	TBD	TBD
SFWMD	SFWMD-05	Kissimmee River Restoration	Restore ecological integrity by restoring 40 miles of meandering river and more than 12,000 miles of wetlands through the design and construction of physical project features coupled with application of optimized hydrologic conditions.	Hydrologic Restoration	1999	2020	Under way	25,000.0	$780,000,000.00		SFWMD/ USACE	17,748.00	17.75	TBD	TBD
SFWMD	SFWMD-13	Dixie West	Storage of 315 ac-ft of water through pasture.	DWM	2011	2012	Completed	TBD	$33,000.00	$51,500.00	SFWMD	230.50	0.23	TBD	TBD
SFWMD	SFWMD-14	Dixie Ranch	Storage of 856 ac-ft of water through pasture.	DWM	2011	2012	Completed	TBD	$42,500.00	$146,500.00	SFWMD	205.90	0.21	TBD	TBD
SFWMD	SFWMD-17	Willaway Cattle and Sod	Storage of 229 ac-ft of water through above ground impoundment.	DWM	2011	2013	Completed	TBD	$302,479.00	$1,878.00	SFWMD	114.40	0.11	TBD	TBD

Lead Entity	Project Number	Project Name	Project Description	Project Type	Start Date	Completion Date	Project Status	Acres Treated	Cost	Cost Annual O&M	Funding Source	TP Reduction (kg/yr)	TP Reduction (mt/yr)	TN Reduction (kg/yr)	TN Reduction (mt/yr)
SFWMD	SFWMD-19	Triple A Ranch	Storage of 397 ac-ft of water through above-ground impoundment.	DWM	2011	2015	Completed	TBD	$322,186.00	$30,000.00	SFWMD	78.60	0.08	TBD	TBD
Coordinating Agency	Project under Development	Latt Maxcy DWM	See Table A-7 in BMAP Annual Report	DWM	TBD		Under way	TBD	TBD		FDACS	2,820.00	2.82	TBD	TBD
Coordinating Agency	Project under Development	Legislative Cost-Share Appropriation Program (Dairy Projects)	See Table A-7 in BMAP Annual Report	Dairy Remediation	2014		Under way	TBD	TBD		FDACS	TBD	TBD	TBD	TBD

Table A-5. Projects in the Taylor Creek/Nubbin Slough Sub-watershed

Notes: These attenuated project reductions are calculated specifically to estimate the reductions at the inflow to Lake Okeechobee. See Table 12 of the 2014 BMAP for basin-specific attenuation factors.
TBD = To be determined.
For DWM projects, the start date reflects the year construction began. The completion date is the construction completion date, at which time the project is considered complete and operational.

Lead Entity	Project Number	Project Name	Project Description	Project Type	Start Date	Completion Date	Project Status	Acres Treated	Cost	Cost Annual O&M	Funding Source	TP Reduction (kg/yr)	TP Reduction (mt/yr)	TN Reduction (kg/yr)	TN Reduction (mt/yr)
City of Okeechobee	CO-01	Centennial Park Stormwater Drainage Construction	Adding baffle box to provide additional treatment prior to discharge into Taylor Creek. Will also stabilize 500 feet of bank in Taylor Creek.	Baffle Box	TBD		Planned	15.0	$250,000		City of Okeechobee/ SFWMD	TBD	TBD	TBD	TBD
FDACS	Agriculture BMPs	Taylor Creek/Nubbin Slough	Landowner implementation of BMPs	Agricultural BMPs	2009		Under way	TBD	TBD			7,731.00	7.73	50,525.00	50.53
FDACS	FDACS-01	Lemkin Creek	HWTT is a combination of wetland and chemical treatment technologies designed mainly to remove phosphorus at the sub-basin and parcel scales.	HWTT	TBD	2009	Completed	1,522.0	TBD		FDACS	151.60	0.15	652.10	0.65
FDACS	FDACS-02	Wolff Ditch	HWTT is a combination of wetland and chemical treatment technologies designed mainly to remove phosphorus at the sub-basin and parcel scales.	HWTT	TBD	2009	Completed	1,930.0	TBD		FDACS	845.50	0.85	1,722.00	1.72
FDACS	FDACS-03	Grassy Island	HWTT is a combination of wetland and chemical treatment technologies designed mainly to remove phosphorus at the sub-basin and parcel scales.	HWTT	TBD	2010	Completed	37,802.0	TBD		FDACS	5,547.30	5.55	8,373.10	8.37
FDACS	FDACS-05	Nubbin Slough	HWTT is a combination of wetland and chemical treatment technologies designed mainly to remove phosphorus at the sub-basin and parcel scales.	HWTT	TBD		Completed	TBD	TBD		FDACS	554.60	0.55	370.90	0.37
FDACS	FDACS-06	Mosquito Creek	HWTT is a combination of wetland and chemical treatment technologies designed mainly to remove phosphorus at the sub-basin and parcel scales.	HWTT	TBD		Completed	TBD	TBD		FDACS	475.60	0.48	602.10	0.60
FDOT District 1	FDOT1-01	SR 70 from 34th Ave. to 80th Ave.	Six wet detention ponds.	Wet Detention Pond	2014		Under way	57.4	TBD		FDOT	22.60	0.02	42.60	0.04

Lead Entity	Project Number	Project Name	Project Description	Project Type	Start Date	Completion Date	Project Status	Acres Treated	Cost	Cost Annual O&M	Funding Source	TP Reduction (kg/yr)	TP Reduction (mt/yr)	TN Reduction (kg/yr)	TN Reduction (mt/yr)
FDOT District 1	FDOT1-02	SR 70 from 80th Ave. to St. Lucie County Line	Three wet detention ponds and three dry retention swales.	Wet Detention Pond	2014		Under way	31.4	TBD		FDOT	17.50	0.02	39.40	0.04
FDOT District 1	FDOT1-03	Street Sweeping	Street sweeping	Street Sweeping	TBD		Under way	TBD	TBD		FDOT	108.90	0.11	69.00	0.07
Okeechobee County	OK-01B	Douglas Park South	Addition of dry detention area to serve 73.5 acres of original 150-acre drainage area.	Dry Detention Pond	2008	2009	Completed	73.5	$643,593.00		Community Development Block Grant	2.20	0.00	13.80	0.01
Okeechobee County	OK-02	Oak Park	Roadside swales with raised inlets and two hydrodynamic separators.	Grass Swales with Swale Blocks or Raised Culverts	2015	2016	Completed	56.4	$1,112,005.00		FEMA and Community Development Block Grant	2.20	0.00	14.40	0.01
Okeechobee County	OK-03	Southwest 21st St.	Dry detention roadside swales with raised inlets and one hydrodynamic separator.	Grass Swales with Swale Blocks or Raised Culverts	2012	2013	Completed	2.1	$483,892.58		FEMA, County, and City	0.10	0.00	0.50	0.00
Okeechobee County	OK-04	Southwest Drainage Area Improvements	Dry detention roadside swales with raised inlets and two hydrodynamic separators.	Grass Swales with Swale Blocks or Raised Culverts	2010	2011	Completed	32.2	$1,485,916.70		FEMA	0.40	0.00	0.30	0.00
Okeechobee County	OK-05	Okeechobee County 2008 Disaster Recovery Community Development Block Grant	Culvert upgrades and dry detention area to improve water quality and alleviate funding.	Stormwater System Rehabilitation	2013	2014	Completed	17.2	$786,665.49		Community Development Block Grant	0.20	0.00	4.20	0.00
Okeechobee County	OK-06	Southwest Drainage Area Improvements Whidden Ditch (Phase III)	Ditch and culvert upgrades to improve stormwater conveyance to Rim Canal.	Stormwater System Rehabilitation	2016		Under way	TBD	$749,410.00		Florida Legislature	TBD	TBD	TBD	TBD
Okeechobee County	OK-07	Lock 7 Bypass Culvert System	Installation of parallel culvert system along the Rim Canal to improve conveyance.	Stormwater System Rehabilitation	2016	2016	Completed	0.00	$157,142.59		Florida Legislature	0.00	0.00	0.00	0.00
SFWMD	SFWMD-01	Taylor Creek	The Taylor Creek STA is a two-celled STA.	STA	2004	2008	Completed	118.0	$26,900,000.00	$50,000.00	SFWMD/ USACE	1,537.00	1.54	TBD	TBD
SFWMD	SFWMD-02	Nubbin Slough	The Nubbin Slough STA is the larger of the two pilot STAs constructed north of the lake. It is a two-celled enclosure.	STA	2004	2015	Completed	773.0	Included in SFWMD-1	$100,000.00	SFWMD/ USACE	4,027.00	4.03	TBD	TBD
SFWMD	SFWMD-03	Lakeside Ranch Phase I	Phase I included the construction of a 1,200-acre STA, canal improvements, and the installation of the S-650 pump station.	STA	2009	2012	Completed	TBD	$22,800,000.00	$341,000.00	SFWMD	6,840.00	6.84	TBD	TBD

Lead Entity	Project Number	Project Name	Project Description	Project Type	Start Date	Completion Date	Project Status	Acres Treated	Cost	Cost Annual O&M	Funding Source	TP Reduction (kg/yr)	TP Reduction (mt/yr)	TN Reduction (kg/yr)	TN Reduction (mt/yr)
SFWMD	SFWMD-15	Dixie Ranch	Storage of 856 ac-ft of water through pasture.	DWM	2011	2012	Completed	TBD	Included in SFWMD-14	Included in SFWMD-14	SFWMD	See SFWMD-14	See SFWMD-14	TBD	TBD
Coordinating Agency	Project under Development	Lakeside Ranch Phase II	See Table A-7 in BMAP Annual Report	STA	TBD		Under way	TBD	TBD		SFWMD	7,600.00	7.60	TBD	TBD
Coordinating Agency	Project under Development	Inactive Dairies – Lagoon Remediation	See Table A-7 in BMAP Annual Report	Dairy Remediation	TBD		Completed	TBD	TBD		FDACS	TBD	TBD	TBD	TBD
Coordinating Agency	Project under Development	SR 710 Regional Project	See Table A-7 in BMAP Annual Report	TBD	TBD		Planned	TBD	TBD		FDOT	TBD	TBD	TBD	TBD
Coordinating Agency	Project under Development	Legislative Cost-Share Appropriation Program (Dairy Projects)	See Table A-7 in BMAP Annual Report	Dairy Remediation	2014		Under way	TBD	TBD		FDACS	1,669.00	1.67	TBD	TBD

Table A-6. Projects in the Upper Kissimmee Sub-watershed

Notes: These attenuated project reductions are calculated specifically to estimate the reductions at the inflow to Lake Okeechobee. See Table 12 of the 2014 BMAP for basin-specific attenuation factors.
TBD = To be determined.
For DWM projects, the start date reflects the year construction began. The completion date is the construction completion date, at which time the project is considered complete and operational.
Combined cost is shown for both the Kissimmee River Restoration Project (SFWMD-05) and Kissimmee River Headwaters Revitalization Project (SFWMD-22). For SFWMD-22, the implementation of the new headwaters regulation schedule is contingent on completion of all restoration construction and land acquisition.

Lead Entity	Project Number	Project Name	Project Description	Project Type	Start Date	Completion Date	Project Status	Acres Treated	Cost	Cost Annual O&M	Funding Source	TP Reduction (kg/yr)	TP Reduction (mt/yr)	TN Reduction (kg/yr)	TN Reduction (mt/yr)
City of Edgewood	EW-01	Water Quality Awareness Program	Water quality education and awareness articles in the city's quarterly newsletter. Various water quality–related informational brochures, flyers, and other publications displayed at city hall for the public.	Public Education	TBD		Under way	TBD	TBD	$1,000	City of Edgewood	0.60	0.00	17.30	0.02
FDACS	Agriculture BMPs	Upper Kissimmee	Landowner implementation of BMPs	Agricultural BMPs	2009		Under way	TBD	TBD			3,561.00	3.56	168,204.0	168.20
FDOT District 5	FDOT5-01	239266-B SR 15 (Hoffner Rd.) from north of Lee Vista Blvd. to west of SR 436 (Pond 2)	Add lanes and reconstruct.	Wet Detention Pond	2015	2019	Under way	4.8	TBD		Florida Legislature	0.10	0.00	0.30	0.00
FDOT District 5	FDOT5-02	239266-A SR 15 Hoffner Ave from east of SR 436 to Conway Rd. (Pond 1)	Add lanes and reconstruct.	Wet Detention Pond	2015	2019	Under way	3.6	TBD		Florida Legislature	0.10	0.00	0.90	0.00
FDOT District 5	FDOT5-03	239266-C SR 15 Hoffner Ave. from west of SR 436 to Conway Rd. (Pond 3)	Add lanes and reconstruct.	Wet Detention Pond	2015	2019	Under way	11.9	TBD		Florida Legislature	0.50	0.00	6.70	0.01
FDOT District 5	FDOT5-04	239266-D SR 15 Hoffner Ave. from west of SR 436 to Conway Rd. (Pond 4)	Add lanes and reconstruct.	Wet Detention Pond	2015	2019	Under way	11.4	TBD		Florida Legislature	0.40	0.00	10.40	0.01
FDOT District 5	FDOT5-05	239535-F SR 50 from Good Homes Rd. to Pine Hills Rd. (Pond 4)	Add lanes and reconstruct.	Dry Detention Pond	TBD		Completed	16.4	TBD		Florida Legislature	0.70	0.00	3.90	0.00
FDOT District 5	FDOT5-06	416518-A Interstate-4 Braided Ramp from U.S. 192 Interchange to Osceola Parkway Interchange (Pond SE-1)	New road construction.	Wet Detention Pond	TBD		Completed	13.8	TBD		Florida Legislature	0.50	0.00	2.30	0.00
FDOT District 5	FDOT5-07	416518-B Interstate-4	New road construction.	Wet Detention Pond	TBD		Completed	6.1	TBD		Florida Legislature	0.20	0.00	0.70	0.00

Lead Entity	Project Number	Project Name	Project Description	Project Type	Start Date	Completion Date	Project Status	Acres Treated	Cost	Cost Annual O&M	Funding Source	TP Reduction (kg/yr)	TP Reduction (mt/yr)	TN Reduction (kg/yr)	TN Reduction (mt/yr)
		Braided Ramp from U.S. 192 Interchange to Osceola Parkway Interchange (Pond SE-2)													
FDOT District 5	FDOT5-08	239682-A SR 500 (U.S. 17-92) from Aeronautical Dr. to Budinger Ave. (Pond 1)	Add lanes and rehabilitate pavement.	Wet Detention Pond	2016	2019	Under way	26.5	TBD		Florida Legislature	0.90	0.00	6.10	0.01
FDOT District 5	FDOT5-09	239682-B SR 500 (U.S. 17-92) from Aeronautical Dr. to Budinger Ave. (Pond 2)	Add lanes and rehabilitate pavement.	Wet Detention Pond	2016	2019	Under way	13.4	TBD		Florida Legislature	0.50	0.00	3.50	0.00
FDOT District 5	FDOT5-10	239682-C SR 500 (U.S. 17-92) from Aeronautical Dr. to Budinger Ave. (Pond 3)	Add lanes and rehabilitate pavement.	Wet Detention Pond	2016	2019	Under way	15.8	TBD		Florida Legislature	0.60	0.00	3.40	0.00
FDOT District 5	FDOT5-11	239682-D SR 500 (U.S. 17-92) from Aeronautical Dr. to Budinger Ave. (Pond 4)	Add lanes and rehabilitate pavement.	Wet Detention Pond	2016	2019	Under way	33.7	TBD		Florida Legislature	1.10	0.00	6.70	0.01
FDOT District 5	FDOT5-12	418403-A, B SR 600 (U.S. 17/92) JYP from south of Portage St. to north of Vine St. (U.S. 192) (Ponds East and West)	Add lanes and reconstruct.	Wet Detention Pond	2015	2018	Under way	14.2	TBD		Florida Legislature	0.50	0.00	3.40	0.00
FDOT District 5	FDOT5-13	239454-A widening of SR 436 from SR 528 to SR 552 (Pond A)	Add lanes and reconstruct.	Wet Detention Pond	TBD	2010	Completed	38.8	TBD		Florida Legislature	0.30	0.00	0.90	0.00
FDOT District 5	FDOT5-14	239635-A New Bridge SR 500 at Reedy Creek (Pond 1)	New bridge	Dry Detention Pond	TBD	2010	Completed	4.1	TBD		Florida Legislature	0.00	0.00	0.60	0.00
FDOT District 5	FDOT5-15	239635-B New Bridge SR 500 at Reedy Creek (Pond 2)	New bridge	Wet Detention Pond	TBD	2010	Completed	7.6	TBD		Florida Legislature	0.20	0.00	3.40	0.00
FDOT District 5	FDOT5-16	239663-A Widening of SR 530 from SR 535 to Hoagland Blvd. (Pond 1)	Add lanes and reconstruct.	Wet Detention Pond	TBD	2010	Completed	14.6	TBD		Florida Legislature	0.60	0.00	2.10	0.00

Lead Entity	Project Number	Project Name	Project Description	Project Type	Start Date	Completion Date	Project Status	Acres Treated	Cost	Cost Annual O&M	Funding Source	TP Reduction (kg/yr)	TP Reduction (mt/yr)	TN Reduction (kg/yr)	TN Reduction (mt/yr)
FDOT District 5	FDOT5-17	239663-B Widening of SR 530 from SR 535 to Hoagland Blvd. (Pond 2)	Add lanes and reconstruct.	Wet Detention Pond	TBD	2010	Completed	17.9	TBD		Florida Legislature	0.70	0.00	2.60	TBD
FDOT District 5	FDOT5-18	239663-C Widening of SR 530 from SR 535 to Hoagland Blvd. (Pond 3)	Add lanes and reconstruct.	Wet Detention Pond	TBD	2010	Completed	16.9	TBD		Florida Legislature	0.70	0.00	2.30	0.00
FDOT District 5	FDOT5-19	239663-D Widening of SR 530 from SR 535 to Hoagland Blvd. (Pond 4)	Add lanes and reconstruct.	Wet Detention Pond	TBD	2010	Completed	12.6	TBD		Florida Legislature	0.50	0.00	2.20	0.00
FDOT District 5	FDOT5-20	242436-A SR 400 Ramps at Gore Ave. Retention Pits (Ponds 1 and 2)	Ramps	Dry Detention Pond	TBD	2011	Completed	9.8	TBD		Florida Legislature	0.20	0.00	2.60	0.00
FDOT District 5	FDOT5-21	242484-A Widening of SR 400 from Universal Blvd. to South St. (Pond 4)	Add lanes and reconstruct.	Wet Detention Pond	TBD	2011	Completed	21.8	TBD		Florida Legislature	0.60	0.00	3.10	0.00
FDOT District 5	FDOT5-22	405515-A and B SR 400 Wet Detention Pond (Ponds 1 and 2)	Add lanes and reconstruct.	Wet Detention Pond	TBD	2011	Completed	14.8	TBD		Florida Legislature	0.20	0.00	1.20	0.00
FDOT District 5	FDOT5-23	410732-B SR 400 Swales	Add lanes and reconstruct.	Grass Swales without Swale Blocks or Raised Culverts	TBD	2010	Completed	32.2	TBD		Florida Legislature	0.20	0.00	1.30	0.00
FDOT District 5	FDOT5-24	Street Sweeping	Street sweeping to collect 1,507,453 lbs/yr of material.	Street Sweeping	TBD		Under way	TBD	TBD		Florida Legislature	66.70	0.07	104.00	0.10
FDOT District 5	FDOT5-25	Education and Outreach	Funding for Orange County Water Atlas website, and illicit discharge inspection and training program.	Public Education	TBD		Under way	TBD	TBD		Florida Legislature	1.70	0.00	19.80	0.02
FDOT District 5	FDOT5-26	2396831 Pond 6 (SR 500 widening from Eastern Ave. to Nova Rd.)	Add lanes and reconstruct.	Wet Detention Pond	2015	2017	Under way	19.1	TBD		Florida Legislature	9.98	0.01	TBD	TBD
FDOT District 5	FDOT5-27	2396831 Pond 7 (SR 500 widening from Eastern Ave. to Nova Rd.)	Add lanes and reconstruct.	Wet Detention Pond	2015	2017	Under way	23.2	TBD		Florida Legislature	5.93	0.01	TBD	TBD
FDOT District 5	FDOT5-28	407143-4 Ponds WDA 2A and 2B (SR 482	Add lanes and reconstruct.	Wet Detention Pond	2015	2019	Under way	23.0	TBD		Florida Legislature	1.30	0.00	58.00	0.06

Lead Entity	Project Number	Project Name	Project Description	Project Type	Start Date	Completion Date	Project Status	Acres Treated	Cost	Cost Annual O&M	Funding Source	TP Reduction (kg/yr)	TP Reduction (mt/yr)	TN Reduction (kg/yr)	TN Reduction (mt/yr)
		widening from west of Turkey Lake Rd. to east of Universal Blvd.)													
FDOT District 5	FDOT5-29	407143-4 Pond WDA 3 (SR 482 widening from west of Turkey Lake Rd. to east of Universal Blvd.)	Add lanes and reconstruct.	Wet Detention Pond	2015	2019	Under way	23.0	TBD		Florida Legislature	0.40	0.00	16.00	0.02
FDOT District 5	FDOT5-30	407143-4 Pond WDA 4 (SR 482 widening from west of Turkey Lake Rd. to east of Universal Blvd.)	Add lanes and reconstruct.	Wet Detention Pond	2015	2019	Under way	23.0	TBD		Florida Legislature	1.60	0.00	72.00	0.07
City of Kissimmee	KS-01	Education and Outreach	PSAs, pamphlets, website, and illicit discharge inspection program.	Public Education	TBD		Under way	TBD	$65,000		City of Kissimmee Stormwater Utility Fund	8.30	0.01	199.90	0.20
City of Kissimmee	KS-02	Street Sweeping	Sweeping over 8,500 miles per year. Material is not currently weighed, but the city is currently developing a program to weigh material.	Street Sweeping	TBD		Under way	TBD	$50,000		City of Kissimmee Stormwater Utility Fund	100.40	0.10	277.60	0.28
City of Kissimmee	KS-03	Lake Tivoli	Treatment for older existing development as well as future online development; treatment provides 2.5 times the proposed percent impervious area.	Online Retention BMPs	TBD		Under way	132.8	$300,000			TBD	TBD	TBD	TBD
City of Kissimmee	KS-04	Lakefront Park Redevelopment – Swales/Rain Gardens	Swale/rain garden system with 2.07 acres of dry detention.	Grass Swales without Swale Blocks or Raised Culverts	TBD	2015	Completed	14.2	$500,000		City of Kissimmee General Fund	0.20	0.00	5.70	0.01
City of Kissimmee	KS-05	Lakefront Park Redevelopment Baffle Boxes	Three nutrient separating baffle boxes (NSBBs) and three filter boxes in the lakefront park area. Intend to install up to and additional two baffle boxes in the next five years.	Baffle Box, 2nd Generation	TBD	2015	Completed	14.2	$394,267 completed; additional $50,000 for future boxes		City of Kissimmee General Fund	0.20	0.00	9.80	0.01
City of Kissimmee	KS-06	Martin Luther King Blvd. Phase III from Thacker Ave. to Dyer Blvd.	Construction of dry detention with particular standards (side slopes, littoral zones) per the Federal Aviation Administration for reduction of bird strikes.	Grass Swales without Swale Blocks or Raised Culverts	TBD	2015	Completed	5.5	$1,500,000		City of Kissimmee General Fund	0.10	0.00	1.20	0.00

Lead Entity	Project Number	Project Name	Project Description	Project Type	Start Date	Completion Date	Project Status	Acres Treated	Cost	Cost Annual O&M	Funding Source	TP Reduction (kg/yr)	TP Reduction (mt/yr)	TN Reduction (kg/yr)	TN Reduction (mt/yr)
City of Kissimmee	KS-07	Emory Ave. Stormwater Management Pond	An offline stormwater pond to provide extra storage to alleviate flooding. The pond will also catch the first flush during rain events to help provide water quality treatment to the West City Ditch.	Wet Detention Pond	2016	2017	Under way	TBD	$500,000		City of Kissimmee Stormwater Utility Fund	TBD	TBD	TBD	TBD
Orange County	OC-01	Education and Outreach	FYN; landscaping, irrigation, fertilizer, and pet waste management ordinances; PSAs; pamphlets; Water Atlas website; and illicit discharge program.	Public Education	TBD		Under way	TBD	TBD		Orange County	586.10	0.59	13,247.40	13.25
Orange County	OC-02	Lake Conway Street Sweeping	Street sweeping of 6,055 curb miles annually.	Street Sweeping	TBD		Under way	1,096.0	TBD	$145,320	Lake Conway Taxing District (MSTU)	9.30	0.01	26.70	0.03
Orange County	OC-03	Lake Holden Street Sweeping	Street sweeping of 829 curb miles annually.	Street Sweeping	TBD		Under way	157.0	TBD	$19,896	Lake Holden Taxing District (MSTU)	2.30	0.00	6.60	0.01
Orange County	OC-04	Lake Jessamine Street Sweeping	Street sweeping of 734 curb miles annually.	Street Sweeping	TBD		Under way	138.0	TBD	$17,616	Lake Jessamine Taxing District (MSTU)	1.70	0.00	4.80	0.00
Orange County	OC-05	Shingle/Boggy/ Hart Basin Street Sweeping	Countywide street sweeping.	Street Sweeping	TBD		Under way	TBD	TBD		Orange County	0.70	0.00	2.10	0.00
Orange County	OC-07	Lake Conway Curb Inlet Basket (CIB) Existing	Curb or grate inlet filter baskets to collect 16,169 lbs/yr of material.	Catch Basin Inserts/Inlet Filter Cleanout	TBD		Completed	71.0	$112,000	$13,269	Lake Conway Taxing District (MSTU)	0.40	0.00	2.00	0.00
Orange County	OC-09	Lake Pineloch CIB	Curb or grate inlet filter baskets to collect 4,158 lbs/yr of material.	Catch Basin Inserts/Inlet Filter Cleanout	TBD		Completed	14.0	$18,000	$2,677	Orange County General Fund	0.10	0.00	0.50	0.00
Orange County	OC-10	Lake Anderson CIB	Curb or grate inlet filter baskets to collect 3,364 lbs/yr of material.	Catch Basin Inserts/Inlet Filter Cleanout	TBD		Completed	7.0	$10,000	$1,280	Lake Anderson MSTU	0.10	0.00	0.40	0.00
Orange County	OC-11	Lake Holden CIB	Curb or grate inlet filter baskets to collect 27,602 lbs/yr of material.	Catch Basin Inserts/Inlet Filter Cleanout	TBD		Completed	72.0	$41,000	$13,386	Lake Holden Taxing District (MSTU)	0.70	0.00	3.30	0.00
Orange County	OC-12	Lake Jessamine CIB	Curb or grate inlet filter baskets to collect 13,025 lbs/yr of material.	Catch Basin Inserts/Inlet Filter Cleanout	TBD		Completed	63.0	$110,000	$10,708	Lake Jessamine Taxing District (MSTU)	0.30	0.00	1.60	0.00
Orange County	OC-13	Lake Floy CIB	Curb or grate inlet filter baskets to collect 4,835 lbs/yr of material.	Catch Basin Inserts/Inlet Filter Cleanout	TBD		Completed	6.0	$10,000	$1,164	Lake Floy MSTU	0.10	0.00	0.60	0.00
Orange County	OC-14	Lake Cane CIB	Curb or grate inlet filter baskets to collect 3,845 lbs/yr of material.	Catch Basin Inserts/Inlet	TBD		Completed	11.0	$14,000	$1,629	Orange County General Fund	0.10	0.00	0.50	0.00

Lead Entity	Project Number	Project Name	Project Description	Project Type	Start Date	Completion Date	Project Status	Acres Treated	Cost	Cost Annual O&M	Funding Source	TP Reduction (kg/yr)	TP Reduction (mt/yr)	TN Reduction (kg/yr)	TN Reduction (mt/yr)
				Filter Cleanout											
Orange County	OC-15	Lake Odell CIB	Curb or grate inlet filter baskets to collect 904 lbs/yr of material.	Catch Basin Inserts/Inlet Filter Cleanout	TBD		Completed	2.0	$3,000	$349	Orange County General Fund	0.00	0.00	0.10	0.00
Orange County	OC-16	Lake Tyler CIB	Curb or grate inlet filter baskets.	Catch Basin Inserts/Inlet Filter Cleanout	TBD		Completed	7.0	$11,000	$1,164		0.00	0.00	0.00	0.00
Orange County	OC-17	Lake Down/ Windermere CIB	Curb or grate inlet filter baskets to collect 16,934 lbs/yr of material.	Catch Basin Inserts/Inlet Filter Cleanout	2013		Completed	34.0	$56,000	$16,063	Windermere Water and Navigation Control District (MSTU)	0.50	0.00	2.00	0.00
Orange County	OC-18	Lake Tibet CIB	Curb or grate inlet filter baskets to collect 13,494 lbs/yr of material.	Catch Basin Inserts/Inlet Filter Cleanout	2013		Completed	58.0	$31,000		Windermere Water and Navigation Control District (MSTU)	0.40	0.00	1.60	0.00
Orange County	OC-19	Lisa Waterway Continuous Deflective Separation (CDS)	Treats runoff from Orange Ave.	CDS Unit	TBD		Completed	TBD	$225,000	$6,987	Lake Conway Taxing District (MSTU)	0.30	0.00	1.50	0.00
Orange County	OC-20	Randolph Ave. CDS Unit	Treats runoff from Randolph Ave.	CDS Unit	TBD		Completed	TBD	TBD			0.00	0.00	0.00	0.00
Orange County	OC-21	Randolph Ave. Stormceptor	Stormceptor	Stormceptor Unit	TBD	Prior to 2014	Completed	TBD	TBD			0.00	0.00	0.10	0.00
Orange County	OC-22	Randolph Ave. Pond	Dry detention pond.	Dry Detention Pond	TBD	Prior to 2014	Completed	TBD	TBD			0.00	0.00	0.40	0.00
Orange County	OC-23	Lake Mary Jess Pond	Wet retention pond created from canal.	Wet Retention Pond	TBD	2013	Completed	31.2	$534,795	$6,000	FDOT District 5/ City of Edgewood	2.90	0.00	13.10	0.01
Orange County	OC-24	Lake Odell Sediment Sump	Small sump that collects sediment from roadway, with an estimate of 12,000 lbs/yr of material.	Control Structure	2013	2014	Completed	TBD	$33,300	$1,500	Orange County General Fund	0.40	0.00	1.20	0.00
Orange County	OC-25	Lake Jennie Jewell NSBB	Construct NSBB containing media.	Baffle Box with Media Filtration	2015	2017	Under way	9.1	$300,000	$2,500	Orange County BCC	33.70	0.03	39.90	0.04
Orange County	OC-26	Lake Anderson Mobile Alum Injection	Storm pond enhancement with alum.	Alum Injection System	2014	2017	Under way	173.0	$344,271	$30,000	Orange County General Fund	12.20	0.01	257.60	0.26
Orange County	OC-27	Lake Jessamine Surface Alum	Whole-lake alum treatment.	Alum Injection System	TBD	2013	Completed	TBD	$246,000		Lake Jessamine Taxing District (MSTU)	4.50	0.00	71.70	0.07
Orange County	OC-28	Lake Down Alum Treatment Facility	Installation of offline alum injection facility on the upstream portion of the Butler Chain of Lakes to address phosphorus loading to	Alum Injection System	2014	2016	Completed	378.8	$2,000,000	$15,000	Windermere Water and Navigation Control District (MSTU)/ DEP Grant	21.30	0.02	555.10	0.56

Lead Entity	Project Number	Project Name	Project Description	Project Type	Start Date	Completion Date	Project Status	Acres Treated	Cost	Cost Annual O&M	Funding Source	TP Reduction (kg/yr)	TP Reduction (mt/yr)	TN Reduction (kg/yr)	TN Reduction (mt/yr)
			the chain and downstream.												
Orange County	OC-29	Lake Conway Hydrologic and Nutrient Study	Identify nutrient sources.	Studies	2015		Under way	TBD	$188,536		Orange County – MSTU	TBD	TBD	TBD	TBD
Orange County	OC-30	Lake Jennie Jewel CIB Installation	Install baskets in stormwater inlets.	Catch Basin Inserts/Inlet Filter Cleanout	TBD	2015	Completed	6.0	$9,360	$1,048	Orange County Board of County Commissioners (BCC)	0.20	0.00	0.33	TBD
Orange County	OC-31	Jewell-Gatlin NSBB	Construct NSBB containing media.	Baffle Box with Media Filtration	TBD		Under way	70.4	$165,000	$2,500	Orange County BCC	TBD	TBD	TBD	TBD
Orange County	OC-32	Lake Gem Mary	Identify impairment sources and provide BMP recommendations.	Studies	TBD	2016	Completed	TBD	$162,517		Orange County BCC	TBD	TBD	TBD	TBD
Orange County	OC-33	Lake Conway Old Dominion Rd. NSBB	Treat stormwater from Lake Conway Woods	Baffle Box with Media Filtration	2016		Completed	39.5	$173,513	$4,258	Lake Conway Taxing District (MSTU) and DEP	1.70	0.00	13.40	0.01
Orange County	OC-34	Lake Conway Pershing CDS	Treat stormwater from Pershing Ave.	CDS Unit	TBD		Completed	TBD	TBD	$5,072	Lake Conway Taxing District (MSTU)	0.07	0.00	0.12	0.00
Orange County	OC-35	Lake Conway Cullen Lakeshore CDS	Treat stormwater from Cullen Lakeshore	CDS Unit	TBD		Completed	TBD	TBD	$5,676	Lake Conway Taxing District (MSTU)	0.07	0.00	0.11	0.00
Orange County	OC-36	Lake Jessamine 608 Viscaya NSB1	Treat stormwater from Viscaya Ave.	Baffle Box with Media Filtration	TBD		Completed	TBD	TBD	$1,175	Lake Jessamine Taxing District (MSTU)	0.01	0.00	0.02	0.00
Orange County	OC-37	Lake Jessamine 616 Viscaya NSB1	Treat stormwater from Viscaya Ave.	Baffle Box with Media Filtration	TBD		Completed	TBD	TBD	$1,404	Lake Jessamine Taxing District (MSTU)	0.01	0.00	0.02	0.00
Orange County	OC-38	Lake Jessamine Silvera Ave. NSB1	Treat stormwater from Silvera Ave.	Baffle Box with Media Filtration	TBD		Completed	TBD	TBD	$2,075	Lake Jessamine Taxing District (MSTU)	0.02	0.00	0.03	0.00
Orange County	OC-39	Lake Tyler Apts 8 CDS	Treat stormwater from Lake Tyler Apartments	CDS Unit	TBD		Completed	TBD	TBD	$2,952	Orange County General Fund	0.03	0.00	0.05	0.00
Orange County	OC-40	Lake Tyler Apts 9 CDS	Treat stormwater from Lake Tyler Apartments	CDS Unit	TBD		Completed	TBD	TBD	$5,445	Orange County General Fund	0.02	0.00	0.03	0.00
Orange County	OC-41	Hidden Cove Apts 7 CDS	Treat stormwater from Hidden Cove Apartments	CDS Unit	TBD		Completed	TBD	TBD	$3,333	Orange County General Fund	0.01	0.00	0.02	0.00
Orange County	OC-42	Lake Tibet Houston Pl NSBB	Treat stormwater from Houston Place	Baffle Box with Media Filtration	TBD		Completed	TBD	TBD	$2,329	Butler MSTU	0.01	0.00	0.02	0.00
Orange County	OC-43	Lake Down Sub-Basin 9 NSBB	Treat stormwater from Sub-Basin 9 in Lake Down	Baffle Box with Media Filtration	TBD	2017	Under way	TBD	TBD		Orange County General Fund	TBD	TBD	TBD	TBD
Orange County	OC-44	Lake Jessamine Hydrologic Nutrient Budget Study	Hydrologic and nutrient budget study	Studies	TBD	2012	Completed	1,315.0	$105,886		Lake Jessamine Taxing District (MSTU)	TBD	TBD	TBD	TBD
Orange County	OC-45	Anderson St. Sweeping	Sweeping of 31.8 curb miles annually	Street Sweeping	TBD		Under way	38.0	TBD	$770	Lake Anderson Taxing District (MSTU)	0.10	0.00	0.10	0.00

Lead Entity	Project Number	Project Name	Project Description	Project Type	Start Date	Completion Date	Project Status	Acres Treated	Cost	Cost Annual O&M	Funding Source	TP Reduction (kg/yr)	TP Reduction (mt/yr)	TN Reduction (kg/yr)	TN Reduction (mt/yr)
Orange County	OC-46	Bass Lake CIB	Collect 1,572 lbs/yr of material	Catch Basin Inserts/Inlet Filter Cleanout	TBD		Completed	4.0	TBD	$470	Bass Lake Taxing District (MSTU)	0.50	0.00	0.30	0.00
Orange County	OC-47	Jennie Jewel Alum	In-lake application of alum and buffer	Alum Injection System	TBD		Planned	66.4	$150,000		Jennie Jewel Taxing District (MSTU)	1,694.00	1.69	TBD	TBD
Orange County	OC-48	LaGrange CIB	Collect 2,290 lbs/yr of material	Catch Basin Inserts/Inlet Filter Cleanout	TBD		Completed	5.0	TBD	$940	LaGrange Taxing District (MSTU)	0.70	0.00	0.40	0.00
Orange County	OC-49	Lake Christie NSBB	Install NSBB fitted with bioactivated media	Baffle Box with Media Filtration	TBD		Planned	81.5	$1,500		Orange County General Fund	7.00	1.50	12.00	0.01
City of Orlando	ORL-01	18th St./Parramore Ave. Baffle Box	Baffle box installed to remove gross pollutants, including organic debris, sediment, and litter.	Baffle Box, 2nd Generation	TBD	2009	Completed	4.6	$578,138		City of Orlando Stormwater Utility + 50 % cost funded from SFWMD Grant	0.00	0.00	3.30	0.00
City of Orlando	ORL-02	19th St./Parramore Ave. Baffle Box	Baffle box installed to remove gross pollutants, including organic debris, sediment, and litter.	Baffle Box, 2nd Generation	TBD	2009	Completed	9.9	Part of project ORL-1		City of Orlando Stormwater Utility + 50 % cost funded from SFWMD Grant	0.10	0.00	7.10	0.01
City of Orlando	ORL-03	Pine St./Orange Blossom Trail Corridor Stormwater Improvements	Installation of 1,800 feet of stormwater pipe from Pine St. to Lake Lorna Doone, including a baffle box.	Baffle Box, 2nd Generation	TBD	2010	Completed	11.5	$577,822		City of Orlando Stormwater Utility + 50 % cost funded by CBIR Grant	0.30	0.00	2.80	0.00
City of Orlando	ORL-04	Lake Holden Terrace/Albert Shores Sanitary Components	Sanitary infrastructure installed for septic tank conversions – 11 of 77 homes converted.	Wastewater Service Area Expansion	TBD	2012	Completed	TBD	$3,522,911		City of Orlando Wastewater Division, City of Orlando Stormwater Utility, Orlando Utility Commission	TBD	TBD	TBD	TBD
City of Orlando	ORL-05	Lake Holden Terrace/Albert Shores Stormwater Components	Two baffle boxes and one Storm Flo unit installed in stormwater infrastructure for capturing organic debris, sediment and litter; stormwater infrastructure added to alleviate flooding.	Baffle Box, 2nd Generation	TBD	2012	Completed	76.4	Part of ORL-4		City of Orlando Wastewater Division, City of Orlando Stormwater Utility, Orlando Utility Commission	1.00	0.00	39.30	0.04
City of Orlando	ORL-06	Lake Angel Drainage Improvements	Expand the permanent pool volume of Lake Angel and install three baffle boxes in the main inflow pipes.	Wet Detention Pond	2014	2015	Completed	87.0	$2,000,000		City of Orlando Stormwater Utility + EPA Grant	0.50	0.00	16.60	0.02
City of Orlando	ORL-07	CEMEX-South Division Ave. Roadway and Drainage Improvements	Pave unimproved access road to industrial park and install baffle box to capture sediment; install curbing along additional	Baffle Box, 2nd Generation	TBD		Planned	52.6	$1,500,000		City of Orlando Stormwater Utility	1.30	0.00	12.70	0.01

Lead Entity	Project Number	Project Name	Project Description	Project Type	Start Date	Completion Date	Project Status	Acres Treated	Cost	Cost Annual O&M	Funding Source	TP Reduction (kg/yr)	TP Reduction (mt/yr)	TN Reduction (kg/yr)	TN Reduction (mt/yr)
			areas of Division Ave. to allow street sweepers to effectively capture more sediment in the Lake Holden Basin.												
City of Orlando	ORL-08	Lake Pineloch Basin Inlet Baskets	32 inlet baskets installed to remove gross pollutants, including organic debris, sediment and litter – 36 cubic yds/yr of material collected.	Catch Basin Inserts/Inlet Filter Cleanout	2009		Completed	TBD	$40,480		City of Orlando Stormwater Utility	14.00	0.01	34.00	0.03
City of Orlando	ORL-09	Clear Lake Basin Inlet Baskets	29 inlet baskets installed to remove gross pollutants, including organic debris, sediment and litter – 23.85 cubic yds/yr of material collected.	Catch Basin Inserts/Inlet Filter Cleanout	2007		Completed	TBD	$8,550		City of Orlando	9.00	0.01	22.00	0.02
City of Orlando	ORL-10	Lake Lorna Doone Basin Inlet Baskets	16 inlet baskets installed to remove gross pollutants, including organic debris, sediment and litter – 33.25 cubic yds/yr of material collected.	Catch Basin Inserts/Inlet Filter Cleanout	2007		Completed	TBD	$17,755		City of Orlando	13.00	0.01	31.00	0.03
City of Orlando	ORL-11	Lake Mann Basin Inlet Baskets	44 inlet baskets installed to remove gross pollutants, including organic debris, sediment and litter – 36.25 cubic yards/yr of material llected.	Catch Basin Inserts/Inlet Filter Cleanout	2007		Completed	TBD	$48,826		City of Orlando	14.00	0.01	34.00	0.03
City of Orlando	ORL-13	Rock Lake Basin Inlet Baskets	10 inlet baskets installed to remove gross pollutants, including organic debris, sediment and litter – 26.25 cubic yds/yr of material collected.	Catch Basin Inserts/Inlet Filter Cleanout	2007		Completed	TBD	$8,550		City of Orlando	10.00	0.01	25.00	0.03
City of Orlando	ORL-14	Lake Sunset Basin Inlet Baskets	Eight inlet baskets installed to remove gross pollutants, including organic debris, sediment and litter – 12.0 cubic yds/yr of material collected.	Catch Basin Inserts/Inlet Filter Cleanout	2007		Completed	TBD	$8,550		City of Orlando	5.00	0.01	11.00	0.01
City of Orlando	ORL-15	Walker Lagoon Basin Inlet Baskets	16 inlet baskets installed to remove gross pollutants, including organic debris, sediment and litter – 19.1 cubic yds/yr of material collected.	Catch Basin Inserts/Inlet Filter Cleanout	2007		Completed	TBD	$17,755		City of Orlando	7.00	0.01	18.00	0.02

Lead Entity	Project Number	Project Name	Project Description	Project Type	Start Date	Completion Date	Project Status	Acres Treated	Cost	Cost Annual O&M	Funding Source	TP Reduction (kg/yr)	TP Reduction (mt/yr)	TN Reduction (kg/yr)	TN Reduction (mt/yr)
City of Orlando	ORL-16	Street Sweeping	Street sweeping within all public roads within city limits – 3,645 cubic yards/yr of material collected.	Street Sweeping	TBD		Under way	TBD	TBD		City of Orlando Stormwater Utility	1,368.00	1.37	2,134.00	2.13
City of Orlando	ORL-17	Education and Outreach	FYN; landscaping, irrigation, fertilizer, and pet waste management ordinances; PSAs; pamphlets; website; and illicit discharge program.	Public Education	TBD		Under way	TBD	TBD	$80,000	City of Orlando Stormwater Utility	206.70	0.21	3,440.00	3.44
Osceola County	OSC-01	Narcoossee Rd. IB Ponds 2 and 3	Roadway widening.	Wet Detention Pond	TBD	2011	Completed	29.3	TBD			0.20	0.00	5.70	0.01
Osceola County	OSC-02	Narcoossee Rd. III Ponds C3A and C3B	Roadway widening.	Wet Detention Pond	TBD	2012	Completed	20.5	TBD			0.10	0.00	3.80	0.00
Osceola County	OSC-03	Narcoossee Rd. III Pond D3	Roadway widening.	Wet Detention Pond	TBD	2012	Completed	24.3	TBD			0.20	0.00	3.70	0.00
Osceola County	OSC-04	Narcoossee Rd. III Pond E1	Roadway widening.	Wet Detention Pond	TBD	2012	Completed	22.4	TBD			0.10	0.00	2.40	0.00
Osceola County	OSC-05	Neptune Rd. I – Ponds 100, 200, and 300	Road improvement.	Wet Detention Pond	TBD	2010	Completed	226.8	TBD			8.30	0.01	219.30	0.22
Osceola County	OSC-06	Old Wilson Rd. Pond D002-P	Road improvement.	Online Retention BMPs	TBD	2012	Completed	55.8	TBD			0.60	0.00	18.90	0.02
Osceola County	OSC-07	Old Wilson Rd. Pond D004-P	Road improvement.	Online Retention BMPs	TBD	2012	Completed	18.7	TBD			0.30	0.00	19.80	0.02
Osceola County	OSC-08	Old Wilson Rd. Pond E002-P	Road improvement.	Online Retention BMPs	TBD	2012	Completed	12.5	TBD			0.70	0.00	21.30	0.02
Osceola County	OSC-09	Stewart St. Regional Pond Retrofit	Regional pond retrofit.	Wet Detention Pond	TBD	2009	Completed	2,249.2	TBD			70.40	0.07	1,747.00	1.75
Osceola County	OSC-10	Education and Outreach	FYN; landscaping, irrigation, fertilizer, and pet waste management ordinances; PSAs; pamphlets; website; and illicit discharge program.	Public Education	TBD		Under way	TBD	TBD			321.60	0.32	10,612.30	10.61
Osceola County	OSC-12	East Lake Reserve Stormwater Reuse	Stormwater reuse for landscape irrigation from Pond A1 (9.1A).	Stormwater Reuse	TBD		Completed	130.8	TBD		Homeowners Association	5.50	0.01	365.40	0.37
Osceola County	OSC-13	Neptune Rd. Stormwater Reuse	Stormwater reuse for landscape irrigation from Ponds 100/101 and 300.	Stormwater Reuse	TBD		Completed	35.7	$640,690	$26,000	Osceola County	1.10	0.00	24.90	0.02
Osceola County	OSC-14	Bellalago and Isles of Bellalago Stormwater Reuse	Stormwater reuse for landscape irrigation (197A).	Stormwater Reuse	TBD		Completed	1,386.8	TBD		Homeowners Association	63.80	0.06	3,071.70	3.07

Lead Entity	Project Number	Project Name	Project Description	Project Type	Start Date	Completion Date	Project Status	Acres Treated	Cost	Cost Annual O&M	Funding Source	TP Reduction (kg/yr)	TP Reduction (mt/yr)	TN Reduction (kg/yr)	TN Reduction (mt/yr)
Osceola County	OSC-15	Poinciana Commerce Center Reuse	Stormwater reuse for landscape irrigation from Pond 1.	Stormwater Reuse	2008		Completed	10.2	TBD		Private	0.50	0.00	13.80	0.01
Osceola County	OSC-16	Kissimmee Bay Reuse	Stormwater reuse 20-year duration for 84.5 acres of golf course and 5-year duration for 45.5 acres of landscape irrigation.	Stormwater Reuse	TBD		Completed	271.0	TBD		Private	19.60	0.02	910.10	0.91
Osceola County	OSC-17	Remington Reuse	Stormwater reuse for golf course irrigation from Ponds 12, 13, 14A, and 14B.	Stormwater Reuse	2015		Completed	149.4	TBD		Private	12.10	0.01	523.40	0.52
Osceola County	OSC-18	Eagle Lake Reuse	Stormwater reuse for turf irrigation.	Stormwater Reuse	TBD		Completed	435.1	TBD		Private	19.20	0.02	873.90	0.87
Osceola County	OSC-19	La Quinta Inn Reuse	Stormwater reuse for turf irrigation.	Stormwater Reuse	TBD		Completed	12.5	TBD		Private	1.70	0.00	14.20	0.01
Osceola County	OSC-20	Lake Toho Regional Water Storage Facility (Judge Farms)	Construction of three large regional stormwater retention ponds or water storage facilities.	STA	2015	2018	Under way	5,883.0	TBD		Multiple	412.10	0.41	8,775.30	8.78
Osceola County	OSC-21	Street Sweeping	Monthly street sweeping.	Street Sweeping	TBD		Under way	TBD	TBD	$60,000	Osceola County	16.10	0.02	46.20	0.05
Osceola County	OSC-22	Buenaventura Lakes Golf Course Ponds	Two new lakes at golf course.	Wet Detention Pond	TBD		Completed	517.7	TBD		Osceola County	2.00	0.00	6.00	0.01
Osceola County	OSC-23	Slaman	Conservation areas.	Land Preservation	TBD	Prior to 2014	Completed	32.2	TBD		Osceola County	0.00	0.00	0.30	0.00
Osceola County	OSC-24	Jim Yates	Conservation areas.	Land Preservation	TBD	Prior to 2014	Completed	5.3	TBD		Osceola County	0.50	0.00	3.20	0.00
Osceola County	OSC-25	Udstad	Conservation areas.	Land Preservation	TBD	Prior to 2014	Completed	5.9	TBD		Osceola County	0.50	0.00	7.70	0.01
Osceola County	OSC-26	Proctor	Conservation areas.	Land Preservation	TBD	Prior to 2014	Completed	0.7	TBD		Osceola County	0.10	0.00	0.30	0.00
Osceola County	OSC-27	Twin Oaks	Conservation areas.	Land Preservation	TBD	Prior to 2014	Completed	399.6	TBD		Osceola County	47.00	0.05	264.90	0.26
Osceola County	OSC-28	Cherokee Point	Conservation areas.	Land Preservation	TBD	Prior to 2014	Completed	178.6	TBD		Osceola County	1.20	0.00	6.70	0.01
Osceola County	OSC-29	Encatada Resort	Stormwater reuse for landscape irrigation from pond.	Stormwater Reuse	TBD		Completed	57.6	TBD		Homeowners Association	3.10	0.00	33.20	0.03
Osceola County	OSC-30	Cypress Palms Condos	Stormwater reuse for landscape irrigation from pond.	Stormwater Reuse	2012		Completed	12.4	TBD		Homeowners Association	1.00	0.00	10.40	0.01
Osceola County	OSC-31	Lake Pointe	Stormwater reuse for landscape irrigation from pond.	Stormwater Reuse	2012		Completed	150.2	TBD		Homeowners Association	5.90	0.01	322.30	0.32
Osceola County	OSC-32	Traditions at Westside	Stormwater reuse for landscape irrigation from pond.	Stormwater Reuse	2011		Completed	21.7	TBD		Homeowners Association	2.30	0.00	19.70	0.02
Polk County	PC-03	Education and Outreach	FYN, fertilizer ordinance, PSAs, pamphlets, website, and	Public Education	TBD		Under way	TBD	TBD		Polk County	118.80	0.12	4,438.10	4.44

Lead Entity	Project Number	Project Name	Project Description	Project Type	Start Date	Completion Date	Project Status	Acres Treated	Cost	Cost Annual O&M	Funding Source	TP Reduction (kg/yr)	TP Reduction (mt/yr)	TN Reduction (kg/yr)	TN Reduction (mt/yr)
			illicit discharge inspection program.												
Polk County	PC-04	Sumica Preserve Water Storage/ Hydrologic Restoration	Construction of a gravel berm to store water onsite for wetland restoration.	Wetland Restoration	TBD	2010	Completed	4,077.4	$42,850	$13,000	SFWMD	7.50	0.01	TBD	TBD
SFWMD	SFWMD-06	Phase I Rolling Meadows	The goal of this project is to restore historical Lake Hatchineha floodplain wetlands and habitat within the Rolling Meadows property which was purchased jointly with DEP.	Wetland Restoration	2015	2016	Completed	1,900.0	$43,200		SFWMD /DEP	65.10	0.07	TBD	TBD
SFWMD	SFWMD-07	Gardner-Cobb Marsh	Located south of Cypress Lake. Project included activities such as 23 ditch plugs, berm removal, exotic treatment, and culvert replacement. It helps attenuate regional stormwater runoff and provide incidental nutrient reductions because of plant uptake from overland flows in the marsh.	Hydrologic Restoration	2009	2010	Completed	2,000.0	TBD		SFWMD	5.20	0.01	TBD	TBD
SFWMD	SFWMD-08	Rough Island	Located southwest of Cypress Lake and west of the C-36 Canal. This project included activities such as ditch plugs, ditch filling, and exotic removal. It helps attenuate regional stormwater runoff and provides incidental nutrient reductions because of plant uptake from overland flows. Estimated to create 215 ac-ft of storage.	Hydrologic Restoration	2009	2009	Completed	1,000.0	TBD		SFWMD	60.80	0.06	TBD	TBD
SFWMD	SFWMD-09	Oasis Marsh Restoration	The Oasis wetlands are located in the floodplain of the southwest corner of Lake Kissimmee. The site is a mosaic of dewatered wetlands and uplands. To restore the floodplain function, 4 ditches totaling 2.4 acres in size were filled with 3,144 cubic yards of sediment material from a levee adjacent to the site	Wetland Restoration	2009	2010	Completed	77.0	TBD		SFWMD	195.30	0.20		TBD

Lead Entity	Project Number	Project Name	Project Description	Project Type	Start Date	Completion Date	Project Status	Acres Treated	Cost	Cost Annual O&M	Funding Source	TP Reduction (kg/yr)	TP Reduction (mt/yr)	TN Reduction (kg/yr)	TN Reduction (mt/yr)
			in spring 2010. The restoration of the topography of Oasis Marsh will restore 77 acres of wetlands and reconnect them to the littoral zone of Lake Kissimmee.												
SFWMD	SFWMD-16	Lost Oak Ranch	Storage of 374 ac-ft of water through pasture.	DWM	2011	2013	Completed	TBD	$79,073	$55,000	SFWMD	28.00	0.03	TBD	TBD
SFWMD	SFWMD-22	Kissimmee River Headwaters Revitalization	Land use change to wetlands in the project area.	Hydrologic Restoration	2000	2020	Under way	7,200.0	Included in SFWMD-05		SFWMD	566.40	0.57	TBD	TBD
Town of Windermere	TW-01	First Ave. and Forest St. Drainage Improvements	Construction of vegetated swales, exfiltration trench systems, and oil/grit separation units to treat stormwater runoff into Wauseon Bay which is directly connected to Lake Butler, and OFW.	Drainage Improvement	2017	2018	Under way	22.5	$394,130		Town/ SFWMD	21.22	0.02	20.22	0.02
Coordinating Agency	Project under Development	Rolling Meadows Wetland Restoration Phase II	See Table A-7 in BMAP Annual Report	Wetland Restoration	TBD		Planned	TBD	TBD			9.00	0.01	TBD	TBD
Coordinating Agency	Project under Development	Legislative Cost-Share Appropriation Program (Dairy Projects)	See Table A-7 in BMAP Annual Report	Dairy Remediation	2014		Under way	TBD	TBD		FDACS	TBD	TBD	TBD	TBD

Table A-7. Projects under development with the Coordinating Agencies

Note: These attenuated project reductions are calculated specifically to estimate the reductions at the inflow to Lake Okeechobee.
TBD = To be determined

Project Name	Sub-watershed	Status	Estimated TP Reduction (mt/yr)	Estimated TP Reduction (kg/yr)	Schedule
IMWID – Phase II	Indian Prairie	An agreement between SFWMD, IMWID/Highlands County, and FDACS has been executed for the implementation of the project (Phase I and Phase II). Acquisition of 401 acres for the project footprint and geotechnical activities, environmental site assessments, and remediation of agrochemicals on those lands have been performed. The design is 90 % complete, a cultural resources survey is under way, and acquisitions of additional easements for a flow path between Phase I and Phase II are pending. A Memorandum of Understanding (MOU) exists between FDACS, SFWMD, IMWID, and Highlands County. FDACS identified funds to assist in constructing the Phase I project and to cover Phase II of the project. Construction has begun on the Phase I project, and the Phase II project is in the design stage.	1.15	1,150	Construction activities are tentatively planned to begin in 2018 and are expected to last 12 months. Operations are anticipated to begin by 2020.
Lakeside Ranch STA Phase II	Taylor Creek/ Nubbin Slough	This phase includes a southern STA and a second pump station (S-191A) to manage rim canal levels during periods of high water flow and potentially to recirculate lake water back to the STA for additional TP removal. Construction of the southern STA is under way. However, the construction of the S-191A pump station is contingent on future legislative funding.	7.6	7,600	The southern STA is anticipated to be completed by 2018. Once funded, the pump station is estimated to be completed in three years.
Brighton Valley - Lykes	Indian Prairie	SFWMD issued an ERP as well as a right-of-way permit for the project. A USACE 404 permit has been applied for, and the application is currently under review. Under FDACS cost-share funding, this NE-PPP project is under design/permitting. The project will result in storage of 34,000 ac-ft of water via a pass-through system.	7.72	7,720	Upon receipt of permits, construction will begin, with completion expected in late 2018/early 2019.
Latt Maxcy DWM	Lower Kissimmee	Under FDACS cost-share funding, this NE-PPP project is under design/permitting. The project will result in storage of an estimated 27,068 ac-ft of water via a pass-through system.	2.82	2,820	Construction is anticipated to begin in 2018, with completion expected in 2019.

Project Name	Sub-watershed	Status	Estimated TP Reduction (mt/yr)	Estimated TP Reduction (kg/yr)	Schedule
Rolling Meadows Wetland Restoration – Phase II	Upper Kissimmee	Land has been acquired and planning started. Phase II of this project, which involves the further restoration of 580 acres of wetlands, is contingent on future legislative funding.	0.009	9	Once funded, project work is estimated to be completed in two to three years.
Inactive Dairies – Lagoon Remediation	Taylor Creek/ Nubbin Slough and Indian Prairie	FDACS worked with a dairy in the LOW to partially remediate its lagoon. The soil was spread on the field for the crops to use the nutrients from the excavated soil. The stormwater is routed back to the remediated pond to minimize discharges and it is reused to reduce groundwater withdrawals. In the future, the dairy will finish excavation and remediation of the entire site. For now, this project is complete.	TBD	TBD	1. Identify areas that need remediation activities/talk to landowners. (Winter 2014/2015–Summer 2015) 2. Procure contractors/ conduct work. (Winter 2015/2016–Spring 2016) 3. Analyze data. (as necessary)
PL-566 Funded/ Fisheating Creek Structure	Indian Prairie	The USACE was working with the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) to develop various alternatives. After some staffing and priority changes at the USACE, the NRCS took the lead on this effort. Currently, a scope of work has been developed to contract with the original contractor on this effort. Once the scope of work is approved and the necessary contractual paperwork is in place, the contractor can begin this effort again. The start date is to be determined.	0.88−2.65	883−2,648	1. NRCS plans to reapply for different funding. (Fall 2014) 2. If funding is obtained, work will be conducted. (To be determined) 3. Water quality benefit calculations will be done. (To be determined)
SR 710 Regional Project	Taylor Creek/ Nubbin Slough and Indian Prairie	The feasibility study was completed. FDOT is reviewing several conceptual designs. The Coordinating Agencies are also reviewing to determine whether multiple program initiatives can be aligned for a greater project impact.	TBD	TBD	1. The final feasibility study was completed on October 22, 2014. 2. If funding is obtained, work will be conducted. (To be determined)

Project Name	Sub-watershed	Status	Estimated TP Reduction (mt/yr)	Estimated TP Reduction (kg/yr)	Schedule
Legislative Cost-Share Appropriation Program ($10 million annually for 7 years)	All	FDACS conducted 3 rounds of solicitations for dairy project proposals. The first solicitation occurred in fall 2014. Seven projects have been funded, of which 1 is still under construction. The second solicitation for dairy projects occurred in fall 2015. Four projects were selected. FDACS sent out a third solicitation for dairy project proposals with a submission deadline in fall 2016. A total of 10 project proposals were received from 6 different dairy producers. FDACS formed a committee with internal staff and staff from DEP to review and formally rank the submitted proposals. Eight of the projects were approved, with funding requests totaling $4,002,527.35. FDACS has signed cost-share agreements for 6 of the 8 projects that were approved for funding. The amount allocated for the third round of projects to date is $3,766,997.80.	28.29	28,293	1. Develop plan and present to DEP annually. 2. Implement projects once funds are available. 3. Conduct the same exercise annually.
		Total	**49.32–51.12**	**49,325–51,123**	

Table A-8. Other initiatives

* Contingent on the USACE 3x3x3 compliance approval.
TBD = To be determined.

Initiative	Explanation	Schedule	Start Date	Completion Date
CERP Planning	The SFWMD is reinitiating the formulation of storage components of the LOW Project with the USACE (federal partner).	The initial stage of the planning effort will include developing the overall scope for the plan. The planning process is anticipated to take three years to complete.	Summer 2016	2019*
Owner-Implemented BMP Verification	FDACS and DEP are developing a plan for BMP verification.	1. Identify key BMPs for each commodity type in the basin. (Spring 2015) 2. Identify the locations of BMPs in basin. (Fall 2015) 3. Develop a monitoring plan/strategy. (Winter 2015/2016) 4. Identify willing owners. (Spring 2016) 5. Begin data collection. (Summer 2016) 6. Form a committee to review findings. (Winter 2016/2017) 7. Evaluate data. (Annually)	Spring 2015	Winter 2016/2017
Cost-Share BMP Effectiveness Verification	FDACS and DEP are developing an approach to evaluate the effectiveness of various types of cost-share projects.	1. Identify key cost-share projects. (Fall 2015) 2. Identify locations for effectiveness evaluation. (Winter 2015/2016) 3. Develop the evaluation approach (monitoring/modeling/calculation). (Winter 2015/2016) 4. Implement cost-share projects. (Spring 2016) 5. Evaluate data. (Annually)	Fall 2015	Spring 2016

Initiative	Explanation	Schedule	Start Date	Completion Date
WAM Revisions	In November 2016, the SFWMD and FDACS executed an amended agreement in support of WAM revisions. The planned completion date is 2017. DEP will work to develop targets based on this information.	1. Develop scope of work for contract. (Fall 2014) 2. Execute contract. (Fall 2014) 3. Complete WAM efforts. (Winter 2015/2016) 4. Conduct sensitivity/uncertainty analyses. (Spring 2016) 5. Use WAM results to update sub-watershed existing loads and project nutrient reduction benefits in the northern sub-watersheds and to develop existing loads in the southern sub-watersheds and calculate project nutrient reduction benefits. (Fall 2016) 6. Conduct predrainage characterization (TBD, following results of model revisions) 7. Identify elevated TP areas for additional project locations and prioritization. (Winter 2016/2017)	Fall 2014	2017
Water Quality Monitoring	As DEP develops a monitoring plan for the BMAP, consideration is being given to areas with on-the-ground projects/BMPs to evaluate water quality improvements.	1. Identify areas with regional projects already in place. (Complete) 2. Evaluate areas with needs for additional water quality data. (Once WAM complete.) 3. Identify lead entity for monitoring efforts. (Spring 2017—Summer 2017) 4. Finalize monitoring plan. (Upon BMAP adoption)	In progress	Fall 2018
Alternative BMP Nutrient Reduction Projects	North of Lake Okeechobee	The Coordinating Agencies have set up a team to identify possible new strategies. Quarterly meetings began in summer 2016, and will continue to ensure that information about potential new strategies is shared between the agencies.	Winter 2014/2015	Ongoing
In-Lake Strategies: Muck Scraping and Tilling	In Lake Okeechobee	Potential for inclusion as BMAP project(s) during low lake levels if drought conditions occur and if project logistics (e.g., planning, permitting, contracting) can be implemented in a timely fashion for work to be conducted. The SFWMD Low Water Level Habitat Enhancement Plan drafted for the lake in November 2015 may inform this initiative. The SFWMD draft plan (November 2015) was submitted to DEP in March 2016.	Fall 2014	TBD

Appendix B: Future BMAP Projects

In accordance with Chapter 2016-1, Laws of Florida, every new and revised BMAP will be required to include more detailed project information than is currently included in BMAPs and annual updates. The new and revised BMAPs will include the following:

- A ranked list of projects with a planning-level cost estimate and estimated date of completion for each project.
- The source and amount of financial assistance to be made available by DEP, a water management district, or other entity for each project, if applicable.
- A planning-level estimate of each project's expected load reduction, if applicable.

Additionally, Paragraph 373.4595(3)(b), Florida Statutes (F.S.), requires the Lake Okeechobee BMAP to include milestones for implementation and water quality improvement, and an associated water quality monitoring component sufficient to determine progress. The milestones, which must be adopted into the BMAP upon the first 5-year review, must include 5-, 10-, and 15-year measurable increments and targets to achieve the TMDL no more than 20 years after BMAP adoption. The implementation schedule is characterized as "guidance for planning and funding purposes" and is exempt from Chapter 120, F.S. A specific reference to that effect will be included when the next revision of the BMAP is adopted. If restoration within 20 years is not "practicable," the schedule must explain why and include additional 5-year milestones leading to restoration.

As a first step towards compiling these project lists, DEP requested information from stakeholders on future projects that have the potential for additional load reductions in the basin. Funding has not yet been identified for many of these future projects, which are identified as "planned" in the project tables located in **Appendix A**. The continual funding of projects is a key part of meeting reductions required to achieve the TMDL. These projects will be updated as project collection and verification efforts are refined.

Appendix C: Agricultural Enrollment and Reductions

All agricultural nonpoint sources in the Lake Okeechobee BMAP area are statutorily required either to implement FDACS-adopted BMPs or to conduct water quality monitoring prescribed by DEP or the applicable water management district that demonstrates compliance with water quality standards (Paragraph 403.067[7][b], F.S.). Under Paragraph 403.067(7)(c), F.S., the implementation of FDACS-adopted, DEP-verified BMPs in accordance with FDACS rules provides a presumption of compliance with state water quality standards.

The Lake Okeechobee BMAP uses land use data from an LET developed with the results from a WAM application in the northern six sub-watersheds of the LOW. This application of the WAM used land uses from the 2009 SFWMD coverage, and the land uses in **Table C-1** were considered agriculture for the purposes of this BMAP. The table also lists the FDACS commodity associated with each land use.

Table C-1. Agricultural land uses in the Lake Okeechobee BMAP

Land Use Code	Land Use Code Description	FDACS Commodity
2100	Cropland and Pastureland	Pasture and Mixed Rangeland
2110	Improved Pastures	Pasture and Mixed Rangeland
2120	Unimproved Pastures	Pasture and Mixed Rangeland
2130	Woodland Pastures	Pasture and Mixed Rangeland
2140	Row Crops	Row/Field/Mixed Crops
2150	Field Crops	Row/Field/Mixed Crops
2156	Sugar Cane	Row/Field/Mixed Crops
2200	Tree Crops	Citrus
2210	Citrus Groves	Citrus
2230	Other Groves	Fruit Orchards/Other Groves
2240	Abandoned Groves	Fruit Orchards/Other Groves
2300	Feeding Operations	Cattle Feeding Operations
2310	Cattle Feeding Operations	Cattle Feeding Operations
2320	Poultry Feeding Operations	Poultry Feeding Operations
2400	Nurseries and Vineyards	Tree Nurseries
2410	Tree Nurseries	Tree Nurseries
2420	Sod Farms	Sod Farms
2430	Ornamentals	Ornamentals
2500	Specialty Farms	Dairies
2510	Horse Farms	Horse Farm
2520	Dairies	Dairies
2600	Other Open Land	Pasture and Mixed Rangeland

Land use data are helpful as a starting point for estimating agricultural acreage and developing BMP implementation strategies. However, DEP relies on local stakeholder knowledge and coordination with FDACS to verify agricultural activities and achieve BMP implementation.

FDACS BMP enrollments are done according to parcels and based on NOIs signed by landowners. **Table C-2** through **Table C-7** list the acreages enrolled in each sub-watershed under the FDACS BMP Program. These tables are based on the acreage of the enrolled parcels, rather than the land use data in the LET. **Figure C-1** shows the parcels enrolled in BMP Programs as of September 30, 2016, for the LOW.

Table C-2. BMP enrollment for the Fisheating Creek Sub-watershed

[1] The acreage enrolled includes all areas that fall within enrolled parcels.
[2] The number of NOIs reported is based on enrollment during the period from January 1, 2009, to September 30, 2016.

FDACS BMP Program	Acreage Enrolled as of December 31, 2008[1]	Acreage Enrolled January 1, 2009–September 30, 2016[1]	Related NOIs[2]
Citrus	10,375	16,947	33
Conservation Plan	0	26,874	2
Cow/Calf	27,528	222,326	49
Dairies	0	1,519	1
Nurseries	0	849	2
Sod	0	1,554	1
Specialty Fruit and Nut	0	753	2
Total	**37,903**	**270,823**	**90**

Table C-3. BMP enrollment for the Indian Prairie Sub-watershed

[1] The acreage enrolled includes all land uses that fall within enrolled areas.
[2] The number of NOIs reported is based on enrollment during the period from January 1, 2009, to September 30, 2016.

FDACS BMP Program	Acreage Enrolled as of December 31, 2008[1]	Acreage Enrolled January 1, 2009–September 30, 2016[1]	Related NOIs[2]
Citrus	75	37,940	63
Conservation Plan	406	3,890	2
Cow/Calf	4,898	143,397	67
Lake Okeechobee Protection Program	0	1,137	1
Nurseries	0	30	2
Sod	3,226	5,195	9
Vegetables and Agronomic Crops	0	7,077	19
Total	**8,605**	**198,667**	**163**

Table C-4. BMP enrollment for the Lake Istokpoga Sub-watershed

[1] The acreage enrolled includes all land uses that fall within enrolled areas.
[2] The number of NOIs reported is based on enrollment during the period from January 1, 2009, to September 30, 2016.

FDACS BMP Program	Acreage Enrolled as of December 31, 2008[1]	Acreage Enrolled January 1, 2009–September 30, 2016[1]	Related NOIs[2]
Citrus	1,961	52,424	763
Conservation Plan	2,213	3,345	2
Cow/Calf	68,967	72,423	64
Lake Okeechobee Protection Program	0	1,298	1
Nurseries	65	180	5
Sod	0	2,893	3
Specialty Fruit and Nut	0	139	5
Vegetables and Agronomic Crops	295	505	5
Total	**73,501**	**133,207**	**848**

Table C-5. BMP enrollment for the Lower Kissimmee Sub-watershed

[1] The acreage enrolled includes all land uses that fall within enrolled areas.
[2] The number of NOIs reported is based on enrollment during the period from January 1, 2009, to September 30, 2016.

FDACS BMP Program	Acreage Enrolled as of December 31, 2008[1]	Acreage Enrolled January 1, 2009–September 30, 2016[1]	Related NOIs[2]
Citrus	2,484	18,612	15
Conservation Plan	7,030	800	2
Cow/Calf	129,639	162,417	70
Lake Okeechobee Protection Program	0	6,799	5
Nurseries	249	203	1
Sod	12,722	0	0
Vegetables and Agronomic Crops	3,739	4,507	10
Total	**155,862**	**193,338**	**103**

Table C-6. BMP enrollment for the Taylor Creek/Nubbin Slough Sub-watershed

[1] The acreage enrolled includes all land uses that fall within enrolled areas.
[2] The number of NOIs reported is based on enrollment during the period from January 1, 2009, to September 30, 2016.

FDACS BMP Program	Acreage Enrolled as of December 31, 2008[1]	Acreage Enrolled January 1, 2009–September 30, 2016[1]	Related NOIs[2]
Citrus	2,248	9,986	7
Conservation Plan	3,520	13,909	6
Cow/Calf	45,029	72,625	118
Equine	71	1,617	6
Lake Okeechobee Protection Program	0	1,971	4
Nurseries	307	1,986	3
Sod	0	553	2
Specialty Fruit and Nut	0	59	1
Vegetables and Agronomic Crops	728	4,380	9
Total	**51,903**	**107,084**	**156**

Table C-7. BMP enrollment for the Upper Kissimmee Sub-watershed

[1] The acreage enrolled includes all land uses that fall within enrolled areas.
[2] The number of NOIs reported is based on enrollment during the period from January 1, 2009, to September 30, 2016.

FDACS BMP Program	Acreage Enrolled as of December 31, 2008[1]	Acreage Enrolled January 1, 2009–September 30, 2016[1]	Related NOIs[2]
Citrus	0	39,045	549
Cow/Calf	6,84	127,879	62
Equine	0	439	2
Nurseries	79	349	23
Sod	15,117	3,808	1
Specialty Fruit and Nut	0	974	24
Vegetables and Agronomic Crops	0	4,009	4
Total	**22,037**	**176,503**	**665**

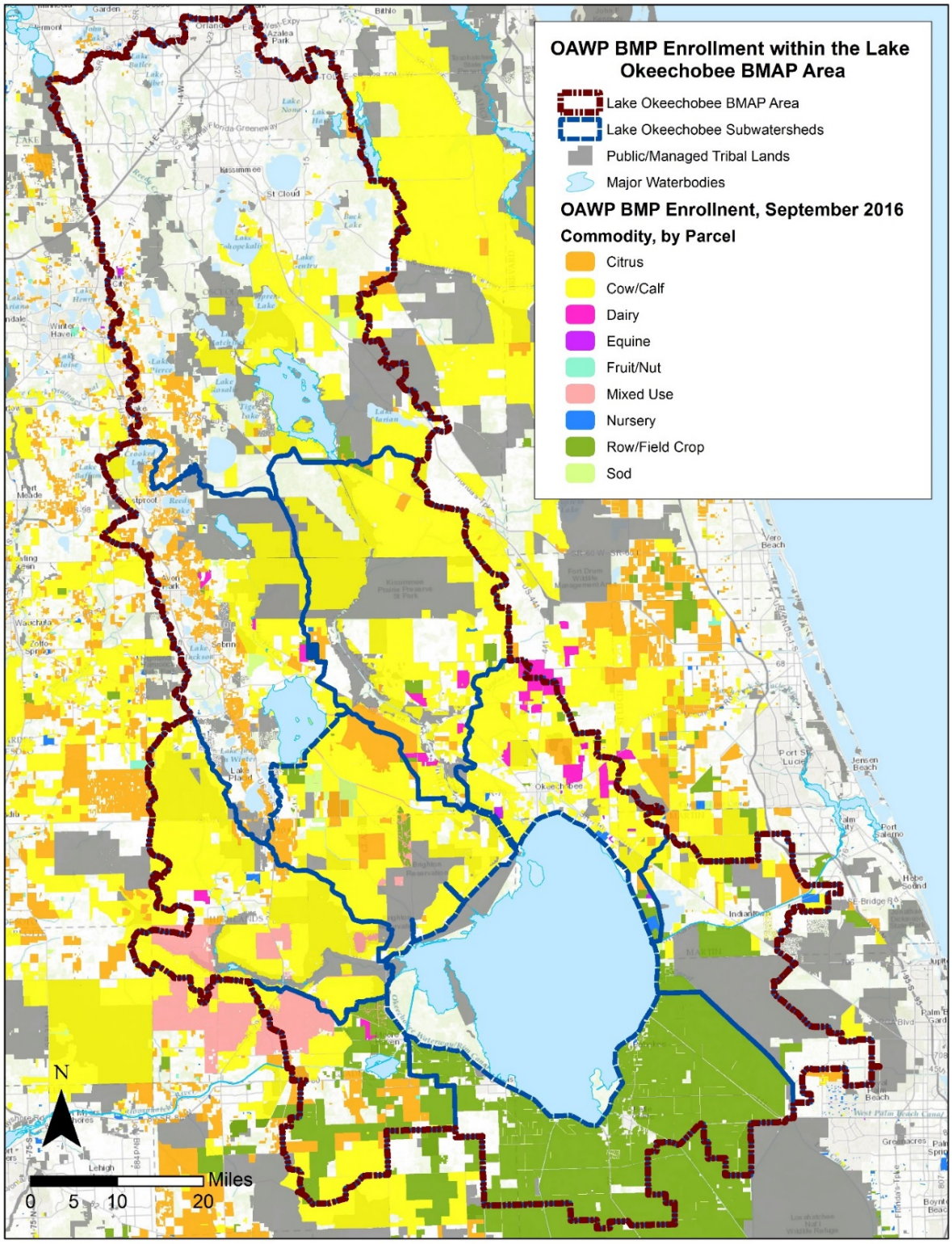

Figure C-1. BMP enrollment in the Lake Okeechobee Watershed as of September 30, 2016

Nutrient reduction efficiencies for agricultural BMPs were developed for the LOW through extensive literature review, modeling projects, and observed data, considering factors such as soil type, land use, rainfall, and commodity-specific management practices (SWET 2008). For the Lake Okeechobee BMAP, agricultural land uses in the LET (**Table C-1**) are considered when estimating TP reductions related to FDACS BMP Program enrollment.

To be consistent with the methodology used for estimating nutrient reductions from urban BMPs, only acres not enrolled as of January 1, 2009, are considered when calculating the TP reductions associated with agricultural BMPs. Because of the statutory requirements for agricultural nonpoint sources and the high percentage of agricultural lands already enrolled in the FDACS BMP Program, nutrient reductions were calculated assuming 100 % enrollment of the acres remaining to enroll on January 1, 2009 (**Table C-8**).

Table C-8. Agricultural acreage in the LET for the northern sub-watersheds

[1] The estimated TP reductions are based on 100 % enrollment of acres left to enroll as of January 1, 2009.

Sub-watershed	LET Agricultural Acres	Acreage Enrolled as of December 31, 2008	Acreage to Enroll as of January 1, 2009	Estimated TP Reductions (mt/yr)[1]
Fisheating Creek	174,561	3,794	170,767	6.98
Indian Prairie	218,216	8,019	210,197	6.72
Lake Istokpoga	130,523	7,660	122,863	1.72
Lower Kissimmee	216,284	59,378	156,906	6.59
Taylor Creek/Nubbin Slough	140,921	44,983	95,938	7.73
Upper Kissimmee	275,034	2,747	272,287	3.56
Total	**1,155,539**	**126,582**	**1,028,957**	**33.3**

The BMAP and annual progress reports will continue to track enrollment progress in the LOW. **Table C-9** through **Table C-14** show (for the 6 northern sub-watersheds) the agricultural acres in the LET; the enrolled LET acres as of September 30, 2016; the additional acreages necessary to meet 100 % enrollment; and the estimated TP reductions related to FDACS BMP Program enrollment. **Figure C-2** shows the acres enrolled in BMP programs as of September 30, 2016, and the additional areas necessary to enroll, according to the LET.

Table C-9. Agricultural acreage in the LET for the Indian Prairie Sub-watershed

[1] The estimated TP reductions are based on 100 % enrollment of acres not already enrolled as of January 1, 2009.
[2] Enrolled acres are the total acres enrolled prior to and after January 1, 2009.

LET Land Use	Estimated TP Reductions (mt/yr)[1]	LET Acres	Enrolled Acres[2]	Remaining Acres
Citrus	1.024	30,236	27,686	2,550
Dairies	0.002	198	177	22
Fruit Orchards/Other Groves	0.024	126	56	70
Horse Farm	0.001	25	0	25
Ornamentals	0.001	55	23	31
Pasture and Mixed Rangeland	4.835	166,586	121,722	44,864
Poultry Feeding Operations	0.002	40	0	40
Row/Field/Mixed Crops	0.626	20,771	16,438	4,332
Tree Nurseries	0.208	178	91	87
Total	**6.72**	**218,216**	**166,194**	**52,022**

Table C-10. Agricultural acreage in the LET for the Lake Istokpoga Sub-watershed

[1] The estimated TP reductions are based on 100 % enrollment of acres not already enrolled as of January 1, 2009.
[2] Enrolled acres are the total acres enrolled prior to and after January 1, 2009.

LET Land Use	Estimated TP Reductions (mt/yr)[1]	LET Acres	Enrolled Acres[2]	Remaining Acres
Cattle Feeding Operations	0.000	6	6	0
Citrus	0.251	51,540	42,672	8,868
Dairies	0.033	3,158	3.023	135
Fruit Orchards/Other Groves	0.039	436	172	264
Horse Farm	0.000	17	0	17
Ornamentals	0.002	246	76	170
Pasture and Mixed Rangeland	0.848	70,330	42,684	27,647
Row/Field/Mixed Crops	0.127	3,348	2,734	614
Sod Farms	0.014	180	172	8
Tree Nurseries	0.448	1,262	538	724
Total	**1.763**	**130,523**	**92,077**	**38,446**

Table C-11. Agricultural acreage in the LET for the Lower Kissimmee Sub-watershed

[1] The estimated TP reductions are based on 100 % enrollment of acres not already enrolled as of January 1, 2009.
[2] Enrolled acres are the total acres enrolled prior to and after January 1, 2009.

LET Land Use	Estimated TP Reductions (mt/yr)[1]	LET Acres	Enrolled Acres[2]	Remaining Acres
Cattle Feeding Operations	0.003	45	12	33
Citrus	0.316	10,513	10,263	250
Dairies	0.073	6,480	6,115	365
Fruit Orchards/Other Groves	0.116	607	595	12
Horse Farm	0.013	265	203	62
Ornamentals	0.000	17	0	17
Pasture and Mixed Rangeland	4.149	185,499	130,155	53,345
Row/Field/Mixed Crops	1.910	12,849	11,743	1,106
Tree Nurseries	0.010	9	0	9
Total	**6.590**	**216,284**	**159,084**	**57,200**

Table C-12. Agricultural acreage in the LET for the Taylor Creek/Nubbin Slough Sub-watershed

[1] The estimated TP reductions are based on 100 % enrollment of acres not already enrolled as of January 1, 2009.
[2] Enrolled acres are the total acres enrolled prior to and after January 1, 2009.

LET Land Use	Estimated TP Reductions (mt/yr)[1]	LET Acres	Enrolled Acres[2]	Remaining Acres
Cattle Feeding Operations	0.032	387	342	46
Citrus	0.094	3,482	3,118	363
Dairies	0.842	10,223	10,001	222
Fruit Orchards/Other Groves	0.026	361	267	94
Horse Farm	0.028	492	397	95
Ornamentals	0.004	66	35	31
Pasture and Mixed Rangeland	3.167	114,997	89,672	25,525
Poultry Feeding Operations	0.003	72	35	38
Row/Field/Mixed Crops	0.384	6,905	5,963	941
Sod Farms	0.367	1,522	1,520	2
Tree Nurseries	2.784	2,414	2,096	318
Total	**7.731**	**140,921**	**113,446**	**27,475**

Table C-13. Agricultural acreage in the LET for the Upper Kissimmee Sub-watershed

[1] The estimated TP reductions are based on 100 % enrollment of acres not already enrolled as of January 1, 2009.
[2] Enrolled acres are the total acres enrolled prior to and after January 1, 2009.

LET Land Use	Estimated TP Reductions (mt/yr)[1]	LET Acres	Enrolled Acres[2]	Remaining Acres
Cattle Feeding Operations	0.001	19	5	14
Citrus	0.263	47,330	29,073	18,257
Dairies	0.001	53	39	14
Fruit Orchards/Other Groves	0.051	1,593	375	1,218
Horse Farm	0.005	220	3	217
Ornamentals	0.003	470	116	354
Pasture and Mixed Rangeland	2.295	212,121	86,774	125,347
Poultry Feeding Operations	0.002	102	11	92
Row/Field/Mixed Crops	0.598	9,143	5,875	3,268
Sod Farms	0.309	3,538	1,918	1,620
Tree Nurseries	0.060	445	51	395
Total	**3.58**	**275,034**	**124,240**	**150,794**

Table C-14. Agricultural acreage in the LET for the Fisheating Creek Sub-watershed

[1] The estimated TP reductions are based on 100 % enrollment of acres not already enrolled as of January 1, 2009.
[2] Enrolled acres are the total acres enrolled prior to and after January 1, 2009.

LET Land Use	Estimated TP Reductions (mt/yr)[1]	LET Acres	Enrolled Acres[2]	Remaining Acres
Citrus	0.826	7,878	5,566	2,312
Dairies	0.002	27	25	2
Fruit Orchards/Other Groves	0.006	46	1	45
Ornamentals	0.107	391	245	146
Pasture and Mixed Rangeland	5.646	164,521	138,544	25,977
Poultry Feeding Operations	0.000	5	0	5
Row/Field/Mixed Crops	0.131	832	794	38
Sod Farms	0.168	737	735	2
Tree Nurseries	1.095	123	29	94
Total	**6.980**	**174,561**	**145,940**	**28,621**

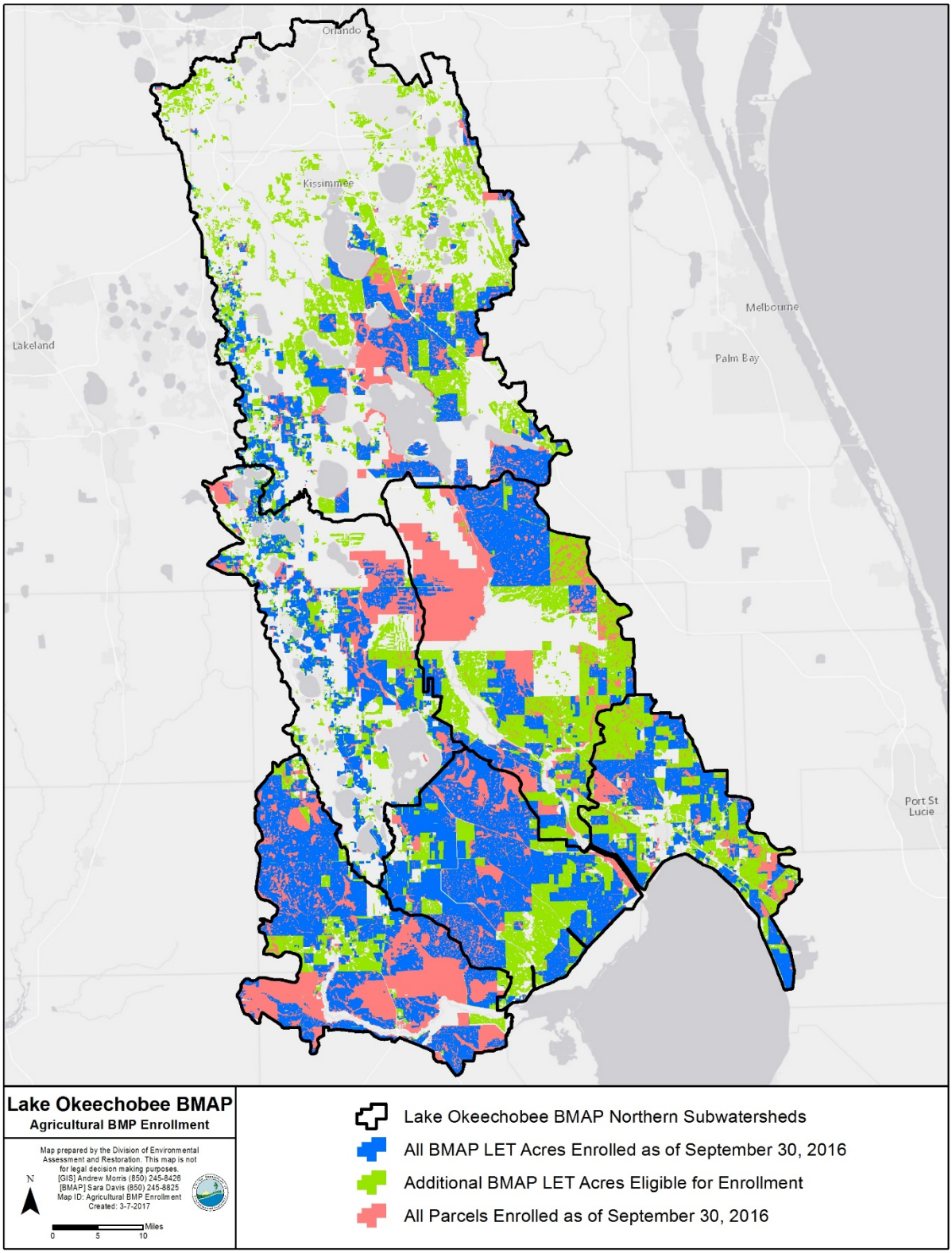

Figure C-2. Agricultural lands in the LET enrolled in BMP programs as of September 30, 2016

FDACS also provides cost-share funds, which are primarily used for the implementation of structural BMPs that are otherwise not economically feasible for individual producers. For the purposes of this BMAP, a 5 % reduction of the TP load calculated using the LET was attributed to parcels where FDACS cost-share funds were spent for water control structures. This is consistent with the low end of efficiencies for these cost-share activities for agricultural operations. As additional project-specific information becomes available, this methodology will be refined to better reflect nutrient reduction benefits at the parcel level based on the specific nutrient management practice.

FDACS also manages HWTT and FAVT projects in the LOW. Details on these projects can be found in **Appendix A**. **Table C-15** summarizes the TP reductions estimated for owner-implemented and cost-share agricultural BMPs and FDACS-led projects in the northern sub-watersheds.

Table C-15. Summary of TP load reductions on agricultural lands

N/A = Not applicable
Note: These attenuated project reductions are calculated specifically to estimate the reductions at the inflow to Lake Okeechobee.
[1] Reductions for cost-share BMPs include Legislative Cost-Share Appropriation Program dairy projects in Table 2 and Table A-7, in addition to other cost-share BMPs.

Sub-watershed	Agricultural BMPs (mt/yr)	Cost-Share BMPs (mt/yr)[1]	HWTT/FAVT (mt/yr)
Fisheating Creek	6.98	0.27	8.59
Indian Prairie	6.72	0.28	N/A
Lake Istokpoga	1.72	0.11	N/A
Lower Kissimmee	6.59	0.32	N/A
Taylor Creek/Nubbin Slough	7.73	2.31	7.57
Upper Kissimmee	3.56	0.03	N/A
Total	**33.3**	**1.58**	**16.17**

Appendix D: BMAP Monitoring Network

Table D-1 lists the stations included in the BMAP monitoring network and the date of the latest sample from the reporting period available in STORET. These stations are not specifically BMAP stations, i.e., the data they generate are also used for other purposes, but the data collected at these sites will be used to monitor the effectiveness of the BMAP. The water quality monitoring will be conducted in accordance with the frequencies below. The stations in the monitoring network are also shown in **Figure D-1**.

Table D-1. BMAP monitoring network

ACF = Flow proportional composite autosampler
ACT = Autosampler composite time proportional
* As of December 2015, sampling frequencies were temporarily reduced.
[a] Data has not yet been uploaded to STORET.
[b] USGS station data available from USGS website.
[c] Sampling location represents outflow from Lakeside Ranch STA.
[d] Sampling location represents outflow from Taylor Creek STA.

Sampling Entity	Station Name	Florida STORET Station ID[b]	Frequency	Year Site Established	Sub-watershed	Date of Latest Sample in Florida STORET[b]
City of Orlando	Buck Lake	BUCK	Quarterly	1994	Upper Kissimmee	12/11/2014
City of Orlando	Lake Fran	FRAN	Quarterly	1999	Upper Kissimmee	1/26/2015
City of Orlando	Lake Mare Prairie	MARE PRAIRIE	Quarterly	1990	Upper Kissimmee	12/17/2014
City of Orlando	Mud Lake	MUD	Quarterly	1994	Upper Kissimmee	12/11/2014
City of Orlando	Turkey Lake (North)	TURKEY NORTH	Quarterly	1985	Upper Kissimmee	10/30/2014
City of Orlando	Turkey Lake (South)	TURKEY SOUTH	Quarterly	1985	Upper Kissimmee	10/30/2014
City of Kissimmee	East City Ditch Outfall	MS 02[a]	Quarterly	2007	Upper Kissimmee	
City of Kissimmee	Mill Slough Outfall	MS 03[a]	Quarterly	2007	Upper Kissimmee	
City of Kissimmee	Bass Slough at Boggy Creek	MS 04[a]	Quarterly	2007	Upper Kissimmee	
City of Kissimmee	Bass Slough at Timothy Lane	MS 05[a]	Quarterly	2007	Upper Kissimmee	
City of Kissimmee	Mill Slough at Mill Run Blvd..	MS 06[a]	Quarterly	2007	Upper Kissimmee	
City of Kissimmee	West City Ditch at Hacienda Circle	MS 13[a]	Quarterly	2007	Upper Kissimmee	
City of Kissimmee	Shingle Creek at John Young Parkway	MS 14[a]	Quarterly	2007	Upper Kissimmee	
City of Kissimmee	Shingle Creek at Town Center Blvd..	MS 15[a]	Quarterly	2007	Upper Kissimmee	11/5/2009
City of Kissimmee	Shingle Creek at Yates Rd.	MS 17[a]	Quarterly	2007	Upper Kissimmee	
Orange County	Boggy Creek A (Tradeport)	BCA	Quarterly	1982	Upper Kissimmee	2/1/2016
Orange County	Shingle Creek (Central FL Pkwy.)	SCC	Quarterly	1972	Upper Kissimmee	3/10/2016

Sampling Entity	Station Name	Florida STORET Station ID[b]	Frequency	Year Site Established	Sub-watershed	Date of Latest Sample in Florida STORET[b]
Orange County	HART: Lake Hart Outflow at S-62 (Clap Sims Duda)	XLKEHS62	Quarterly	2011	Upper Kissimmee	2/11/2016
Orlando/Orange County	Boggy Creek B (S.R. 527A)	BCB	Biannually (winter and summer)	1999	Upper Kissimmee	7/19/2010
Orlando/ Orange County	Boggy Creek @ 527A City of Orlando Site aka bcb	BCO	Biannually (winter and summer)	1999	Upper Kissimmee	3/21/2016
Orlando/ Orange County	Shingle Creek City of Orlando	SCO	Biannually (winter and summer)	1999	Upper Kissimmee	2/29/2016
Osceola County	ETO5253114	ETO5253114	Monthly, if flowing	2009	Upper Kissimmee	5/11/2016
Osceola County	JUDGES_DCH	JUDGES_DCH	Monthly, if flowing	2011	Upper Kissimmee	3/30/2016
Osceola County	PARTIN_CNL	PARTIN_CNL	Monthly, if flowing	2011	Upper Kissimmee	5/11/2016
Osceola County	RUNNYMEDE	RUNNYMEDE	Monthly, if flowing	2011	Upper Kissimmee	12/1/2015
SFWMD	A03	A03	Bimonthly (6 times/yr)	1981	Upper Kissimmee	6/13/2016
SFWMD	ABOGGN	ABOGGN	Monthly*	1981	Upper Kissimmee	6/13/2016
SFWMD	B02	B02	Bimonthly (6 times/yr)	1981	Upper Kissimmee	6/13/2016
SFWMD	B06	B06	Bimonthly (6 times/yr)	1981	Upper Kissimmee	6/13/2016
SFWMD	B09	B09	Bimonthly (6 times/yr)	1981	Upper Kissimmee	6/13/2016
SFWMD	BNSHINGLE	BNSHINGLE	Monthly*	1981	Upper Kissimmee	4/18/2016
SFWMD	BS-59	BS-59	Monthly*	1981	Upper Kissimmee	6/13/2016
SFWMD	C03	C03	Bimonthly (6 times/yr)	1981	Upper Kissimmee	6/13/2016
SFWMD	C38W	C38W	Biweekly, if flowing/ Monthly/Quarterly	1973	Indian Prairie	6/20/2016
SFWMD	C41H78	C41H78	Weekly – ACT/ Biweekly, if flowing/ Monthly/Quarterly	2008	Indian Prairie	6/20/2016
SFWMD	CL06283111	CL06283111	Biweekly, if flowing*	2006	Upper Kissimmee	5/16/2016
SFWMD	CREEDYBR	CREEDYBR	Monthly*	1981	Upper Kissimmee	6/13/2016
SFWMD	CULV10A	CULV10A	Biweekly, if flowing / Monthly/Quarterly	1973	East Lake Okeechobee	6/6/2016
SFWMD	CULV5	CULV5	Biweekly, if flowing / Monthly/Quarterly	1973	Fisheating Creek	6/6/2016

Sampling Entity	Station Name	Florida STORET Station ID[b]	Frequency	Year Site Established	Sub-watershed	Date of Latest Sample in Florida STORET[b]
SFWMD	CULV5A	CULV5A	Biweekly, if flowing / Monthly/Quarterly	1973	West Lake Okeechobee	6/6/2016
SFWMD	D02	D02	Bimonthly (6 times/yr)	1981	Upper Kissimmee	6/13/2016
SFWMD	E02	E02	Bimonthly (6 times/yr)	1981	Upper Kissimmee	6/13/2016
SFWMD	ET05253114	ET05253114	Biweekly, if flowing*	2006	Upper Kissimmee	5/11/2016
SFWMD	FECSR78	FECSR78	Biweekly, if flowing/ Monthly/Quarterly	1973	Fisheating Creek	6/20/2016
SFWMD	INDUSCAN	INDUSCAN	Biweekly, if flowing/ Monthly/Quarterly	1973	South Lake Okeechobee	6/6/2016
SFWMD	IOC	IOC[c]	Weekly recorded flow ACF/Biweekly grabs	2012	Within Lake	6/21/2016
SFWMD	ISTK6	ISTK6	Bimonthly (6 times/yr)*	1998	Lake Istokpoga	11/16/2015
SFWMD	KISSR0.0	KISSR0.0	Monthly	1986	Within Lake	6/14/2016
SFWMD	KREA 30A/02273630	KREA 30A	Biweekly, if flowing*	1988	Taylor Creek/ Nubbin Slough	2/18/2016
SFWMD	KREA 98	KREA 98	Monthly	1997	Lower Kissimmee	6/22/2016
SFWMD	L001	L001	Monthly	1986	Within Lake	6/14/2016
SFWMD	L004	L004	Monthly	1986	Within Lake	6/14/2016
SFWMD	L006	L006	Monthly	1986	Within Lake	6/15/2016
SFWMD	L008	L008	Monthly	1986	Within Lake	6/14/2016
SFWMD	L59E	L59E	Biweekly, if flowing/ Monthly/Quarterly	1973	Indian Prairie	6/6/2016
SFWMD	L59W	L59W	Biweekly, if flowing/ Monthly/Quarterly	1973	Indian Prairie	6/20/2016
SFWMD	L60E	L60E	Biweekly, if flowing/ Monthly/Quarterly	1973	Indian Prairie	6/20/2016
SFWMD	L60W	L60W	Biweekly, if flowing/ Monthly/Quarterly	1973	Indian Prairie	6/6/2016
SFWMD	L61E	L61E	Biweekly, if flowing/ Monthly/Quarterly	1973	Indian Prairie	4/11/2016
SFWMD	LI02362923	LI02362923	Biweekly, if flowing*	2011	Lake Istokpoga	5/25/2016

Sampling Entity	Station Name	Florida STORET Station ID[b]	Frequency	Year Site Established	Sub-watershed	Date of Latest Sample in Florida STORET[b]
SFWMD	LZ25A	LZ25A	Monthly	1981	Within Lake	6/15/2016
SFWMD	LZ30	LZ30	Monthly	1986	Within Lake	6/15/2016
SFWMD	MBOXSOU	MBOXSOU	Monthly – Stage dependent	1996	Within Lake	6/6/2016
SFWMD	POLE3S	POLE3S	Monthly	1986	Within Lake	6/15/2016
SFWMD	S127	S127	Biweekly, if flowing/ Monthly/Quarterly	1973	Indian Prairie	6/6/2016
SFWMD	S129	S129	Biweekly, if flowing/ Monthly/Quarterly	1973	Indian Prairie	6/6/2016
SFWMD	S131	S131	Biweekly, if flowing/ Monthly/Quarterly	1973	Indian Prairie	6/6/2016
SFWMD	S133	S133	Biweekly, if flowing/ Monthly/Quarterly	1973	Taylor Creek/ Nubbin Slough	6/6/2016
SFWMD	S135	S135	Biweekly, if flowing/ Monthly/Quarterly	1973	Taylor Creek/ Nubbin Slough	6/6/2016
SFWMD	S154	S154	Weekly – ACT/ Biweekly, if flowing/ Monthly/Quarterly*	1973	Taylor Creek/ Nubbin Slough	6/20/2016
SFWMD	S154C	S154C	Biweekly, if flowing/ Monthly/Quarterly	1973	Taylor Creek/ Nubbin Slough	6/20/2016
SFWMD	S169	S169	Biweekly, if flowing/ Monthly/Quarterly	1973	South Lake Okeechobee	6/6/2016
SFWMD	S191	S191	Weekly – ACF/ Biweekly, if flowing/ Monthly/Quarterly	1973	Taylor Creek/ Nubbin Slough	6/6/2016
SFWMD	S2	S2	Weekly – ACF/ Biweekly, if flowing/Monthly/ Quarterly/Event	1973	South Lake Okeechobee	6/6/2016
SFWMD	S236	S236	Biweekly, if flowing/ Monthly/Quarterly	1979	South Lake Okeechobee	5/9/2016

Sampling Entity	Station Name	Florida STORET Station ID[b]	Frequency	Year Site Established	Sub-watershed	Date of Latest Sample in Florida STORET[b]
SFWMD	S3	S3	Weekly – ACF/ Biweekly, if flowing/ Monthly/Quarterly/ Event	1981	South Lake Okeechobee	6/6/2016
SFWMD	S308C	S308C	Biweekly, if flowing/ Monthly/Quarterly	1973	East Lake Okeechobee	6/6/2016
SFWMD	S351	S351	Weekly – ACF	2000	South Lake Okeechobee	6/29/2016
SFWMD	S352	S352	Weekly – ACF/ Biweekly, if flowing/ Monthly/Quarterly	2000	South Lake Okeechobee	6/29/2016
SFWMD	S354	S354	Weekly – ACF	2000	South Lake Okeechobee	6/29/2016
SFWMD	S392	S392[d]	Weekly ACF/ Biweekly grabs	2006	Taylor Creek/ Nubbin Slough	6/21/2016
SFWMD	S4	S4	Weekly ACF/ Biweekly, if flowing/ Monthly/Quarterly	1973	South Lake Okeechobee	6/6/2016
SFWMD	S65	S65	Weekly – ACT/Biweekly/ Quarterly grabs *	1973	Upper Kissimmee	6/13/2016
SFWMD	S650	S650	Weekly ACF/ Biweekly grabs	2012	Taylor Creek/ Nubbin Slough	6/21/2016
SFWMD	S65A	S65A	Weekly – ACT/ Biweekly/ Quarterly grabs *	1973	Lower Kissimmee	6/13/2016
SFWMD	S65E	S65E	Weekly – ACF/ Biweekly/ Quarterly grabs	1973	Lower Kissimmee	6/22/2016
SFWMD	S71	S71	Weekly – ACF/ Biweekly, if flowing/ Monthly	1973	Indian Prairie	6/22/2016
SFWMD	S72	S72	Weekly – ACF/ Biweekly, if flowing/ Monthly	2007	Indian Prairie	6/8/2016
SFWMD	S77	S77	Biweekly, if flowing/ Monthly	2007	Within Lake	6/20/2016

Sampling Entity	Station Name	Florida STORET Station ID[b]	Frequency	Year Site Established	Sub-watershed	Date of Latest Sample in Florida STORET[b]
SFWMD	S84	S84	Biweekly, if flowing/ Monthly	2007	Indian Prairie	6/20/2016
SFWMD	TCNS 201	TCNS 201	Biweekly, if flowing*	1988	Taylor Creek/ Nubbin Slough	2/8/2016
SFWMD	TCNS 204	TCNS 204	Biweekly, if flowing*	1988	Taylor Creek/ Nubbin Slough	6/16/2016
SFWMD	TCNS 207	TCNS 207	Biweekly, if flowing*	1988	Taylor Creek/ Nubbin Slough	6/16/2016
SFWMD	TCNS 220	TCNS 220	Biweekly, if flowing*	1988	Taylor Creek/ Nubbin Slough	6/1/2016
SFWMD	TCNS 222	TCNS 222	Biweekly, if flowing*	1988	Taylor Creek/ Nubbin Slough	6/1/2016
SFWMD	TCNS 228	TCNS 228	Biweekly, if flowing*	1988	Taylor Creek/ Nubbin Slough	10/14/2015
SFWMD	TCNS 230	TCNS 230	Biweekly, if flowing*	1988	Taylor Creek/ Nubbin Slough	9/30/2015
SFWMD	TCNS 249	TCNS 249	Biweekly, if flowing*	1988	Taylor Creek/ Nubbin Slough	2/18/2016
SFWMD/USGS	02270500	02270500	Weekly – ACT	2005	Lake Istokpoga	12/30/2016
SFWMD/USGS	02273198	02273198	Weekly – ACT	2005	Lake Istokpoga	12/30/2016
SFWMD/USGS	S390/02274325	S390	Weekly ACF/ Biweekly grabs	2006	Taylor Creek/ Nubbin Slough	6/21/2016
SFWMD/USGS	TCNS 209/02274005	TCNS 209	Biweekly, if flowing*	1988	Taylor Creek/ Nubbin Slough	6/16/2016
SFWMD/USGS	TCNS 213/02274010	TCNS 213	Biweekly, if flowing*	1988	Taylor Creek/ Nubbin Slough	6/16/2016
SFWMD/USGS	TCNS 214/02274490	TCNS 214	Biweekly, if flowing*	1988	Taylor Creek/ Nubbin Slough	6/1/2016
SFWMD/USGS	TCNS 217/02274505	TCNS 217	Biweekly, if flowing*	1988	Taylor Creek/ Nubbin Slough	6/1/2016
SFWMD/USGS	02255600	02255600	Biweekly, if flowing*	2005	Fisheating Creek	12/30/2016
SFWMD/USGS	02256500	02256500	Biweekly, if flowing*	2005	Fisheating Creek	4/17/2017
SFWMD/USGS	02272676	02272676	Biweekly, if flowing*	2005	Upper Kissimmee	12/30/2016

Sampling Entity	Station Name	Florida STORET Station ID[b]	Frequency	Year Site Established	Sub-watershed	Date of Latest Sample in Florida STORET[b]
SFWMD/USGS	02273230	02273230	Biweekly, if flowing*	2005	Indian Prairie	12/30/2016
SFWMD/USGS	02275197	02275197	Biweekly, if flowing*	2005	Taylor Creek/ Nubbin Slough	12/30/2016
SFWMD/USGS	E04	E04	Bimonthly (6 times/yr)	1981	Upper Kissimmee	6/13/2016
SFWMD/USGS	KREA 01/02272650	KREA 01	Biweekly, if flowing*	1986	Upper Kissimmee	12/30/2016
USGS	Boggy Creek near Taft	02262900	Continuous	1959	Upper Kissimmee	12/30/2016
USGS	Shingle Creek at Airport near Kissimmee	02263800	Continuous	1958	Upper Kissimmee	12/30/2016
USGS	2272650	02272650	Continuous	2003	Lower Kissimmee	12/30/2016
USGS	2273230	02273230	Continuous	2003	Indian Prairie	12/30/2016
USGS	2273630	02273630	Continuous	2003	Taylor Creek/ Nubbin Slough	12/30/2016
USGS	2274005	02274005	Continuous	2003	Taylor Creek/ Nubbin Slough	12/30/2016
USGS	2274010	02274010	Continuous	2003	Taylor Creek/ Nubbin Slough	12/30/2016
USGS	2274325	02274325	Continuous	2004	Taylor Creek/ Nubbin Slough	12/30/2016
USGS	2274490	02274490	Continuous	2003	Taylor Creek/ Nubbin Slough	12/30/2016
USGS	2274505	02274505	Continuous	2003	Taylor Creek/ Nubbin Slough	12/30/2016

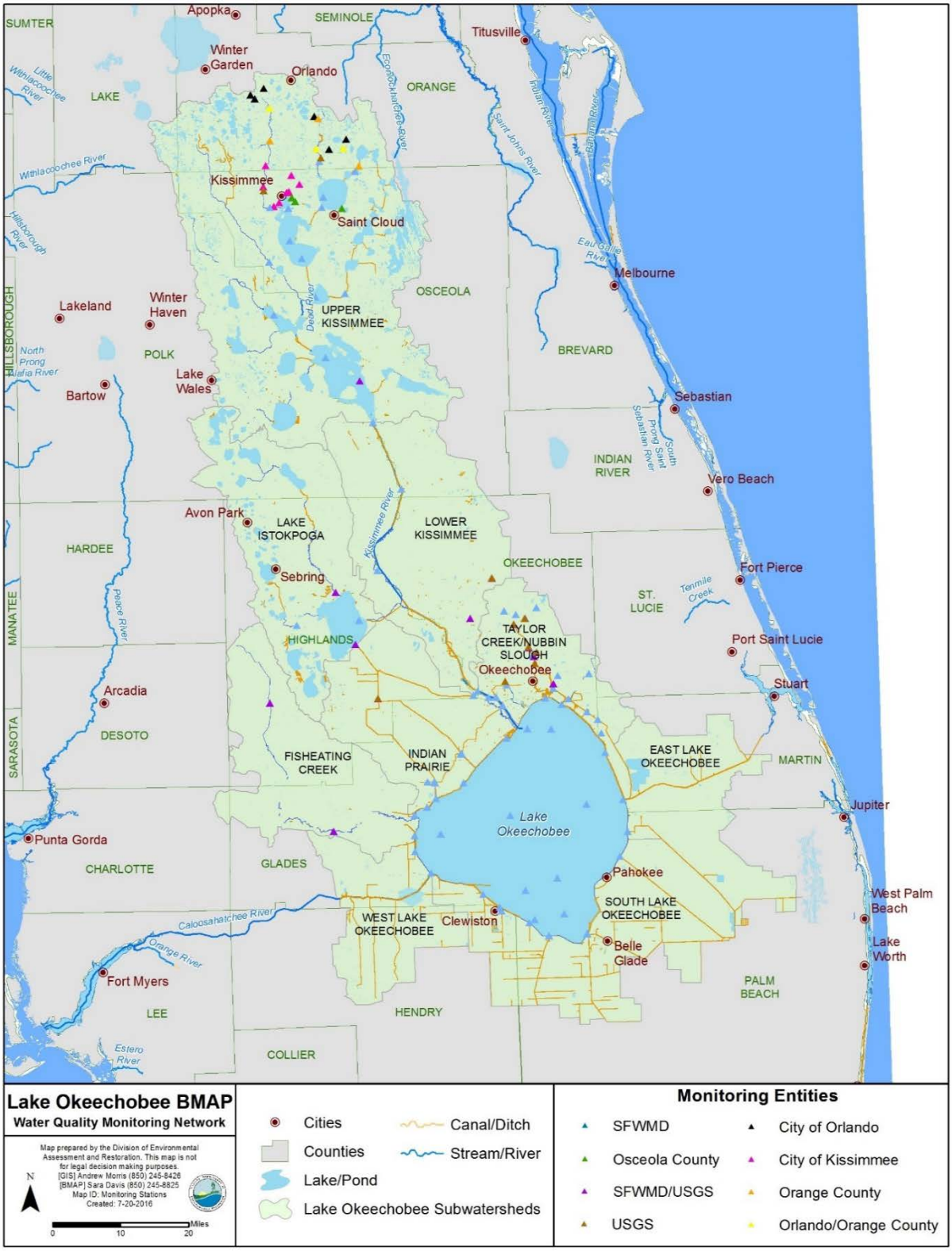

Figure D-1. Water quality monitoring network for the Lake Okeechobee Watershed as of December 2016

Appendix E: Water Quality Analyses

For this progress report, trend analyses were conducted on available data from stations within the Lake Okeechobee BMAP network using a variation of temporal and spatial attributes from an overall POR of January 1, 2009, to December 31, 2016. **Section 3.1** summarizes the analyses and results, and additional details are provided below.

Methods

TP and TN concentration data available in STORET were retrieved and processed for all stations in the BMAP network monitored by local entities. TP loading data for SFWMD individual stations were also obtained from SFWMD staff and draft trend analysis were completed. Further analyses will be completed for SFWMD stations in the BMAP monitoring network and included in future reports. **Table 10** lists the stations used for trend analyses, including their respective sampling entity, available POR (within the overall POR), and number of samples used in the analyses.

Nonparametric statistical techniques were used to identify monotonic trend analyses in a statistically rigorous way with the Seasonal Kendall and Mann-Kendall trend tests. Seasonal Kendall tests were performed when sufficient data were available; otherwise only Mann-Kendall tests were performed for stations that did not have sufficient data. Data are not required to conform to a particular distribution for nonparametric analyses. Nonparametric tests are also robust against outliers and large data gaps, which were evident in some of the station datasets.

Because of the differences in data collection frequency by sampling entity, slight variations in trend analysis factors were necessary to appropriately analyze each particular dataset. The number of data points was limited each year in the POR. Therefore, trend analyses were conducted on TP and TN concentrations using (1) the entire processed POR dataset for each individual station incorporating season (attributed to the quarter that the sample was collected) as a factor, and (2) the entire processed POR dataset using data aggregated into AGMs using WY.

For all Mann-Kendall tests, statistical results were considered significant if the p-value was less than 0.05 ($p\text{-value} < 0.05$). The strength of the trend analysis result is described as the correlation coefficient, or Tau for the Mann-Kendall test, which represents how concentration or load and time tend to change together over the established POR. If the result is statistically significant ($p\text{-value} < 0.05$), then a negative Tau value and slope represent a downward or decreasing trend indicating improvement, and positive Tau and slope values suggest an increasing or upward trend (decline in water quality conditions).

Results

The results are summarized in **Table 11** and **Table 12** of **Section 3.1**, and represented through **Figure E-1** to **Figure E-23** in this appendix. Figures are first grouped by the type of statistical test performed to obtain the results, and then by the parameter (TP or TN).

Mann-Kendall Trend Analysis

Total Phosphorus

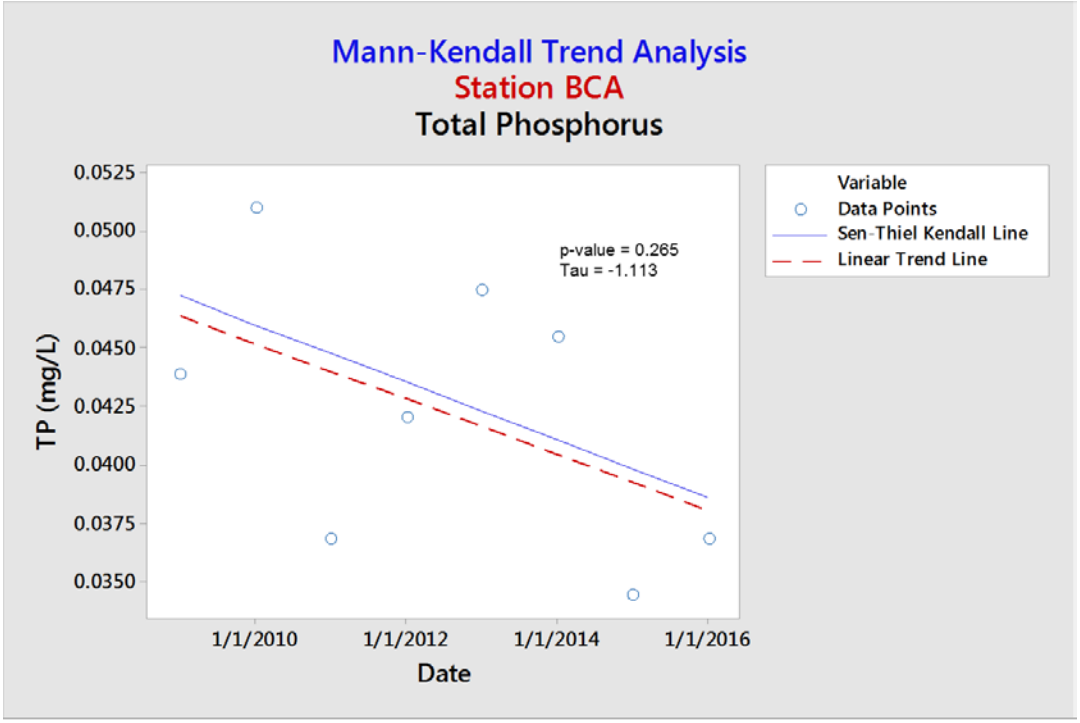

Figure E-1. Mann-Kendall trend analysis for TP at Orange County Station BCA

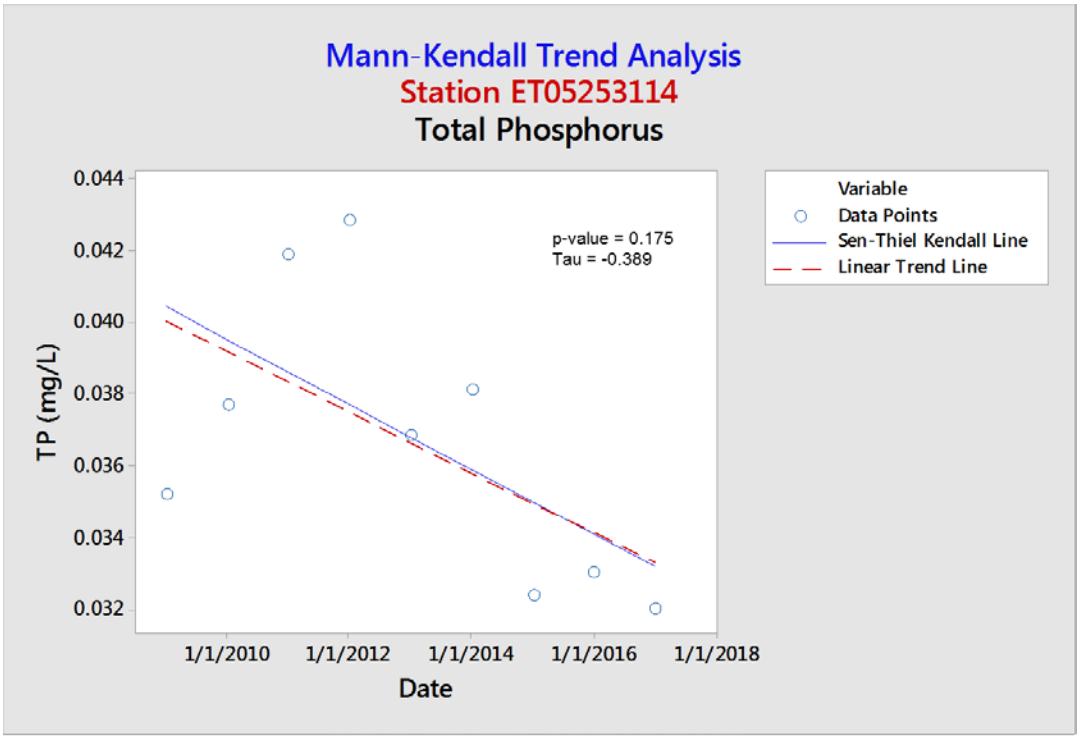

Figure E-2. Mann-Kendall trend analysis for TP at Osceola County Station ETO5253114

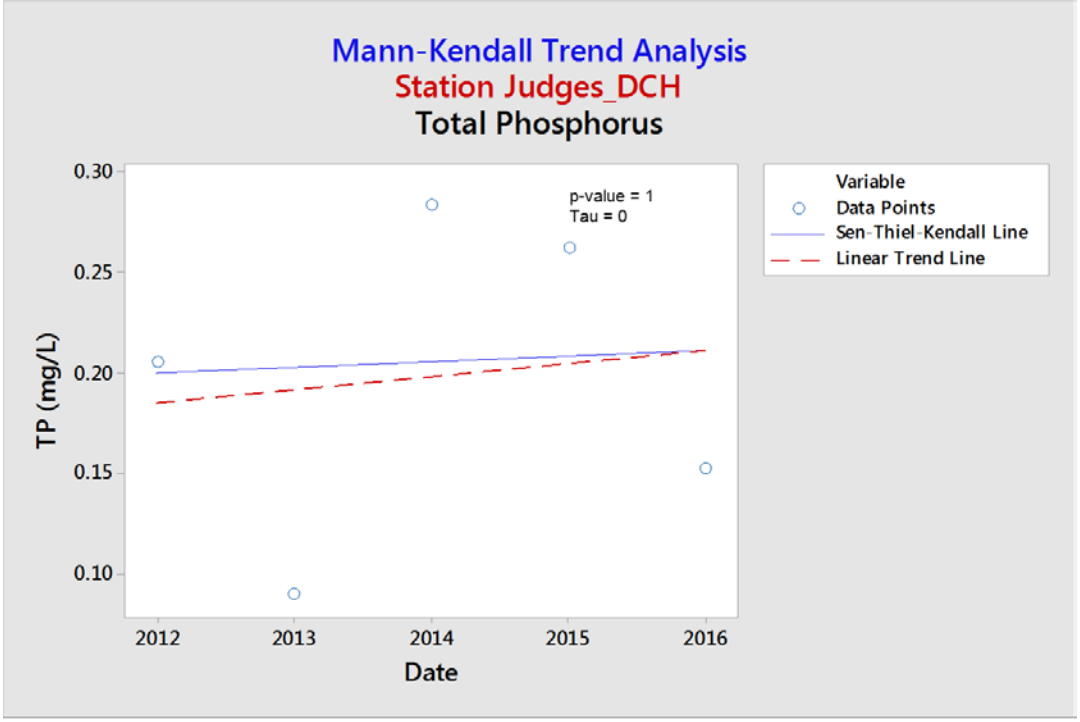

Figure E-3. Mann-Kendall trend analysis for TP at Osceola County Station Judges_DCH

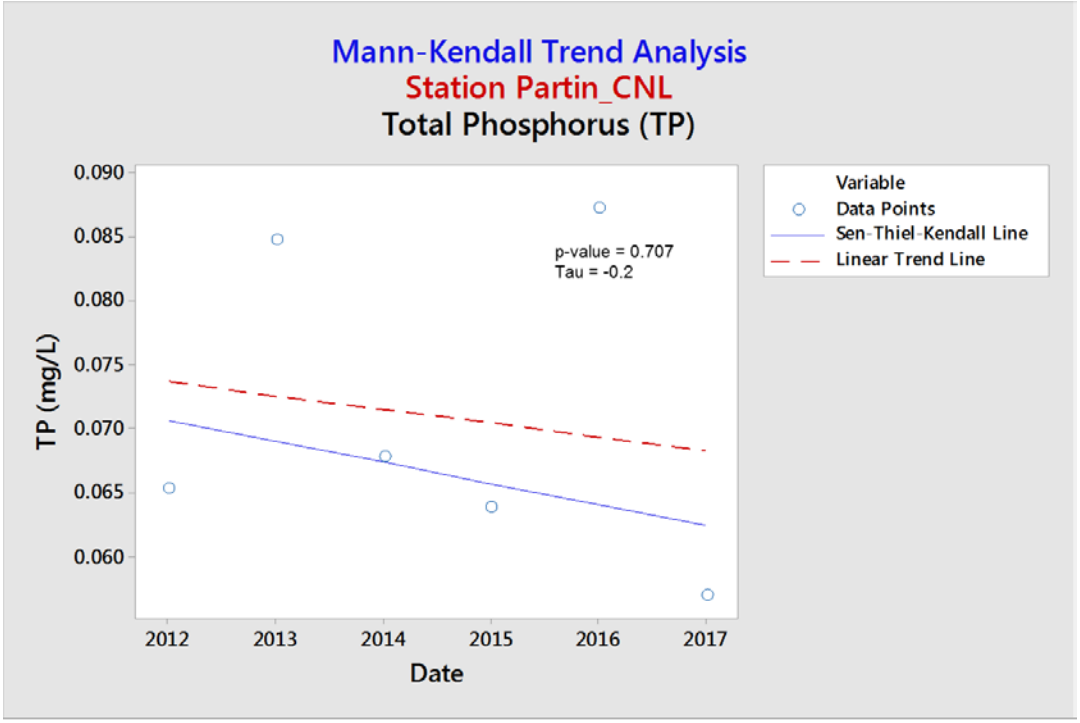

Figure E-4. Mann-Kendall trend analysis for TP at Osceola County Station Partin_CNL

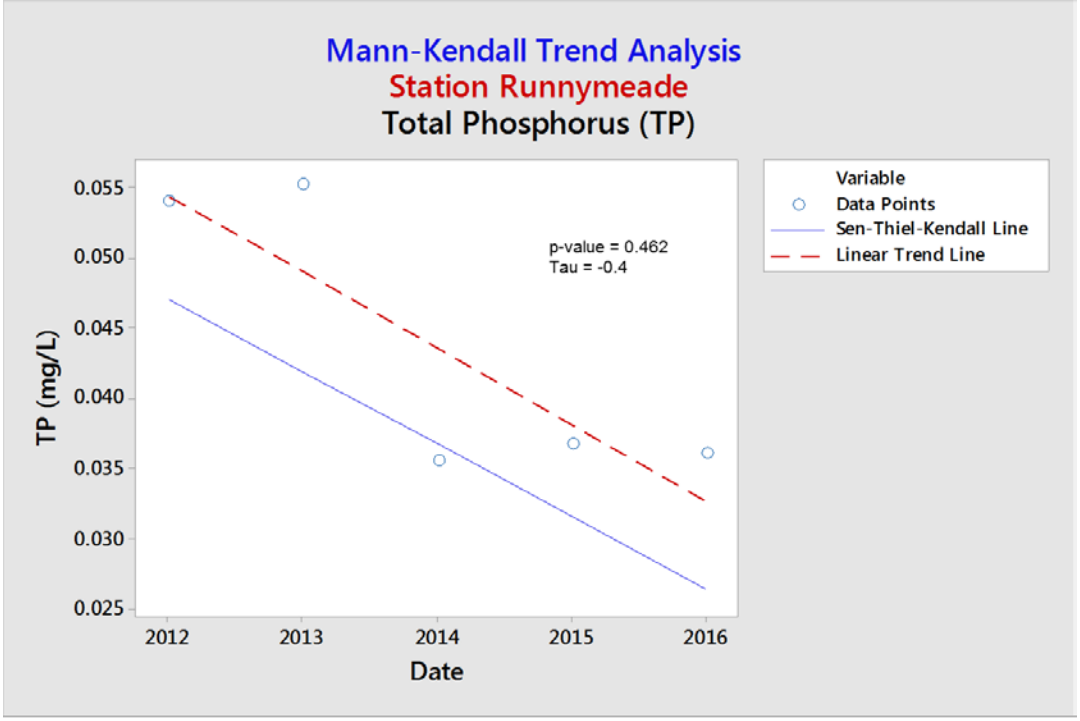

Figure E-5. Mann-Kendall trend analysis for TP at Osceola County Station Runnymeade

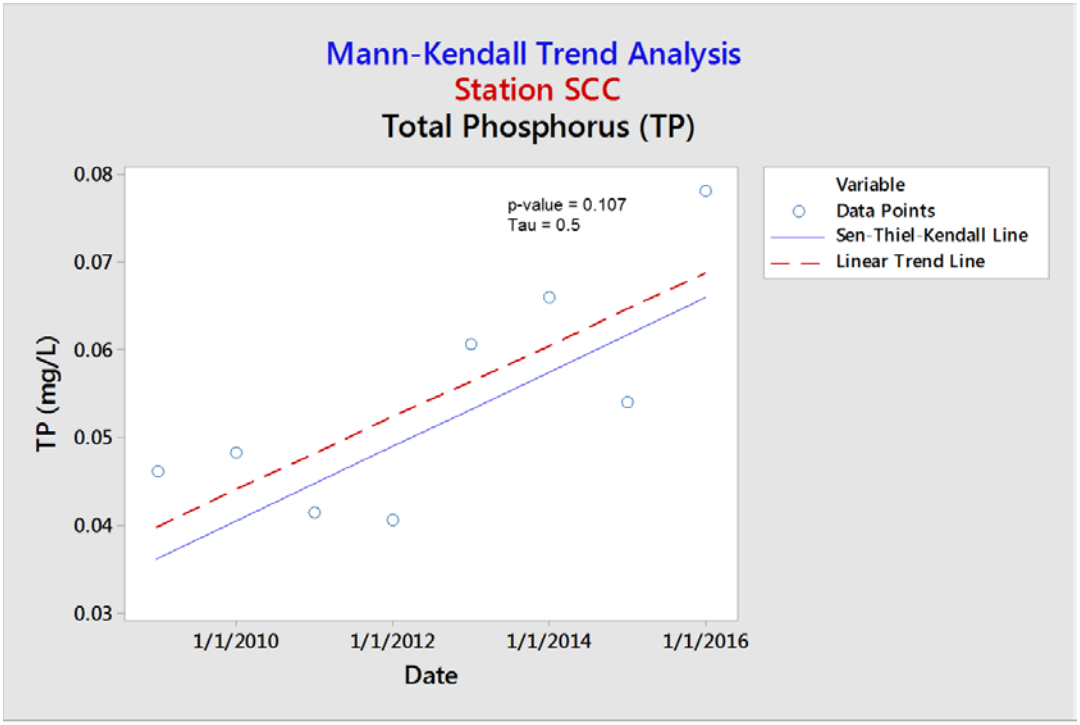

Figure E-6. Mann-Kendall trend analysis for TP at Orlando/Orange County Station SCC

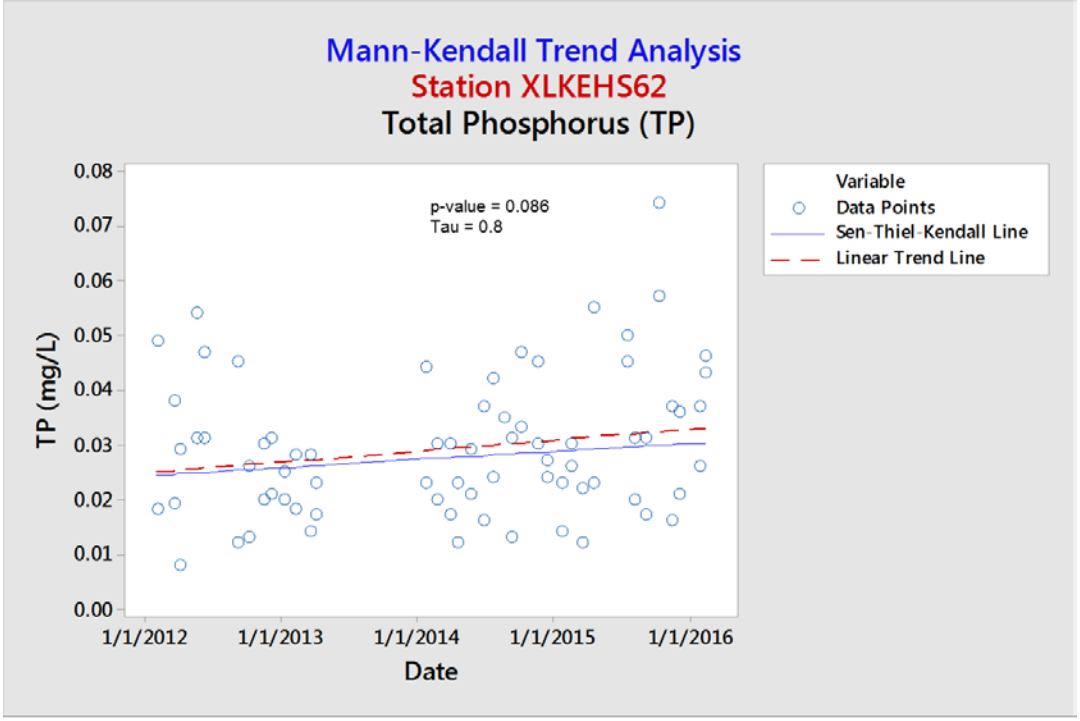

Figure E-7. Mann-Kendall trend analysis for TP at Orange County Station XLKEHS62

Total Nitrogen

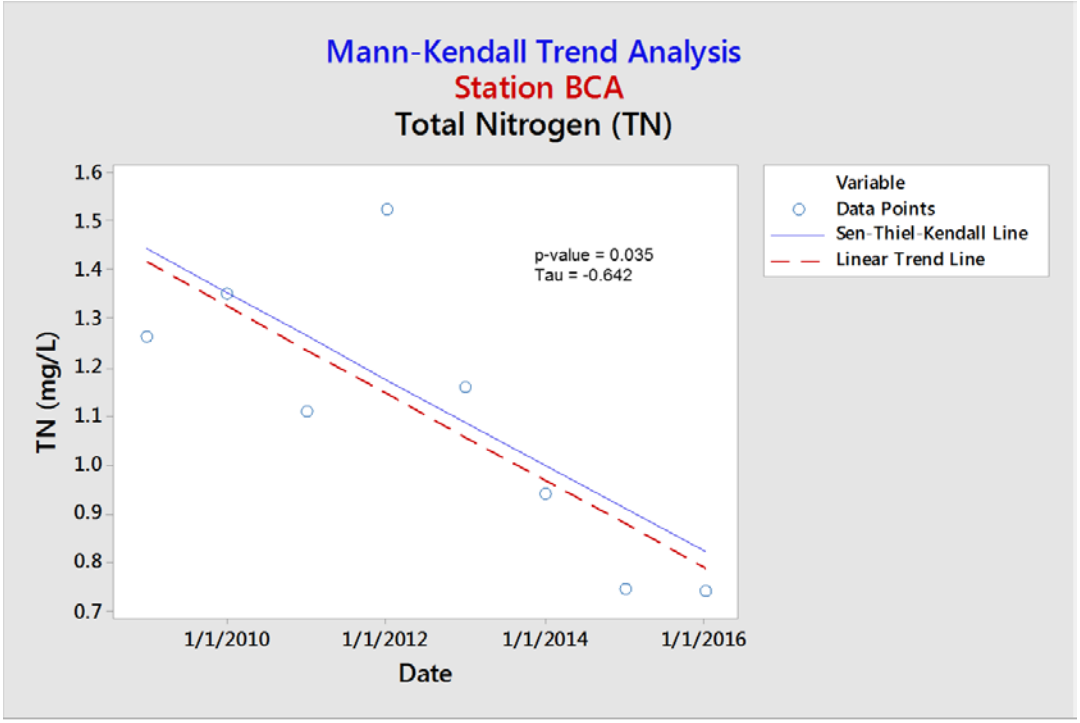

Figure E-8. Mann-Kendall trend analysis for TN at Orange County Station BCA

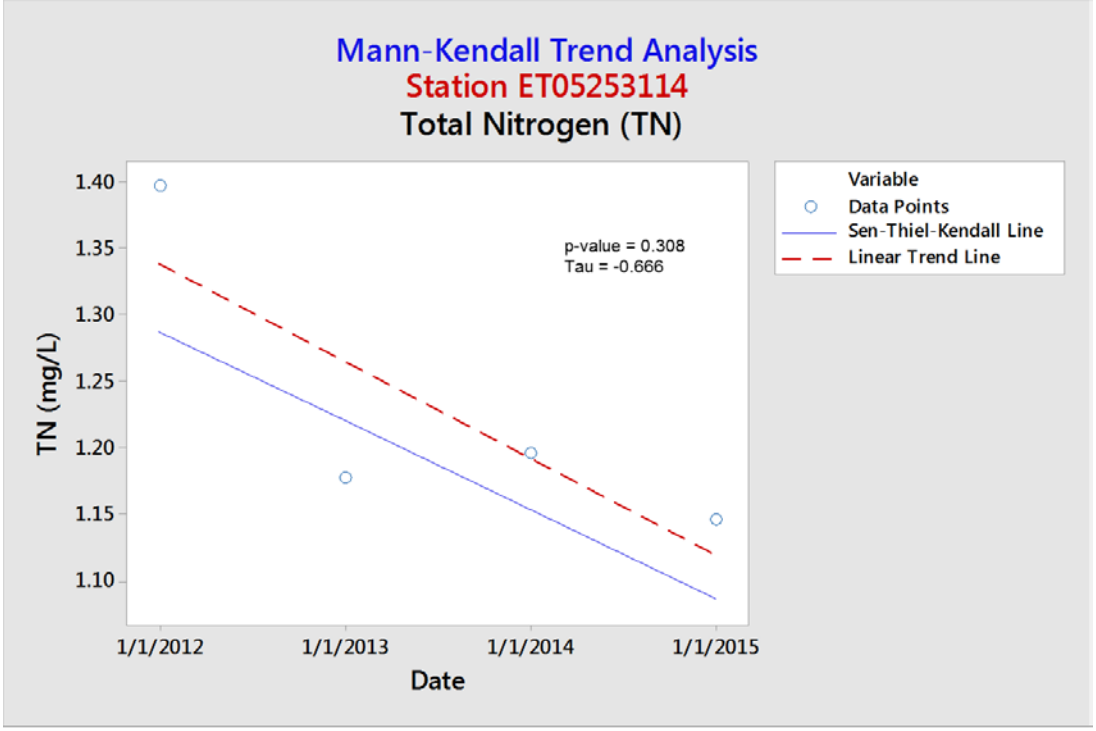

Figure E-9. Mann-Kendall trend analysis for TN at Osceola County Station ETO5253114

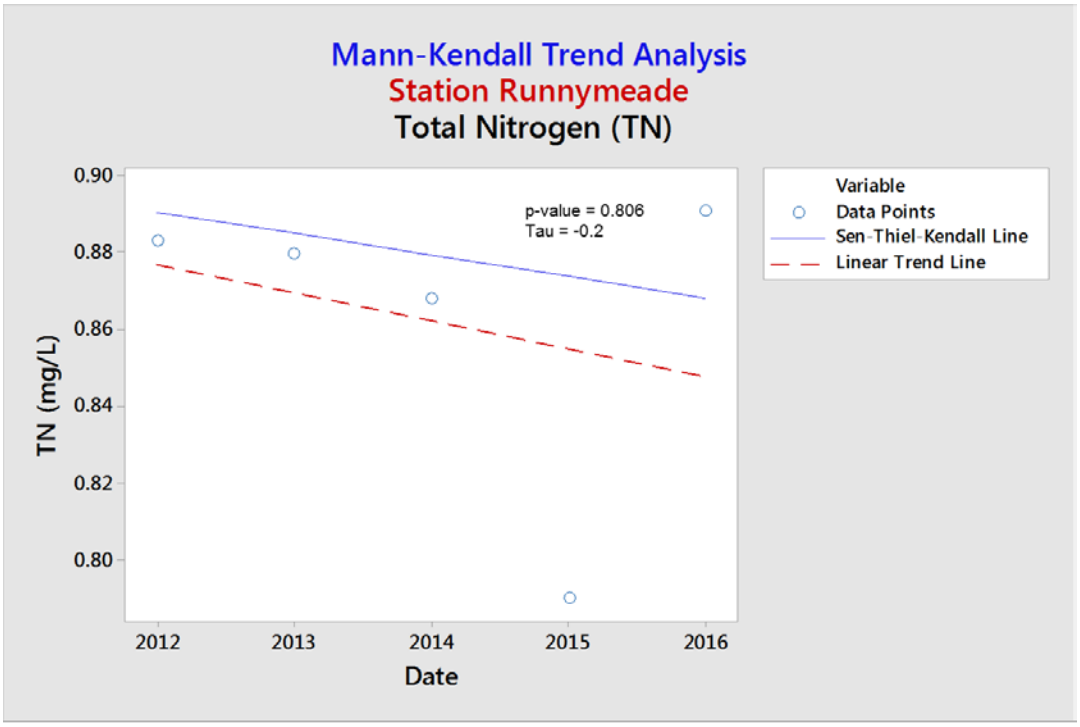

Figure E-10. Mann-Kendall trend analysis for TN at Osceola County Station Runnymeade

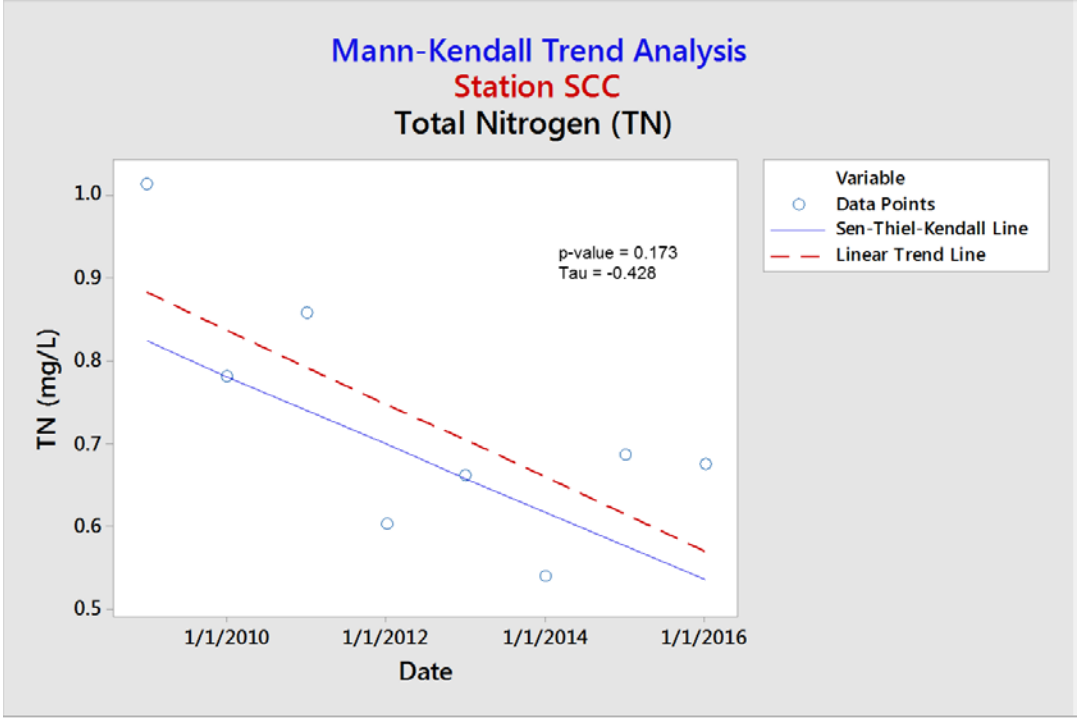

Figure E-11. Mann-Kendall trend analysis for TN at Orlando/Orange County Station SCC

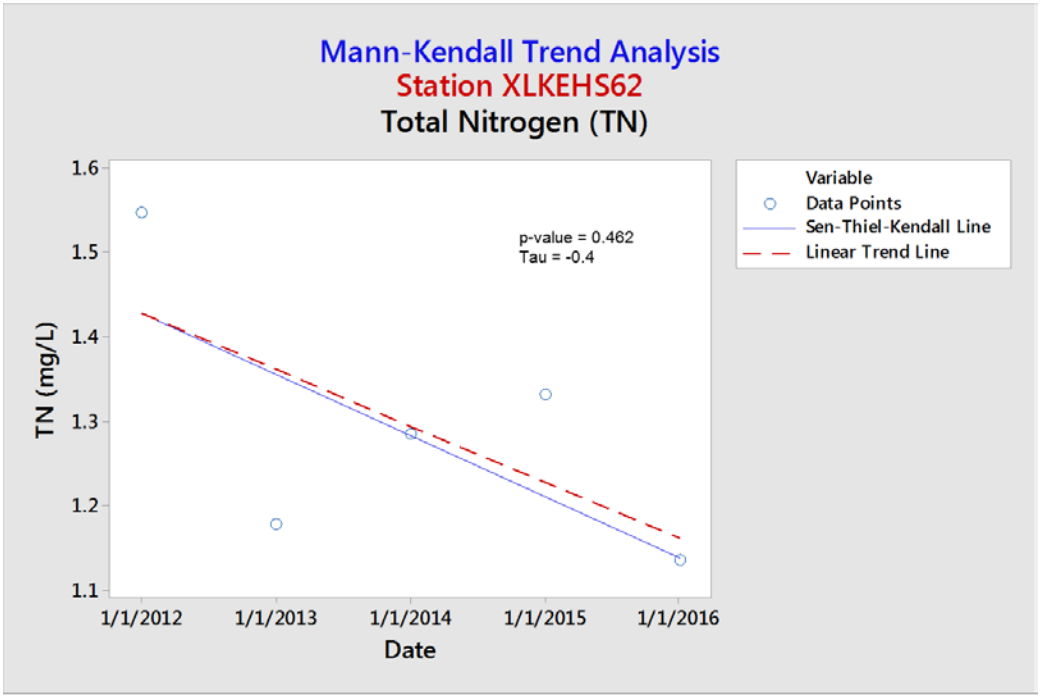

Figure E-12. Mann-Kendall trend analysis for TN at Orange County Station XLKEHS62

Seasonal Kendall Trend Analysis

Total Phosphorus

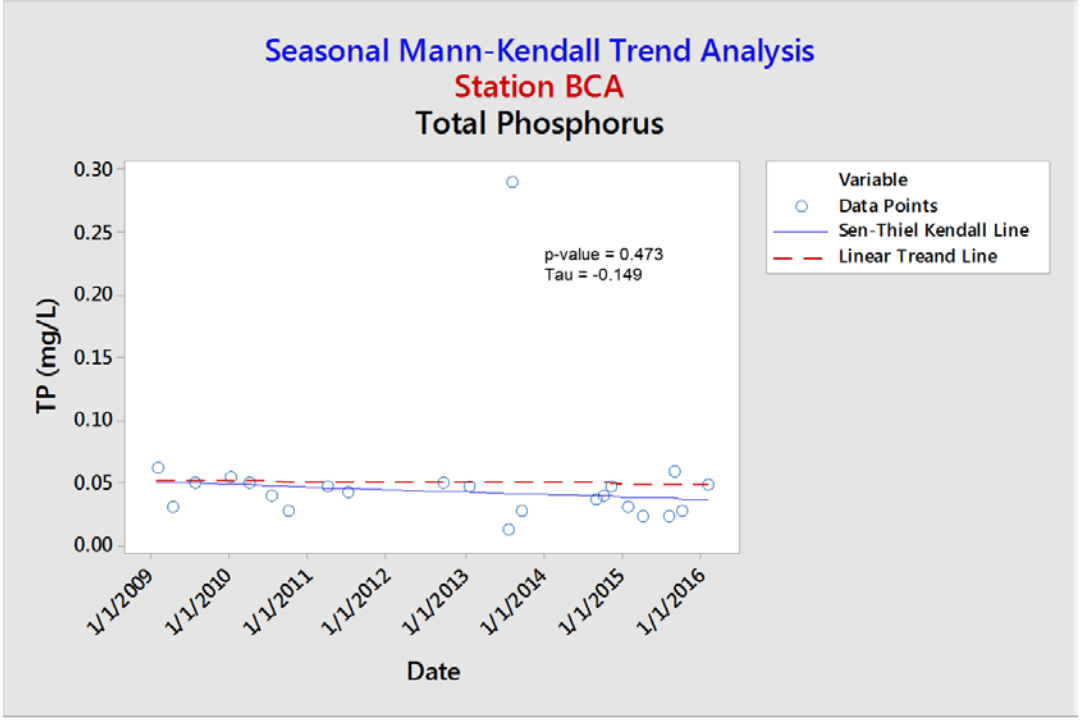

Figure E-13. Seasonal Mann-Kendall trend analysis for TP at Orange County Station BCA

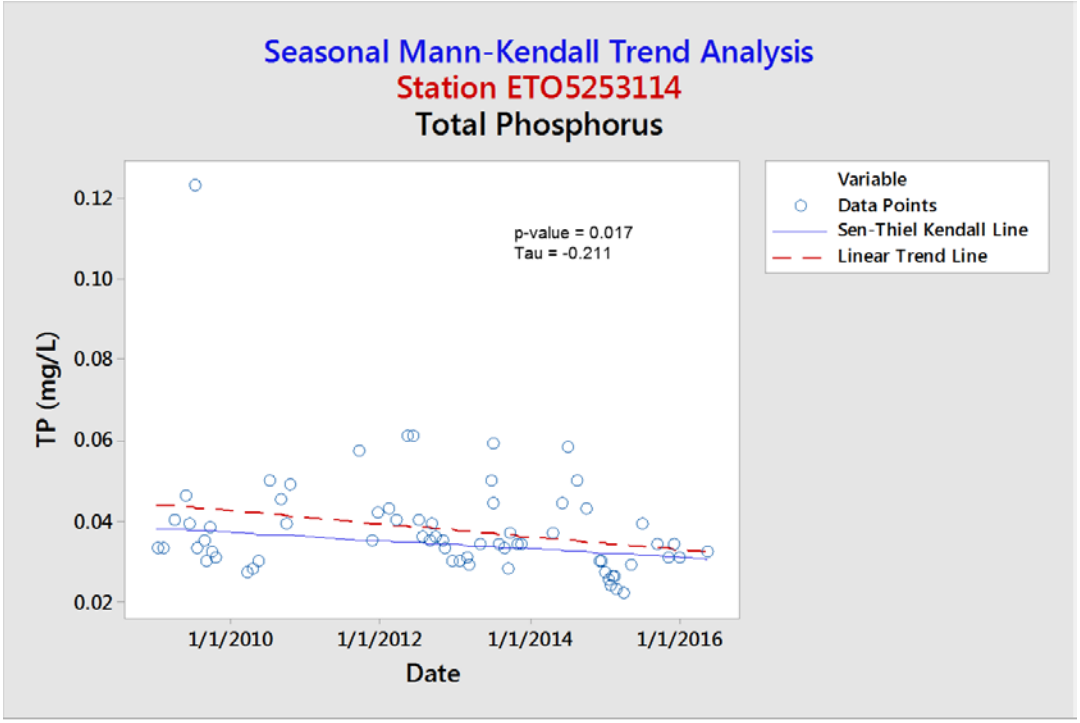

Figure E-14. Seasonal Mann-Kendall trend analysis for TP at Osceola County Station ETO5253114

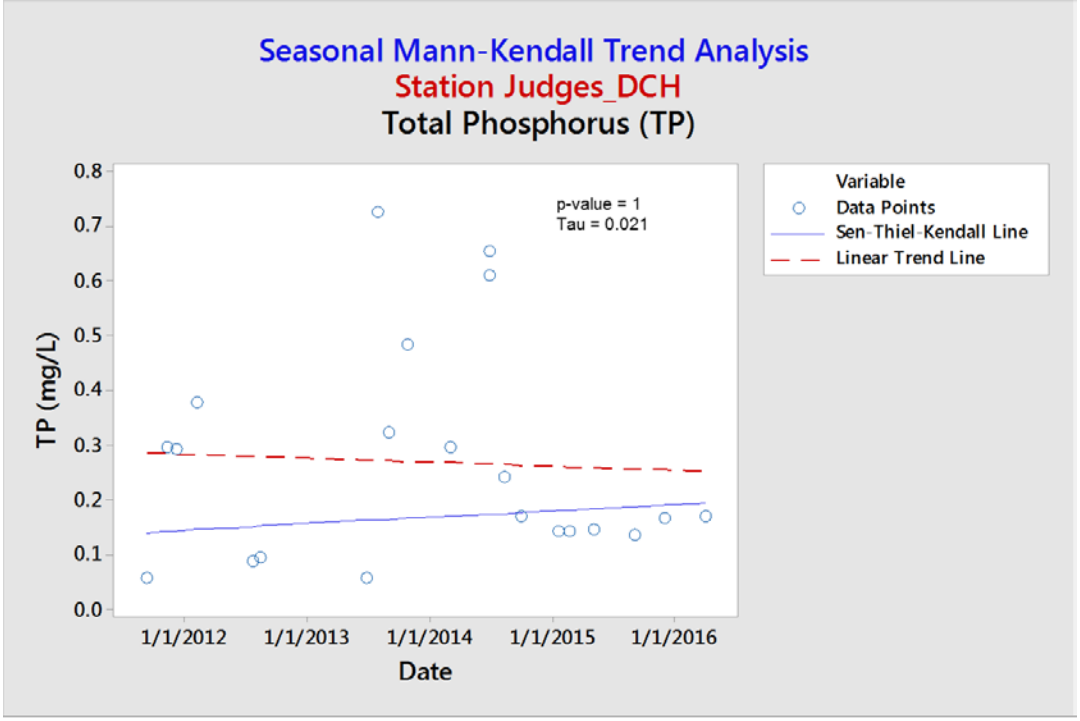

Figure E-15. Seasonal Mann-Kendall trend analysis for TP at Osceola County Station Judges_DCH

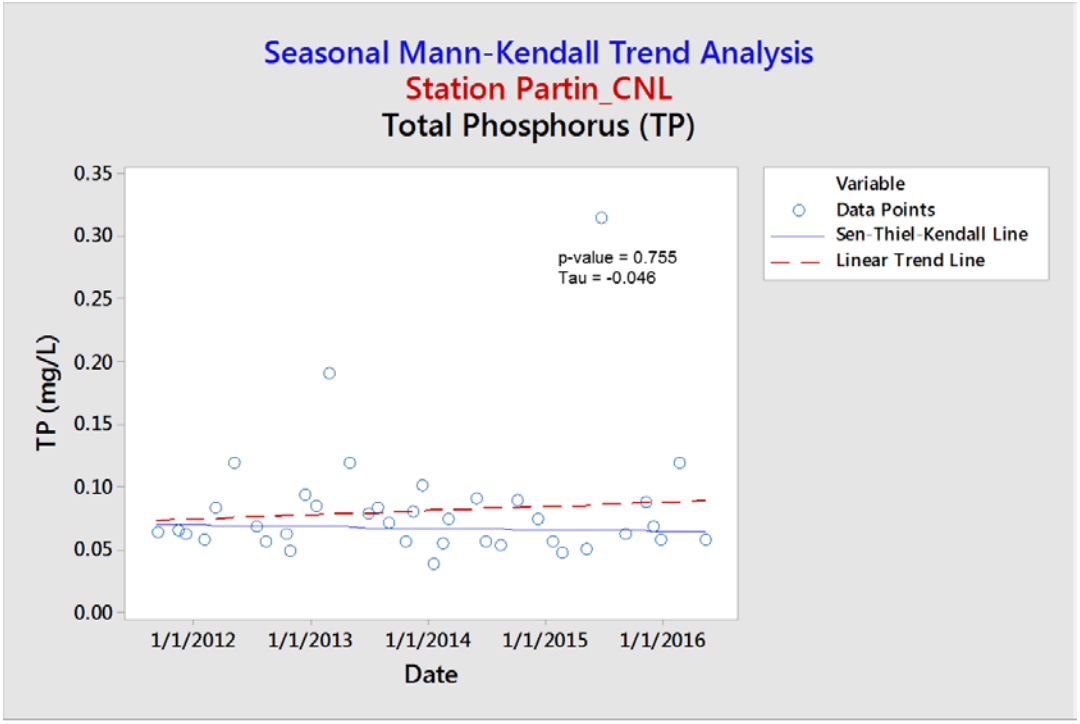

Figure E-16. Seasonal Mann-Kendall trend analysis for TP at Osceola County Station Partin_CNL

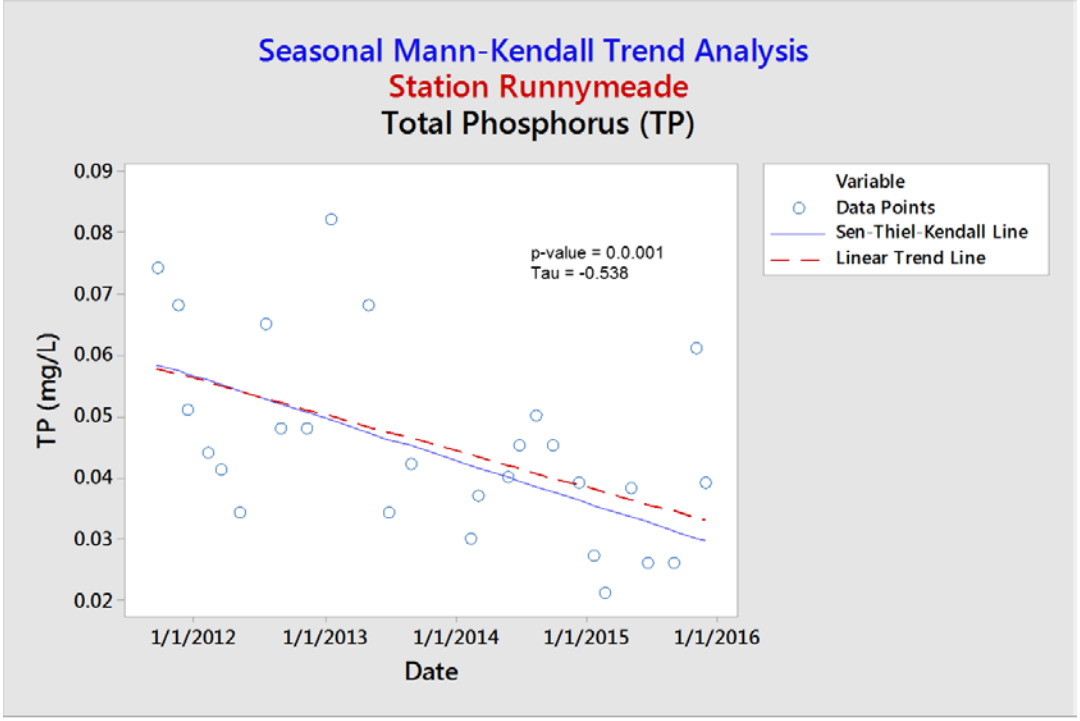

Figure E-17. Seasonal Mann-Kendall trend analysis for TP at Orange County Station Runnymeade

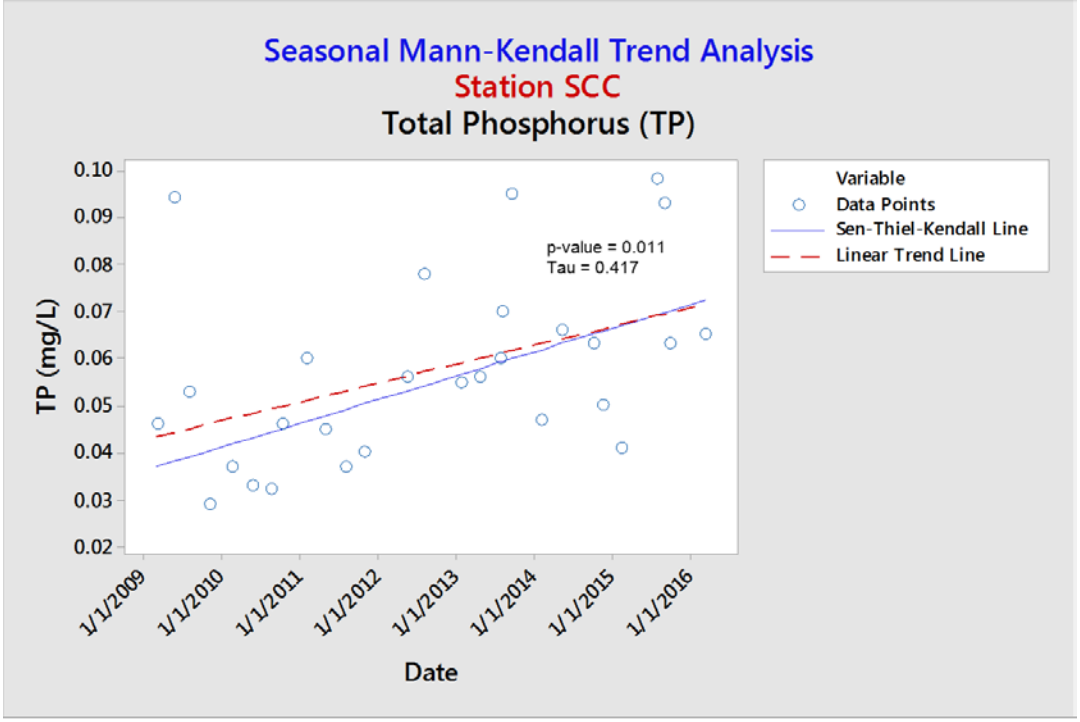

Figure E-18. Seasonal Mann-Kendall trend analysis for TP at Orlando/Orange County Station SCC

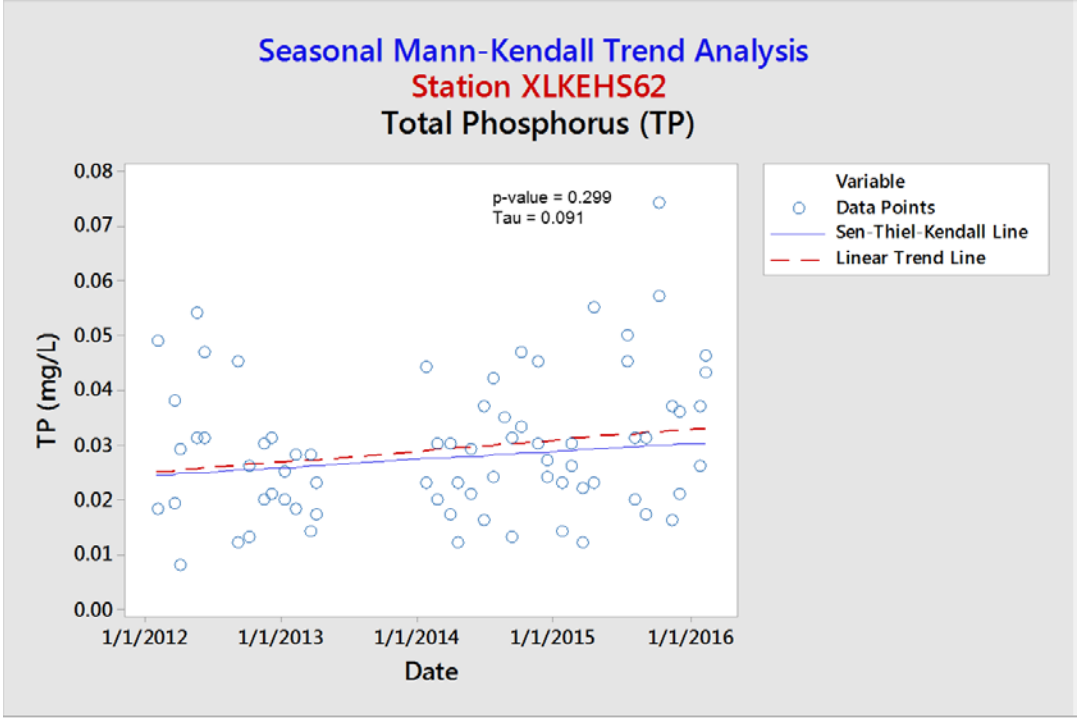

Figure E-19. Seasonal Mann-Kendall trend analysis for TP at Orange County Station XLKEHS62

Total Nitrogen

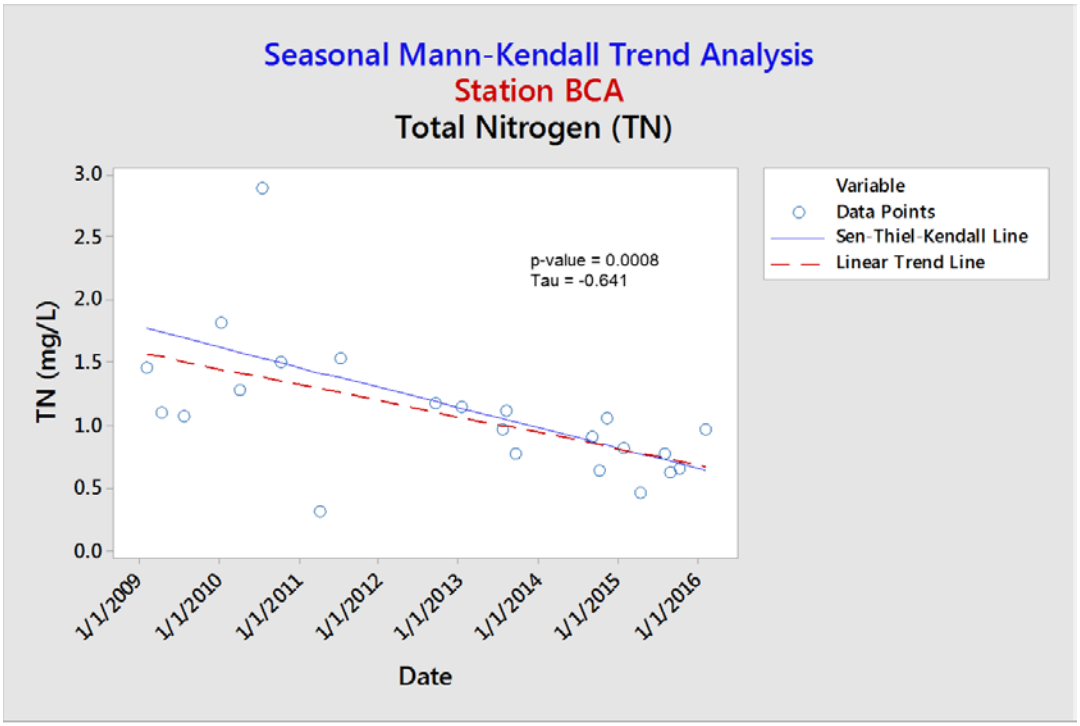

Figure E-20. Seasonal Mann-Kendall trend analysis for TN at Orange County Station BCA

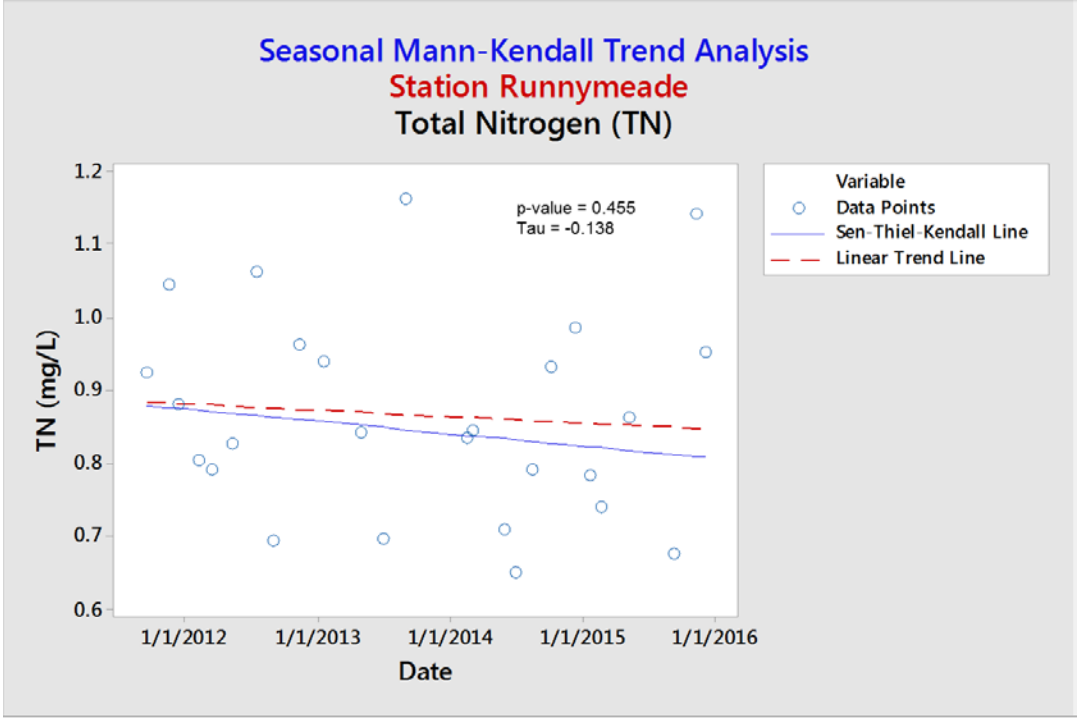

Figure E-21. Seasonal Mann-Kendall trend analysis for TN at Osceola County Station Runnymeade

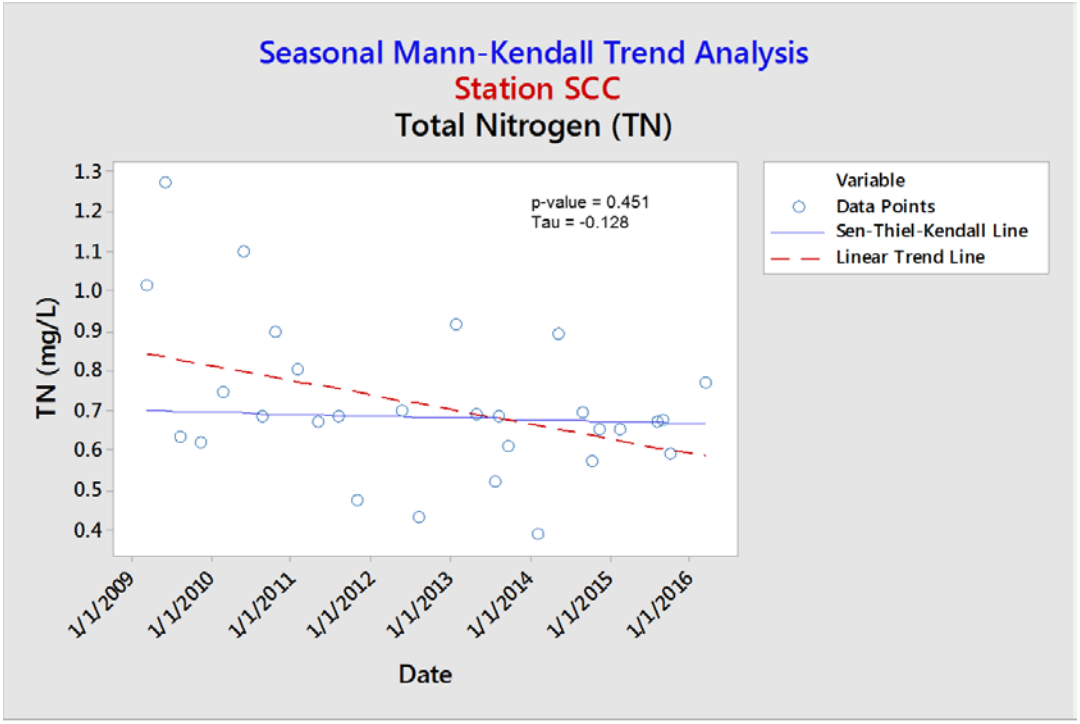

Figure E-22. Seasonal Mann-Kendall trend analysis for TN at Orlando/Orange County Station SCC

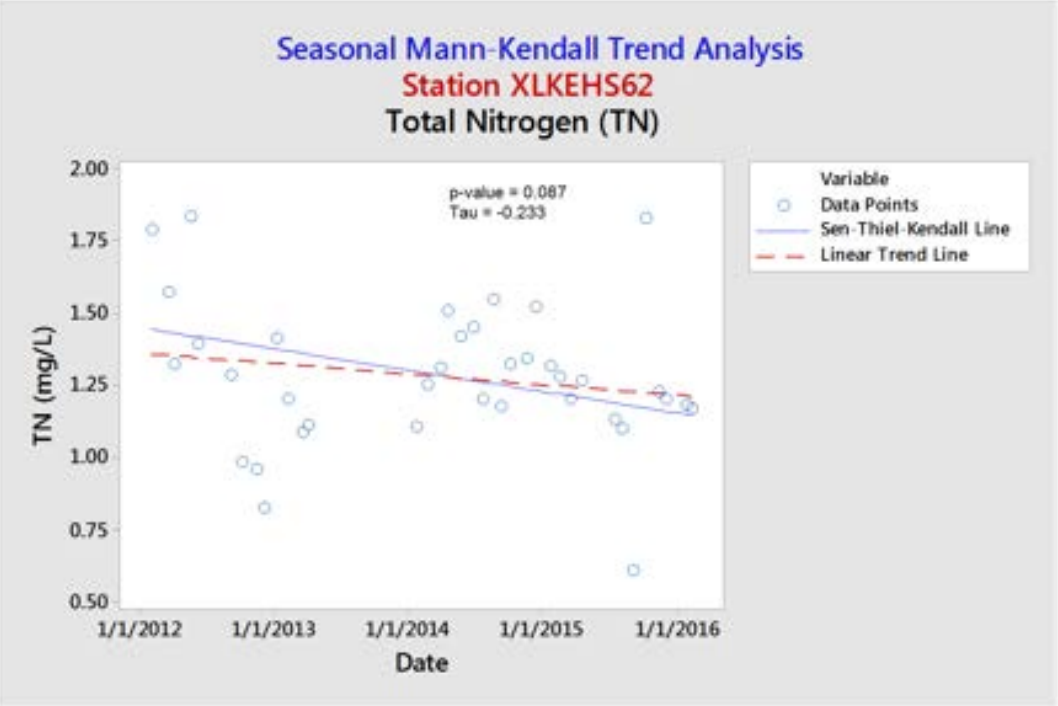

Figure E-23. Mann-Kendall trend analysis for TN at Orange County Station XLKEHS62

Appendix F: Important Links

Cover page:
DEP homepage: http://www.dep.state.fl.us

Acknowledgments:
Sara Davis email: sara.c.davis@dep.state.fl.us

Summary:
TP TMDL for Lake Okeechobee: http://www.dep.state.fl.us/water/tmdl/final_tmdl.htm

Section 1, Introduction:
TP TMDL for Lake Okeechobee: http://www.dep.state.fl.us/water/tmdl/final_tmdl.htm

Lake Okeechobee BMAP: http://www.dep.state.fl.us/water/watersheds/bmap.htm

Section 2.2, SFWMD Activities:
2017 SFER – Volume I, Chapters 8A and 8B, and Volume III, Appendix 4-1: https://www.sfwmd.gov/science-data/sfer

2017 SFER – Volume I, Chapter 9: https://www.sfwmd.gov/science-data/sfer

2017 SFER – Volume I, Chapter 8A: https://www.sfwmd.gov/science-data/sfer

Section 2.4, Agricultural Activities:
FDACS BMP manuals: http://www.freshfromflorida.com/Business-Services/Water/Agricultural-Best-Management-Practices

Section 2.6, Summary of Accomplishments:
2015 Progress Report: http://www.dep.state.fl.us/water/watersheds/docs/bmap/LakeO-BMAP-APR-2015.pdf

Section 3.1.3, Water Quality Analyses:
2017 SFER – Volume I, Chapter 8B: https://www.sfwmd.gov/science-data/sfer

Section 4.2.3, Public Education and Outreach:
Everglades Research and Education Center website: http://erec.ifas.ufl.edu/research/index_soil_and_water.shtml

Appendix B: Future BMAP Projects:
Chapter 2016-1, Laws of Florida: http://laws.flrules.org/2016/1