Performance Efficiency Evaluation of the Tropical Farms Stormwater Retrofit Project

Final Report -- January 2013

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SECTION 1

INTRODUCTION

This document provides a summary of work efforts conducted by Environmental Research & Design, Inc. (ERD) for the Martin County Office of Environmental Restoration and Management Division, formerly known as the Office of Water Quality, (County) to conduct a performance efficiency evaluation of the Tropical Farms Stormwater Quality Retrofit Project. This facility was constructed by Martin County, with cooperative funding from the Florida Department of Environmental Protection (FDEP) and the St. Lucie River Issues Team (SLRIT) to reduce pollutant loadings discharging from residential watersheds into the St. Lucie River. The Tropical Farms facility is designed to reduce pollutant loadings from a watershed of approximately 468 acres located primarily south and west of the project site, much of which currently have no existing stormwater treatment facilities. The Tropical Farms systems consists of a combination of wet detention ponds and planted vegetation systems which provide nutrient load reductions in a linear treatment train.

1.1 Impaired Waters Designation

Section 301(D) of the Clean Water Act requires states to submit lists of surface waterbodies that do not meet applicable water quality standards. These waterbodies are defined as "impaired waters" and total maximum daily loads (TMDLs) must be established for these waters on a prioritized schedule. The South Fork of the St. Lucie River (WBID 3210) has been designated as an "impaired water" for mercury, turbidity, dissolved oxygen, and nutrients, with nitrogen considered to be the causative pollutant. The current low levels of dissolved oxygen are thought by FDEP to be caused by elevated chlorophyll which is caused by elevated nutrients. The South Fork of the St. Lucie River is included on the Verified List of Impaired Waters for the St. Lucie-Loxahatchee Basin that was adopted by secretarial order on May 15, 2009. The Tropical Farms project was constructed to assist in reducing nutrient loadings to the South Fork of the St. Lucie River and to improve the existing conditions of low dissolved oxygen.

1.2 Project Description

General location maps for the Tropical Farm Stormwater Quality Retrofit Project site are given on Figure 1-1. The project site is located in Martin County, southwest of the City limits of Stuart. A vicinity map for the Tropical Farms project site is given on Figure 1-2. The targeted drainage basin is known as the Tropical Farms/Roebuck Creek Basin in Central Martin County. The Tropical Farms treatment system is constructed in Phipps Park, downstream of the St. Lucie River lock, north of S.R. 76, and immediately west of the Florida Turnpike. Phipps Park is located north of the Gregor Woods Subdivision.

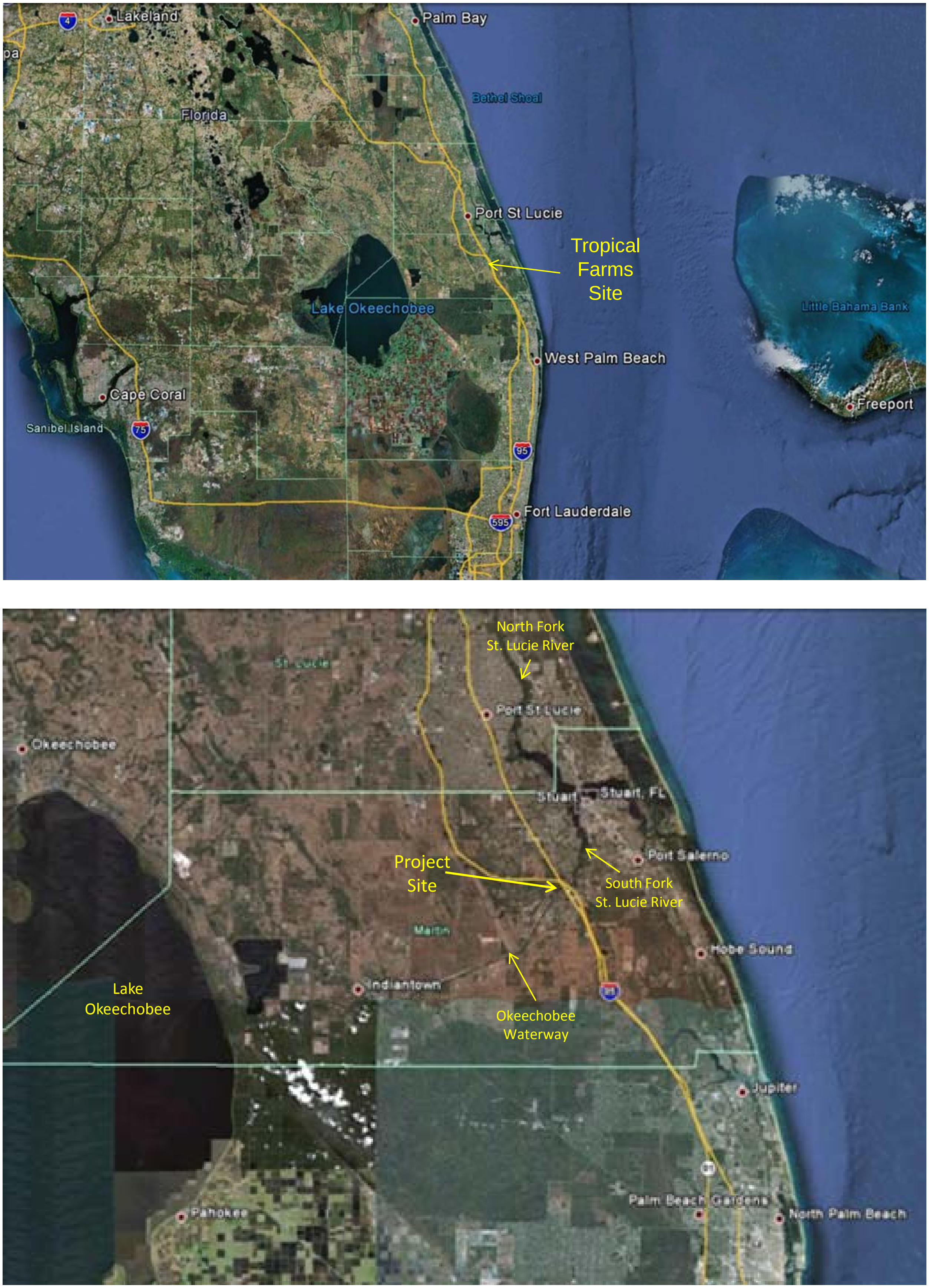


Figure 1-1. Location Maps for the Tropical Farms Retrofit Project Site.

Figure 1-2. Vicinity Map for the Tropical Farms Retrofit Project.

Design of the Tropical Farms Water Quality Retrofit project was completed by Captec Engineering, Inc. during 2007. An overview of the Tropical Farms Retrofit project is given on Figure 1-3. The treatment system consists of approximately 16.6 acres (@ NWL) of wet detention ponds and vegetated stormwater treatment areas which form a linear meandering pathway for the runoff inputs. The Tropical Farms system provides treatment for approximately 468 acres (24%) of the 1,915-acre Tropical Farms Watershed which drains to Roebuck Creek. Of the 468 acres which discharge to the Tropical Farms treatment system, approximately 160 acres have permitted stormwater treatment systems, while the remaining 308 acres do not. The Tropical Farms watershed is bounded by the River Forest and Locks Landing Subdivisions on the west, the St. Lucie Canal on the north, Roebuck Creek on the east, and Southwest Ranch Trail on the south.

A summary of current land use characteristics in watershed areas treated by the Tropical Farms facility is given on Table 1-1. The largest land use category within the treated watershed area is medium-density residential, which comprises 52% of the overall watershed area. Approximately 25% of the watershed area consists of low-density residential, with 15% in open land, and 8% in water.

Figure 1-3. Overview of the Tropical Farms Retrofit Project.

TABLE 1-1

CURRENT LAND USE IN WATERSHED AREAS TREATED BY THE TROPICAL FARMS FACILITY

LAND USE CATEGORY	AREA (acres)	PERCENT OF TOTAL (%)
Low-Density Residential	117.80	25
Medium-Density Residential	245.46	52
Open Land	68.68	15
Water	35.92	8
Total:	**467.86**	**100**

A significant component of the treatment system is the installation of approximately 10,000 ft of stormsewers, with periodic inlet structures, to intercept runoff generated from the subdivisions east and south of SW Locks Road and east and west of SW Tropical Avenue, and divert the runoff into the initial pond of the treatment system. Approximately 50% of the overall 16.6-acre treatment area consists of deep wet detention pond, with the remaining 50% covered with shallow vegetated zones. The treatment system is designed to provide 1 inch of treatment storage for the 468-acre treated basin area. The SCS Soil Survey of Martin County identifies the soils in the watershed area as Nettles sand, Paolo, and Jonathan sand. Each of these soils is characterized by water table elevations approximately 1-3 ft below the ground surface, which is consistent with observed conditions within the basin.

A summary of estimated pollutant load reductions for the Tropical Farms treatment system is given on Table 1-2. The Tropical Farms facility is projected to reduce annual nitrogen loadings to the South Fork of the St. Lucie River by approximately 603 kg/yr (43%), 90 kg/yr for total phosphorus (66%), and 10,852 kg/yr for TSS (85%).

TABLE 1-2

ESTIMATED POLLUTANT LOAD REDUCTIONS FOR THE TROPICAL FARMS TREATMENT SYSTEM (Source: FDEP Agreement No. S0361 Grant Work Plan)

CONDITION	UNITS	TOTAL NITROGEN	TOTAL PHOSPHORUS	TSS
Pre-Project	kg/yr	1,404	137	12,767
Post-Project	kg/yr	801	47	1,915
Load Reduction	kg/yr %	603 43	90 66	10,852 85

1.3 Work Efforts Performed by ERD

A Quality Assurance Project Plan (QAPP) was developed by ERD during April 2011 which provides details concerning the proposed field monitoring and laboratory analyses. The QAPP was reviewed and approved by FDEP. Monitoring equipment was installed at the Tropical Farms site during late-April 2011. Routine monitoring was initiated on May 1, 2011 and was continued for a period of 12 months until May 1, 2012.

This report has been divided into five separate sections to summarize the work efforts conducted by ERD. Section 1 contains an introduction to the report, a description of the Tropical Farms facility, and a brief summary of work efforts performed by ERD. A discussion of the design of the Tropical Farms treatment system is given in Section 2. Section 3 provides a detailed discussion of the methodologies used for field and laboratory evaluations. Section 4 includes a discussion of the hydrologic and water quality results, with a summary provided in Section 5. Appendices are attached which contain data and supporting documentation for the results and conclusions of this project.

1.4 Project Costs and Funding

Funding for the Tropical Farms site was provided by Martin County, the St. Lucie River Issues Team (SLRIT), and FDEP. A summary of funding amounts and sources for the Tropical Farms project is given on Table 1-3. Martin County and SLRIT contributed $2,877,058 for the project, which included the master basin engineering study, construction plan preparation and permitting, a portion of the construction costs, BMP monitoring, and a portion of the public education element. A TMDL Grant in the amount of $1,178,843 was contributed by FDEP, which included project construction, BMP effectiveness monitoring, and a portion of the Public Education element. Overall, the total cost for the project, including each of the items summarized in Table 1-3 is $4,055,901.

TABLE 1-3

FUNDING AMOUNTS AND SOURCES FOR THE TROPICAL FARMS TREATMENT FACILITY

PROJECT FUNDING ACTIVITY	FDEP TMDL GRANT FUNDS ($)	MATCHING FUNDS ($)	NON-MATCHING FUNDS ($)	TOTALS ($)	MATCH SOURCE
Design and Engineering	--	137,482	255,648	393,130	SLRIT
Construction	930,175	1,204,557	1,199,670	3,334,402	SLRIT
BMP Monitoring	149,655	0	0	149,655	-
Public Education	99,013	79,701	0	178,714	SLRIT/County
Sub-Total:	**$ 1,178,843**	**$ 1,421,750**	**$ 1,455,318**	**$ 4,055,901**	
Project Costs (Grant)	**$ 2,600,593**				
Percentage Match (Grant):	**45.3%**	**54.7%**			
Total Project Costs	**$4,055,901**				
Percent Match	**29.1%**	**70.9%**			

SECTION 2

SYSTEM DESIGN

An overview of the Tropical Farms treatment system, with primary flow lines, is given on Figure 2-1. The design is based upon a linear treatment train consisting of an alternating series of deep wet detention ponds and shallow vegetated cells. Inflows from the treated sub-basin areas enter the southwestern pond which is the initial pond in the treatment train. Discharges from the initial pond travel through approximately 1,270 ft of a vegetated canal before entering the northeast series of ponds and vegetated areas. Treated water from the final pond discharges to Roebuck Creek which ultimately enters the St. Lucie Waterway on the east side of the Florida Turnpike. For purposes of this analysis, the treatment system has been divided into five separate waterbodies, identified as Ponds 1-5. A set of record construction drawings for the Tropical Farms project is given in Appendix A.

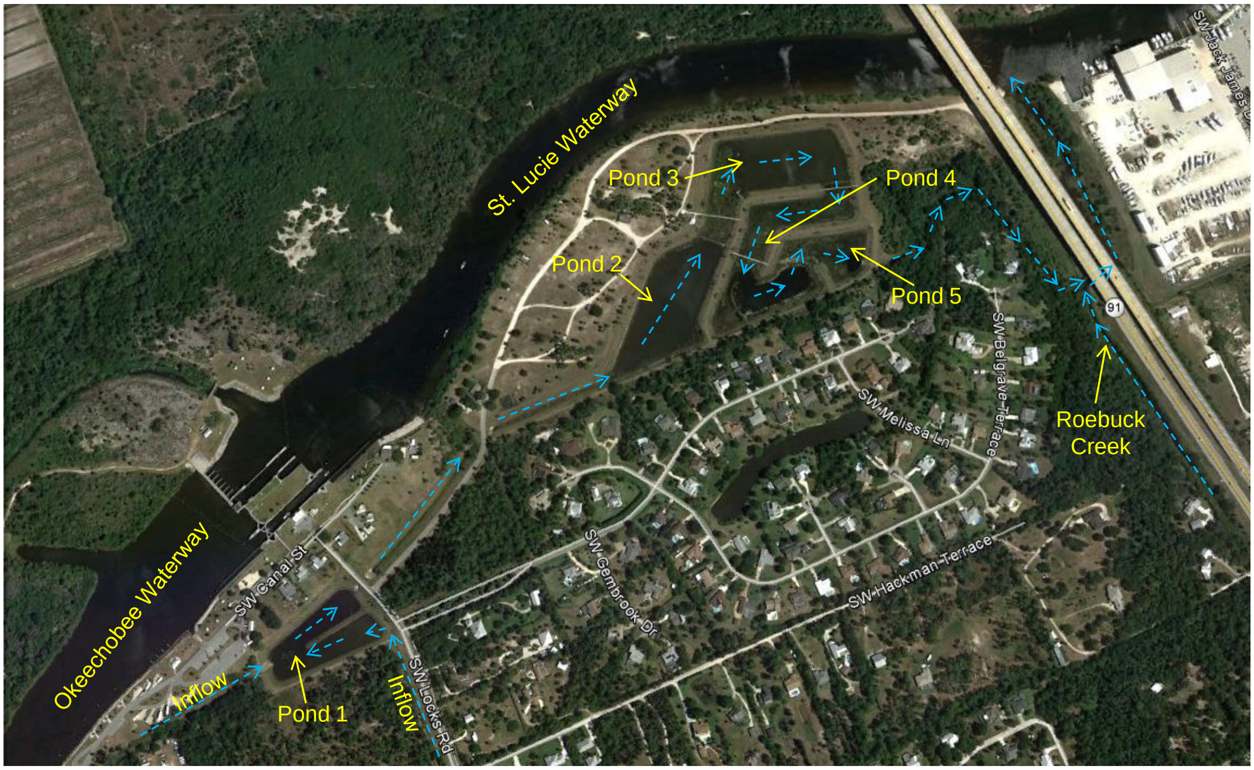


Figure 2-1. Overview of the Tropical Farms Treatment System with Primary Flow Lines.

Stage-area-volume relationships for the Tropical Farms treatment system were developed by ERD based upon the record drawings provided in Appendix A. A summary of stage-area-volume relationships for the Tropical Farms treatment system is given in Table 2-1. This information is used in subsequent sections to evaluate the overall performance efficiency of the Tropical Farms system.

TABLE 2-1

STAGE-AREA-VOLUME RELATIONSHIPS FOR THE TROPICAL FARMS TREATMENT SYSTEM

POND 1			POND 2			POND 3		
Elevation (feet)	Area (acres)	Volume (ac-ft)	Elevation (feet)	Area (acres)	Volume (ac-ft)	Elevation (feet)	Area (acres)	Volume (ac-ft)
10	2.88	15.39	8	5.66	42.68	8	5.39	42.59
9	2.74	12.58	7	5.37	37.17	7	5.20	37.30
8	2.59	9.92	6	5.07	31.95	6	5.01	32.19
7	2.34	7.46	5	4.70	27.07	5	4.77	27.30
6	2.16	5.21	4.1	4.13	23.12	4.1	4.53	23.13
5.96	2.15	5.13	4	4.06	22.69	4	4.50	22.67
5	1.93	3.17	3	3.81	18.75	3	4.03	18.40
4	1.30	1.56	2	3.36	15.16	2	3.03	14.88
3	0.45	0.68	1	3.12	11.92	1	2.66	12.03
2	0.29	0.31	0	2.89	8.91	0	2.43	9.48
1	0.15	0.09	-1	2.59	6.17	-1	2.18	7.18
0	0.03	0.00	-2	2.22	3.77	-2	1.94	5.12
			-3	1.73	1.79	-3	1.72	3.29
			-4	0.92	1.79	-4	1.50	1.68
			-5	0.01	0.47	-5	0.67	0.59
						-6	0.19	0.16
						-7	0.06	0.03
						-8	0.00	0.00

POND 4			POND 5		
Elevation (feet)	Area (acres)	Volume (ac-ft)	Elevation (feet)	Area (acres)	Volume (ac-ft)
8	5.58	34.02	8	1.96	9.17
7	5.30	28.58	7	1.84	7.27
6	5.00	23.43	6	1.73	5.48
5	4.66	18.60	5	1.60	3.82
4.1	4.34	14.56	4.1	1.48	2.44
4	4.31	14.12	4	1.46	2.29
3	3.77	10.07	3	1.26	0.92
2	2.23	7.07	2	0.58	0.00
1	1.58	5.17			
0	1.39	3.68			
-1	1.17	2.40			
-2	0.93	1.35			
-3	0.68	0.54			
-4	0.40	0.00			

Values at control elevation

An overview of Pond 1 and associated hydraulic features is given on Figure 2-2. Pond 1 is the initial waterbody in the treatment system and receives the inflows from the 468-acre drainage basin which is treated by the Tropical Farms system. At the water control elevation of 5.96 ft for Pond 1, the approximate water surface area is 2.15 acres. The most significant inflow into Pond 1 is a 48-inch RCP which enters on the east side of the pond. This inflow contributes runoff from approximately 365 of the 468 acres (78%) treated by the Tropical Farms system. Land use in the contributing drainage basin is primarily single-family residential. A diversion berm was constructed along the centerline of Pond 1 to maximize the travel path for the inflows from the 48-inch RCP and to prevent short-circuiting between the 48-inch RCP and the pond outfall. The vast majority of sub-basin areas which discharge into the 48-inch RCP have no existing stormwater treatment facilities.

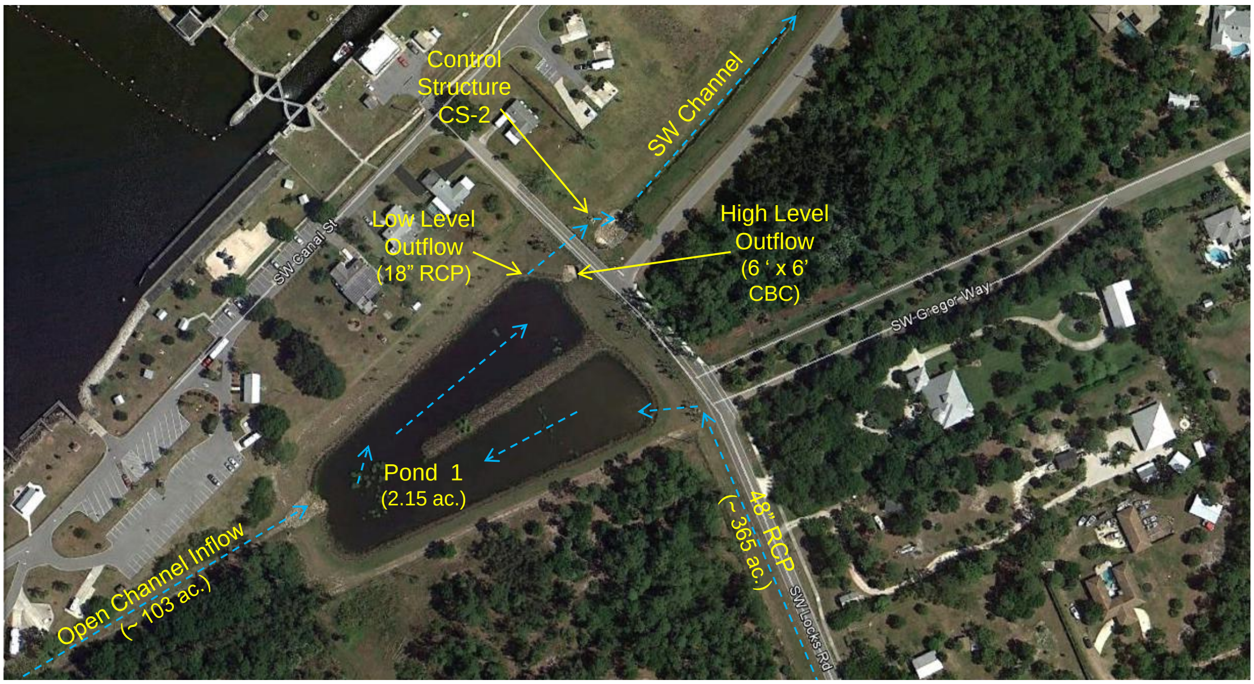


Figure 2-2. Overview of Pond 1 and Associated Hydraulic Features.

The second inflow into Pond 1 originates from a vegetated open channel which introduces runoff from the remaining 103 acres of the overall 468 acres treated in the Tropical Farms system. Land use in the contributing drainage basin is primarily single-family residential, much of which has existing stormwater treatment systems consisting primarily of wet detention ponds.

Water level elevations in Pond 1 are regulated by control structure CS-2 which is located on the east side of SW Locks Road, as indicated on Figure 2-2. A schematic of water control structure CS-2 is given on Figure 2-3. Under ordinary low flow conditions, discharges from Pond 1 occur through a submerged 18-inch RCP located on the north side of the pond, as indicated on Figure 2-2. Control structure CS-2 contains an internal concrete weir with a top elevation of 9.96 ft. The weir contains a 6-inch bleed-down orifice with an invert elevation of 5.96 ft which provides the control water elevation for Pond 1. Under low flow conditions, all discharges from Pond 1 pass through the 6-inch bleed-down orifice. Water which passes through the 6-inch bleed-down orifice is discharged through an 18-inch RCP on the downstream side of the weir into the vegetated channel, referred to as the Southwest Channel on Figure 2-2.

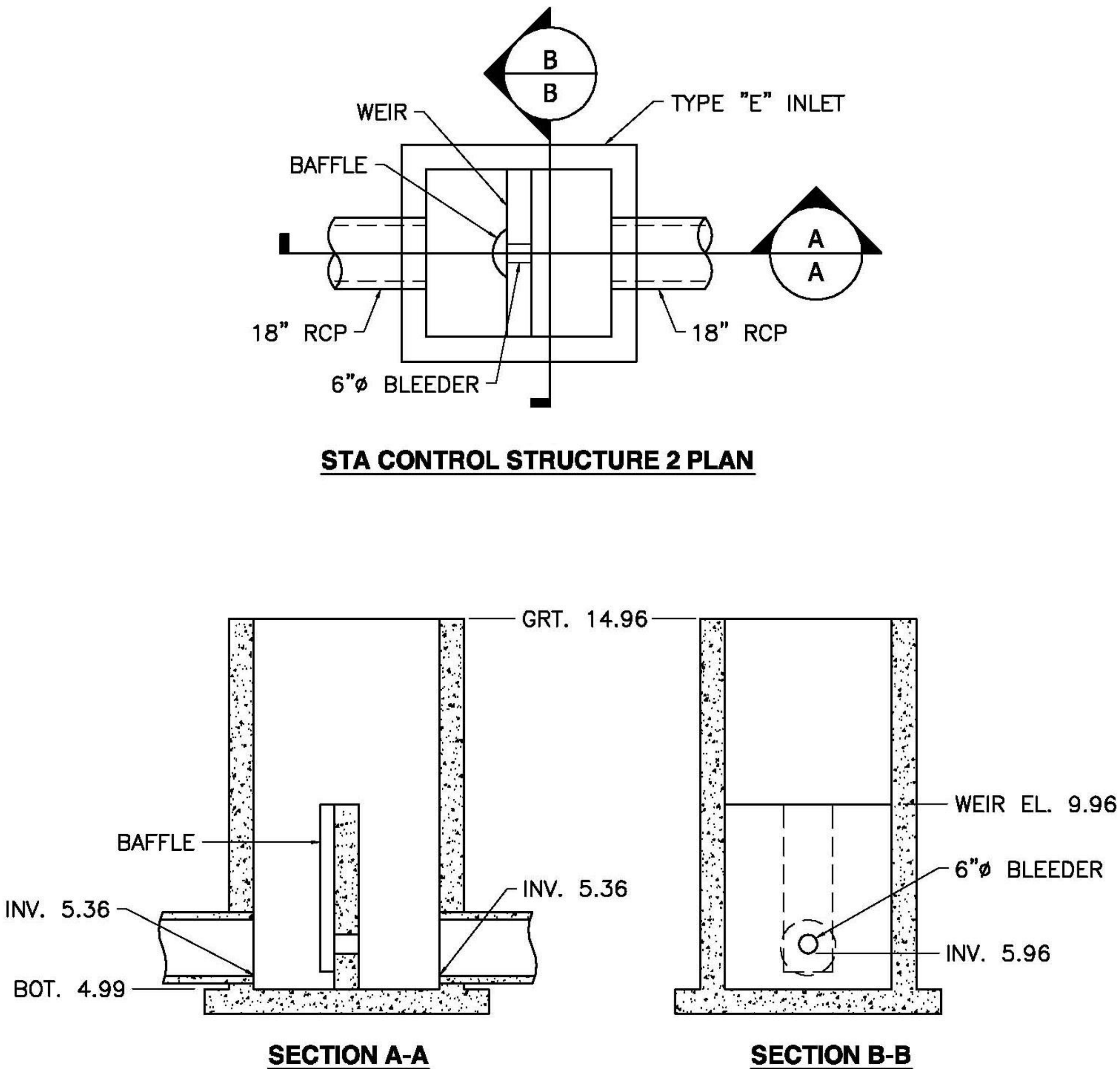


Figure 2-3. Water Control Structure (CS-2) for Pond 1.

When water surface elevations in Pond 1 reach 8.1 ft (approximately 2.1 ft above the pond control elevation), water will begin to also discharge through a 6-ft x 6-ft concrete box culvert (CBC) which passes beneath SW Locks Road. Photographs of high water level discharges from Pond 1 through the box culvert are given on Figure 2-4. Under these conditions, discharges from Pond 1 occur through both the box culvert as well as through structure CS-2.

a. High level discharge from Pond 1 through box culvert

b. Pond 1 discharge through box culvert

c. Box culvert discharge into channel

d. Discharge channel under high flow conditions

Figure 2-4. Photographs of High Water Level Discharges from Pond 1.

Discharges from Pond 1 enter a vegetated earthen channel, indicated on Figures 2-5 and 2-4c and 2-4d, which is referred to as the Southwest Channel for purposes of this evaluation. The Southwest Channel is approximately 735 ft in length and is conveyed beneath the entrance roadway to Phipps Park through two 48-inch RCPs. On the downstream side of the entrance road, the channel is referred to as the Northeast Channel for purposes of this evaluation. The Northeast Channel is approximately 535 ft in length and discharges into the southwest side of Pond 2. An overview of the Northeast Conveyance Channel is given on Figure 2-6.

Discharges from the Northeast Channel enter a series of meandering wet detention ponds and shallow vegetated treatment areas, referred to as Ponds 2, 3, 4, and 5. An overview of treatment Ponds 2-5 is given on Figure 2-7. Yellow dashed lines are used to indicate the approximate boundaries for each of the pond areas. Pond 2 consists of a 4.13-acre wet detention pond. According to the record drawings contained in Appendix A, Pond 2 has a maximum water depth of approximately 8-9 ft.

Pond 3 is a 4.53-acre waterbody which contains both shallow vegetated areas and deeper open water cells. Vegetated portions of Pond 3 are located primarily on the western side of the pond where the water depth is approximately 2 ft. The open water portion of Pond 3 has maximum depths ranging from 8-10 ft.

Figure 2-5. Overview of the Southwest Conveyance Channel Downstream from Pond 1.

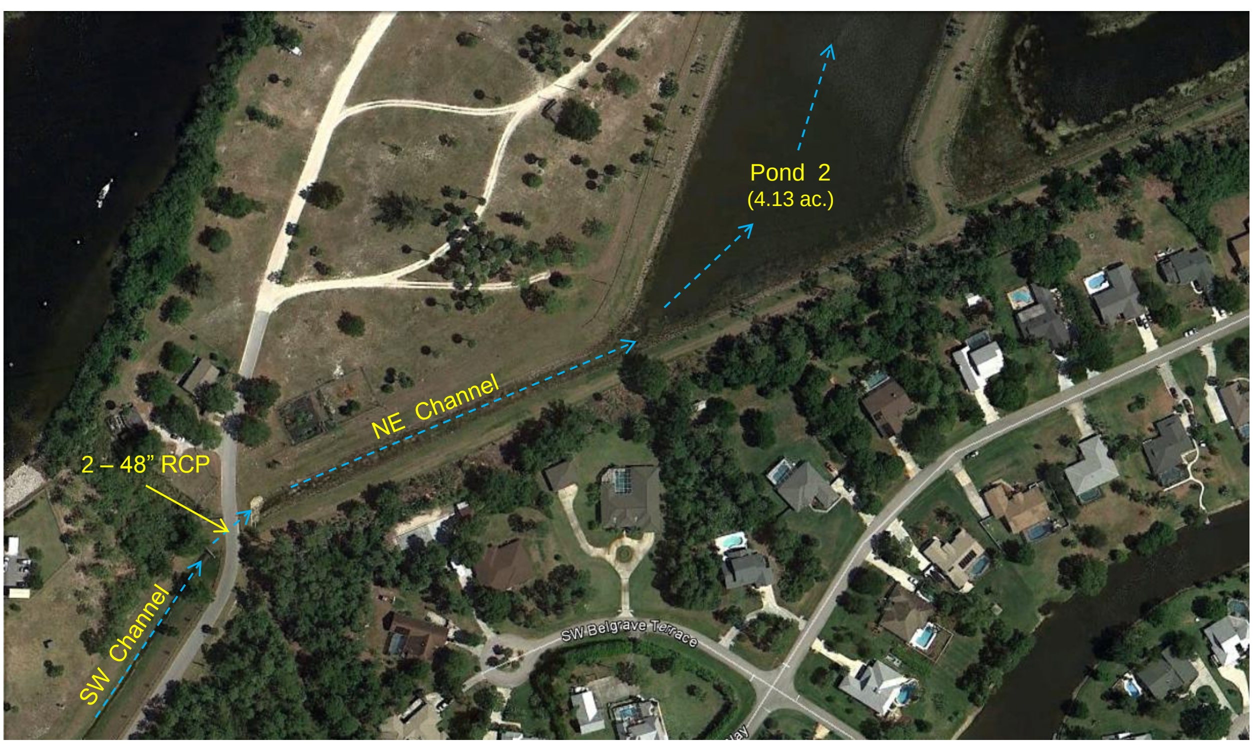


Figure 2-6. Overview of the Northeast Conveyance Channel.

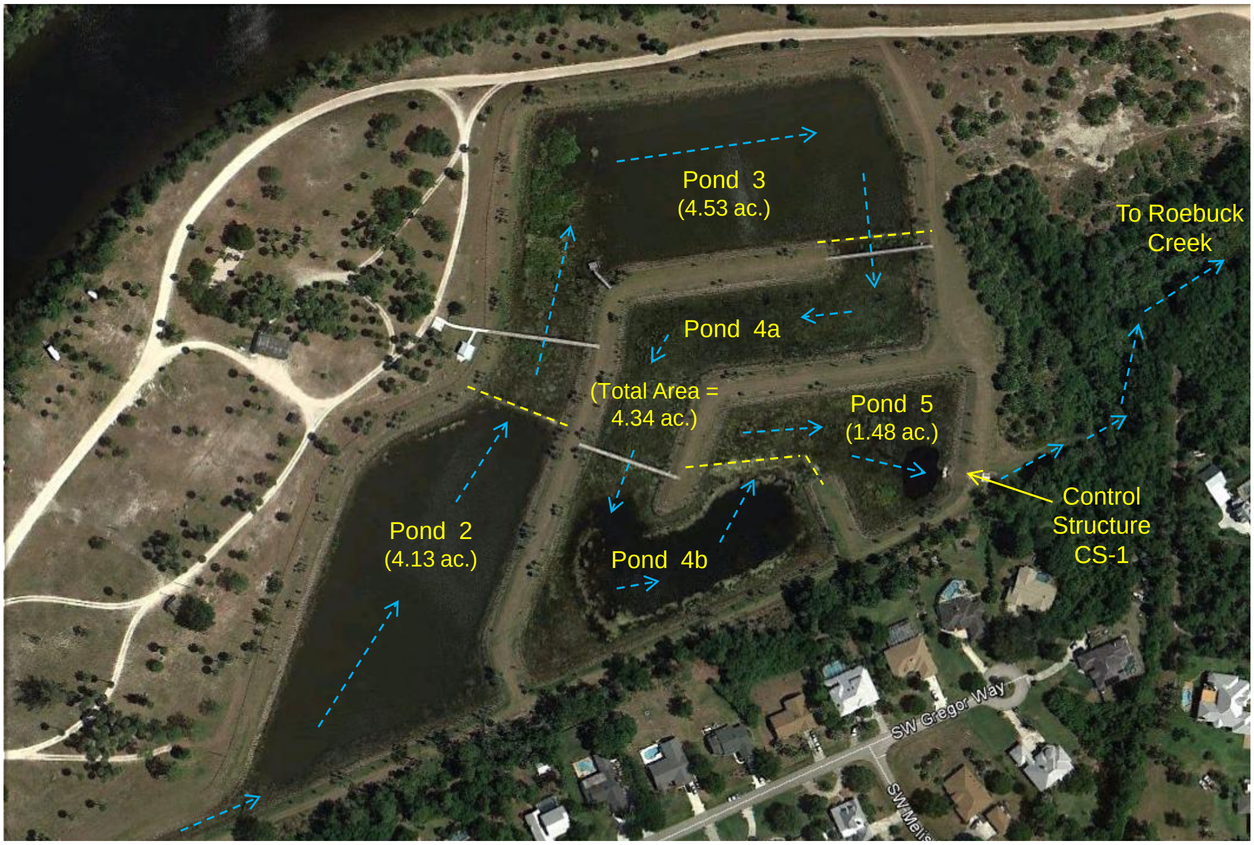
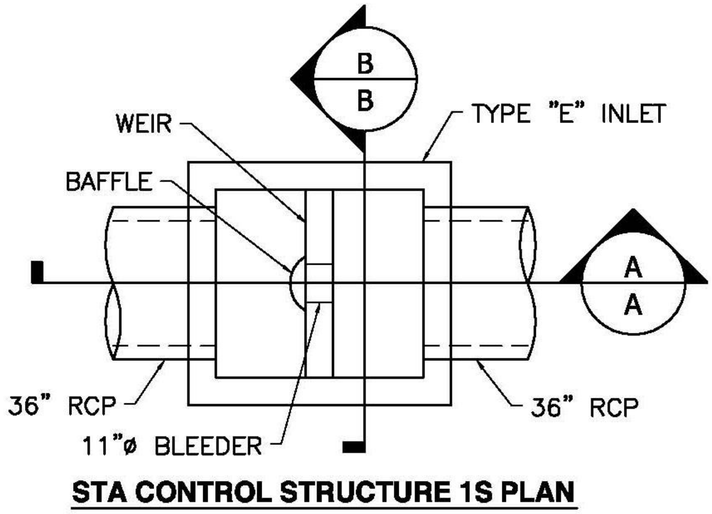


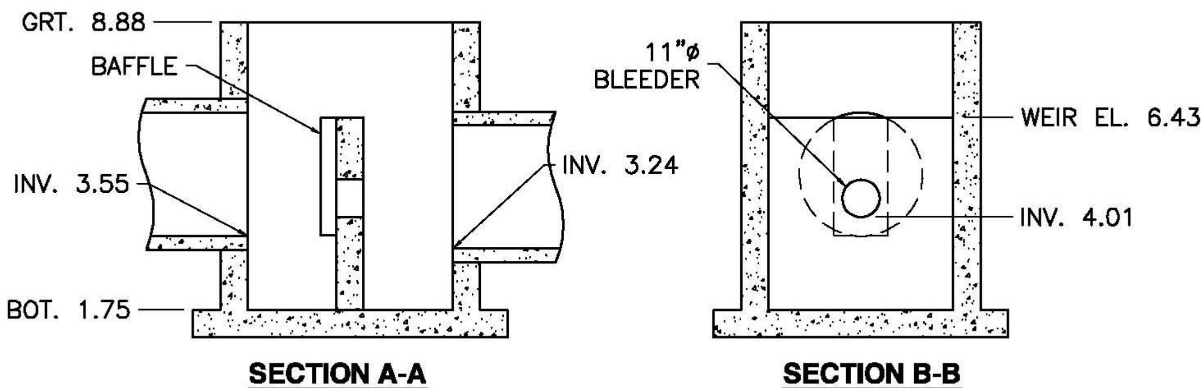
Figure 2-7. Overview of Treatment Ponds 2-5.

Discharges from Pond 3 enter Pond 4 which has a total area of approximately 4.34 acres. The initial portions of Pond 4, referred to as Pond 4a on Figure 2-7, consist of a shallow, densely vegetated area with a water depth of approximately 2 ft. Downstream portions of Pond 4, referred to as Pond 4b on Figure 2-7, consist primarily of an open water cell with a maximum water depth of 8-9 ft.

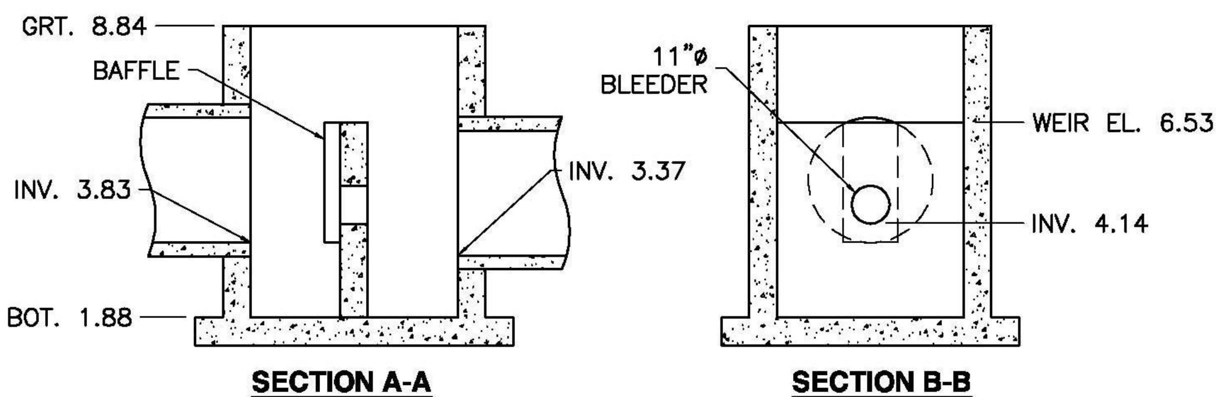
The final pond in the treatment system, designated as Pond 5 on Figure 2-7, is a 1.48-acre waterbody consisting of both shallow vegetated zones and open water. Approximately 80% of Pond 5 consists of a shallow vegetated zone with a water depth of approximately 2 ft. A small area of open water is present in Pond 5 immediately adjacent to the outfall structure, with water depths ranging from 6-8 ft.

Water level elevations in Ponds 2-5 are regulated by water control structure CS-1 which is the ultimate point of discharge from the overall treatment system. A schematic of water control structure CS-1 is given on Figure 2-8. Control structure CS-1 consists of two identical side-by-side control structures, with one referred to as the Northern Structure and the other referred to as the Southern Structure. Each of these structures is similar in function to structure CS-2 described previously, with internal concrete weirs with top elevations ranging from 6.43-6.53 ft. Each of the internal weirs contains an 11-inch bleed-down orifice with an invert elevation of 4.01 ft for the northern structure and 4.14 ft for the southern structure. Inflows from the pond enter each of the two control structures through 36-inch RCPs, with discharges from the structures also leaving through 36-inch RCPs.





a. Northern Structure

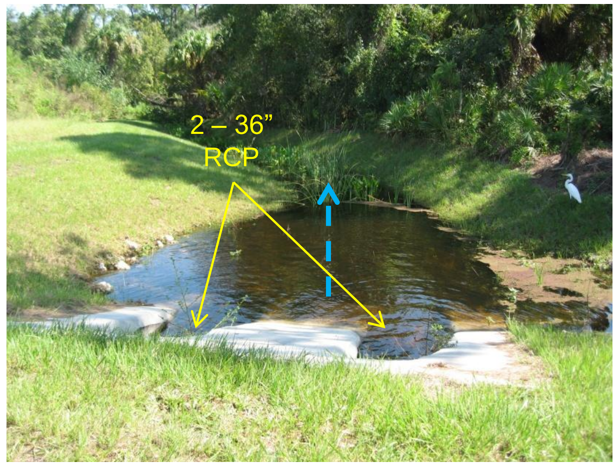


b. Southern Structure

Figure 2-8. Schematic of Water Control Structure CS-1.

Discharges from control structure CS-1 enter a shallow meandering channel which ultimately merges with Roebuck Creek. Photographs of discharges from control structure CS-1 during low flow and high flow conditions are given on Figure 2-9.

a. Outfall during low flow conditions



b. Outfall during high flow conditions

Figure 2-9. Photographs of the System Discharge.

SECTION 3

FIELD AND LABORATORY ACTIVITIES

Field and laboratory investigations were conducted by ERD over a 12-month period from May 2011-April 2012 to evaluate the performance efficiency of the Tropical Farms stormwater treatment facility. Field monitoring was conducted at each of the two primary inflows into the system, as well as the system outfall which included a continuous record of discharges at each of these monitoring sites and collection of flow-weighted composite samples. In addition, three intermediate monitoring sites were established along the treatment train to evaluate changes in water quality characteristics through different components of the treatment system. Laboratory analyses were conducted on the collected samples for general parameters and nutrients to assist in identifying concentration-based and mass removal efficiencies. Specific details of monitoring efforts conducted at the Tropical Farms treatment facility are given in the following sections.

3.1 Field Instrumentation and Monitoring

An overview of inflow and outflow monitoring sites at the Tropical Farms facility is given on Figure 3-1. Automated monitoring was conducted at six separate locations to evaluate the hydrologic inputs and chemical characteristics of inflows and outflows for the treatment system. Monitoring was also conducted at selected locations along the treatment flow path to monitor changes in chemical characteristics during migration through the overall treatment system.

For purposes of describing overall field instrumentation and monitoring, the Tropical Farms treatment system has been divided into two separate areas for discussion purposes. The first area is the southwest pond, referred to as Pond 1, which includes the two primary inflows into the treatment system, the discharge from Pond 1, and associated hydrologic instrumentation. The second area includes Ponds 2-5, located on the northeast portion of the treatment system, and associated hydrologic instrumentation. A detailed discussion of monitoring activities and instrumentation installed in each of these areas is given in the following sections.

3.1.1 Pond 1 Area

A schematic of monitoring locations and hydrologic instrumentation used to evaluate inflows and outflows at Pond 1 is given on Figure 3-2. Inflows into Pond 1 were monitored at two separate locations which reflect the primary inflows into the Tropical Farms treatment system. Continuous monitoring of runoff inflows was conducted at the ditch inflow into Pond 1 which enters on the west side of the pond and is designated as Site 1. An additional inflow into Pond 1 was monitored at the 48-inch RCP inflow which enters the east side of Pond 1 and is designated as Site 2. Discharges from Pond 1 were monitored inside control structure CS-2 which reflects the discharge from Pond 1 as well as the inflow to Ponds 2-5.

Figure 3-1. Overview of Inflow and Outflow Monitoring Sites at the Tropical Farms Site.

A recording rain gauge was installed adjacent to control structure CS-2 to provide a continuous record of rain events which occurred at the Tropical Farms site during the field monitoring program. A bulk precipitation collector was also installed adjacent to control structure CS-2 to provide information on the chemical characteristics of wet and dry fallout at the project site. A digital water level recorder and staff gauge were installed in Pond 1 to provide a continuous record of changes in water surface elevations. Shallow groundwater monitoring wells were installed on each of the four sides of Pond 1 to provide information on the quantity and quality of groundwater inflows or outflows at Pond 1. Details of the hydrologic instrumentation and groundwater monitoring wells installed in the vicinity of Pond 1 are provided in a subsequent section.

3.1.1.1 Western Inflow Channel - Site 1

An overview of physical characteristics in the vicinity of the western channel inflow (Site 1) is given on Figure 3-3. Inflow through the western channel originates from a 103-acre residential watershed located west and south of Pond 1. Much of the contributing sub-basin area has existing stormwater management facilities, consisting primarily of wet detention ponds, and the majority of inflow through the ditch reflects discharges from the wet detention systems.

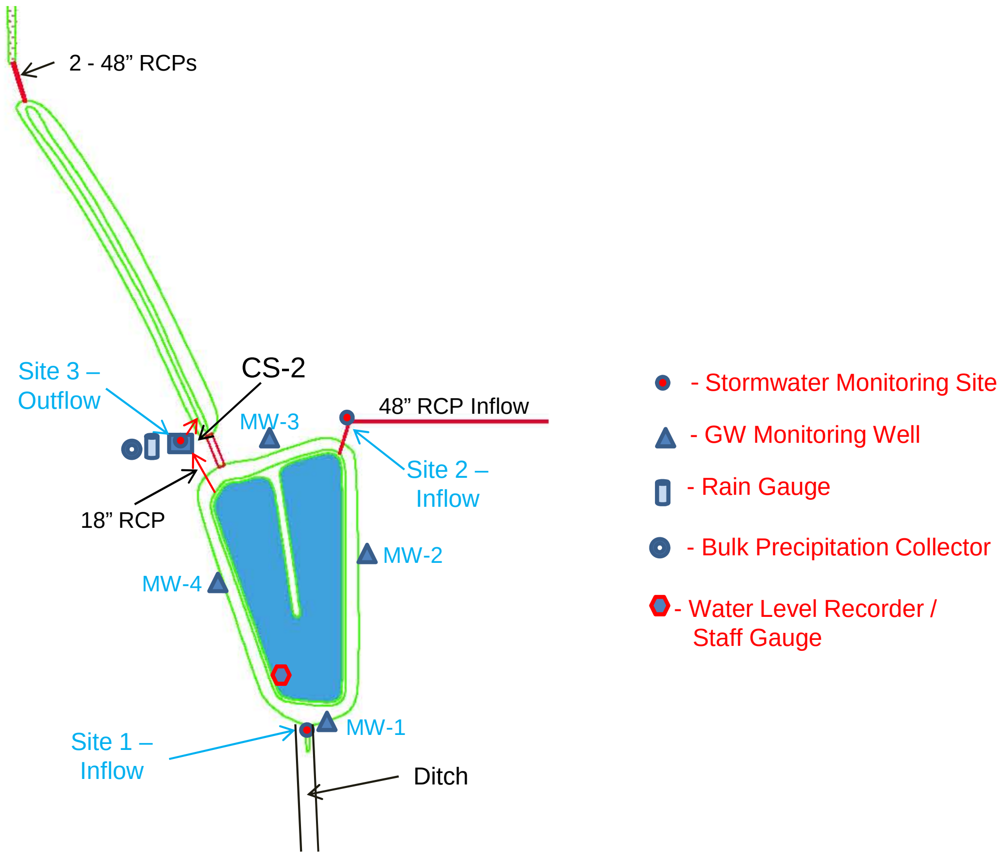


Figure 3-2. Monitoring Locations and Equipment in the Vicinity of Pond 1.

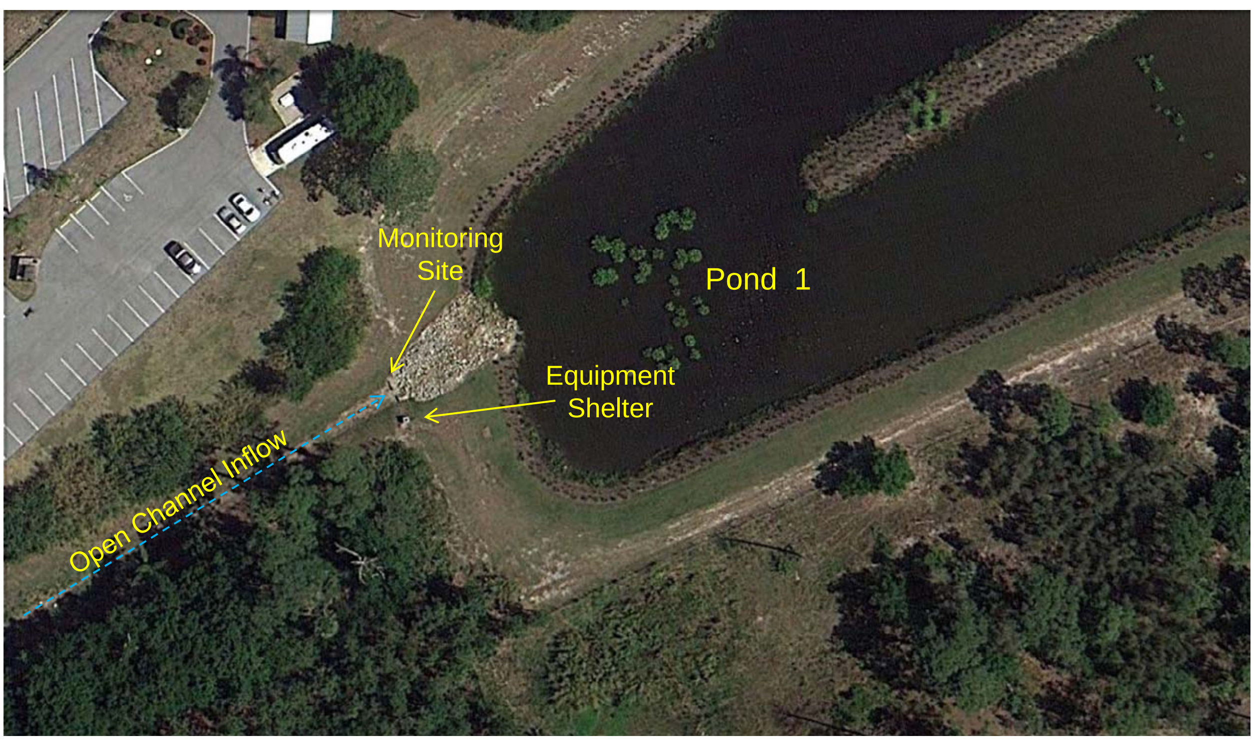
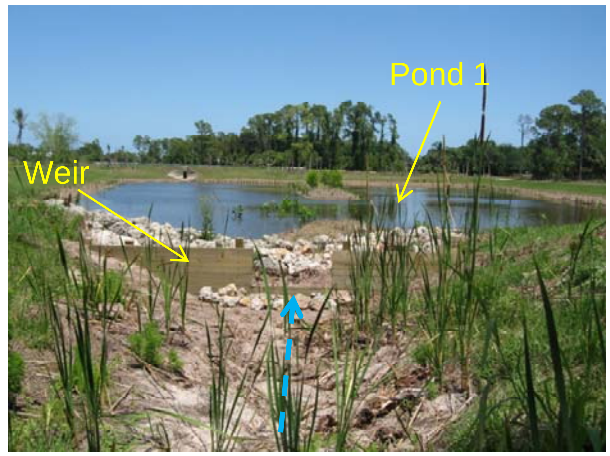


Figure 3-3. Monitoring Location for the Western Channel Inflow (Site 1).

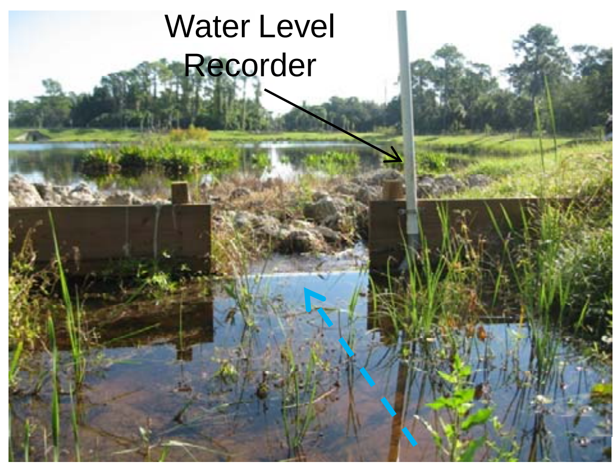
Monitoring at Site 1 was conducted upstream of the point of inflow for the channel into Pond 1. Photographs of the monitoring equipment used at Site 1 are given on Figure 3-4. A wooden horizontal weir was constructed across the inflow channel by ERD to provide a control section for monitoring of discharge from the channel. The wooden weir was constructed immediately upstream from the concrete rip-rap used to prevent erosion where the channel discharges into Pond 1. The weir structure contained a 36-inch opening located at the center of the inflow channel. A digital water level recorder was installed on the upstream side of the weir to provide continuous measurements of water level elevations to corroborate information provided by the pressure transducer flow probe.

a. Inflow channel with weir structure



b. Inflow channel upstream of weir structure

c. Horizontal weir



d. Water level recorder

Figure 3-4. Photographs of the Field Monitoring Installation at Site 1.

Automatic stormwater monitoring at this site was conducted using a Sigma automatic sequential sampler with integral flow meter (Model 900MAX) which was installed inside an insulated equipment shelter adjacent to the weir structure. Sensor cables and sample tubing were extended from the equipment shelter through a 3-inch PVC conduit to protect the sensor cables and sample tubing from mowing and other maintenance activities for the pond. The sample collection tubing was extended to a Teflon strainer which was mounted on the upstream side of the weir to collect flow-weighted samples of discharges through the horizontal weir structure. The flow sensor, consisting of a pressure transducer, was also mounted on the back side of the weir to provide continuous measurements of water level discharging through the weir for estimation of discharge rates.

The internal flow meter for the autosampler provided a continuous measurement of discharges through the channel under both storm event and baseflow conditions, as well as sample pacing for collection of flow-weighted samples of the inflow over a wide range of flow conditions. The internal flow meter within the autosampler was programmed to provide a continuous record of discharges into the pond, with measurements stored into internal memory at 10-minute intervals. The autosampler used at this site contained a single 20-liter polyethylene bottle and was programmed to collect samples in a flow-weighted mode, with 500-ml aliquots pumped into the collection bottle with every programmed increment of discharge. Since 120 VAC power was not available at the site, the automatic sampler was operated on 12 VDC batteries which were replaced on a periodic basis.

Discharge measurement at Site 1 were conducted using a pressure transducer flow probe which provided continuous measurements of water depth. The measured water depth was converted into discharge using the following standard horizontal weir equation:

$$Q = K (L - 0.2H) H^{1.5}$$

where:	K	=	discharge coefficient = 3.33 for a sharp-crested weir
	L	=	weir length = 3 ft
	H	=	water depth over weir (ft)

Field measurements recorded by the autosampler were verified by ERD during each weekly monitoring event by conducting manual measurements of discharge through the inflow channel.

The inflow channel at Site 1 exhibited dry conditions throughout a majority of the field monitoring program. Photographs of the inflow channel under dry and wet conditions are given on Figure 3-5. Since the inflow channel primarily receives inputs from stormwater pond discharges, flow through the inflow channel was not observed until the end of wet season conditions when the upstream stormwater ponds had become filled and began to discharge. However, once the discharge began, it continued for a period of 3-4 months in spite of low rainfall since the upstream waterbodies were continuing to discharge.

a. Inflow channel under dry conditions

b. Inflow channel under wet conditions

Figure 3-5. Photographs of the Inflow Channel Under Dry and Wet Conditions.

3.1.1.2 48-Inch RCP Inflow - Site 2

An overview of the monitoring location for the 48-inch RCP inflow at Site 2 is given on Figure 3-6. Inflow through the 48-inch RCP originates from a 365-acre residential community located south of the Tropical Farms treatment system. Monitoring at this site was conducted inside the junction box where the 48-inch RCP is diverted into Pond 1. The inflow discharges into the southeast corner of Pond 1 and must meander around the central berm before discharging through the pond outfall on the north end of the pond.

A photograph of the Site 2 monitoring equipment is given on Figure 3-7. A Sigma automatic sequential stormwater sampler with integral flow meter (Model 900MAX) was installed inside an insulated equipment shelter on top of the grate for the manhole structure. Sensor cables and sample collection tubing were extended from the equipment shelter through a 3-inch PVC conduit to protect the sensor cables and sample tubing from mowing and other maintenance activities for the pond and roadway. The sample tubing was extended approximately 15 ft upstream into the 48-inch RCP. The flow sensor was extended into the 48-inch RCP approximately 20 ft, and the area velocity (AV) flow probe was mounted to the bottom of the 48-inch RCP to prevent movement or vibration of the probe which would interfere with flow measurements during high flow conditions.

The internal flow meter for the autosampler provided a continuous measurement of discharge through the 48-inch RCP under both storm event and baseflow conditions, as well as collect flow-weighted samples of the inflow over a wide range of flow conditions. The internal flow meter within the autosampler was programmed to provide a continuous record of discharges into the pond, with measurements stored into internal memory at 10-minute intervals. The autosampler used at this site contained a single 20-liter polyethylene bottle and was programmed to collect samples in a flow-weighted mode, with 500-ml aliquots pumped into the collection bottle with every programmed increment of discharge. Since 120 VAC power was not available at the site, the automatic sampler was operated on 12 VDC batteries which were replaced on a periodic basis.

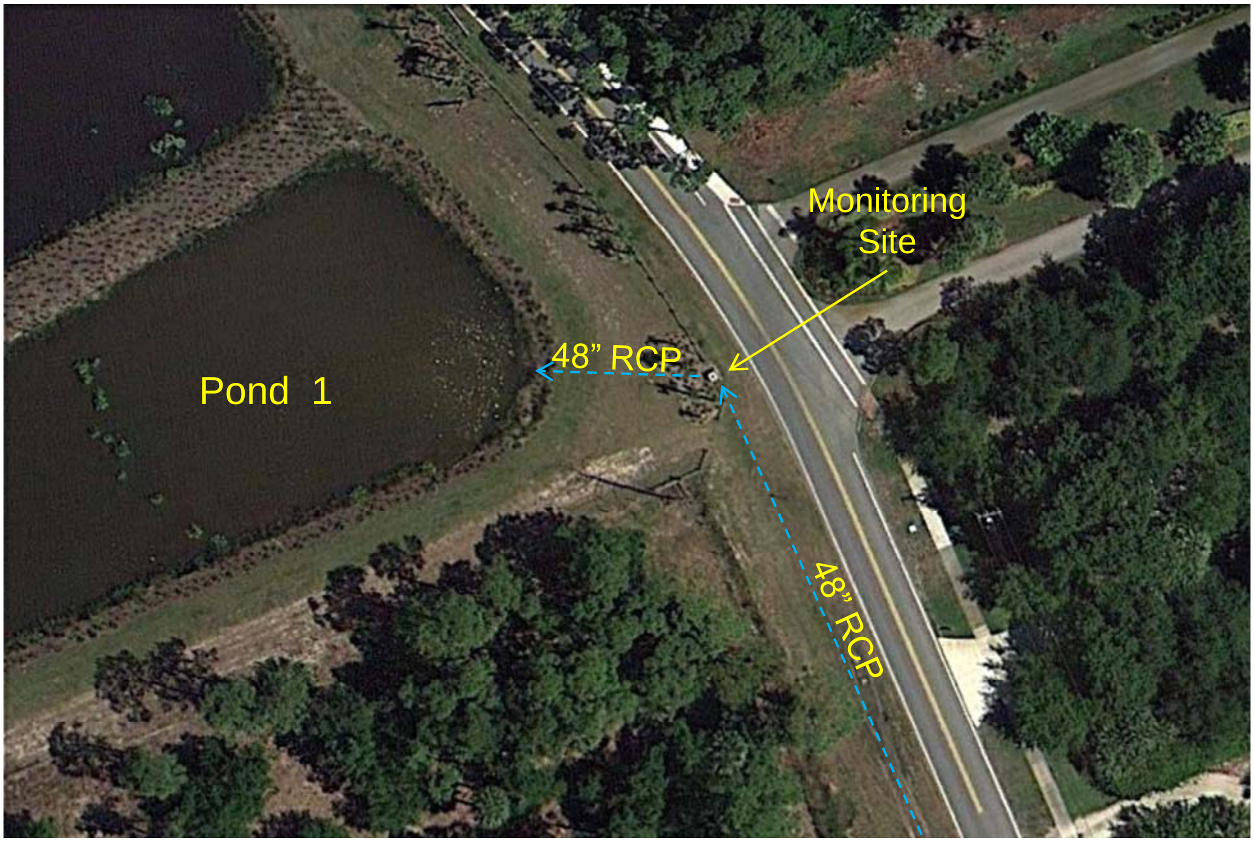


Figure 3-6. Monitoring Location for the 48-inch RCP Inflow at Site 2.

Figure 3-7. Photograph of the Site 2 Monitoring Equipment.

Discharge measurement at Site 2 were conducted using an area-velocity (AV) flow probe which provided simultaneous measurements of water depth and water velocity. The measured water depth was converted into a cross-sectional area based upon the geometry of the 48-inch RCP and the depth of water. Discharge was then calculated using the Continuity Equation:

$$Q = V \times A$$

where:	Q	=	discharge in cubic feet per second (cfs)
	A	=	cross-sectional area of the channel (square feet, ft^2)
	V	=	flow velocity (feet per second, fps)

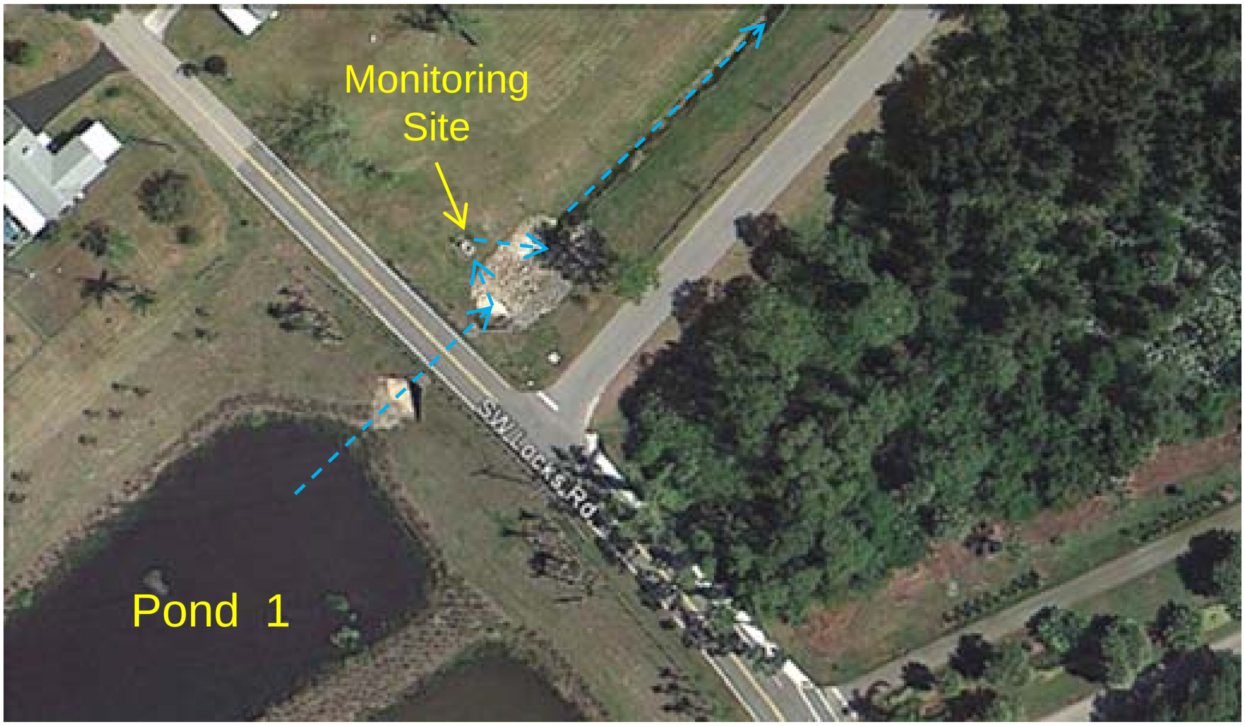
Field discharge measurements recorded by the autosampler were verified manually by ERD during each weekly monitoring event by conducting manual measurements of discharge from the 48-inch RCP.

3.1.1.3 Pond 1 Discharge - Site 3

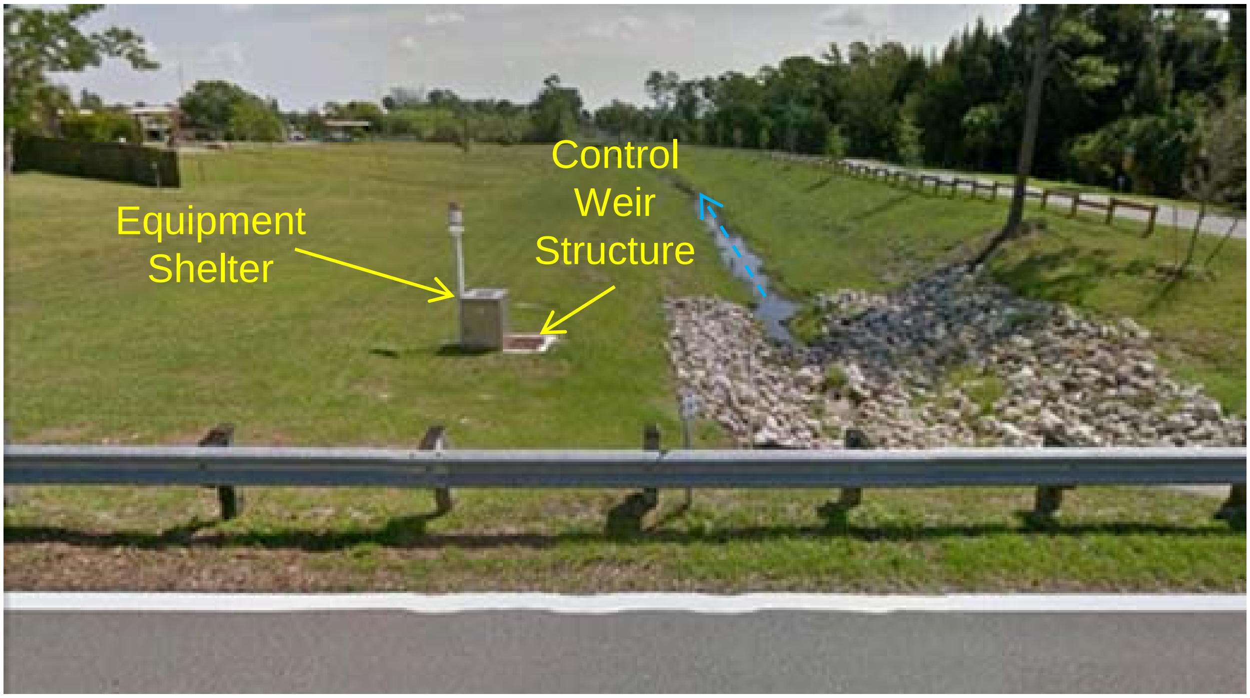
Discharges from Pond 1 were monitored on a continuous basis inside control structure CS-2 which receives all discharges from Pond 1 except under extremely high water level conditions. An overview of the Pond 1 outfall monitoring site is given on Figure 3-8.

Photographs of monitoring equipment installed at Site 3 are given on Figure 3-9. A Sigma automatic sequential stormwater sampler with integral flow meter (Model 900MAX) was installed inside an insulated equipment shelter on top of the grate for control structure CS-2. Sensor cables and sample collection tubing were extended from the equipment shelter through a 3-inch PVC conduit to the point of entry through the grate to protect the sensor cables and sample tubing from mowing and other maintenance activities for the pond. The sample intake tubing and strainer was mounted to the upstream side of the concrete weir wall to allow collection of discharges through the control structure. A pressure transducer flow meter was also installed on the upstream side of the weir to allow measurement of discharges through the structure.

The internal flow meter for the autosampler provided a continuous measurement of discharge from the control structure under both storm event and baseflow conditions, as well as collect flow-weighted samples of the discharge over a wide range of flow conditions. The internal flow meter within the autosampler was programmed to provide a continuous record of discharges from the pond, with measurements stored into internal memory at 10-minute intervals. The autosampler used at this site contained a single 20-liter polyethylene bottle and was programmed to collect samples in a flow-weighted mode, with 500-ml aliquots pumped into the collection bottle with every programmed increment of discharge. Since 120 VAC power was not available at the site, the automatic sampler was operated on 12 VDC batteries which were replaced on a periodic basis.

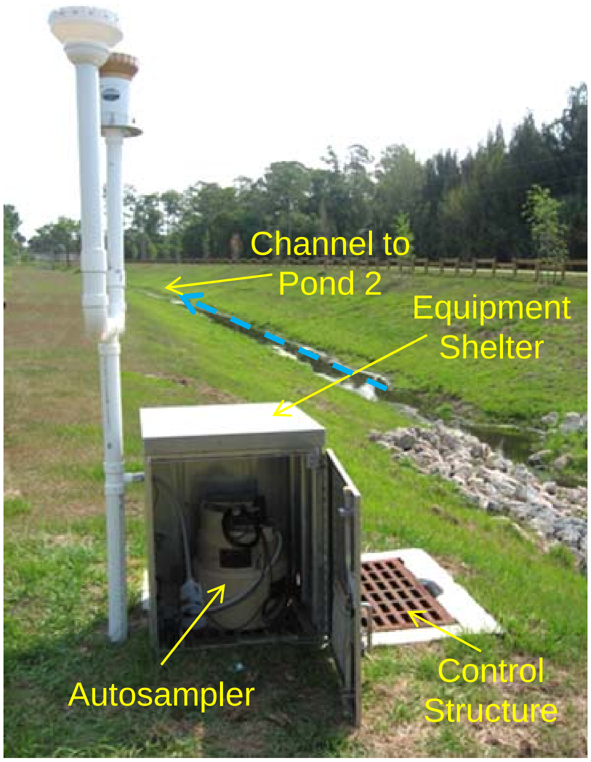


a. Overview of Monitoring Site 3

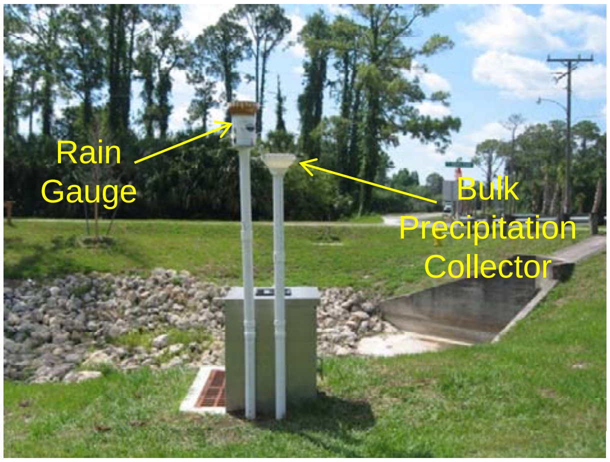


b. Monitoring Site 3

Figure 3-8. Overview of the Site 3 Monitoring Site.



a. Overview of monitoring site area



b. Monitoring equipment

c. Outflow from discharge structure

Figure 3-9. Monitoring Equipment Installed at Site 3.

Discharge measurement at Site 3 were conducted using a pressure transducer flow probe which provided continuous measurements of water depth. The measured water depth was converted into discharge using a standard orifice discharge equation:

$$Q = C_d \bullet A_o \sqrt{2gH}$$

where: C_d = discharge coefficient 0.62
A_o = area of orifice (ft^2)
H = height of water above centerline of the orifice

Field discharge measurements recorded by the autosampler were verified manually by ERD during each weekly monitoring event by conducting manual measurements of discharge from the orifice in the 18-inch RCP on the downstream side of the weir wall.

3.1.2 Eastern Pond System - Ponds 2-5

A schematic of monitoring locations and equipment used at the eastern pond system (referred to as Ponds 2-5) for the Tropical Farms treatment facility is given on Figure 3-10. Monitoring of discharges through the treatment system was conducted at three separate locations designated as Sites 4, 5, and 6. Monitoring conducted at Site 6 reflects the ultimate point of discharge from the overall Tropical Farms treatment system and is used to evaluate the overall performance efficiency of the treatment process. Monitoring Sites 4 and 5 are located along the flow path for the water as it meanders through the treatment system and provides information on changes in water quality characteristics after migration through open water and vegetated areas.

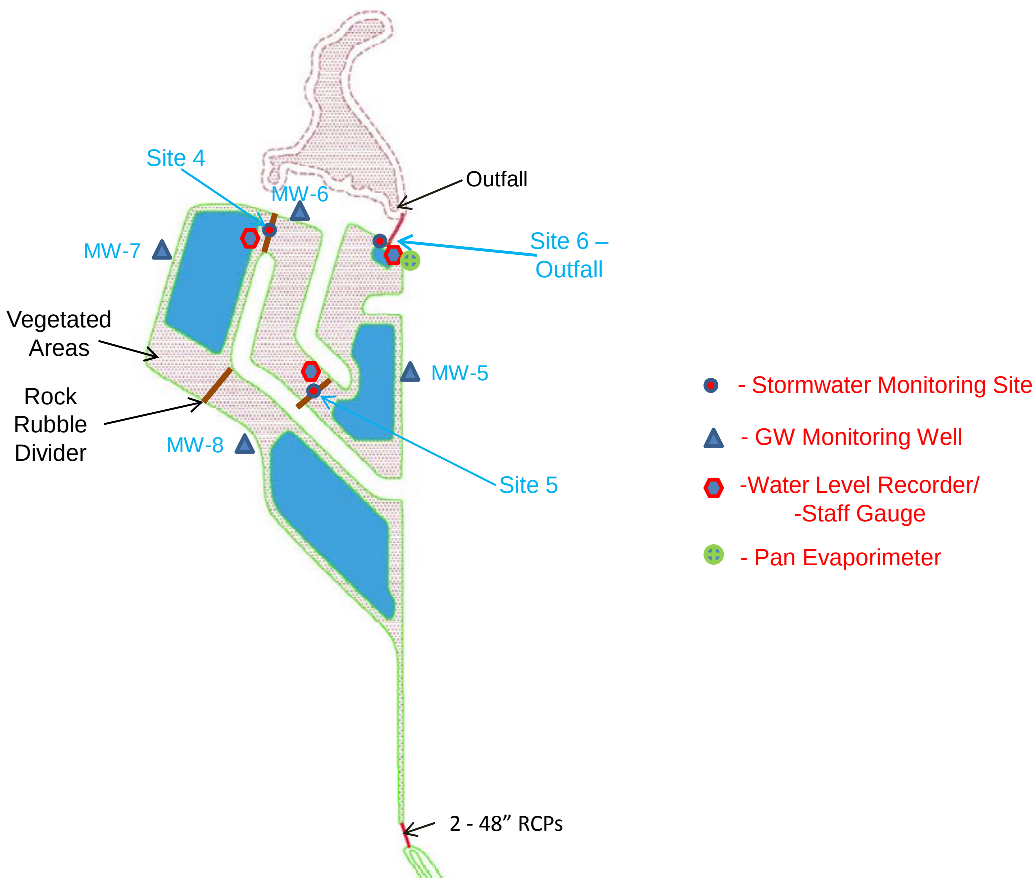


Figure 3-10. Monitoring Locations and Equipment in the Vicinity of Ponds 2-5.

In addition to the stormwater monitoring sites, digital water level recorders were installed adjacent to each of the three monitoring sites to evaluate changes in water surface elevations within the treatment area. In addition, shallow groundwater monitoring wells were installed at four locations around the perimeter of the pond system to assist in quantifying hydrologic and nutrient loadings into and out of the pond system from shallow groundwater. A more detailed discussion of instrumentation used for hydrologic monitoring is given in a subsequent section.

An overview of monitoring sites and equipment locations for Sites 4-6 is given on Figure 3-11. A more detailed discussion of monitoring conducted at each of the three monitoring sites is given in the following sections.

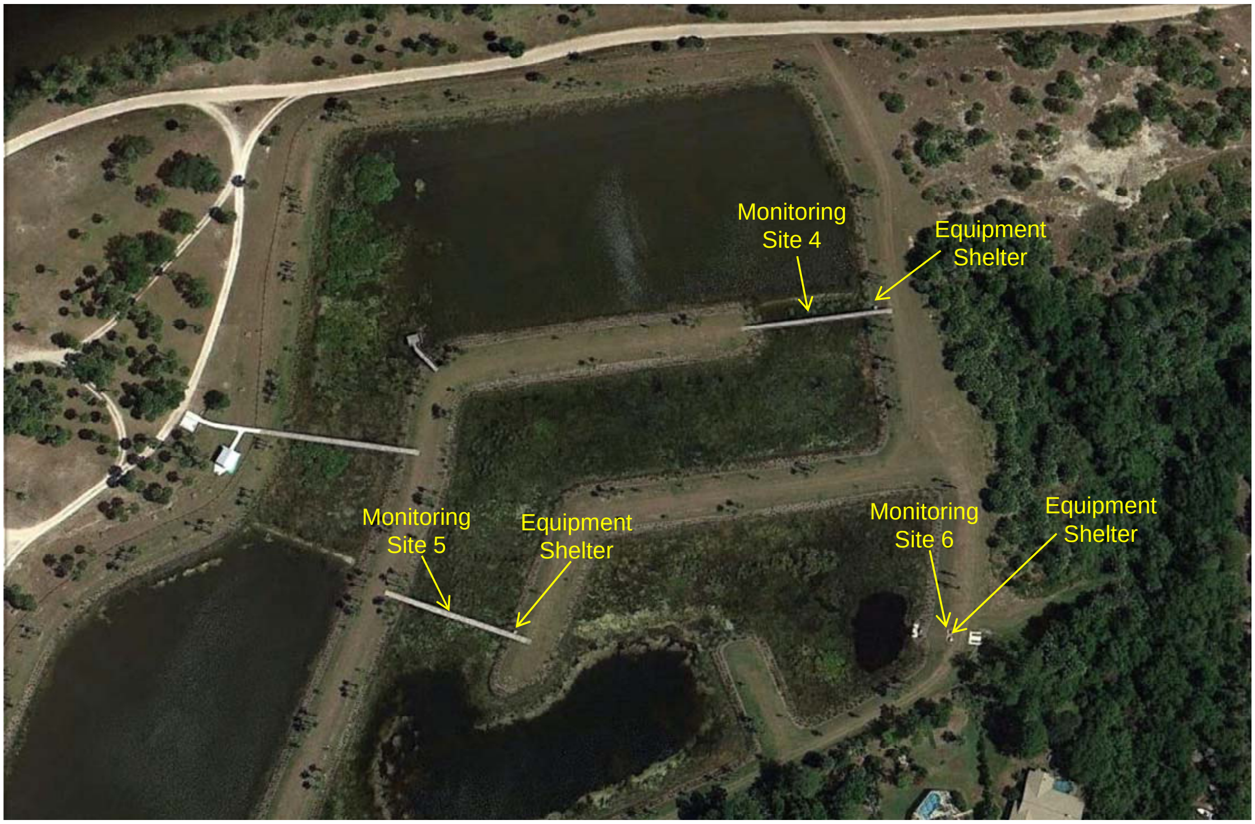


Figure 3-11. Overview of Monitoring Sites and Equipment Locations for Sites 4-6.

3.1.2.1 <u>Monitoring Site 4</u>

Monitoring Site 4 is located at the discharge from Pond 3, as indicated on Figure 2-1. Water collected at this location reflects the discharge from Pond 1 which has meandered through the southwest and northeast channels, into the open water portion of Pond 2, through the initial vegetated section of Pond 3, and through the open water portion of Pond 3.

A Sigma automatic sequential stormwater sampler with integral flow meter (Model 900MAX) was installed inside an insulated equipment shelter adjacent to the boardwalk structure which crosses the ponds at the discharge from Pond 3. Sample collection tubing was extended from the equipment shelter through a 3-inch PVC conduit to the center of the boardwalk structure where the intake strainer was attached to one of the boardwalk timbers approximately mid-depth within the water column. Due to the width of the channel and the lack of a control structure, it was impractical to monitor discharge at this site. Therefore, samples were collected on a timed basis, with 500 ml aliquots pumped into a single 20-liter polyethylene collection bottle at 8-hour intervals. Since 120 VAC power was not available at the site, the automatic sampler was operated on 12 VDC batteries which were replaced on a periodic basis.

3.1.2.2 Monitoring Site 5

Monitoring Site 5 is located at the discharge from Pond 4a, as indicated on Figure 2-7. A Sigma automatic sequential stormwater sampler was installed inside an insulated equipment shelter adjacent to the boardwalk structure which crosses the pond at this location. Sample collection tubing was extended from the equipment shelter through a 3-inch PVC conduit to approximately mid-way along the boardwalk structure. The intake strainer was attached to one of the boardwalk timbers approximately mid-depth within the water column. Samples collected at this site reflect water which has migrated through the densely vegetated shallow cell between monitoring Sites 4 and 5 and reflects water quality impacts of the aquatic vegetation.

Due to the width of the channel and the lack of a control section, sample collection at this site was conducted on a timed basis. The autosampler was programmed to collect samples in a timed mode, with 500 ml aliquots pumped into a 20-liter polyethylene collection bottle on an 8-hour interval. Since 120 VAC power was not available at the site, the automatic sampler was operated on 12 VDC batteries which were replaced on a periodic basis.

3.1.2.3 Treatment System Outfall - Site 6

Monitoring conducted at Site 6 reflects the overall discharge from the Tropical Farms treatment system and is used to calculate the overall removal effectiveness of the treatment process. Monitoring Site 6 is located in control structure CS-1 which consists of two identical side-by-side control structures, as discussed in Section 2. Flow monitoring and sample collection activities were conducted in the northernmost control structure, with the measured discharge rates multiplied by 2 to reflect discharges from the two identical structures.

A Sigma automatic sequential sampler with integral flow meter (Model 900MAX) was installed inside an insulated equipment shelter on top of the grates for the outfall structure. Sensor cables and sample tubing were extended from the equipment shelter through a 3-inch PVC conduit to protect the sensor cables and sample tubing from mowing and other maintenance activities for the pond. The sample collection tubing was extended through a hole in the grate and was mounted to the upstream side of the weir wall approximately mid-depth within the water column. The flow sensor was also extended through openings in the grate and was mounted on the upstream side of the weir wall, also at approximately mid-depth within the water.

The internal flow meter for the autosampler provided a continuous measurement of outfall discharge from the control structure under both storm event and baseflow conditions, as well as provide pacing for the autosampler to collect flow-weighted samples of the discharge over a wide range of flow conditions. The internal flow meter within the autosampler was programmed to provide a continuous record of discharges into the pond, with measurements stored into internal memory at 10-minute intervals. The autosampler used at this site contained a single 20-liter polyethylene bottle and was programmed to collect samples in a flow-weighted mode, with 500-ml aliquots pumped into the collection bottle with every programmed increment of discharge. Since 120 VAC power was not available at the site, the automatic sampler was operated on 12 VDC batteries which were replaced on a periodic basis.

Discharge measurement at Site 6 were conducted using a pressure transducer flow probe which provided continuous measurements of water depth. The measured water depth was converted into discharge using a standard orifice discharge equation:

$$Q = C_d \cdot A_o \sqrt{2gH}$$

where:	C_d	=	discharge coefficient 0.62
	A_o	=	area of orifice (ft^2)
	H	=	height of water above centerline of the orifice

As indicated previously, the calculated discharge was multiplied by 2 to reflect discharges from the two identical outfall control structures. Field discharge measurements recorded by the autosampler were verified by ERD during each weekly monitoring event by conducting manual measurements of discharge in the outflow channel downstream from CS-1.

3.1.3 Hydrologic Instrumentation

In addition to the inflow and outflow monitoring sites discussed previously, hydrologic instrumentation was also installed at the Tropical Farms site to provide information on rainfall, water levels, and evaporation during the field monitoring program. Locations of installed hydrologic instrumentation are indicated on Figures 3-2 and 3-10. The additional hydrologic equipment included a rain gauge, pan evaporimeter, and four sets of digital water level recorders and staff gauges.

Rainfall was monitored using a continuous rainfall recorder which was attached to a 4-inch PVC post near monitoring Site 3 (Figure 3-9). The rainfall recorder (Texas Electronics Model 1014-C) produced a continuous record of all rainfall which occurred at the site, with a resolution of 0.01 inch. Rainfall data were stored inside a digital storage device (Hobo Event Rainfall Logger) which was also attached to the wooden post inside a waterproof enclosure. The rainfall record is used to provide information on general rainfall characteristics in the vicinity of the monitoring sites and to assist in completing the hydrologic budget for the pond.

In addition to the rainfall recorder, a Class A pan evaporimeter was also installed adjacent to the system outfall at monitoring Site 6. Measurements of water level within the evaporation pan were recorded on a continuous basis using a sensitive digital water level recorder. The recorded evaporation losses are corrected for measured rainfall and used to provide estimates of evaporation from the pond surface during the field monitoring program. An overview of the pan evaporimeter at Site 6 is given on Figure 3-12.

Figure 3-12. Pan Evaporimeter at Outfall Monitoring Site 6.

Digital water level recorders (Global Water Model WL16) and staff gauges were installed at each of the four locations indicated on Figures 3-2 and 3-10 to provide continuous measurements of water levels in the various treatment areas during the monitoring program. This information is used to assist in completing the hydrologic budget for the ponds and to corroborate and verify elevations and corresponding discharge measurements recorded by the stormwater samplers.

3.1.4 Groundwater Monitoring Wells

As indicated on Figures 3-2 and 3-10, eight groundwater monitoring wells were installed to assist in identifying potential inputs or losses to the treatment system from shallow groundwater. Four shallow groundwater monitoring wells were installed around the perimeter of Pond 1, with an additional four monitoring wells installed around the perimeter of the eastern series of treatment ponds.

Each of the groundwater monitoring wells consisted of a 2-inch slotted casing which was hand-augered to a depth of approximately 3-4 ft below the surficial groundwater table at the time of installation. Typical construction details for groundwater monitoring wells are given in Figure 3-13. Each of the monitoring wells was installed at a uniform distance of 25 ft from the water edge at the time of installation to ensure that each monitoring well reflected a similar flow path from the ponds. Each of the wells contained a bottom slotted PVC screen, approximately 4 ft in length, with slot widths of 0.01 inches. The bore hole for each well was constructed using a 4-inch diameter hand auger.

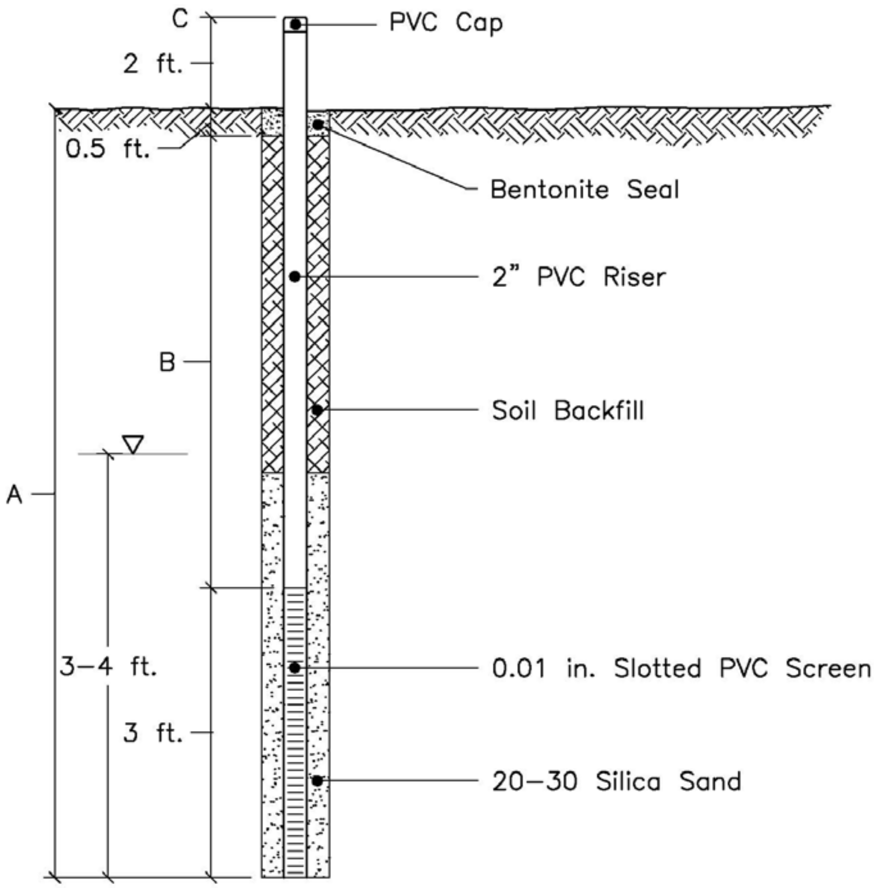


Figure 3-13.

Construction Details for Groundwater Monitoring Wells.

The void space around the well was filled with 20-30 silica sand to a level above the slotted PVC screen. Soil backfill from the excavated hole was then placed around the well to a level approximately 6 inches below the ground surface. A 6-inch thick bentonite pellet seal was then added to prevent short-circuiting of water through the well bore hole. The 2-inch PVC riser extended 24 inches above the ground, with a vented PVC cap placed on the top to prevent contamination of the well between monitoring events.

Monitoring of piezometric elevations in the monitoring wells was conducted during each weekly site visit and sample collection for groundwater characteristics was conducted on a monthly basis. During each monitoring event, the depth to the surficial groundwater table was measured using a Solinst Model 101 water level sounder, consisting of a submersible pressure transducer with an accuracy of 0.008%. The approximate water volume within the well was calculated, and the well was purged by removing a water volume equivalent to three times the initial well volume.

After the purging was completed, the well was allowed to equilibrate, and a groundwater sample was collected using a submersible battery-powered centrifugal pump. The groundwater sample was field- filtered using a disposable 0.45-micron groundwater filter. The filtered samples were placed in ice and returned to the ERD Laboratory for analysis of the parameters listed previously for surface water, with the exceptions of particulate nitrogen, particulate phosphorus, and TSS, since the groundwater samples were field filtered. This monitoring regime generated a total of 96 samples (8 sites x 12 events) during this program. Additional samples were also collected to meet applicable QA criteria.

3.1.5 Sampling Equipment

All field sampling procedures and documentation followed procedures outlined in the document titled "Department of Environmental Protection Standard Operating Procedures for Field Activities," DEP-SOP-001/01, dated February 1, 2004. A listing of sampling equipment used for this project is given in Table 3-1.

TABLE 3-1

SAMPLING EQUIPMENT

EQUIPMENT DESCRIPTION		CONSTRUCTION MATERIALS	USE
Sampling Equipment	Geotech Submersible Geosquirt Purging/Sampling Pump	Plastic case, S.S. impeller, vinyl tubing	Purging for monitoring wells; Sample collection for general parameters and nutrients
	Nalgene Syringe Filter System - Surface Water	Acrylic/polyethylene	Filtration for Orthophosphorus
Filtration Equipment	Geotech 0.45 μ high-capacity disposable filter	Plastic casing glass fiber filter	Filtration for groundwater samples
	Masterflex E/S Portable Sampler	Silicon tubing	Filtration for groundwater samples
Field Measurement Equipment	Hydrolab H2O Water Quality Monitor	Teflon	Field parameters
	SonTek FlowTracker Hand-held ADV	Polyethylene, S.S.	Measure discharge at inflow and outflow to calibrate autosampler flow meters

3.1.6 Monitoring Activities

ERD field personnel visited each Tropical Farms site at least once each week to retrieve collected stormwater, baseflow, and outflow samples and to download stored hydrologic data from the inflow and outflow automatic samplers as well as the additional hydrologic instrumentation. Readings of staff gauge levels were also conducted during each weekly visit. Data collected during each weekly visit were evaluated for quality control purposes and, if acceptable, compiled into a continuous data set for use in evaluating the hydrologic performance efficiency of the system.

3.2 Field Measurements

During each weekly monitoring visit, field measurements of pH, temperature, specific conductivity, dissolved oxygen, and oxidation-reduction potential (ORP) were conducted in each of the ponds indicated on Figures 2-2 and 2-7 (Ponds, 1, 2, 3, 4a, 4b, and 5) using a Hydrolab Datasonde 4a water quality monitor. Field measurements were conducted at approximately mid-depth in the water column.

3.3 Laboratory Analyses

A summary of laboratory methods and MDLs for analyses conducted on water samples collected during this project is given in Table 3-2. All laboratory analyses were conducted in the ERD Laboratory which is NELAC-certified (No. E1031026). Details on field operations, laboratory procedures, and quality assurance methodologies are provided in the Quality Assurance Project Plan (QAPP), outlining the specific field and laboratory procedures to be conducted for this project. The QAPP was submitted to, and approved by, FDEP prior to initiation of any field and laboratory activities.

TABLE 3-2

ANALYTICAL METHODS AND DETECTION LIMITS FOR LABORATORY ANALYSES

PARAMETER	METHOD OF ANALYSIS	METHOD DETECTION LIMITS (MDLs)[1]
pH	SM-21, Sec. 4500-H^+ B[2]	N/A
Conductivity	SM-21, Sec. 2510 B	0.2 μmho/cm
Alkalinity	SM-21, Sec. 2320 B	0.5 mg/l
Ammonia	SM-21, Sec. 4500-NH_3 G	0.005 mg/l
NO_x	SM-21, Sec. 4500-NO_3 F	0.005 mg/l
Total Nitrogen	SM-21, Sec. 4500-N C	0.01 mg/l
Ortho-P	SM-21, Sec. 4500-P F	0.001 mg/l
Total Phosphorus	SM-21, Sec. 4500-P B.5	0.001 mg/l
Turbidity	SM-21, Sec. 2130 B	0.3 NTU
Color	SM-21, Sec. 2120 C	1 Pt-Co Unit
TSS	SM-21, Sec. 2540 D	0.7 mg/l
BOD	SM-21, Sec. 5210 B	2 mg/l

1. MDLs are calculated based on the EPA method of determining detection limits
2. Standard Methods for the Examination of Water and Wastewater, 21st Ed., 2005.

3.4 Routine Data Analysis and Compilation

All data generated during this project, including hydrologic, hydraulic, and water quality information, were entered into a computerized database and double-checked for accuracy. Hydrologic and hydraulic information was tabulated and summarized on monthly intervals. This information is used to develop a hydrologic budget for the pond for use in evaluating system performance.

Data collected during this project were analyzed using a variety of statistical methods and software. Simple descriptive statistics were generated for runoff inflow, pond outflow, rainfall, and pond water levels to examine changes in water quality characteristics and system performance throughout the research period. The majority of these analyses were conducted using statistical procedures available in Excel.

Statistical procedures such as multiple regression or analysis of variance (ANOVA) were also conducted to examine predicted relationships between water quality characteristics and hydrologic or hydraulic factors, such as pond water elevation, antecedent dry period, cumulative event rainfall, and other variables. The majority of these analyses were conducted using the SAS (Statistical Analysis System) package.

Distribution patterns for the inflow, outflow, and bulk precipitation data sets were evaluated using both normal probability and log probability plots. These analyses indicated that the data most closely observe a log-normal distribution which is commonly observed with environmental data. As a result, statistical analyses were conducted using log transformations of each of the data sets. The data were then converted back to untransformed data at the completion of the statistical analyses.

SECTION 4

RESULTS

Field monitoring, sample collection, and laboratory analyses were conducted by ERD from May 1, 2011-April 30, 2012 to evaluate the hydrologic performance and pollutant removal efficiencies of the Tropical Farms stormwater facility. A discussion of the results of these efforts is given in the following sections.

4.1 Site Hydrology

4.1.1 Rainfall

A continuous record of rainfall characteristics was collected at the Tropical Farms monitoring site from May 1, 2011-April 30, 2012 using a tipping bucket rainfall collector with a resolution of 0.01 inch and a digital data logging recorder. The characteristics of individual rain events measured at the Tropical Farms site are given in Table 4-1. Information is provided for event rainfall, event start time, event end time, event duration, average rainfall intensity, and antecedent dry period for each individual rain event measured at the monitoring site. For purposes of this analysis, average rainfall intensity is calculated as the total rainfall divided by the total event duration.

A total of 41.85 inches of rainfall fell in the vicinity of the Tropical Farms site over the 365-day monitoring period from a total of 198 separate storm events. A summary of rainfall event characteristics measured at the Tropical Farms rain gauge site from May 1, 2011-April 30, 2012 is given in Table 4-2. Individual rainfall amounts measured at the pond site range from 0.01-4.07 inches, with an average of 0.21 inches/event. Durations for events measured at the site range from 0.01-13.9 hours, with antecedent dry periods ranging from 0.13-23.0 days.

A comparison of measured and typical "average" rainfall in the vicinity of the Tropical Farms site is given in Figure 4-1. Measured rainfall presented in this figure is based upon the field-measured rain events at the pond site presented in Table 4-1, summarized on a monthly basis. "Average" rainfall conditions are based upon historical average monthly rainfall recorded at the Stuart National Weather Service (NWS) Site 088620 over the 30-year period from 1971-2000. Historical average annual rainfall in the Stuart area is approximately 59.95 inches.

As seen in Figure 4-1, measured rainfall in the vicinity of the Tropical Farms site was substantially greater than "normal" only during December 2011, with "normal" or lower than "normal" rainfall during the remaining months. A tabular comparison of measured and average rainfall for the Tropical Farms site is given in Table 4-3. The total annual rainfall of 41.85 inches measured at the Tropical Farms site is approximately 30% less than the "normal" rainfall of 59.95 inches which typically occurs on an annual basis in the Stuart area.

TABLE 4-1

SUMMARY OF RAINFALL MEASURED AT THE TROPICAL FARMS MONITORING SITE FROM MAY 1, 2011 - APRIL 30, 2012

EVENT START		EVENT END		TOTAL RAINFALL (inches)	DURATION (hours)	ANTECEDENT DRY PERIOD (days)	AVERAGE INTENSITY (inches/hour)
Date	Time	Date	Time				
5/5/2011	7:43	5/5/11	10:16	0.17	2.54	---	0.07
5/14/11	9:46	5/14/11	13:44	1.49	3.97	8.98	0.37
5/18/11	1:22	5/18/11	4:11	0.11	2.81	3.48	0.04
5/18/11	13:40	5/18/11	13:40	0.01	---	0.39	---
5/18/11	19:05	5/18/11	19:05	0.01	---	0.23	---
5/18/11	23:49	5/19/11	0:52	0.02	1.05	0.20	0.02
5/20/11	7:35	5/20/11	7:35	0.01	---	1.28	---
5/25/11	10:30	5/25/11	10:30	0.01	---	5.12	---
5/26/11	2:40	5/26/11	2:40	0.02	0.00	0.67	36.00
5/27/11	4:54	5/27/11	5:56	0.08	1.04	1.09	0.08
5/27/11	23:55	5/27/11	23:55	0.01	---	0.75	---
6/8/11	1:32	6/8/11	1:32	0.03	0.00	11.07	108.00
6/14/11	20:24	6/14/11	22:27	0.46	2.05	6.79	0.22
6/15/11	9:39	6/15/11	10:50	0.03	1.19	0.47	0.03
6/16/11	13:05	6/16/11	13:05	0.01	0.00	1.09	---
6/18/11	5:26	6/18/11	6:51	0.04	1.42	1.68	0.03
6/24/11	21:43	6/24/11	21:43	0.01	0.00	6.62	---
6/25/11	1:44	6/25/11	1:44	0.01	0.00	0.17	---
6/26/11	17:09	6/26/11	19:22	1.25	2.21	1.64	0.57
6/27/11	7:26	6/27/11	7:26	0.01	0.00	0.50	---
6/28/11	10:09	6/28/11	14:06	0.66	3.95	1.11	0.17
6/29/11	10:48	6/29/11	13:11	0.14	2.39	0.86	0.06
6/30/11	5:22	6/30/11	6:15	0.02	0.88	0.67	0.02
7/1/11	12:45	7/1/11	15:01	0.12	2.27	1.27	0.05
7/2/11	1:53	7/2/11	4:26	0.17	2.54	0.45	0.07
7/6/11	4:59	7/6/11	4:59	0.01	0.00	4.02	---
7/7/11	0:57	7/7/11	0:57	0.01	---	0.83	---
7/7/11	5:42	7/7/11	5:42	0.01	---	0.20	---
7/8/11	6:59	7/8/11	9:46	0.19	2.79	1.05	0.07
7/10/11	9:14	7/10/11	10:11	0.17	0.94	1.98	0.18
7/11/11	7:50	7/11/11	8:04	0.42	0.24	0.90	1.72
7/12/11	7:34	7/12/11	8:50	0.41	1.27	0.98	0.32
7/13/11	3:59	7/13/11	4:01	0.03	0.04	0.80	0.67
7/13/11	9:18	7/13/11	13:35	0.16	4.28	0.22	0.04
7/14/11	11:08	7/14/11	14:43	0.03	3.57	0.90	0.01
7/15/11	9:18	7/15/11	11:22	0.07	2.07	0.77	0.03
7/16/11	9:04	7/16/11	9:58	0.02	0.90	0.90	0.02
7/18/11	7:26	7/18/11	8:50	0.03	1.39	1.89	0.02
7/20/11	1:22	7/20/11	1:22	0.02	0.01	1.69	2.57
7/21/11	6:27	7/21/11	6:48	0.73	0.35	1.21	2.06
7/22/11	4:23	7/22/11	5:38	0.30	1.24	0.90	0.24
7/22/11	11:46	7/22/11	16:19	0.04	4.55	0.26	0.01
7/23/11	6:50	7/23/11	9:42	0.14	2.88	0.60	0.05
7/25/11	10:02	7/25/11	10:10	0.02	0.15	2.01	0.13
7/26/11	2:08	7/26/11	2:08	0.01	---	0.66	---
7/26/11	9:29	7/26/11	11:08	0.32	1.66	0.31	0.19
7/26/11	23:18	7/26/11	23:24	0.02	0.10	0.51	0.21
8/1/11	8:26	8/1/11	10:02	0.08	1.60	5.38	0.05
8/2/11	10:13	8/2/11	15:49	0.53	5.60	1.01	0.09
8/3/11	6:03	8/3/11	6:03	0.01	---	0.59	---

TABLE 4-1 -- CONTINUED

SUMMARY OF RAINFALL MEASURED AT THE TROPICAL FARMS MONITORING SITE FROM MAY 1, 2011 - APRIL 30, 2012

EVENT START		EVENT END		TOTAL RAINFALL (inches)	DURATION (hours)	ANTECEDENT DRY PERIOD (days)	AVERAGE INTENSITY (inches/hour)
Date	Time	Date	Time				
8/3/11	12:33	8/3/11	13:14	0.07	0.70	0.27	0.10
8/4/11	8:37	8/4/11	10:06	0.24	1.47	0.81	0.16
8/7/11	7:51	8/7/11	11:45	0.21	3.91	2.91	0.05
8/8/11	5:40	8/8/11	9:25	0.30	3.76	0.75	0.08
8/9/11	5:22	8/9/11	7:59	0.20	2.62	0.83	0.08
8/10/11	5:45	8/10/11	6:03	0.48	0.30	0.91	1.62
8/11/11	1:17	8/11/11	1:17	0.01	---	0.80	---
8/11/11	8:22	8/11/11	9:59	0.18	1.61	0.29	0.11
8/12/11	8:27	8/12/11	10:34	0.03	2.12	0.94	0.01
8/13/11	9:20	8/13/11	15:50	0.29	6.49	0.95	0.04
8/14/11	11:08	8/14/11	12:52	0.39	1.74	0.80	0.22
8/15/11	6:36	8/15/11	12:15	0.36	5.65	0.74	0.06
8/16/11	7:56	8/16/11	8:48	0.82	0.87	0.82	0.94
8/18/11	5:12	8/18/11	5:32	0.14	0.34	1.85	0.42
8/18/11	8:38	8/18/11	10:24	0.17	1.77	0.13	0.10
8/19/11	9:08	8/19/11	11:53	0.52	2.75	0.95	0.19
8/20/11	5:43	8/20/11	9:07	0.14	3.41	0.74	0.04
8/22/11	7:35	8/22/11	9:51	0.13	2.27	1.94	0.06
8/23/11	4:13	8/23/11	5:29	0.08	1.26	0.77	0.06
8/23/11	8:30	8/23/11	9:18	0.02	0.80	0.13	0.02
8/24/11	0:23	8/24/11	0:23	0.01	---	0.63	---
8/25/11	1:45	8/25/11	5:31	0.82	3.76	1.06	0.22
8/27/11	11:16	8/27/11	11:16	0.01	---	2.24	---
8/29/11	5:12	8/29/11	7:20	0.08	2.13	1.75	0.04
8/30/11	9:12	8/30/11	9:12	0.01	---	1.08	---
8/31/11	6:01	8/31/11	11:42	0.27	5.68	0.87	0.05
9/1/11	3:28	9/1/11	6:10	0.21	2.70	0.66	0.08
9/1/11	14:09	9/1/11	14:09	0.01	---	0.33	---
9/2/11	8:30	9/2/11	9:44	0.28	1.23	0.77	0.23
9/5/11	11:41	9/5/11	11:41	0.01	---	3.08	---
9/6/11	5:58	9/6/11	10:15	1.09	4.27	0.76	0.26
9/7/11	7:49	9/7/11	11:41	0.15	3.86	0.90	0.04
9/8/11	8:58	9/8/11	13:09	0.21	4.19	0.89	0.05
9/9/11	8:43	9/9/11	15:18	0.68	6.58	0.82	0.10
9/10/11	7:46	9/10/11	13:28	0.59	5.71	0.69	0.10
9/11/11	7:51	9/11/11	9:45	0.22	1.90	0.77	0.12
9/12/11	6:50	9/12/11	9:58	0.17	3.14	0.88	0.05
9/20/11	0:40	9/20/11	0:40	0.02	0.00	7.61	72.00
9/20/11	5:53	9/20/11	6:05	0.04	0.20	0.22	0.20
9/20/11	9:30	9/20/11	9:31	0.02	0.01	0.14	3.00
9/21/11	8:39	9/21/11	8:39	0.01	---	0.96	---
9/22/11	0:10	9/22/11	1:47	0.92	1.62	0.65	0.57
9/22/11	5:18	9/22/11	8:02	0.08	2.74	0.15	0.03
9/23/11	9:47	9/23/11	10:18	0.09	0.52	1.07	0.17
9/23/11	21:13	9/23/11	21:13	0.01	---	0.45	---
9/24/11	8:04	9/24/11	12:02	0.57	3.96	0.45	0.14
9/25/11	6:36	9/25/11	9:26	0.37	2.84	0.77	0.13
9/26/11	0:29	9/26/11	3:27	0.02	2.97	0.63	0.01
9/27/11	5:43	9/27/11	8:55	0.12	3.20	1.09	0.04
9/29/11	2:02	9/29/11	2:02	0.01	---	1.71	---

TABLE 4-1 -- CONTINUED

SUMMARY OF RAINFALL MEASURED AT THE TROPICAL FARMS MONITORING SITE FROM MAY 1, 2011 - APRIL 30, 2012

EVENT START		EVENT END		TOTAL RAINFALL (inches)	DURATION (hours)	ANTECEDENT DRY PERIOD (days)	AVERAGE INTENSITY (inches/hour)
Date	Time	Date	Time				
10/6/11	17:11	10/6/11	18:37	0.03	1.44	7.63	0.02
10/6/11	22:22	10/7/11	3:05	0.79	4.71	0.16	0.17
10/7/11	12:35	10/7/11	20:37	0.41	8.03	0.40	0.05
10/8/11	8:59	10/8/11	8:59	0.01	---	0.52	---
10/9/11	12:32	10/9/11	13:21	0.14	0.82	1.15	0.17
10/10/11	11:31	10/10/11	16:15	0.25	4.74	0.92	0.05
10/11/11	16:17	10/11/11	16:17	0.01	0.00	1.00	---
10/12/11	1:46	10/12/11	1:46	0.02	0.00	0.39	72.00
10/12/11	12:56	10/12/11	15:01	0.43	2.09	0.47	0.21
10/13/11	10:20	10/13/11	13:02	0.21	2.70	0.80	0.08
10/14/11	22:02	10/14/11	22:02	0.01	0.00	1.37	---
10/17/11	15:08	10/17/11	17:41	0.17	2.54	2.71	0.07
10/18/11	14:09	10/18/11	19:02	2.03	4.88	0.85	0.42
10/20/11	1:46	10/20/11	1:46	0.01	---	1.28	---
10/28/11	16:25	10/28/11	18:14	0.56	1.81	8.61	0.31
10/29/11	10:12	10/29/11	14:02	1.06	3.84	0.67	0.28
10/30/11	11:34	10/30/11	16:32	0.32	4.97	0.90	0.06
10/31/11	15:45	10/31/11	18:14	0.16	2.49	0.97	0.06
11/3/11	0:48	11/3/11	0:48	0.01	---	2.27	---
11/5/11	8:39	11/5/11	10:37	0.08	1.95	2.33	0.04
11/6/11	15:32	11/6/11	16:56	0.04	1.42	1.20	0.03
11/7/11	10:26	11/7/11	11:51	0.04	1.42	0.73	0.03
11/8/11	11:52	11/8/11	11:52	0.01	0.00	1.00	---
11/14/11	13:31	11/14/11	15:28	0.08	1.95	6.07	0.04
11/15/11	10:35	11/15/11	13:17	0.21	2.70	0.80	0.08
11/17/11	1:25	11/17/11	5:31	0.31	4.11	1.51	0.08
11/19/11	13:45	11/19/11	16:35	0.25	2.84	2.34	0.09
11/20/11	19:01	11/20/11	23:21	0.31	4.34	1.10	0.07
11/21/11	3:59	11/21/11	4:24	0.03	0.40	0.19	0.07
11/27/11	11:02	11/27/11	11:44	0.07	0.69	6.28	0.10
11/28/11	3:35	11/28/11	4:46	0.08	1.18	0.66	0.07
12/1/11	3:03	12/1/11	3:03	0.01	---	2.93	---
12/4/11	15:30	12/4/11	15:30	0.02	0.00	3.52	72.00
12/9/11	7:22	12/9/11	9:40	0.14	2.30	4.66	0.06
12/9/11	16:35	12/9/11	18:21	0.12	1.77	0.29	0.07
12/9/11	22:25	12/10/11	4:04	4.07	5.65	0.17	0.72
12/10/11	7:56	12/10/11	7:56	0.01	---	0.16	---
12/10/11	22:36	12/11/11	3:03	0.08	4.45	0.61	0.02
12/11/11	12:29	12/11/11	12:29	0.01	---	0.39	---
12/12/11	12:46	12/12/11	18:50	0.11	6.06	1.01	0.02
12/13/11	12:26	12/13/11	14:01	0.05	1.59	0.73	0.03
12/14/11	4:13	12/14/11	5:06	0.02	0.88	0.59	0.02
12/24/11	9:50	12/24/11	9:50	0.01	0.00	10.20	---
12/26/11	17:55	12/26/11	19:30	0.05	1.59	2.34	0.03
12/27/11	13:08	12/27/11	14:44	0.05	1.59	0.73	0.03
12/31/11	22:40	12/31/11	22:40	0.01	0.00	4.33	---
1/23/12	21:53	1/24/12	0:13	0.05	2.33	22.97	0.02
1/24/12	19:14	1/24/12	21:37	0.14	2.39	0.80	0.06
1/25/12	10:17	1/25/12	10:17	0.01	0.00	0.52	---
1/27/12	1:58	1/27/12	2:52	0.23	0.90	1.65	0.26

TABLE 4-1 -- CONTINUED

SUMMARY OF RAINFALL MEASURED AT THE TROPICAL FARMS MONITORING SITE FROM MAY 1, 2011 - APRIL 30, 2012

EVENT START		EVENT END		TOTAL RAINFALL (inches)	DURATION (hours)	ANTECEDENT DRY PERIOD (days)	AVERAGE INTENSITY (inches/hour)
Date	Time	Date	Time				
2/3/12	2:35	2/3/12	2:35	0.01	---	6.99	---
2/4/12	20:23	2/5/12	1:27	0.56	5.07	1.74	0.11
2/6/12	3:01	2/6/12	8:52	0.21	5.84	1.07	0.04
2/6/12	19:47	2/6/12	20:36	0.09	0.83	0.45	0.11
2/7/12	6:20	2/7/12	6:45	0.04	0.41	0.41	0.10
2/9/12	2:48	2/9/12	2:48	0.02	0.01	1.84	2.67
2/9/12	20:33	2/10/12	0:10	0.17	3.63	0.74	0.05
2/10/12	6:49	2/10/12	7:37	0.06	0.79	0.28	0.08
2/10/12	18:57	2/10/12	20:28	0.04	1.53	0.47	0.03
2/11/12	3:44	2/11/12	3:44	0.01	---	0.30	---
2/15/12	4:25	2/15/12	4:25	0.01	---	4.03	---
2/21/12	3:27	2/21/12	3:27	0.01	---	5.96	---
2/25/12	22:49	2/25/12	22:49	0.01	---	4.81	---
2/27/12	8:25	2/27/12	8:28	0.02	0.05	1.40	0.38
2/29/12	4:52	2/29/12	5:07	0.23	0.25	1.85	0.93
3/1/12	3:04	3/1/12	3:04	0.01	---	0.91	---
3/4/12	2:22	3/4/12	3:52	0.22	1.51	2.97	0.15
3/6/12	8:59	3/6/12	8:59	0.01	---	2.21	---
3/8/12	12:39	3/8/12	20:29	0.49	7.83	2.15	0.06
3/9/12	4:46	3/9/12	4:46	0.01	---	0.35	---
3/9/12	16:50	3/9/12	17:47	0.94	0.95	0.50	0.99
3/10/12	5:42	3/10/12	5:48	0.26	0.10	0.50	2.53
3/10/12	14:10	3/10/12	14:10	0.01	---	0.35	---
3/11/12	6:37	3/11/12	12:02	0.72	5.42	0.69	0.13
3/15/12	5:05	3/15/12	6:43	0.17	1.63	3.71	0.10
3/16/12	8:29	3/16/12	8:29	0.01	0.00	1.07	---
3/18/12	21:50	3/18/12	23:01	0.03	1.19	2.56	0.03
3/21/12	0:32	3/21/12	1:02	0.22	0.50	2.06	0.44
3/21/12	4:51	3/21/12	4:51	0.02	0.88	0.16	0.02
3/25/12	5:50	3/25/12	9:00	0.22	0.50	4.04	0.44
3/25/12	13:02	3/25/12	13:02	0.02	0.88	0.17	0.02
3/27/12	10:44	3/27/12	10:44	0.44	3.16	1.90	0.14
3/28/12	20:30	3/28/12	20:30	0.01	---	1.41	---
3/29/12	3:35	3/29/12	3:35	0.01	---	0.29	---
3/30/12	9:06	3/30/12	9:07	0.01	---	1.23	---
4/7/12	11:07	4/7/12	11:07	0.01	---	8.08	---
4/13/12	13:34	4/13/12	15:31	0.08	1.95	6.10	0.04
4/14/12	0:58	4/14/12	0:58	0.01	0.00	0.39	---
4/19/12	16:18	4/19/12	16:18	0.71	3.65	5.64	0.19
4/19/12	19:54	4/19/12	19:54	0.01	---	0.15	---
4/19/12	23:23	4/19/12	23:23	0.01	---	0.15	---
4/20/12	13:40	4/20/12	15:48	1.19	2.13	0.59	0.56
4/21/12	2:33	4/21/12	2:33	0.01	---	0.45	---
4/21/12	7:24	4/21/12	7:24	0.01	---	0.20	---
4/21/12	23:58	4/21/12	23:58	0.01	---	0.69	---
4/22/12	4:05	4/22/12	4:05	0.01	---	0.17	---
4/22/12	8:13	4/22/12	22:08	0.52	13.92	0.17	0.04
4/29/12	5:45	4/29/12	15:53	0.06	10.13	6.32	0.01
			TOTAL RAINFALL:	**41.85**			

TABLE 4-2

SUMMARY OF RAINFALL CHARACTERISTICS IN THE VICINITY OF THE TROPICAL FARMS SITE FROM MAY 2011 - APRIL 2012

PARAMETER	UNITS	MINIMUM VALUE	MAXIMUM VALUE	MEAN EVENT VALUE
Event Rainfall	inches	0.01	4.07	0.21
Event Duration	hours	0.01	13.9	2.24
Average Intensity	inches/hour	0.01	108	2.78
Antecedent Dry Period	days	0.13	23.0	1.76

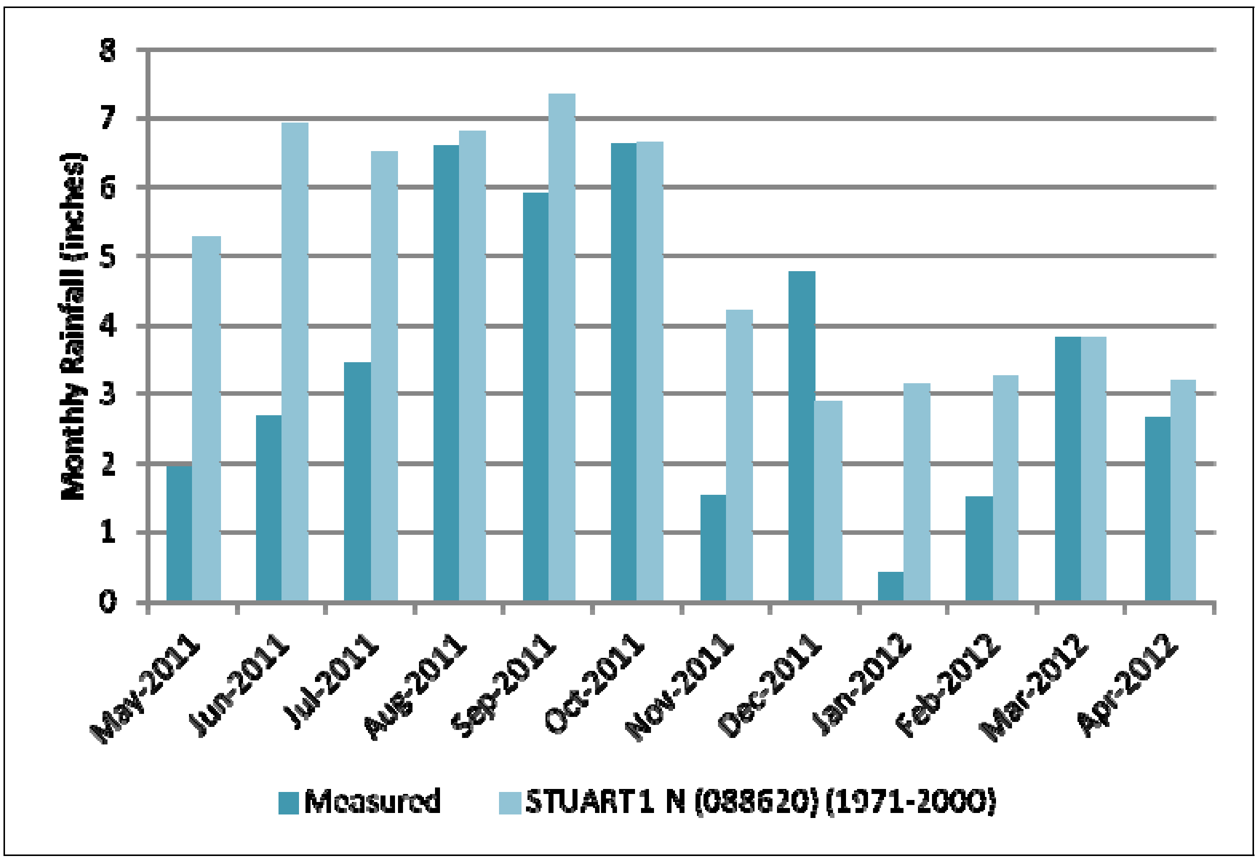


Figure 4-1. Comparison of Average and Measured Rainfall in the Vicinity of the Tropical Farms Site.

TABLE 4-3

MEASURED AND AVERAGE RAINFALL FOR THE TROPICAL FARMS SITE FROM MAY 2011 - APRIL 2012

MONTH	MEAN MONTHLY RAINFALL[1] (inches)	MEASURED SITE RAINFALL (inches)	MONTH	MEAN MONTHLY RAINFALL[1] (inches)	MEASURED SITE RAINFALL (inches)
May	5.28	1.94	November	4.21	1.52
June	6.90	2.67	December	2.88	4.76
July	6.51	3.45	January	3.15	0.43
August	6.79	6.60	February	3.25	1.49
September	7.34	5.90	March	3.81	3.83
October	6.65	6.62	April	3.18	2.64
			TOTAL:	**59.95**	**41.85**

1. Measured at the Stuart NWS Site 088620 from 1971-2000

A summary of calculated hydrologic inputs to the Tropical Farms ponds from direct precipitation is given in Table 4-4. Separate calculations are provided for Pond 1 and for combined Ponds 2-5. These inputs were calculated by multiplying the measured monthly rainfall times the surface area of 2.15 acres for Pond 1 and 14.48 acres for the combined Ponds 2-5. Calculated hydrologic inputs to Pond 1 from direct precipitation range from a low of 0.08 ac-ft during January 2012 to a high of 1.19 ac-ft during October 2011, with a total input of 7.50 ac-ft during the monitoring program. Hydrologic inputs to Ponds 2-5 range from 0.52 ac-ft during January 2012 to 7.99 ac-ft during October 2011, with a total input of 50.50 ac-ft during the monitoring program. The values summarized in Table 4-4 are utilized in a subsequent section to develop hydrologic budgets for the ponds.

4.1.2 Water Level Elevations

As indicated on Figures 3-2 and 3-10, digital water level recorders were installed in Pond 1 and in Ponds 2-5 at the Tropical Farms site to provide a continuous record of water surface elevations in various parts of the treatment system. A single water level recorder was installed in Pond 1, with three separate water level recorders installed in various locations in the Pond 2-5 system. However, the recorded water level elevations in Ponds 2-5 were virtually identical, and the mean of the three recorded elevations is used to reflect water elevations in the eastern pond system.

TABLE 4-4

HYDROLOGIC INPUTS TO THE TROPICAL FARMS PONDS FROM DIRECT RAINFALL FROM MAY 2011 - APRIL 2012

YEAR	MONTH	MEASURED RAINFALL (inches)	RAINFALL VOLUME (ac-ft)	
			Pond 1[a]	Ponds 2-5[b]
2011	May	1.94	0.35	2.34
	June	2.67	0.48	3.22
	July	3.45	0.62	4.16
	August	6.60	1.18	7.96
	September	5.90	1.06	7.12
	October	6.62	1.19	7.99
	November	1.52	0.27	1.83
	December	4.76	0.85	5.74
2012	January	0.43	0.08	0.52
	February	1.49	0.27	1.80
	March	3.83	0.69	4.62
	April	2.64	0.47	3.19
	TOTAL:	**41.85**	**7.50**	**50.50**

a. Based on a pond surface area of 2.15 acres
b. Based on a combined surface area of 14.48 acres

A graphical summary of fluctuations in recorded water level elevations in the western and eastern ponds at the Tropical Farms site from May 2011-April 2012 is given on Figure 4-2. Recorded rainfall events are also summarized on Figure 4-2 to illustrate relationships between surface water elevations and rainfall events. In general, recorded water surface elevations in Pond 1 were equal to or greater than the pond control elevation of 5.96 ft throughout the entire field monitoring program. Even during periods of low rainfall, water level elevations in Pond 1 did not appear to fluctuate substantially.

Impacts of significant rain events in the watershed can be clearly seen in water surface elevations within Pond 1. A substantial increase in water surface elevations within the pond occurred during mid-October which extended until approximately January and corresponds with the initiation of inflows through the earthen channel at Site 1 which did not occur prior to mid-October. Water level elevations with Pond 1 increased approximately 2 ft during periods of significant inflow from the western inflow channel.

The fact that water level elevations in Pond 1 were equal to or greater than the control elevation throughout the entire monitoring program suggests a relatively constant inflow into the pond throughout virtually the entire year. Since the western inflow channel only discharged during a relatively short period of the field monitoring program, the only potential source of inflow into Pond 1 would be a constant baseflow through the 48-inch RCP.

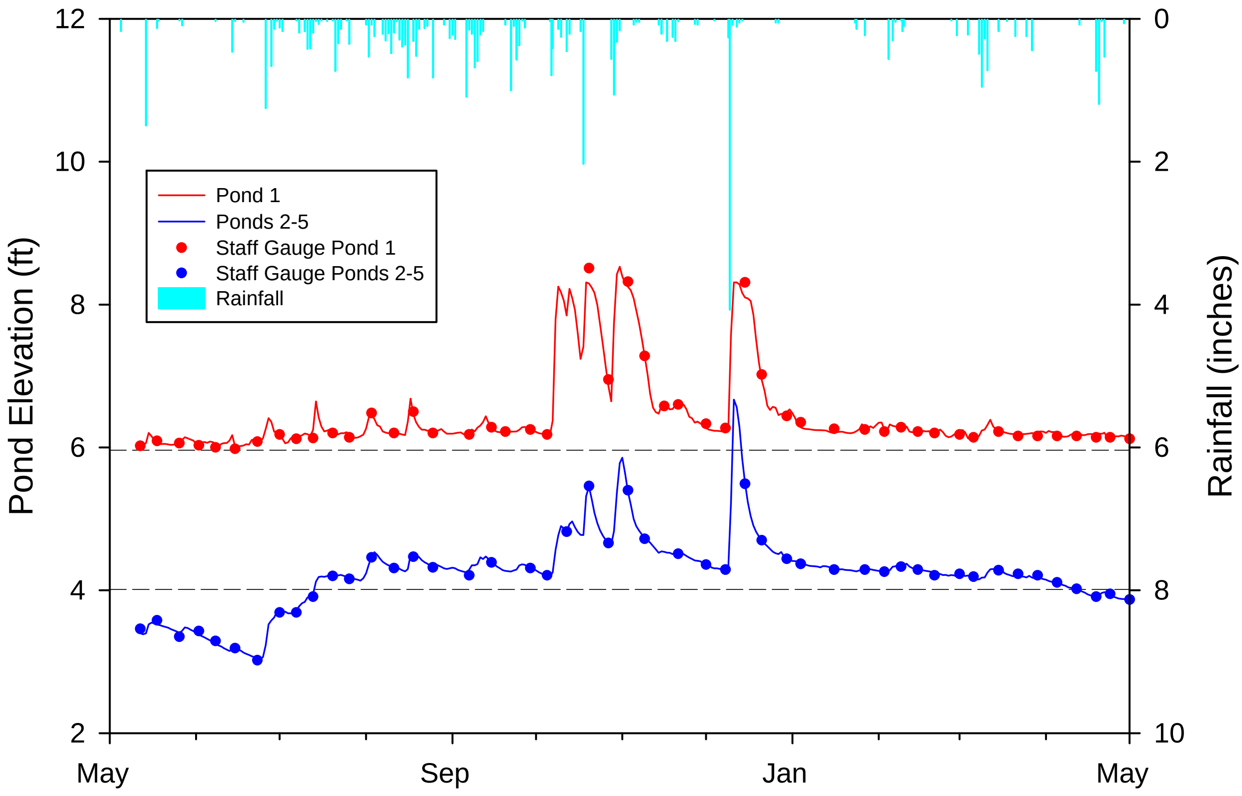


Figure 4-2. Recorded Water Level Elevations in the Western and Eastern Ponds at the Tropical Farms Site from May 1, 2011-April 30, 2012.

Mean recorded water surface elevations in Ponds 2-5 are also illustrated on Figure 4-2. In general, water level elevations in the eastern ponds exhibited a higher degree of variability than was observed in Pond 1. Water surface elevations in the eastern ponds were less than the control elevation of 4.01 ft during the initial 2.5 months of the field monitoring program, and much of the final month. Spikes in water surface elevations are associated with significant rain events which occurred within the watershed. The highest recorded water level elevations in the eastern series of ponds appear to be associated with the peaks in water elevations observed in Pond 1 as a result of initiation of inflows through the western channel in Pond 1.

Measured minimum, maximum, and mean surface water elevations in the western pond (Pond 1) and eastern ponds (Ponds 2-5) during the field monitoring program are summarized in Table 4-5. The western pond (Pond 1) exhibited a maximum elevation change of 1.42 ft during the field monitoring program compared with a maximum elevation change of 1.44 ft in the eastern ponds (Ponds 2-5), suggesting that the hydrologic characteristics of the two ponds are closely related. Water elevations in the western pond (Pond 1) were above the control elevation on each day of the field monitoring program, with water surface elevations in Ponds 2-5 above the control elevation during 275 of the 365-day field monitoring program.

TABLE 4-5

SUMMARY OF RECORDED WATER LEVEL DATA FOR THE EASTERN AND WESTERN PONDS

PARAMETER	WESTERN POND (POND 1)	EASTERN PONDS (PONDS 2-5)
Minimum Elevation	6.01	3.03
Maximum Elevation	8.53	6.67
Mean Elevation	6.45	4.24
Maximum Change in Elevation	1.42	1.44
Number of Days Above Control Elevation	365	275

4.1.3 Monitored Inflows and Outflows

As discussed in Section 3, continuous inflow hydrographs were recorded at four separate locations at the Tropical Farms site, including the western inflow channel input to Pond 1 (Site 1), the 48-inch RCP inflow to Pond 1 (Site 2), the discharge from Pond 1 (Site 3), and the discharge from the eastern ponds (Site 6).

A graphical summary of monitored inflow and outflow hydrographs at the Tropical Farms site is given on Figure 4-3. Separate inflow hydrographs are provided for monitoring conducted at Sites 1, 2, 3, and 6. Monitored rain events at the Tropical Farms site are also included on Figure 4-3 to evaluate relationships between flow rates and monitored rain events at the site. In general, monitored inflow and outflow hydrographs at each of the sites are very similar, differing only in the magnitude of the relative hydrograph peaks. The hydrology of the treatment system appears to be driven by inflows which occur through the western inflow channel (Site 1) and the 48-inch RCP (Site 2) since hydrograph discharges from Pond 1 at Site 3 and discharges from the overall treatment system at Site 6 closely mimic the inflow hydrographs at Sites 1 and 2. In general, hydrograph peaks at each of the inflow and outflow monitoring sites corresponded closely to significant monitored rain events at the site.

An expanded 0-10 cfs scale for the inflow/outflow hydrographs is given on Figure 4-4 to provide a better view of relative changes in hydrograph characteristics. As mentioned previously, inflows into Pond 1 from the western channel (Site 1) occurred only during the period from October-March. Inflows at Site 1 appear to have a large impact on downstream hydrographs monitored at the discharge from Pond 1 (Site 3) and the discharge from the overall system (Site 6). Inflows into Pond 1 from the 48-inch RCP (Site 2) occurred throughout virtually the entire field monitoring program, even in the absence of significant rain events. This behavior suggests that a continuous inflow occurs into the 48-inch RCP system as a result of either groundwater influx or discharge from surface waters or stormwater management systems within the basin. Discharges from the treatment system at Site 6 occurred from approximately mid-July to mid-April.

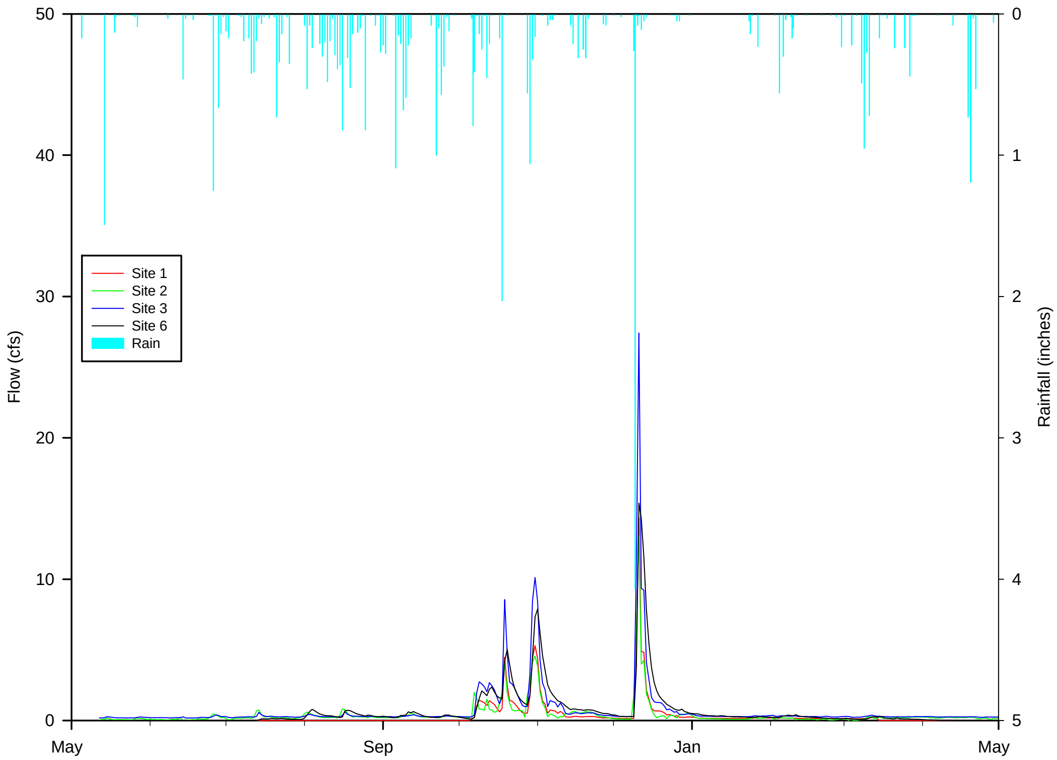


Figure 4-3. Monitored Inflow/Outflow Hydrographs at the Tropical Farms Site.

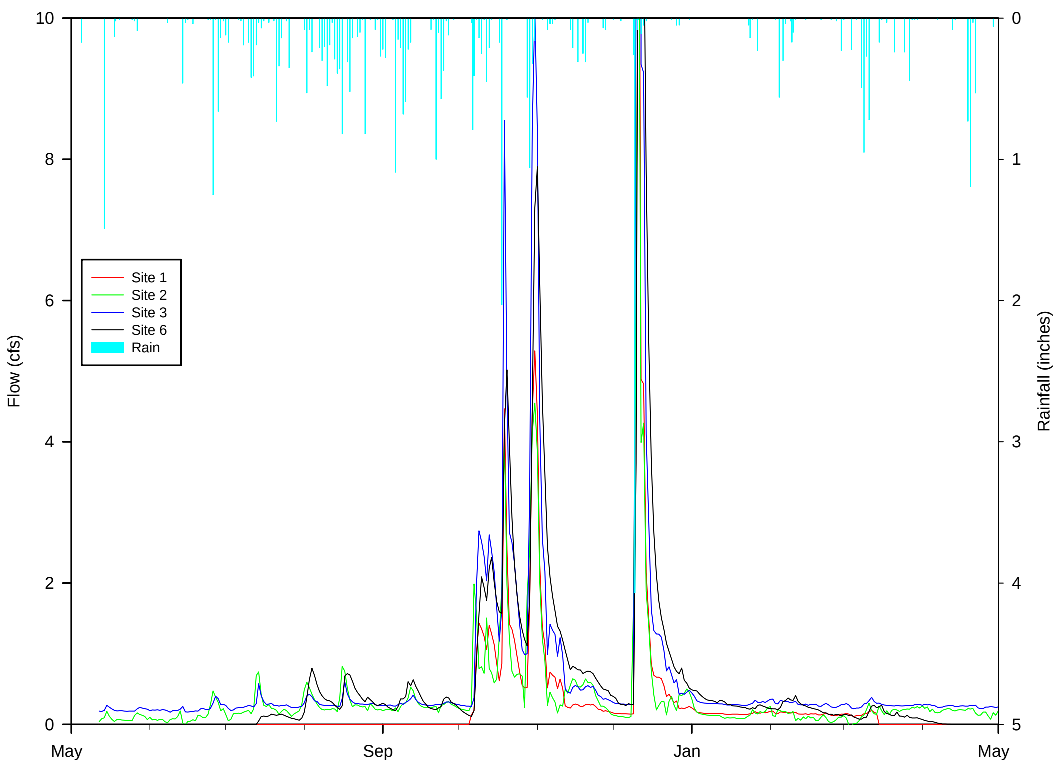


Figure 4-4. Expanded Scale (0-10 cfs) for the Inflow/Outflow Hydrographs.

An interesting relationship appears to exist between discharge measurements at Site 3 (reflecting the discharge from Pond 1) and Pond 6 (which reflects the overall discharge from the treatment system). Hydrograph peaks at Site 3 appear to be characterized by higher total peaks but with a relatively narrow hydrograph width. This hydrograph shape is consistent with the physical characteristics of discharges at Site 3 which occur initially through outfall discharge structure CS-2 but can also occur through the 6 ft x 6 ft CBC under high flow conditions. The large area of the 6 ft x 6 ft CBC allows the water to be discharged relatively rapidly from Pond 1 into the downstream pond system. In contrast, discharges at Site 6 are regulated by two 11-inch diameter orifices which restrict the maximum discharge rate which can occur from the pond. As a result, discharges from Pond 6 appear to reach a lower peak discharge which occurs over a longer period of time, creating a relatively broad hydrograph shape.

Estimates of monthly discharges at Sites 1, 2, 3, and 6 were obtained by integrating the inflow/outflow hydrographs provided on Figure 4-3 on a monthly basis. A tabular summary of estimated monthly inflow/outflow volumes at each of the six Tropical Farms monitoring sites is given in Table 4-5 on a monthly basis. As discussed previously, inputs into Pond 1 from the western inflow channel (Site 1) occurred only during the period from October-March. During the field monitoring program, approximately 194.0 ac-ft of runoff discharged into Pond 1 through the western channel. Inflows into Pond 1 from the 48-inch RCP (Site 2) occurred during every month of the field monitoring program, with a total of 313.8 ac-ft of inflow during the monitoring program. Discharges from Pond 1 (Site 3) also occurred continuously during the field monitoring program, with a total of 508.0 ac-ft monitored at this site. The combined inputs to Pond 1 from Sites 1 and 2 contributed 507.8 ac-ft of inflow compared with a pond discharge of 508.0 ac-ft.

TABLE 4-6

MEASURED HYDROLOGIC INPUTS / OUTPUTS AT THE TROPICAL FARMS MONITORING SITES

YEAR	MONTH	HYDROLOGIC INPUTS / OUTPUTS (ac-ft)			
		Site 1	Site 2	Site 3	Site 6
2011	May	0.0	9.8	8.2	0.0
	June	0.0	15.7	13.2	0.0
	July	0.0	17.5	16.7	3.8
	August	0.0	19.0	19.4	25.9
	September	0.0	17.1	17.5	19.8
	October	56.9	93.9	146.2	118.8
	November	34.3	24.7	65.6	94.0
	December	80.3	71.9	153.8	162.5
2012	January	9.7	7.6	18.6	18.9
	February	8.7	7.4	16.7	13.5
	March	4.1	12.8	16.9	8.6
	April	0.0	16.4	15.2	0.6
TOTAL:		**194.0**	**313.8**	**508.0**	**466.4**

Discharges from the treatment system at Site 6 occurred on a relatively continuous basis from July-April. During the field monitoring program, a total of 466.4 ac-ft of water discharged through the outfall structure. Inflows into the eastern pond system, as monitored at Site 3, were approximately 518.1 ac-ft during the field monitoring program. The information summarized in Table 4-6 is used in a subsequent section to generate an overall hydrologic budget for the treatment system.

A summary of runoff coefficient calculations for watershed areas treated by the Tropical Farms system is given in Table 4-7. Calculations are provided for the primary system inflows from the western inflow channel (Site 1) and the 48-inch RCP inflow (Site 2). As discussed in Section 2, the contributing watershed area for the western inflow channel (Site 1) is approximately 103 acres, with a 365-acre watershed for the 48-inch RCP inflow (Site 2). The measured rainfall depth which occurred at the site during the field monitoring program from May 2011-April 2012 was approximately 41.85 inches. This corresponds to a rainfall volume of 359.2 ac-ft for the western inflow channel basin and 1273 ac-ft for the 48-inch RCP basin. As indicated on Figure 4-5, an inflow volume of 194.0 ac-ft was monitored at Site 1, with 313.8 ac-ft monitored at Site 2. This corresponds to a calculated C-value of 0.540 for the western inflow channel and 0.247 for the 48-inch RCP inflow sub-basin.

TABLE 4-7

RUNOFF COEFFICIENT (C-VALUE) CALCULATIONS FOR THE TROPICAL FARMS WATERSHEDS

PARAMETER	UNITS	SITE 1 INFLOW	SITE 2 INFLOW
Basin Area	acres	103	365
Measured Rainfall[1]	inches	41.85	41.85
Rainfall Volume[2]	ac-ft	359.2	1273
Discharged Volume[3]	ac-ft	194.0	313.8
Calculated C-value	--	0.540	0.247

1. Measured rainfall at the Tropical Farms site from May 2011-April 2012
2. Volume of rainfall over basin area
3. Measured hydrologic inputs at Sites 1 and 2 from May 2011-April 2012

The calculated C-value of 0.247 appears to be appropriate for the sub-basin area discharging into the Tropical Farms system through the 48-inch RCP and is typical of runoff coefficients commonly observed in residential sub-divisions with soil types similar to those in the sub-basin area. However, the calculated C-value of 0.540 for the watershed area contributing at Site 1 appears to be substantially elevated and approximately twice the value which would be anticipated for a similar residential watershed. Two possible explanations exist for this apparent elevated C-value. First, the actual sub-basin area contributing to the western channel may be much larger than the 103-acre sub-basin area reflected in the design calculations. Second, the elevated C-value may be partially caused by the large number of wet detention stormwater treatment ponds located within the contributing sub-basin area. Inflows into Pond 1 from this sub-basin area only began when the stormwater ponds reached the point of discharge and began contributing to the western inflow channel. Under these conditions, additional rainfall which occurred on the pond area would be discharged directly into the inflow canal for Pond 1, increasing the apparent C-value for the basin.

4.1.4 Direct Overland Flow

In addition to the previously discussed inflows from the western channel and the 48-inch RCP, the Tropical Farms treatment system also receives a small additional inflow volume as a result of runoff from areas discharging into the treatment system as a result of direct overland flow. An outline of areas discharging to the Tropical Farms treatment system by direct overland flow is given on Figure 4-5. The basin delineation indicated on Figure 4-5 was obtained by evaluating LIDAR contour data for areas in the vicinity of the treatment system. The area outlined on Figure 4-5 discharges into the southwest and northeast channel as well as Ponds 2-5. A small area of direct overland flow also occurs to Pond 1, although it appears that this area is limited primarily to the maintenance berm around the pond. Due to the small size of the areas which contribute direct overland flow to Pond 1, this area is ignored for purposes of this analysis.

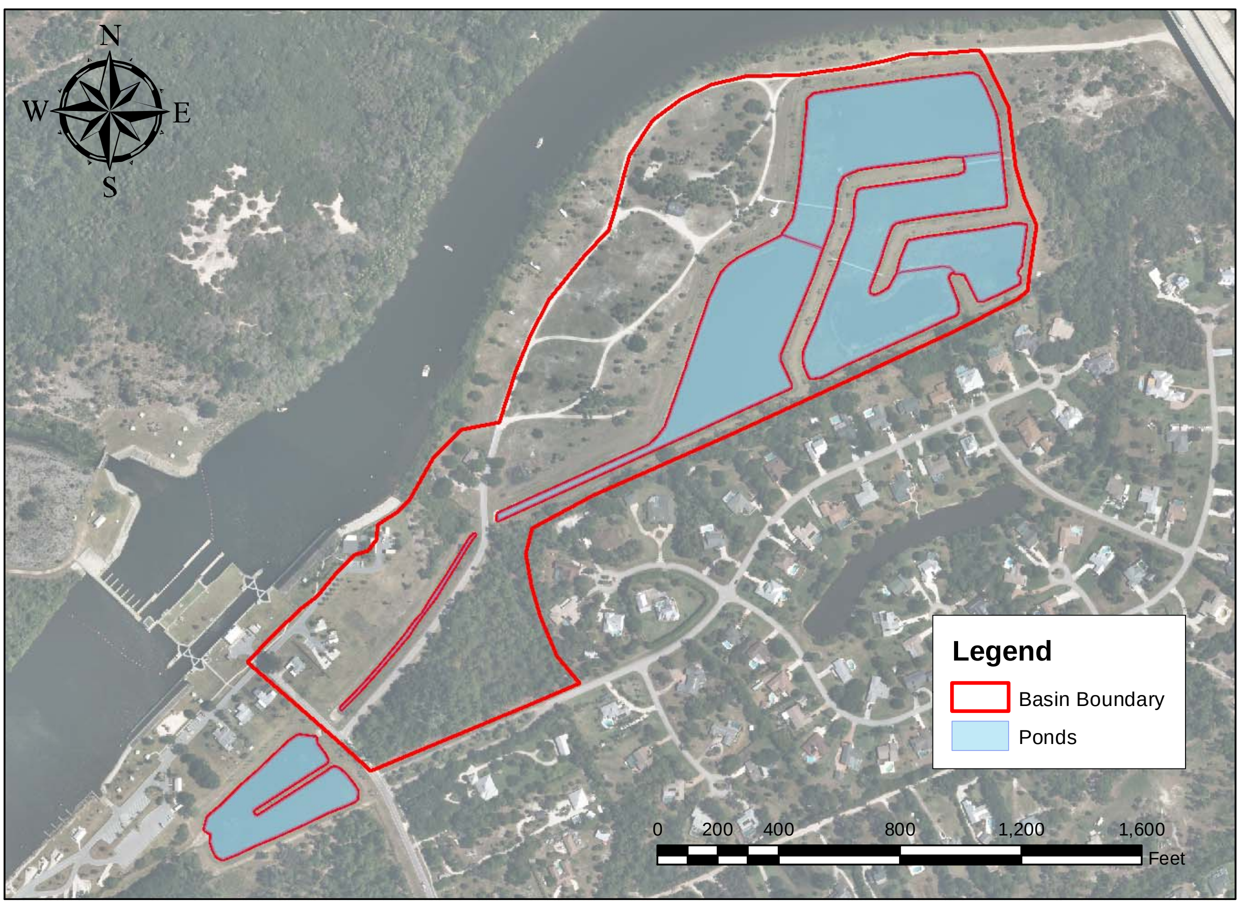


Figure 4-5. Outline of Areas Discharging to the Tropical Farms Treatment System by Direct Overland Flow.

Hydrologic characteristics of the direct overland flow sub-basin were calculated by ERD based upon soil types and land use characteristics within the sub-basin area. An overview of soil types and hydrologic soil groups (HSG) in the direct overland flow sub-basin is given on Figure 4-6. Information on soil types and hydrologic soil groups was obtained from the NRC website. In general, the majority of soils in the overland flow sub-basin are classified in HSG A which reflects deep sandy soils with a low runoff potential and high rate of infiltration. A small amount of HSG C/D is also present which reflects soils with a high water table elevation and a relatively high runoff potential.

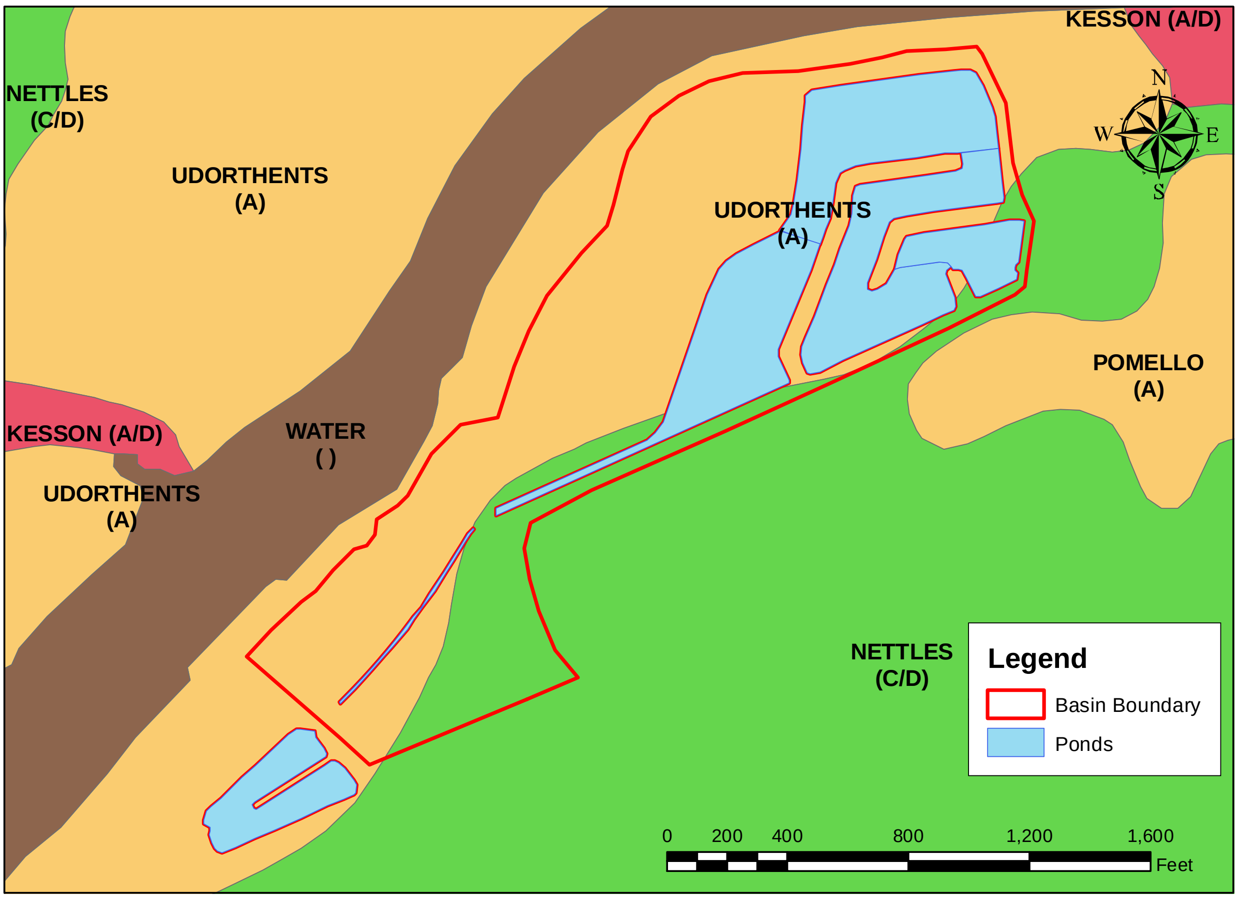


Figure 4-6. Soil Types and Hydrologic Soil Groups (HSG) in the Direct Overland Flow Sub-basin.

A tabular summary of hydrologic characteristics of the overland flow sub-basin area is given in Table 4-8. The overland flow sub-basin is approximately 33.37 acres in size, with an estimated curve number (CN value) of 60. Initial extraction for the sub-basin area is assumed to be approximately 1.33 inches.

TABLE 4-8

HYDROLOGIC CHARACTERISTICS OF THE OVERLAND FLOW SUB-BASIN AREA

PARAMETER	UNITS	VALUE
Area	acres	33.37
CN	--	60
Soil Storage	inches	6.67
Initial Abstraction	inches	1.33

A continuous simulation was conducted by ERD which uses the monitored rain events (summarized in Table 4-1) as the precipitation input data. This model provides an estimate of the runoff generated during each monitored storm event at the Tropical Farms site during the field monitoring program. The runoff volume for each rainfall event is calculated by adding the rainfall excess from the non-directly connected impervious area (non-DCIA) portion to the rainfall excess created from the DCIA portion for the basin. Rainfall excess from the non-DCIA areas is calculated using the following set of equations:

$$\text{Soil Storage, } S = \frac{1000}{nDCIA\ CN} - 10$$

$$nDCIA\ CN = \frac{[CN * (100 - IMP)] + [98\ (IMP - DCIA)]}{(100 - DCIA)}$$

$$Q_{nDCIAi} = \frac{(P_i - 0.2S)^2}{(P_i + 0.8S)}$$

where:

CN	=	curve number for pervious area
IMP	=	percent impervious area
DCIA	=	percent directly connected impervious area
nDCIA CN	=	curve number for non-DCIA area
P_i	=	rainfall event depth (inches)
Q_{nDCIAi}	=	rainfall excess for non-DCIA for rainfall event (inches)

For the DCIA portion, rainfall excess is calculated using the following equation:

$$Q_{DCIAi} = (P_i - 0.1)$$

When P_i is less than 0.1, Q_{DCIAi} is equal to zero. This methodology is used to estimate the generated runoff volume within the overland flow sub-basin area for each of the rainfall events listed in Table 4-1. The sum of runoff generated by each of the modeled events is equivalent to the estimated annual runoff volume. This methodology was developed by ERD for FDEP for use in the Statewide Stormwater Rule.

A summary of modeled runoff inputs to the Tropical Farms site from direct overland flow during the field monitoring program is given on Table 4-9. Significant inflows to the Tropical Farms site occurred only during the months of October and December which were characterized by relatively large and frequent rain events. The lack of significant runoff generation during the remaining months is due primarily to the rapid infiltration provided by the HSG A soils within the overland flow sub-basin. Overall, a total of 2.40 ac-ft of direct runoff occurred into the treatment system, primarily downstream of Pond 1, during the field monitoring program. The information provided in Table 4-9 is used in a subsequent section to generate an overall hydrologic budget for the Tropical Farms system.

TABLE 4-9

MODELED RUNOFF INPUTS TO THE TROPICAL FARMS SITE FROM DIRECT OVERLAND FLOW FROM MAY 2011-APRIL 2012

YEAR	MONTH	HYDROLOGIC INPUTS (ac-ft)
2011	May	0.01
	June	0.00
	July	0.00
	August	0.00
	September	0.00
	October	0.18
	November	0.00
	December	2.21
2012	January	0.00
	February	0.00
	March	0.00
	April	0.00
	TOTAL:	**2.40**

4.1.5 Pond Evaporation

As discussed in Section 3, a Class A pan evaporimeter was installed on a level wooden platform adjacent to the outfall for the treatment system at Site 6. Changes in water level within the pan were recorded at approximately one week intervals and corrected for rainfall which occurred during the preceding period to obtain estimates of pan evaporation. The pan evaporation measurements were then multiplied by the standard factor of 0.75 to produce estimates of evaporation from the pond surface.

A graphical summary of monthly lake evaporation measured at the Tropical Farms site from May 2011-April 2012 is given on Figure 4-7. The values summarized in this figure reflect the measured pan evaporation values multiplied by 0.75.

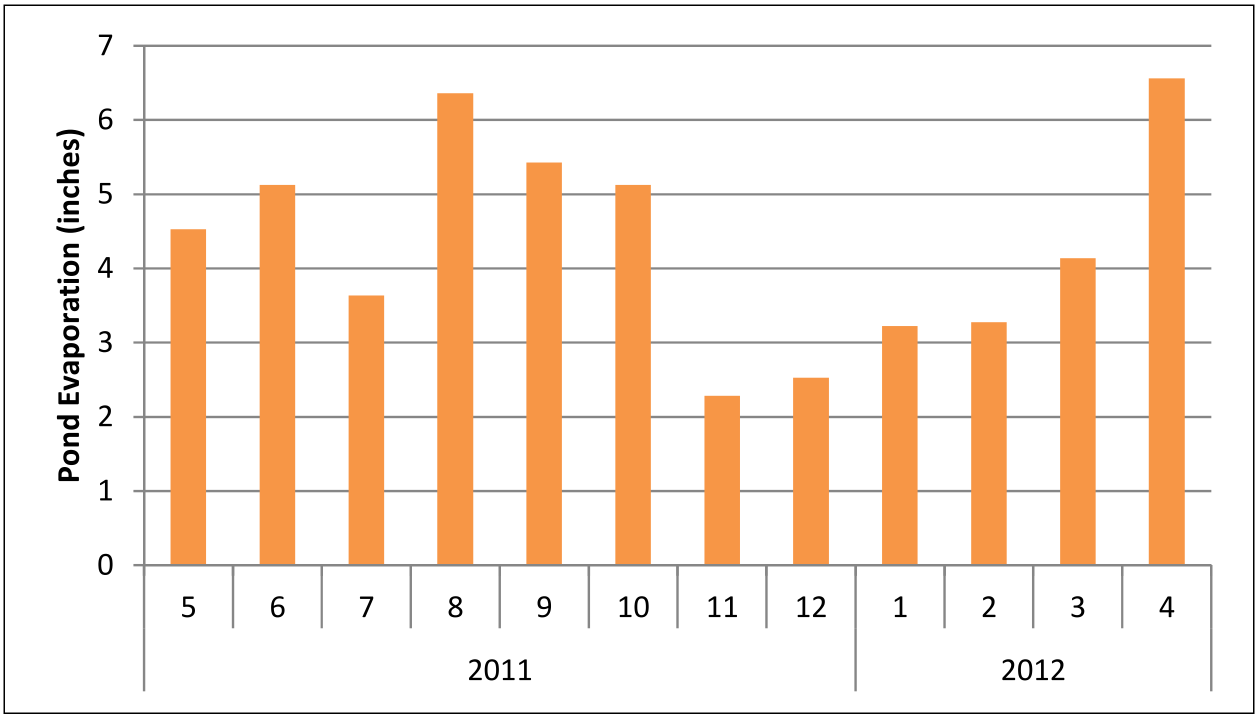


Figure 4-7. Monthly Lake Evaporation Measured at the Tropical Farms Site from May 2011-April 2012.

A summary of estimated evaporation losses at the Tropical Farms site from May 2011-April 2012 is given on Table 4-10. Separate evaporation losses are provided for Pond 1 and the combined Ponds 2-5. Evaporation losses from the two ponds were greatest during the months of August and April, with the lowest evaporation losses occurring during the months of November and December. Overall, lake evaporation at the Tropical Farms site was approximately 53.08 inches over the period from May 2011-April 2012. During the 12-month field monitoring program, surface evaporation removed approximately 9.51 ac-ft of water from Pond 1 and 64.05 ac-ft of water from Ponds 2-5. This information is used in a subsequent section to develop an overall hydrologic budget for the system.

TABLE 4-10

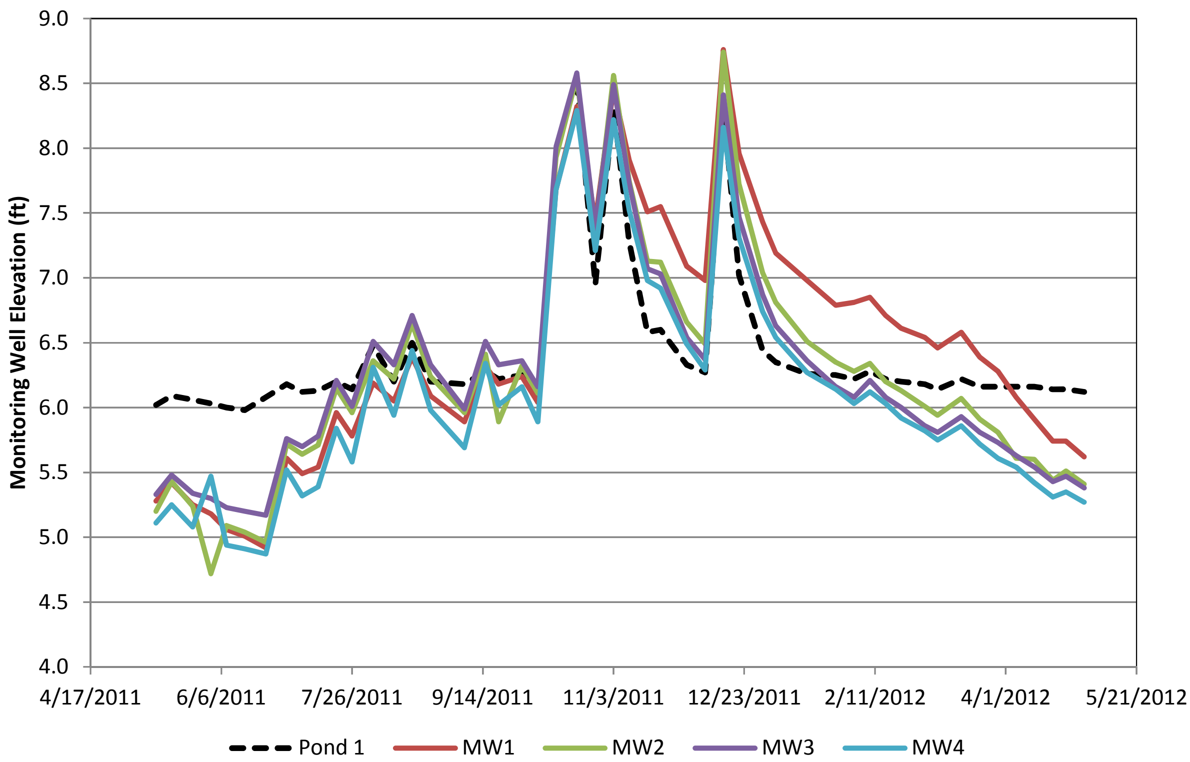
ESTIMATED EVAPORATION LOSSES AT THE TROPICAL FARMS SITE FROM MAY 2011-APRIL 2012

YEAR	MONTH	PAN EVAPORATION (inches)	LAKE EVAPORATION (inches)	POND 1 LOSSES (ac-ft)	PONDS 2-5 LOSSES (ac-ft)
2011	May	7.17	5.38	0.96	6.49
	June	6.83	5.12	0.92	6.18
	July	4.84	3.63	0.65	4.38
	August	8.48	6.36	1.14	7.67
	September	7.24	5.43	0.97	6.55
	October	6.84	5.13	0.92	6.19
	November	3.05	2.29	0.41	2.76
	December	3.37	2.53	0.45	3.05
2012	January	4.30	3.23	0.58	3.90
	February	4.37	3.28	0.59	3.96
	March	5.52	4.14	0.74	5.00
	April	8.75	6.56	1.18	7.92
	TOTAL:	**70.75**	**53.08**	**9.51**	**64.05**

4.1.6 Groundwater Inputs and Losses

As discussed in Section 3.1.4, shallow groundwater monitoring wells were installed around the perimeter of Pond 1 and Ponds 2-5 to assist in identifying hydraulic gradients between surface water and groundwater within the Tropical Farms system during the field monitoring program. Surface water elevations within Pond 1 and Ponds 2-5 were measured on a continuous basis using a digital water level recorder. Piezometric elevations in the adjacent groundwater monitoring wells were measured on a weekly basis.

A graphical comparison of piezometric elevations in surface water and groundwater for Pond 1 and Ponds 2-5 during the field monitoring program is given on Figure 4-8. In Pond 1, groundwater piezometric elevations were substantially lower than the pond surface elevation from the beginning of the field monitoring program until approximately mid-October. This pattern suggests that a net loss of water occurred from the pond into the adjacent groundwater during this period. From mid-October until approximately February, groundwater elevations were generally greater than surface water elevations within Pond 1, suggesting a net movement of groundwater into the pond during this period. During the final two months of the field monitoring program, groundwater piezometric elevations were generally lower than surface water elevations, suggesting a net migration of water from the pond into the adjacent groundwater. In general, piezometric elevations in the groundwater monitoring wells appear to be relatively similar until approximately November 2011. After this date, piezometric elevations in monitoring well MW-1 (located on the western side of Pond 1) were significantly higher than observed in the remaining groundwater monitoring wells which were relatively similar in value.



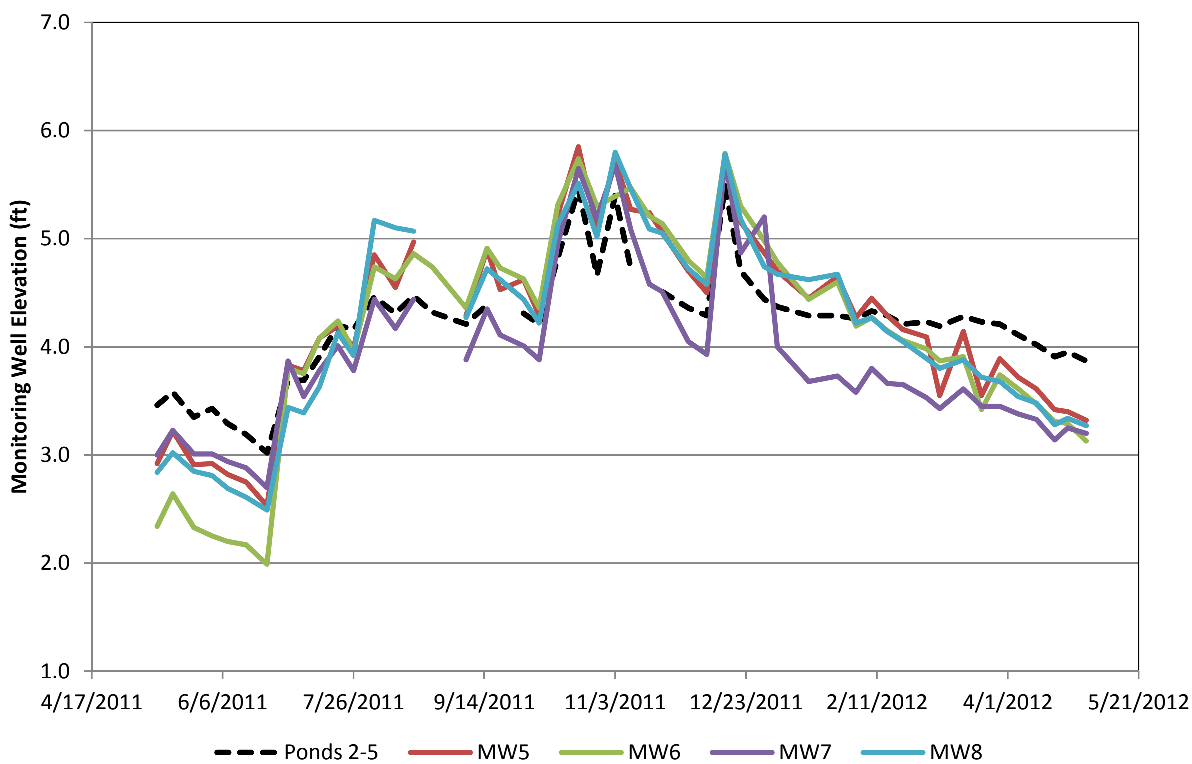


Figure 4-8. Comparison of Pond and Adjacent Groundwater Elevations at the Tropical Farms Site from May 2011-April 2012.

A graphical comparison of pond and groundwater elevations for Ponds 2-5 is given at the bottom of Figure 4-8. During the initial two months of the field monitoring program, groundwater elevations were generally less than the adjacent pond elevation, suggesting a net migration from the ponds into shallow groundwater. However, beginning in July 2011 and continuing until approximately February 2012, groundwater elevations at most sites were typically higher than pond elevations, suggesting a net migration of groundwater into the pond. Beginning in February 2012, groundwater elevations appear to be lower than the adjacent pond elevations, indicating a net migration of water from the pond into shallow groundwater. Piezometric elevations in the groundwater monitoring wells appear to be relatively similar for monitoring wells MW-5, MW-6, and MW-8 throughout the field monitoring program. However, slightly lower piezometric elevations were recorded in monitoring well MW-7 throughout much of the field monitoring period. This monitoring well is located on the north side of Ponds 2-5 and is closest to the adjacent St. Lucie Waterway. The lower elevations observed at this site may be related to the substantial hydraulic gradient between water level elevations in Ponds 2-5 and the adjacent St. Lucie Waterway elevation.

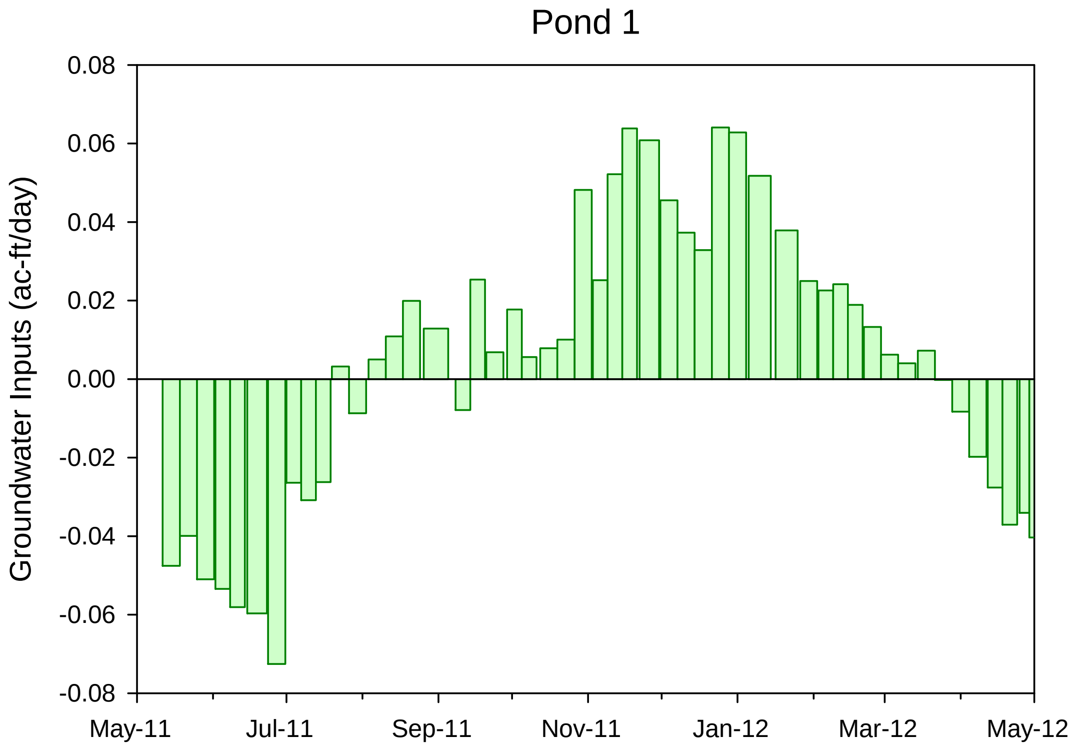
Estimates of groundwater inputs and losses to the Tropical Farms treatment system were calculated as the missing components in the hydrologic budget after consideration of the hydrologic inputs and losses discussed previously and accounting for change in storage within each of the treatment areas on a monthly basis. After evaluation of estimated inputs and losses for Pond 1 and for Ponds 2-5, a small additional amount of inputs or losses was necessary during most of the monthly periods to balance the hydrologic budgets after consideration for change in storage within the overall pond system. These additional required inputs and losses are assumed to reflect groundwater inputs or losses into the system.

A graphical summary of calculated groundwater inputs and losses to Pond 1 and Ponds 2-5 from May 2011-April 2012 is given on Figure 4-9. In general, groundwater losses occurred from Pond 1 from the beginning of the field monitoring program until approximately mid-July 2011. A small amount of groundwater inflow occurred from approximately mid-July until mid-March, with groundwater losses occurring again until the completion of the field monitoring program. A similar pattern is also apparent for Ponds 2-5, although the duration of net losses from the pond into groundwater is somewhat greater than observed for Pond 1. The information summarized on Figure 4-9 is used to generate overall hydrologic budgets for the two ponds.

4.1.7 Hydrologic Budget

4.1.7.1 Pond 1

A monthly hydrologic budget for Tropical Farms Pond 1 from May 2011-April 2012 is given on Table 4-11. Inputs into the pond are assumed to occur as a result of direct precipitation on the water surface and measured inflows from Sites 1 and 2. Hydrologic losses are assumed to occur as a result of discharges from the pond at Site 3 and evaporation from the water surface. Change in storage is calculated for each monthly period based upon the change in water level elevation and resulting water volume for each monthly interval.



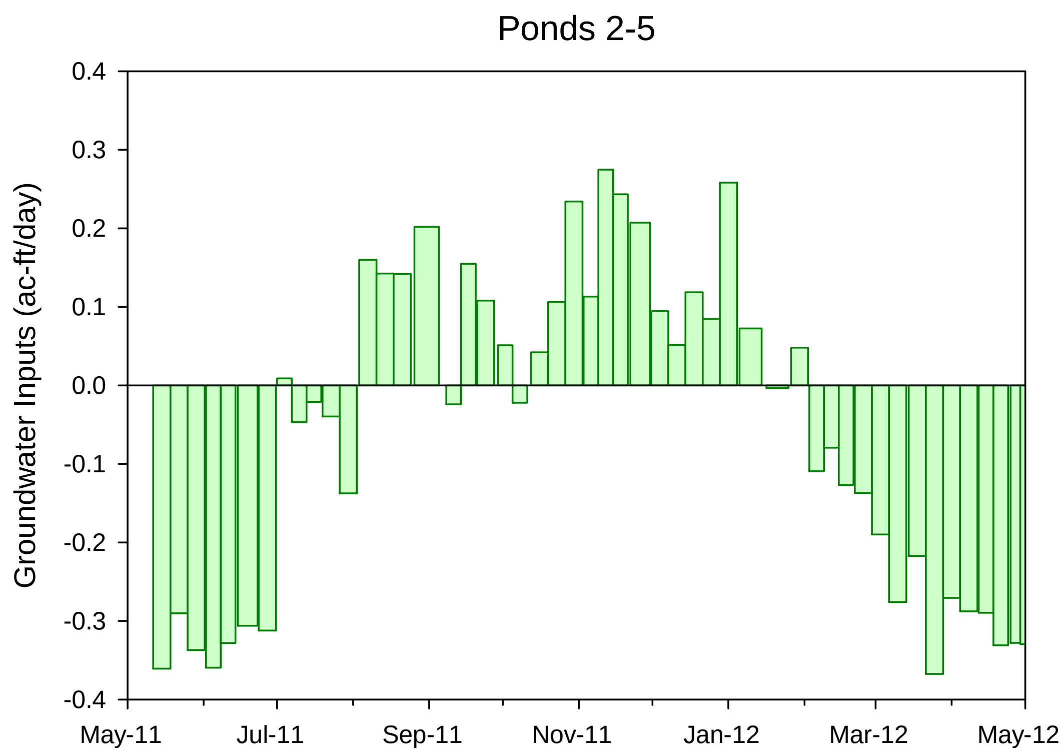


Figure 4-9. Calculated Groundwater Inputs/Losses to Pond 1 and Ponds 2-5 from May 2011-April 2012.

TABLE 4-11

MONTHLY HYDROLOGIC BUDGETS FOR TROPICAL FARMS POND 1 FROM MAY 2011-APRIL 2012

YEAR	MONTH	HYDROLOGIC INPUTS (ac-ft)					HYDROLOGIC LOSSES (ac-ft)				Δ STORAGE (ac-ft)
		Precip.	Site 1	Site 2	G.W.	Total	Site 3	Evap.	G.W.	Total	
2011	May	0.35	0.0	9.8	0.0	10.1	8.2	0.96	0.9	10.1	0.1
	June	0.48	0.0	15.7	0.0	16.2	13.2	0.92	1.8	15.9	0.3
	July	0.62	0.0	17.5	0.0	18.1	16.7	0.65	0.7	18.1	0.1
	August	1.18	0.0	19.0	0.3	20.5	19.4	1.14	0.0	20.5	-0.1
	September	1.06	0.0	17.1	0.3	18.5	17.5	0.97	0.0	18.5	0.0
	October	1.19	56.9	93.9	0.4	152.4	146.2	0.92	0.0	147.1	5.3
	November	0.27	34.3	24.7	1.5	60.8	65.6	0.41	0.0	66.0	-5.2
	December	0.85	80.3	71.9	1.4	154.5	153.8	0.45	0.0	154.3	0.2
2012	January	0.08	9.7	7.6	1.5	18.9	18.6	0.58	0.0	19.2	-0.3
	February	0.27	8.7	7.4	0.6	17.0	16.7	0.59	0.0	17.3	-0.3
	March	0.69	4.1	12.8	0.2	17.8	16.9	0.74	0.0	17.6	0.1
	April	0.47	0.0	16.4	0.0	16.9	15.2	1.18	0.7	17.1	-0.2
TOTAL:		**7.50**	**194.0**	**313.8**	**6.2**	**521.5**	**508.0**	**9.51**	**4.1**	**521.6**	**-0.1**

A graphical comparison of hydrologic inputs and losses for Tropical Farms Pond 1 is given on Figure 4-10. Approximately 60% of the hydrologic inputs to the pond originated as inflow through the 48-inch RCP monitored at Site 2. Approximately 37% of the hydrologic inputs originated from the western inflow channel (Site 1), with 2% contributed by direct precipitation onto the water surface and 1% by groundwater inflow. Approximately 97% of the losses from Pond 1 occurred as a result of discharges through the pond outfall at Site 3, with 2% of the losses as a result of evaporation from the water surface and 1% from losses to groundwater.

4.1.7.2 Ponds 2-5

Monthly hydrologic budgets for Tropical Farms Ponds 2-5 from May 2011-April 2012 is given on Table 4-12. Hydrologic inputs into Ponds 2-5 are assumed to occur as a result of direct precipitation on the water surface, inflow into the system resulting from discharges from Pond 1, direct overland flow, and groundwater inflow. Hydrologic losses from Ponds 2-5 are assumed to occur as a result of discharges through the outfall structure (Pond 6), evaporation from the pond surface, and groundwater losses.

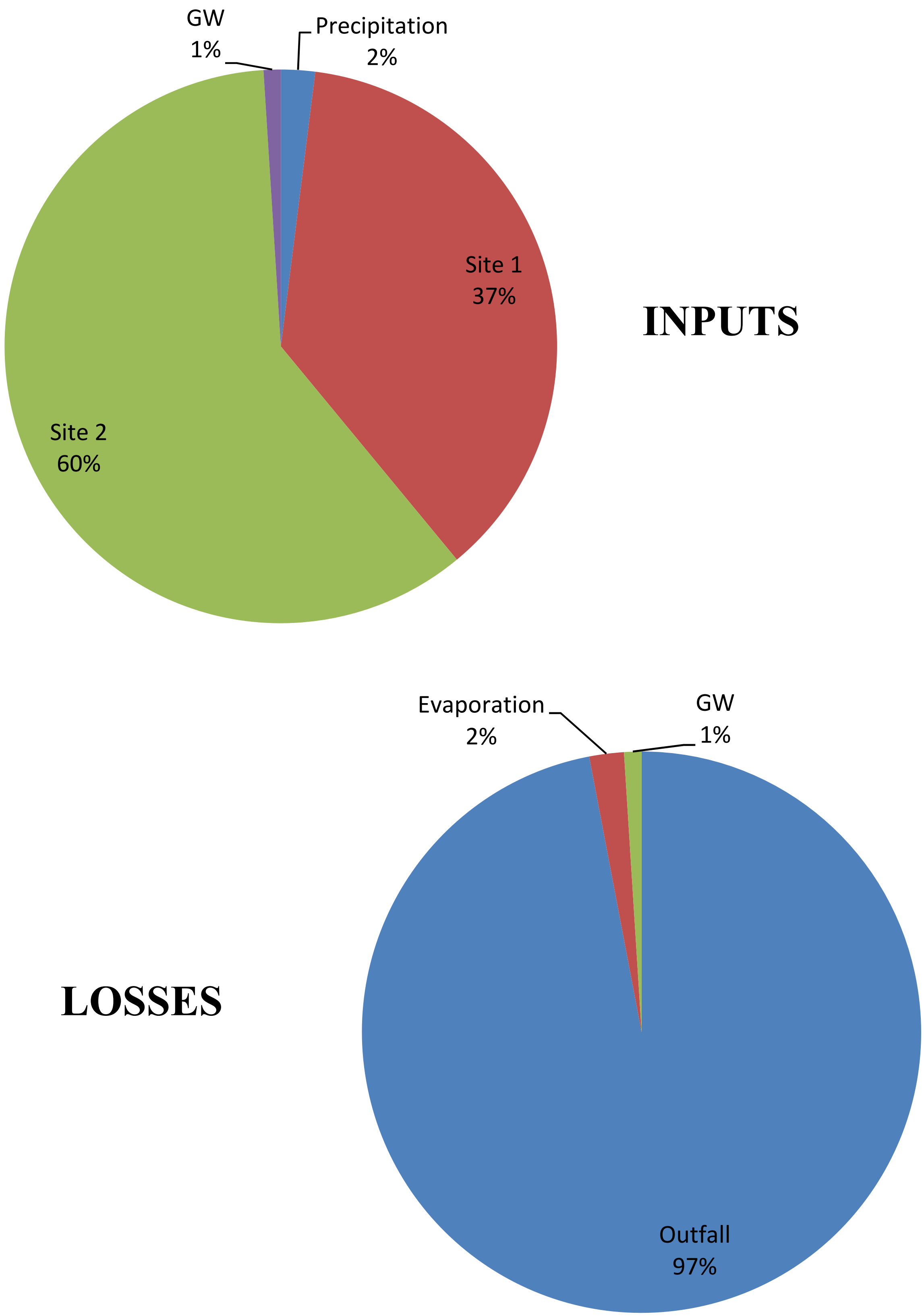


Figure 4-10. Comparison of Hydrologic Inputs and Losses for Tropical Farms Pond 1.

TABLE 4-12

MONTHLY HYDROLOGIC BUDGETS FOR TROPICAL FARMS PONDS 2-5 FROM MAY 2011-APRIL 2012

YEAR	MONTH	HYDROLOGIC INPUTS (ac-ft)					HYDROLOGIC LOSSES (ac-ft)				Δ STORAGE (ac-ft)
		Precip.	Site 3	Direct	G.W.	Total	Site 6	Evap.	G.W.	Total	
2011	May	2.34	8.2	0.01	0.0	10.6	0.0	6.5	10.3	16.8	-6.2
	June	3.22	13.2	0.0	0.0	16.4	0.0	6.2	15.2	21.4	-5.0
	July	4.16	16.7	0.0	0.0	20.9	3.8	4.4	2.9	11.1	9.8
	August	7.96	19.4	0.0	4.5	31.9	25.9	7.7	0.0	33.6	-1.7
	September	7.12	17.5	0.0	5.7	30.3	19.8	6.6	0.0	26.4	4.0
	October	7.99	146.2	0.18	2.7	157.1	118.8	6.2	0.0	125.0	32.1
	November	1.83	65.6	0.0	10.0	77.4	94.0	2.8	0.0	96.8	-19.3
	December	5.74	153.8	2.21	4.7	166.5	162.5	3.1	0.0	165.6	0.9
2012	January	0.52	18.6	0.0	4.9	24.0	18.9	3.9	0.0	22.8	1.2
	February	1.80	16.7	0.0	0.0	18.5	13.5	4.0	3.8	21.3	-2.8
	March	4.62	16.9	0.0	0.0	21.5	8.6	5.0	12.2	25.8	-4.3
	April	3.19	15.2	0.00	0.0	18.4	0.6	7.9	13.8	22.3	-3.9
TOTAL:		**50.5**	**508.0**	**2.40**	**32.5**	**593.4**	**466.4**	**64.0**	**58.2**	**588.6**	**4.7**

A graphical comparison of hydrologic inputs and losses for Ponds 2-5 during the field monitoring program is given on Figure 4-11. During the field monitoring program, approximately 86% of the hydrologic inputs to Ponds 2-5 originated as outflow from Pond 1. Approximately 9% of the hydrologic inputs occurred as a result of direct precipitation on the water surface, with 5% contributed by groundwater inflow, and less than 1% contributed by direct overland flow. Approximately 79% of the hydrologic losses occurred as a result of discharges through the outfall structure, with 11% lost to evaporation and 10% lost as a result of groundwater seepage through the pond bottom.

4.1.8 Hydraulic Residence Time

Estimates of the average residence time within various portions of the Tropical Farms treatment system were calculated for the western pond system (Pond 1) and the eastern pond system (Ponds 2-5). Detention time was calculated by dividing the assumed pond volume by the sum of the total inputs over the 365-day monitoring program. A summary of calculated mean hydraulic residence times for the Tropical Farms treatment system is given in Table 4-13. Based upon this analysis, the mean residence time within Pond 1 was approximately 3.6 days, with a mean residence time for Ponds 2-5 of approximately 38.9 days.

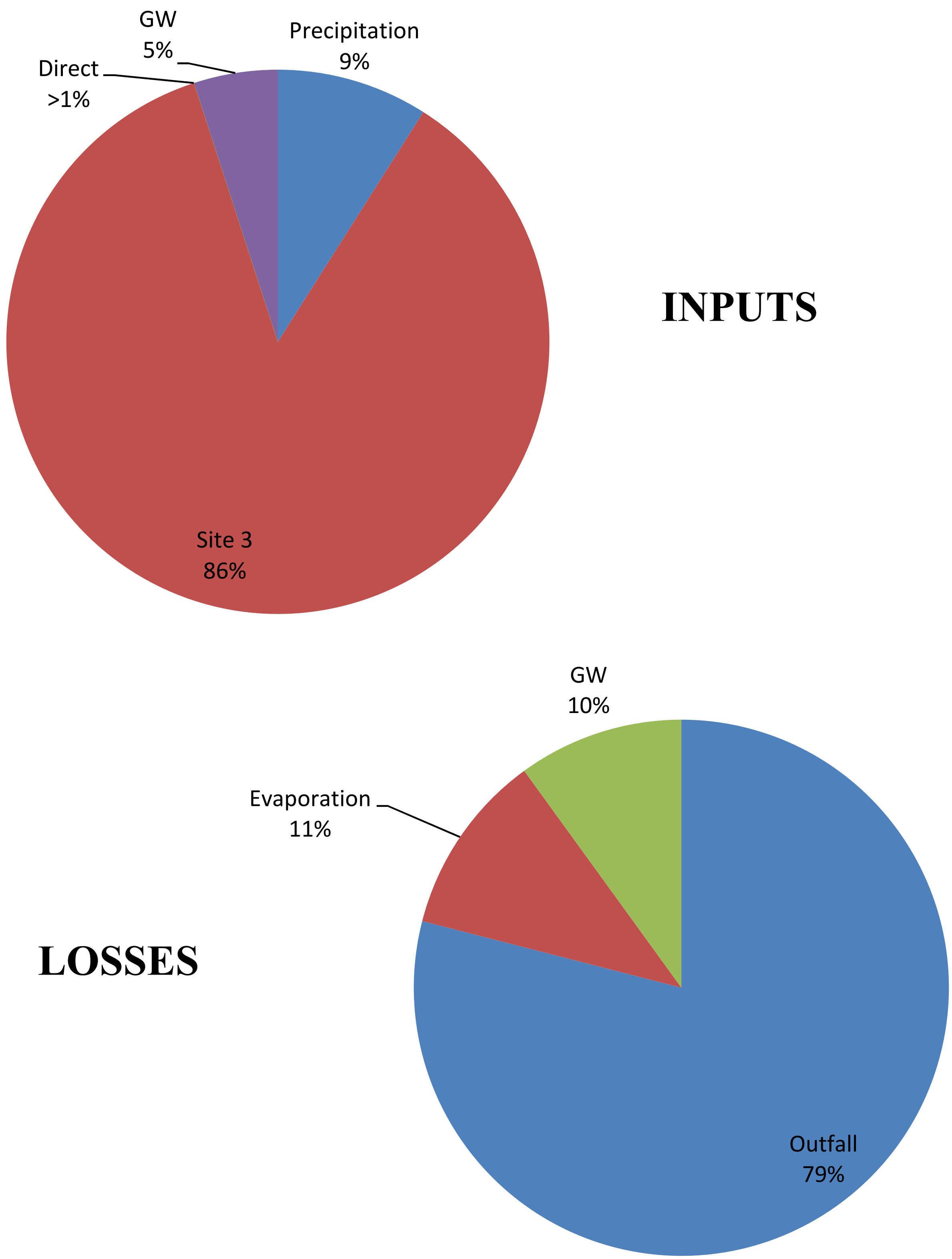


Figure 4-11. Comparison of Hydrologic Inputs and Losses for Tropical Farms Ponds 2-5.

TABLE 4-13

CALCULATED MEAN HYDRAULIC RESIDENCE TIMES FOR THE TROPICAL FARMS TREATMENT SYSTEM

PARAMETER	UNITS	POND 1	PONDS 2-5
Volume	ac-ft	5.13	63.25
Inflow	ac-ft	521.5	593.4
Mean Residence Time	days	3.6	38.9

4.2 Characteristics of Monitored Inputs and Outputs

Field monitoring was conducted at the Tropical Farms site over a 365-day period from May 1, 2011-April 30, 2012. Monitoring activities included collection and analysis of flow-weighted composite samples at the inflows and outflows to both the eastern and western treatment ponds. In addition, field measurements of temperature, pH, conductivity, dissolved oxygen, oxygen saturation percentage, oxidation-reduction potential (ORP) were also collected on a weekly basis in the treatment pond areas designated as Ponds 1, 2, 3, 4a, 4b, and 5. A discussion of the field measurements and laboratory analyses conducted at the Tropical Farms site from May 2011-April 2012 is given in the following sections.

4.2.1 Physical-Chemical Field Measurements

As discussed in Section 3.2, field measurements of pH, temperature, specific conductivity, dissolved oxygen, and ORP were conducted in Ponds 1, 2, 3, 4a, 4b, and 5 during each weekly monitoring visit at approximately mid-depth in the water column using a Hydrolab DataSonde 4 water quality monitor. A complete listing of physical-chemical measurements collected in each of the designated ponds during the field monitoring program is given in Appendix B.

A tabular summary of geometric means for field measurements collected in the Tropical Farms pond system from May 2011-April 2012 is given on Table 4-14. In general, measured pH values in the pond system were slightly alkaline in value and typical of pH vales commonly observed in stormwater treatment systems. The lowest mean pH value was observed in the initial pond (Pond 1), with increases in pH observed in downstream waterbodies. Measured conductivity values in the pond system were also typical of values commonly observed in surface waters in Martin County. A general trend of decreasing conductivity was observed with increasing distance through the pond system, presumably resulting from removal of dissolved ions through biological uptake within the pond system. The initial pond (Pond 1) was also characterized by the lowest mean concentration for dissolved oxygen, with increases in dissolved oxygen observed during migration through the treatment system.

TABLE 4-14

SUMMARY OF MEAN FIELD MEASUREMENTS COLLECTED IN THE TROPICAL FARMS SYSTEM FROM MAY 2011 - APRIL 2012

PARAMETER	UNITS	MEAN VALUE BY SITE					
		Pond 1	**Pond 2**	**Pond 3**	**Pond 4a**	**Pond 4b**	**Pond 5**
Temperature	^oC	23.66	25.02	24.57	23.89	24.42	22.78
pH	s.u.	7.31	7.78	7.80	7.71	7.81	7.68
Conductivity	µmho/cm	606	503	460	446	451	454
Dissolved Oxygen	mg/l	4.7	5.6	5.6	5.3	6.2	5.1
DO Saturation	%	56	68	68	63	74	60
ORP	mV	169	159	138	167	160	142

A graphical comparison of trends in temperature and pH in the treatment ponds at the Tropical Farms site from May 2011-April 2012 is given on Figure 4-12. In general, water temperature measurements appear to trend very closely between the six monitoring sites, with slightly lower water temperature measurements at the final pond monitoring site (Pond 5). Pond water temperatures were generally in excess of 20^oC, with the exception of a brief period from December-January. Field measured pH values in the treatment ponds also appear to trend in a relatively similar manner, although a somewhat lower pH was measured in the initial pond (Pond 1) during a majority of the monitoring events. The most elevated pH measurements appear to occur in central portions of the treatment system (Ponds 2, 3, 4a, and 4b), with slightly lower pH measurements in the initial (Pond 1) and final (Pond 5) areas.

A graphical comparison of trends in field measurements of conductivity and dissolved oxygen in the Tropical Farms treatment system is given on Figure 4-13. During the period from May-December, measured conductivity values throughout the pond systems were relatively similar, although more elevated conductivity measurements were observed in Pond 1 during some monitoring events. However, beginning in approximately mid-December, a more distinct separation of conductivity measurements began to occur, with the most elevated conductivity values measured in Pond 1, followed by Pond 2 and Pond 3. Measured conductivity values in the remaining ponds were relatively similar. The pattern indicated on Figure 4-13 suggests that inflows into Pond 1 resulted in increases in specific conductivity which were slowly mitigated during migration through Ponds 2 and 3 as a result of biological uptake. By the time the water reaches the end of Pond 3, conductivity measurements are relatively similar throughout the remaining treatment ponds.

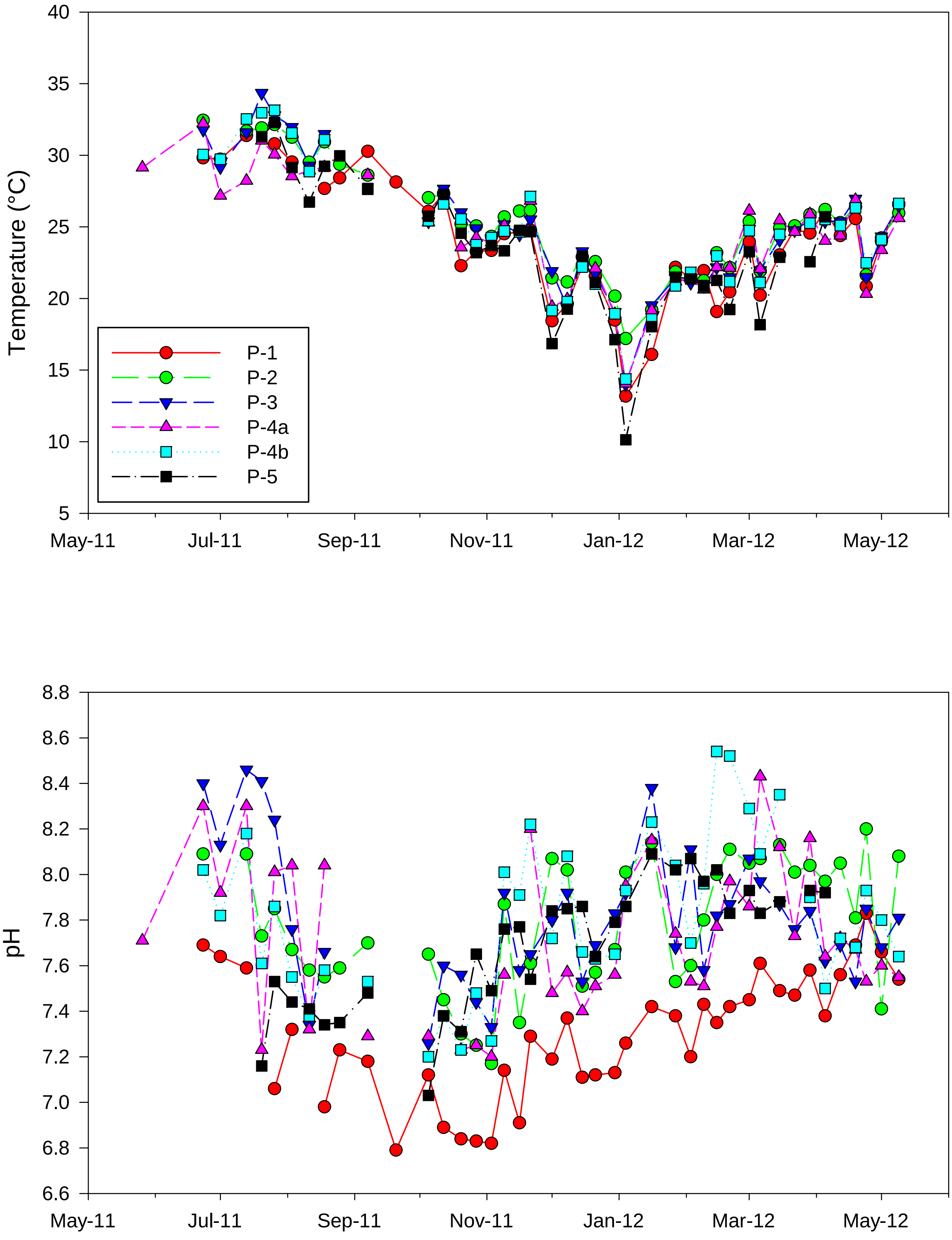
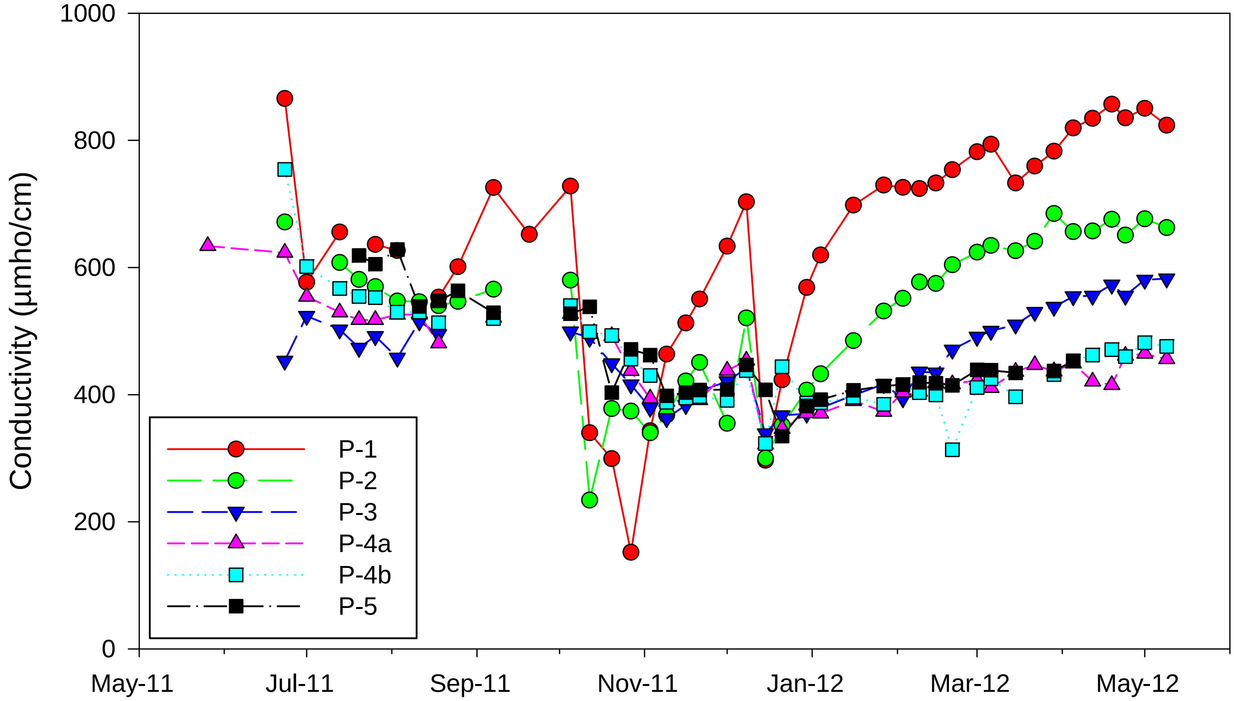


Figure 4-12. Trends in Temperature and pH in Treatment Ponds at the Tropical Farms Site from May 2011-April 2012.



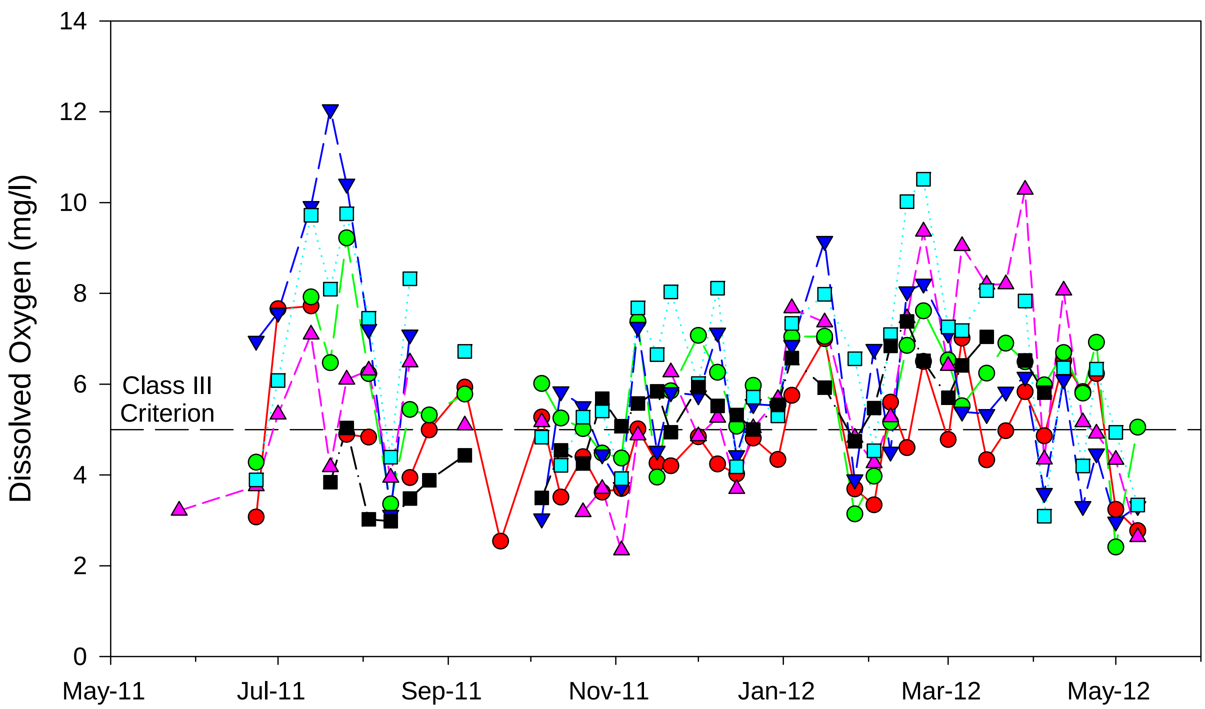


Figure 4-13. Trends in Conductivity and Dissolved Oxygen in Treatment Ponds at the Tropical Farms Site from May 2011-April 2012.

Measured dissolved oxygen concentrations in the Tropical Farms pond system were highly variable during the field monitoring program, with measured values ranging from approximately 2-12 mg/l. Based on the dissolved oxygen plots summarized on Figure 4-13, it appears that approximately half of the measured dissolved oxygen concentrations were less than the Class III criterion of 5 mg/l for freshwater systems, with the other half above the minimum Class III criterion. A slight trend of lower dissolved oxygen concentrations appears to occur during the fall period (approximately September-January), with more elevated concentrations during other parts of the year. A slight trend of slightly lower dissolved oxygen concentrations is also apparent for Pond 1 which is the initial pond in the treatment system.

A graphical summary of measurements of dissolved oxygen saturation and ORP in ponds at the Tropical Farms site from May 2011-April 2012 is given on Figure 4-14. In general, dissolved oxygen saturation was substantially less than 100% throughout a majority of the field monitoring program, with the exception of the period of July-August when significant algal blooms were observed within treatment Ponds 2-5. Measured ORP values were generally in excess of 200 mV (indicating oxidized conditions) throughout the entire field monitoring program. Reduced conditions (indicated by ORP values <200 mV) were observed on only one occasion in Pond 1 which is the initial pond in the treatment system.

A statistical comparison of field measured values of pH, conductivity, dissolved oxygen, and ORP in ponds at the Tropical Farms site is given in Figure 4-15 in the form of Tukey box plots, often also called "box and whisker plots". The bottom of the box portion of each plot represents the lower quartile, with 25% of the data points falling below this value. The upper line of the box represents the 75% upper quartile, with 25% of the data falling above this value. The **blue horizontal line** within the box represents the median value, with 50% of the data falling both above and below this value, while the **red horizontal line** represents the mean value. The vertical lines, also known as "whiskers", represent the 5 and 95 percentiles for the data sets. Individual values which fall outside of the 5-95 percentile range are indicated as **red dots**.

In general, variability in measured pH values appear to be relatively similar between each of the pond monitoring sites, with a somewhat lower pH value measured in Pond 1 and relatively similar pH values measured in Ponds 2, 3, 4a, 4b, and 5. Measured conductivity values in Pond 1 and Pond 2 (which receives the discharge from Pond 1) exhibited a relatively high degree of variability during the field monitoring program. However, a much lower degree of variability was observed in the downstream ponds which exhibited both lower concentrations and a lower degree of variability than observed in the upstream ponds. This reduction in conductivity is likely related to biological uptake within the pond system.

A relatively high degree of variability was observed in measured dissolved oxygen concentrations within the pond system at each of the six monitoring sites. A slightly lower dissolved oxygen concentration appears to have occurred in Pond 1 which receives the primary inflows for the treatment system. Measured ORP values at the six monitoring sites appear to be relatively similar in value as well as similar in degree of variability. No significant differences in ORP concentrations are apparent between the pond sites.

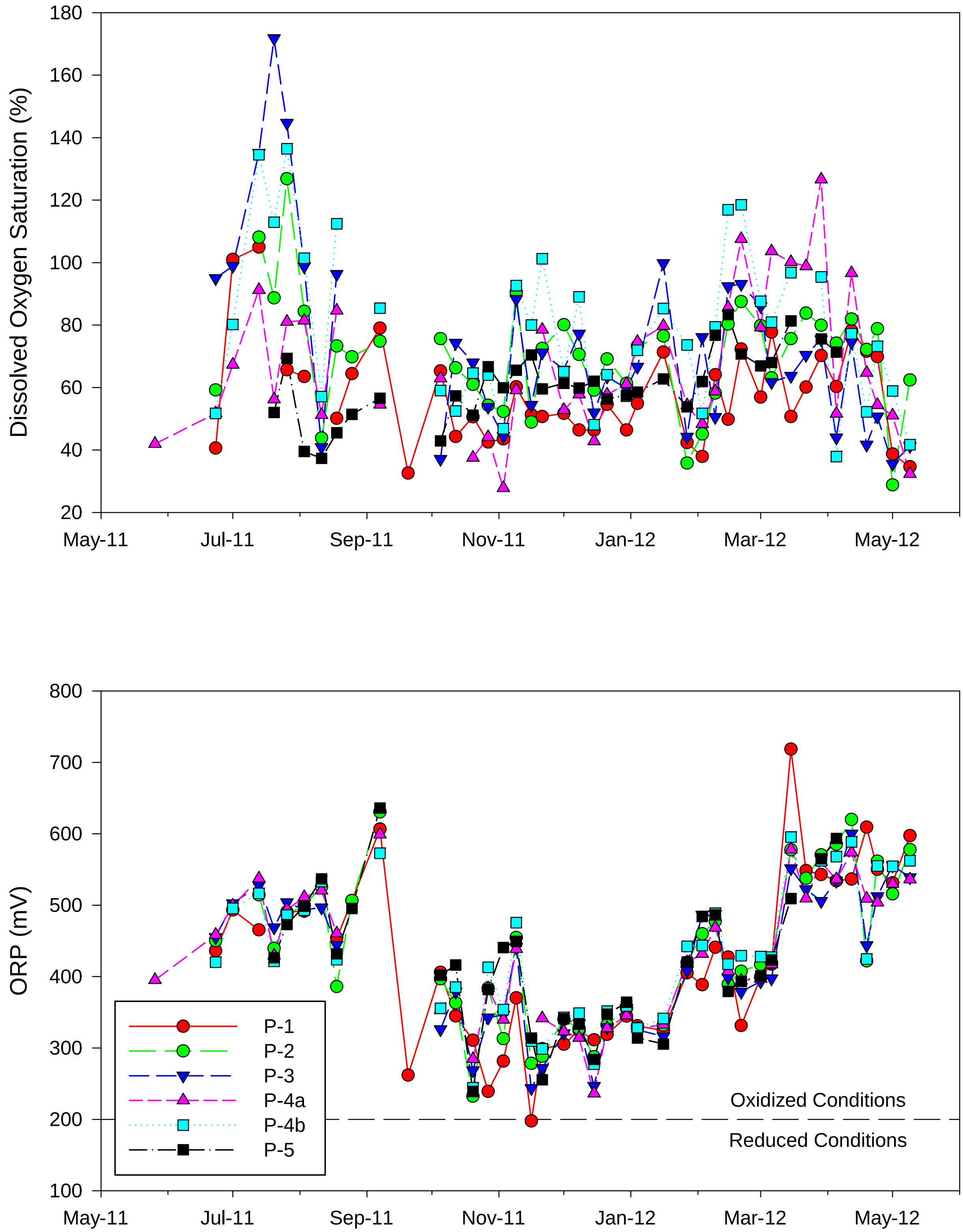


Figure 4-14. Trends in Dissolved Oxygen Saturation and ORP in Treatment Ponds at the Tropical Farms Site from May 2011-April 2012.

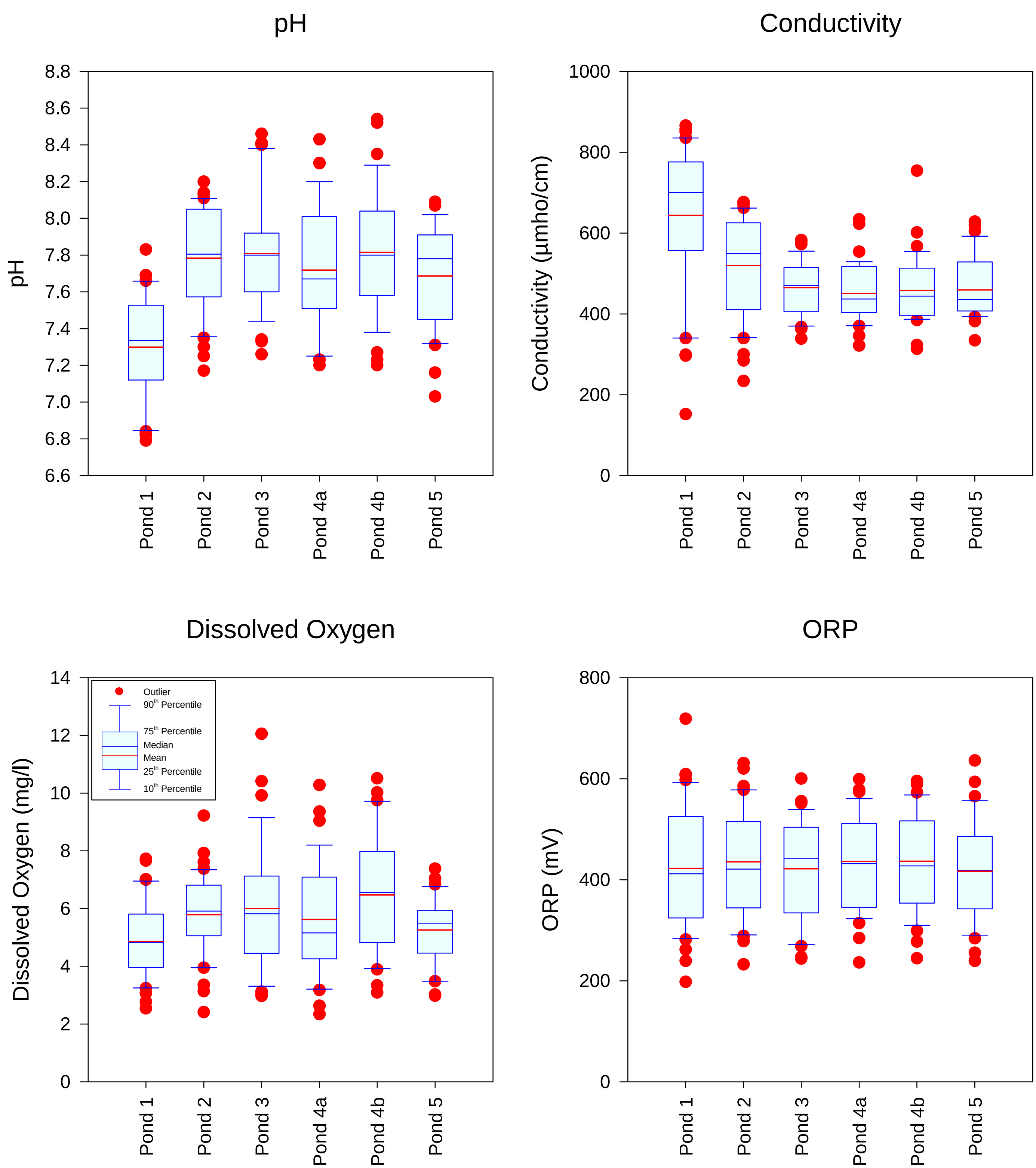


Figure 4-15. Statistical Comparison of Field Measured Values of pH, Conductivity, Dissolved Oxygen, and ORP in Ponds at the Tropical Farms Site from May 2011-April 2012.

4.2.2 Chemical Characteristics of Monitored Inputs and Outputs

As discussed in Section 3, flow-weighted composite inflow and outflow samples were collected at primary inflows and outflows to the Tropical Farms treatment system to characterize the pollutant removal efficiency of the system. These monitoring sites are designated as Site 1 (western inflow channel), Site 2 (48-inch RCP inflow), Site 3 (Pond 1 outflow), and Site 6 (Ponds 2-5 outflow). In addition, timed composite samples were collected at the inflow and outflow for the vegetated portion of Pond 4, referred to as Pond 4a, to quantify load reductions resulting from the planted vegetation. These monitoring sites are designated as Sites 4 and 5 (see Figure 3-11). In addition, composite bulk precipitation samples were collected on a continuous basis throughout the field monitoring program. Monthly monitoring was also conducted in each of the 8 monitoring wells installed around the perimeter of Pond 1 (see Figure 3-2) and Ponds 2-5 (see Figure 3-10). A summary of sample collection activities at each of the monitoring sites during the field monitoring program from May 2011-April 2012 is given on Table 4-15. Overall, a total of 338 field samples were collected for laboratory analyses during the monitoring program. A discussion of the chemical characteristics of each of the general sample types collected is given in the following sections.

TABLE 4-15

SUMMARY OF SAMPLE COLLECTION ACTIVITIES AT THE TROPICAL FARMS SITE FROM MAY 2011 - APRIL 2012

SITE	DESCRIPTION	NUMBER OF SAMPLES
1	Western inflow channel	20
2	48-inch RCP inflow	19
3	Pond 1 outflow	45
4	Pond 4	49
5	Pond 5	49
6	Outfall from Ponds 2-5	36
Bulk Precipitation	Bulk Precipitation	24
Monitoring Wells	Monitoring Wells 1-8	96
	TOTAL:	**338**

4.2.2.1 Inflow/Outflow Samples

Continuous flow-weighted composite monitoring was conducted at each of the significant inflows and outflows to the Tropical Farms system. Monitoring was conducted at the western inflow channel to Pond 1 (Site 1), the 48-inch RCP inflow to Pond 1 (Site 2), the outflow from Pond 1 (Site 3), and the outfall from Ponds 2-5 (Site 6). A complete listing of the chemical characteristics of samples collected at each of the inflow/outflow monitoring sites during the field monitoring program is given in Appendix C. A discussion of the chemical characteristics of the inflow/outflow samples is given in the following sections.

4.2.2.1.1 Western Inflow Channel to Pond 1 (Site 1)

A complete listing of laboratory analyses conducted on samples collected from the western inflow channel (Site 1) is given in Appendix C.1. A tabular summary of the chemical characteristics of flow-weighted composite samples collected from the western inflow channel during the field monitoring program is given on Table 4-16. Information is provided for the minimum and maximum values measured for each parameter during the field monitoring program, along with the geometric mean value. A log-normal or geometric mean is calculated for each parameter rather than an arithmetic mean since the data exhibit a log-normal distribution, and a log-normal or geometric mean provides a better measure of central tendency for the data.

TABLE 4-16

CHARACTERISTICS OF WESTERN INFLOW CHANNEL SAMPLES (SITE 1) COLLECTED FROM MAY 2011-APRIL 2012

PARAMETER	UNITS	MINIMUM VALUE	MAXIMUM VALUE	GEOMETRIC MEAN
pH	s.u.	6.91	8.05	7.45
Alkalinity	mg/l	82.4	247	161
Conductivity	µmho/cm	288	693	505
Ammonia	µg/l	3	215	25
NO_x	µg/l	3	474	54
Diss. Organic N	µg/l	111	849	362
Particulate N	µg/l	35	935	145
Total N	µg/l	199	1,688	708
SRP	µg/l	27	130	68
Diss. Organic P	µg/l	1	30	9
Particulate P	µg/l	32	167	60
Total P	µg/l	76	304	148
Turbidity	NTU	1.5	8.1	3.4
TSS	mg/l	1.0	13.6	3.2
BOD	mg/l	0.9	3.5	1.4
Color	Pt-Co	59	169	102

In general, inflows from the western channel into Site 1 were approximately neutral to slightly alkaline in pH, with an overall geometric mean pH value of 7.45. Inflows through the western channel were generally well buffered, with a mean alkalinity of 161 mg/l. Field measured conductivity values at this site ranged from low to moderately elevated, with an overall mean of 505 µmho/cm.

Measured concentrations of nitrogen species were highly variable at the western inflow channel, with several orders of magnitude difference between minimum and maximum values for most nitrogen species. However, in spite of the high degree of variability, measured concentrations for nitrogen species discharging from the western inflow channel into Pond 1 were generally low in value, particularly for inorganic nitrogen species of ammonia and NO_x, with geometric mean concentrations of 25 μg/l and 54 μg/l, respectively. The dominant nitrogen species observed in the western channel inflow was dissolved organic nitrogen which comprised approximately 50% of the total nitrogen measured. Approximately 25% of the total nitrogen in the western inflow channel was contributed by particulate nitrogen. The overall total nitrogen concentration of 708 μg/l is approximately one-half to one-third of the total nitrogen concentrations commonly observed in residential runoff and reflects the significant pre-treatment provided by the upstream wet detention ponds which provide the majority of inflow at this site.

Similar to the trends observed for nitrogen species, measured concentrations for phosphorus species were also highly variable and moderate in value on an average basis. The mean measured concentrations of 68 μg/l for SRP and 60 μg/l for particulate phosphorus are approximately half of the concentrations commonly observed in urban runoff and reflect pre-treatment which occurs in the upstream wet detention ponds. The mean total phosphorus concentration of 148 μg/l is approximately half of the total phosphorus concentration commonly observed in residential runoff.

Somewhat variable concentrations were also observed for turbidity, TSS, and BOD in the western inflow channel, although the mean concentrations for each parameter are extremely low and value, and again reflect significant pre-treatment which occurs in the upstream series of wet detention ponds. Inflow through the western channel was highly colored, with a mean color concentration of 102 Pt-Co units.

4.2.2.1.2 48-Inch RCP Inflow to Pond 1 (Site 2)

A complete listing of laboratory analyses conducted on samples collected from the 48-inch RCP inflow (Site 2) is given in Appendix C.2. A summary of the chemical characteristics of inflows to Pond 1 from the 48-inch RCP is given in Table 4-17. As discussed in previous sections, inflow from the 48-inch RCP reflects the most significant hydrologic input to Pond 1 on an annual basis. Inflows from the 48-inch RCP were approximately neutral in pH and extremely well buffered, with a mean pH of 7.22 and mean alkalinity of 227 mg/l. Measured conductivity values in the 48-inch RCP were slightly greater than values measured in the western inflow channel, with an overall mean conductivity of 640 μmho/cm.

Measured concentrations of nitrogen species in inflows from the 48-inch RCP were highly variable throughout the field monitoring program, with 1-2 orders of magnitude difference between minimum and maximum values measured for most nitrogen species. Overall, measured concentrations of nitrogen species in the 48-inch RCP inflow were typical of nitrogen concentrations commonly observed in residential runoff. Nitrogen discharging from the 48-inch RCP was comprised primarily of NO_x and dissolved organic nitrogen, followed by particulate nitrogen and ammonia. The overall mean total nitrogen concentration of 1,480 μg/l is similar to values commonly measured in residential runoff.

TABLE 4-17

CHARACTERISTICS OF INFLOWS FROM THE 48-INCH RCP (SITE 2) INTO POND 1 COLLECTED FROM MAY 2011-APRIL 2012

PARAMETER	UNITS	MINIMUM VALUE	MAXIMUM VALUE	GEOMETRIC MEAN
pH	s.u.	6.84	7.77	7.22
Alkalinity	mg/l	118	309	227
Conductivity	µmho/cm	429	825	640
Ammonia	µg/l	10	1,611	73
NO_x	µg/l	149	706	427
Diss. Organic N	µg/l	52	878	422
Particulate N	µg/l	35	1,462	248
Total N	µg/l	798	2,861	1,480
SRP	µg/l	7	70	15
Diss. Organic P	µg/l	2	43	6
Particulate P	µg/l	10	1,876	245
Total P	µg/l	23	1,896	282
Turbidity	NTU	13.5	295	61.5
TSS	mg/l	3.2	789	64.6
BOD	mg/l	0.5	7.7	1.7
Color	Pt-Co	27	192	65

Measured concentrations of phosphorus species in inflows from the 48-inch RCP were also highly variable, with 1-2 orders of magnitude difference between minimum and maximum values measured for most phosphorus species. Measured concentrations of SRP and dissolved organic phosphorus were generally low in value, with the majority of the total phosphorus comprised of particulate phosphorus. The overall mean total phosphorus concentration of 282 µg/l is similar to phosphorus concentrations commonly observed in residential runoff.

Measured concentrations of turbidity and TSS were both highly variable and elevated in value in samples collected from the 48-inch RCP. The overall mean turbidity of 61.5 NTU and mean TSS of 64.6 mg/l reflect elevated concentrations. However, BOD concentrations were generally low in value, with a mean of only 1.7 mg/l. Inflow from the 48-inch RCP was moderately colored, with a mean color concentration of 65 Pt-Co units.

4.2.2.1.3 Pond 1 Discharge (Site 3)

A complete listing of laboratory analyses conducted on samples collected at the Pond 1 discharge (Site 3) is given in Appendix C.3. A tabular summary of the measured chemical characteristics of discharges from Pond 1 during the field monitoring program is given in Table 4-18. Samples collected at this site reflect the removal efficiencies for inflows at Sites 1 and 2 achieved within the Pond 1 system. In general, measured pH values in the discharge from Pond 1 range from approximately neutral to slightly alkaline, with an overall mean value of 7.63. Water discharging from Pond 1 was generally well buffered, with an overall mean alkalinity of 204 mg/l. Measured conductivity values in the discharge from Pond 1 were highly variable, with an overall mean conductivity of 575 μmho/cm.

TABLE 4-18

CHARACTERISTICS OF DISCHARGES FROM POND 1 (SITE 3) COLLECTED FROM MAY 2011-APRIL 2012

PARAMETER	UNITS	MINIMUM VALUE	MAXIMUM VALUE	GEOMETRIC MEAN
pH	s.u.	6.85	8.26	7.63
Alkalinity	mg/l	81.2	303	204
Conductivity	μmho/cm	254	850	575
Ammonia	μg/l	2	924	43
NO_x	μg/l	1	636	110
Diss. Organic N	μg/l	24	1,043	350
Particulate N	μg/l	30	1,145	209
Total N	μg/l	95	2,563	887
SRP	μg/l	2	123	15
Diss. Organic P	μg/l	1	124	8
Particulate P	μg/l	11	366	62
Total P	μg/l	16	372	98
Turbidity	NTU	4.1	90.4	13.6
TSS	mg/l	2.8	162	15.1
BOD	mg/l	0.7	4.1	1.4
Color	Pt-Co	45	225	75

Discharges from Pond 1 contained highly variable concentrations of nitrogen species, with 1-2 orders of magnitude difference between minimum and maximum values measured for most nitrogen species at this site. Relatively low mean concentrations were observed for both ammonia and NO_x in discharges from Pond 1, with a mean outflow ammonia concentration of 43 μg/l and a mean NO_x concentration of 110 μg/l. The dominant nitrogen species at this site was dissolved organic nitrogen which comprised approximately 40% of the total nitrogen measured. An additional 30% of the total nitrogen measured was contributed by particulate nitrogen. The overall mean total nitrogen concentration of 887 μg/l is typical of nitrogen concentrations commonly observed in discharges from wet detention ponds.

A high degree of variability was observed in measured phosphorus concentrations discharging from Pond 1, with 1-2 orders of magnitude difference between minimum and maximum measured values. Measured concentrations of SRP and dissolved organic phosphorus in discharges from Pond 1 were typically low in value, with mean concentrations of 15 μg/l and 8 μg/l, respectively. The dominant phosphorus species discharging from Pond 1 was particulate phosphorus which comprised approximately 70% of the overall total phosphorus measured.

Measured concentrations for turbidity and TSS were moderate in value, with a low concentration for BOD. Measured color concentrations discharging from Pond 1 were highly variable, with a somewhat elevated mean outflow color concentration of 75 Pt-Co units.

4.2.2.1.4 Ponds 2-5 Discharge (Site 6)

A complete listing of laboratory analyses conducted on samples collected from Ponds 2-5 discharge (Site 6) is given in Appendix C.4. A tabular summary of the chemical characteristics of discharges from Ponds 2-5 (Site 6) is given in Table 4-19. This site reflects the final discharge from the Tropical Farms treatment system. In general, discharges from the system were neutral to slightly alkaline in pH, with an overall geometric mean pH value of 7.64. System discharges were also well buffered, with an overall mean alkalinity of 148 mg/l. A relatively wide range of conductivity values was measured at the site, with an overall geometric mean of 441 μmho/cm.

TABLE 4-19

CHARACTERISTICS OF DISCHARGES FROM PONDS 2-5 (SITE 6) COLLECTED FROM MAY 2011-APRIL 2012

PARAMETER	UNITS	MINIMUM VALUE	MAXIMUM VALUE	GEOMETRIC MEAN
pH	s.u.	7.27	7.91	7.64
Alkalinity	mg/l	109	196	148
Conductivity	μmho/cm	217	625	441
Ammonia	μg/l	3	180	16
NO_x	μg/l	10	287	46
Diss. Organic N	μg/l	102	941	424
Particulate N	μg/l	11	402	78
Total N	μg/l	159	1,338	617
SRP	μg/l	1	41	7
Diss. Organic P	μg/l	2	29	7
Particulate P	μg/l	2	33	8
Total P	μg/l	11	58	25
Turbidity	NTU	0.2	6.0	1.1
TSS	mg/l	0.4	3.9	1.3
BOD	mg/l	0.4	1.9	0.7
Color	Pt-Co	36	133	64

Measured concentrations of nitrogen species exhibited a relatively high degree of variability in discharges from the treatment system, although the degree of variability appears to be substantially less than observed at the upstream sites. Discharges from the treatment system were characterized by extremely low levels of ammonia (16 μg/l) and NO_x (46 μg/l). The dominant nitrogen species in discharges from the system was dissolved organic nitrogen which comprised approximately 70% of the nitrogen measured in the discharge. Approximately 15% of the nitrogen measured in the discharge was contributed by particulate nitrogen. Overall, the mean total nitrogen concentration of 617 μg/l in the discharge reflects a relatively low value and is similar to discharge concentrations observed in other wet detention systems.

Measured concentrations of phosphorus species in the discharge from the treatment system also exhibited a moderate degree of variability which is substantially lower than the degree of variability observed at the inflow monitoring sites. The discharge contained extremely low levels of SRP, dissolved organic phosphorus, and particulate phosphorus. The overall mean total phosphorus concentration of 25 μg/l is equal to or less than discharge concentrations for total phosphorus commonly observed in wet detention ponds.

Low levels of turbidity, TSS, and BOD were observed in discharges from the treatment system throughout the majority of the field monitoring program. Measured concentrations for these parameters exhibited a relatively low degree of variability, particularly when compared with the monitored inputs and upstream pond sites. Discharges from the treatment system were moderately colored, with a mean color concentration of 64 Pt-Co units.

4.2.2.1.5 Bulk Precipitation

A complete listing of laboratory analyses conducted on bulk precipitation samples collected from the Tropical Farms site is given in Appendix C.5. A tabular summary of the chemical characteristics of the bulk precipitation samples collected at the Tropical Farms site during the field monitoring program is given on Table 4-20. Bulk precipitation is included as a mass input to each of the ponds in the treatment system during calculation of mass inputs and outputs. Collected bulk precipitation samples at the Tropical Farms site ranged from acidic to approximately neutral in pH, with an overall geometric mean pH value of 6.10. Bulk precipitation at the site was also poorly buffered, with an overall mean alkalinity of only 6.0 mg/l. The bulk precipitation samples were characterized by low conductivity values, with an overall mean value of 43 μmho/cm.

A relatively high degree of variability was observed in measured concentrations of nitrogen species in bulk precipitation during the field monitoring program, with 1-2 orders of magnitude difference between minimum and maximum values measured for most nitrogen species. Overall, bulk precipitation was characterized by low to moderate levels of ammonia and NO_x, with a mean ammonia concentration of 105 μg/l and a mean NO_x concentration of 89 μg/l. The dominant nitrogen species in bulk precipitation was dissolved organic nitrogen which comprised approximately 30% of the total nitrogen measured at the site. A relatively small contribution to total nitrogen occurred as a result of particulate nitrogen which contributed approximately 15% of the overall nitrogen loading.

TABLE 4-20

CHARACTERISTICS OF BULK PRECIPITATION SAMPLES COLLECTED AT THE TROPICAL FARMS SITE FROM MAY 2011-APRIL 2012

PARAMETER	UNITS	MINIMUM VALUE	MAXIMUM VALUE	GEOMETRIC MEAN
pH	s.u.	4.73	7.45	6.10
Alkalinity	mg/l	0.6	57.0	6.0
Conductivity	µmho/cm	18	166	43
Ammonia	µg/l	15	609	105
NO_x	µg/l	8	307	89
Diss. Organic N	µg/l	39	641	165
Particulate N	µg/l	3	791	66
Total N	µg/l	148	1,667	522
SRP	µg/l	1	83	9
Diss. Organic P	µg/l	1	89	8
Particulate P	µg/l	1	49	6
Total P	µg/l	4	144	33
Turbidity	NTU	0.4	3.3	1.0
TSS	mg/l	0.5	8.9	1.7
BOD	mg/l	0.2	2.1	0.6
Color	Pt-Co	2.0	13.0	6.3

In general, measured concentrations of phosphorus species in bulk precipitation at the Tropical Farms site exhibited a high degree of variability, with 1-2 orders of magnitude difference between minimum and maximum values. However, overall, total phosphorus concentrations in bulk precipitation were relatively low in value and contributed approximately equally between SRP, dissolved organic phosphorus, and particulate phosphorus.

Measured concentrations of turbidity, TSS, BOD, and color exhibited a moderate degree of variability in bulk precipitation, with generally low mean values for each parameter. Bulk precipitation does not appear to be a significant contributor of loadings for any of these parameters.

4.2.2.1.6 Shallow Groundwater

A complete listing of laboratory analyses conducted on shallow groundwater samples collected at the Tropical Farms site is given in Appendix C.6. As discussed in Section 4.1, shallow groundwater represents a hydrologic input to the Tropical Farms treatment system during portions of the year. Estimates of mass loadings from groundwater influx into the treatment system are based upon the chemical characteristics of shallow groundwater monitored at the site during the field monitoring program. A tabular summary of the measured mean characteristics of groundwater monitoring well samples collected at the Tropical Farms site during the field monitoring program is given on Table 4-21. Mean values are provided for each of the four monitoring wells which surrounded Pond 1, as well as the four monitoring wells which surrounded Ponds 2-5.

TABLE 4-21

MEAN CHARACTERISTICS OF GROUNDWATER MONITORING WELL SAMPLES COLLECTED AT THE TROPICAL FARMS SITE FROM MAY 2011-APRIL 2012

PARAMETER	UNITS	POND 1				PONDS 2-5			
		MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8
pH	s.u.	6.00	5.84	6.06	6.83	6.90	7.15	7.15	7.15
Alkalinity	mg/l	42.4	15.9	26.4	89.2	178	174	183	195
Conductivity	μmho/cm	233	141	325	376	1,318	586	520	518
Ammonia	μg/l	113	116	174	193	289	127	301	123
NOx	μg/l	14	9	15	17	28	6	12	24
Organic N	μg/l	347	427	750	431	1,534	857	451	449
Total N	μg/l	564	663	1,012	815	2,063	1,165	829	693
SRP	μg/l	3	8	17	55	16	6	107	3
Organic P	μg/l	9	25	26	31	15	11	36	7
Total P	μg/l	13	35	44	95	33	20	161	11
Color	Pt-Co	177	206	245	172	275	155	183	135
BOD	mg/l	2.1	2.6	2.8	1.9	1.4	1.8	3.0	1.6

In general, shallow groundwater in the vicinity of the Tropical Farms site was slightly acidic to neutral in pH, with slightly lower measured pH values in shallow groundwater entering Pond 1 compared with groundwater entering Ponds 2-5. Shallow groundwater discharging into Pond 1 was also poorly buffered, with mean alkalinities ranging from 15.9-89.2 mg/l. In contrast, groundwater in the vicinity of Ponds 2-5 was extremely well buffered, with mean alkalinities ranging from 174-195 mg/l. Shallow groundwater in the vicinity of Pond 1 was also characterized by relatively low conductivity values, with mean concentrations ranging from 141-376 μmho/cm. However, shallow groundwater in the vicinity of Ponds 2-5 exhibited substantially higher mean conductivity values, ranging from 518-1,318 μmho/cm. The observed elevated values for pH, alkalinity, and conductivity in the vicinity of Ponds 2-5 may be related to the impacts of the estuarine water adjacent to this portion of the Tropical Farms treatment system.

Shallow groundwater in the vicinity of Pond 1 was characterized by moderate levels of ammonia and low levels of NO_x. In general, dissolved organic nitrogen comprised approximately 50-60% of the overall total nitrogen measured in the vicinity of Pond 1. Mean total nitrogen concentrations ranged from low to moderate in the vicinity of Pond 1, with mean values ranging from 564-1,012 μg/l. In contrast, mean total nitrogen concentrations in the vicinity of Ponds 2-5 ranged from low to elevated in value, with mean concentrations ranging from 693-2,063 μg/l.

Measured concentrations of phosphorus species were low to moderate in value in groundwater at each of the two pond sites. The collected groundwater samples exhibited low to moderate concentrations of SRP in the vicinity of Pond 1 and low to elevated concentrations of SRP in the vicinity of Ponds 2-5. Overall, mean total phosphorus concentrations ranged from low to moderate in the vicinity of Pond 1, and low to elevated in the vicinity of Ponds 2-5.

Groundwater samples collected in the vicinity of each of the pond systems was highly colored at all sites. Measured concentrations of BOD were low in value at each of the monitoring well sites.

4.2.3 <u>Characteristics of Monitored Pond Samples</u>

As discussed in Section 3.1.2, timed composite samples were collected at the inflow and outflow to Pond 4a to attempt in quantifying removal efficiencies achieved during migration through the heavily vegetated portion of Pond 4. As indicated on Figure 3-11, these monitoring sites are referred to as Sites 4 (upstream site) and 5 (downstream site).

4.2.3.1 <u>Site 4</u>

A complete listing of laboratory analyses conducted on surface water samples collected at Site 4 is given in Appendix D.1. A tabular summary of the characteristics of pond surface water samples collected at Site 4 during the field monitoring program is given in Table 4-22. The composite surface water samples collected at this site were approximately neutral to slightly alkaline in pH, with an overall geometric mean pH of 7.58. The samples were also moderately to well buffered, with a mean alkalinity of 146 μmho/cm. Monitored conductivity values at the two sites are typical of conductivity values commonly observed in surface water systems in Martin County.

Measured concentrations of nitrogen species at Site 4 were highly variable, with 1-3 orders of magnitude difference between minimum and maximum values for nitrogen species at the site. However, overall, mean concentrations of ammonia (25 μg/l) and NO_x (5 μg/l) were extremely low in value. The dominant nitrogen species at this site was dissolved organic nitrogen which comprised approximately 70% of the overall total nitrogen measured. Approximately 15% of the total nitrogen was contributed by particulate nitrogen. The overall mean total nitrogen concentration of 695 μg/l reflects a relatively low value for a stormwater treatment system.

TABLE 4-22

CHARACTERISTICS OF POND SURFACE WATER SAMPLES COLLECTED AT SITE 4 AT THE TROPICAL FARMS SITE FROM MAY 2011-APRIL 2012

PARAMETER	UNITS	MINIMUM VALUE	MAXIMUM VALUE	GEOMETRIC MEAN
pH	s.u.	7.24	8.03	7.58
Alkalinity	mg/l	77	187	146
Conductivity	µmho/cm	319	706	448
Ammonia	µg/l	2	1,169	25
NO_x	µg/l	2	28	5
Diss. Organic N	µg/l	113	925	485
Particulate N	µg/l	1	647	86
Total N	µg/l	190	1,951	695
SRP	µg/l	1	28	3
Diss. Organic P	µg/l	1	27	6
Particulate P	µg/l	1	104	9
Total P	µg/l	3	113	21
Turbidity	NTU	0.6	9.9	1.9
TSS	mg/l	0.4	14.6	1.7
BOD	mg/l	0.8	4.8	1.7
Color	Pt-Co	32	175	57

Measured concentrations of phosphorus species at Site 4 were also highly variable, with several orders of magnitude difference between minimum and maximum values for most phosphorus species. Overall, phosphorus concentrations were generally low in value. Approximately 40% of the total phosphorus was contributed by particulate phosphorus, with relatively small contributions from SRP and dissolved organic phosphorus. The overall mean total phosphorus concentration of 21 µg/l reflects a relatively low value for a stormwater treatment system.

Measured concentrations of turbidity, TSS, and BOD exhibited a moderate degree of variability during the field monitoring program, although overall mean concentrations for these parameters were extremely low in value. Water collected at Site 4 was moderately colored, with a mean color concentration of 57 Pt-Co units.

4.2.3.2 Site 5

A complete listing of laboratory analyses conducted on surface water samples collected at Site 5 is given in Appendix D.2. A tabular summary of the characteristics of pond surface water samples collected at Site 5 during the field monitoring program is given on Table 4-23. Surface water samples collected at this site were approximately neutral to slightly alkaline in pH, with an overall mean pH value of 7.56. The surface water samples were also well buffered, with a mean alkalinity of 140 mg/l. Measured conductivity values at Site 5 were somewhat variable, with an overall mean of 462 μmho/cm.

TABLE 4-23

CHARACTERISTICS OF POND SURFACE WATER SAMPLES COLLECTED AT SITE 5 AT THE TROPICAL FARMS SITE FROM MAY 2011-APRIL 2012

PARAMETER	UNITS	MINIMUM VALUE	MAXIMUM VALUE	GEOMETRIC MEAN
pH	s.u.	7.20	8.15	7.56
Alkalinity	mg/l	105	190	140
Conductivity	μmho/cm	308	648	462
Ammonia	μg/l	3	201	26
NO_x	μg/l	2	157	7
Diss. Organic N	μg/l	213	1,050	563
Particulate N	μg/l	16	922	131
Total N	μg/l	253	1,968	790
SRP	μg/l	1	21	2
Diss. Organic P	μg/l	1	23	4
Particulate P	μg/l	1	83	7
Total P	μg/l	3	87	16
Turbidity	NTU	0.2	11.3	1.4
TSS	mg/l	0.4	26.9	1.9
BOD	mg/l	0.5	10.7	1.7
Color	Pt-Co	33	150	56

Measured concentrations of nitrogen species at Site 5 were highly variable, with 1-3 orders of magnitude difference between minimum and maximum values measured for the nitrogen species. However, in general, the surface water samples contained extremely low levels of both ammonia and NO_x, with dissolved organic nitrogen comprising the dominant nitrogen source. A somewhat smaller portion of the total nitrogen was contributed by particulate nitrogen. Overall, the mean total nitrogen concentration of 790 μg/l is relatively low for a stormwater treatment system.

Measured concentrations of phosphorus species at Site 5 were also highly variable during the field monitoring program, with 1-2 orders of magnitude difference between minimum and maximum values. However, overall, the measured total phosphorus concentrations were low in value, particularly for SRP and dissolved organic phosphorus. Particulate phosphorus comprised approximately 45% of the overall total phosphorus measured.

Measured concentrations of turbidity, TSS, and color exhibited a moderate degree of variability, although the overall mean values for these parameters are generally low. Water collected at Site 5 was also moderately colored, with a mean color concentration of 56 Pt-Co units.

4.3 Performance Efficiency of Pond 1

An evaluation of the performance efficiency of Pond 1 at the Tropical Farms treatment system site is given in this section. This evaluation is conducted using three separate techniques, including a comparison of inflow and outflow characteristics, evaluation of temporal variability in inflow and outflow characteristics, and calculations for mass removal efficiencies. A discussion of each of these components is given in the following sections.

4.3.1 Comparison of Inflow and Outflow Characteristics

A statistical comparison of measured values for pH, alkalinity, conductivity, and TSS in inflows and outflows to Pond 1 is given on Figure 4-16. Primary inflows into the pond include inputs from the western channel (Site 1) and the 48-inch RCP inflow (Site 2). Outflows from Pond 1 are reflected by measurements conducted at the pond discharge at Site 3. The majority of measured pH values in the inflows and outflows to Pond 1 ranged from approximately 7.0-8.0, with a median pH at Site 1 of approximately 7.55 and 7.2 at Site 2. The median pH value in the discharge from Pond 1 at Site 3 is approximately 7.7, indicating an increase in pH within the pond. This increase in pH is likely related to algal production which occurred within the pond.

A relatively high degree of variability was observed in measured alkalinity values in inflows through the western inflow channel. However, a substantially lower degree of variability in alkalinity measurements was observed in the inflow through the 48-inch RCP at Site 2. Discharges from Pond 1 at Site 3 appear to mimic the alkalinity inputs measured at Site 2 since this inflow reflects the dominant hydrologic input into the pond. A similar pattern is also apparent for measured conductivity values, with discharges from the pond at Site 3 closely mimicking conductivity values in the dominant inflow to the pond at Site 2. Measured TSS concentrations are low in value at the western inflow channel as well as in the pond outflow at Site 3. However, substantially elevated TSS concentrations enter the pond through the 48-inch RCP. The pond appears to provide a good removal efficiency for TSS based upon the discharged TSS concentrations.

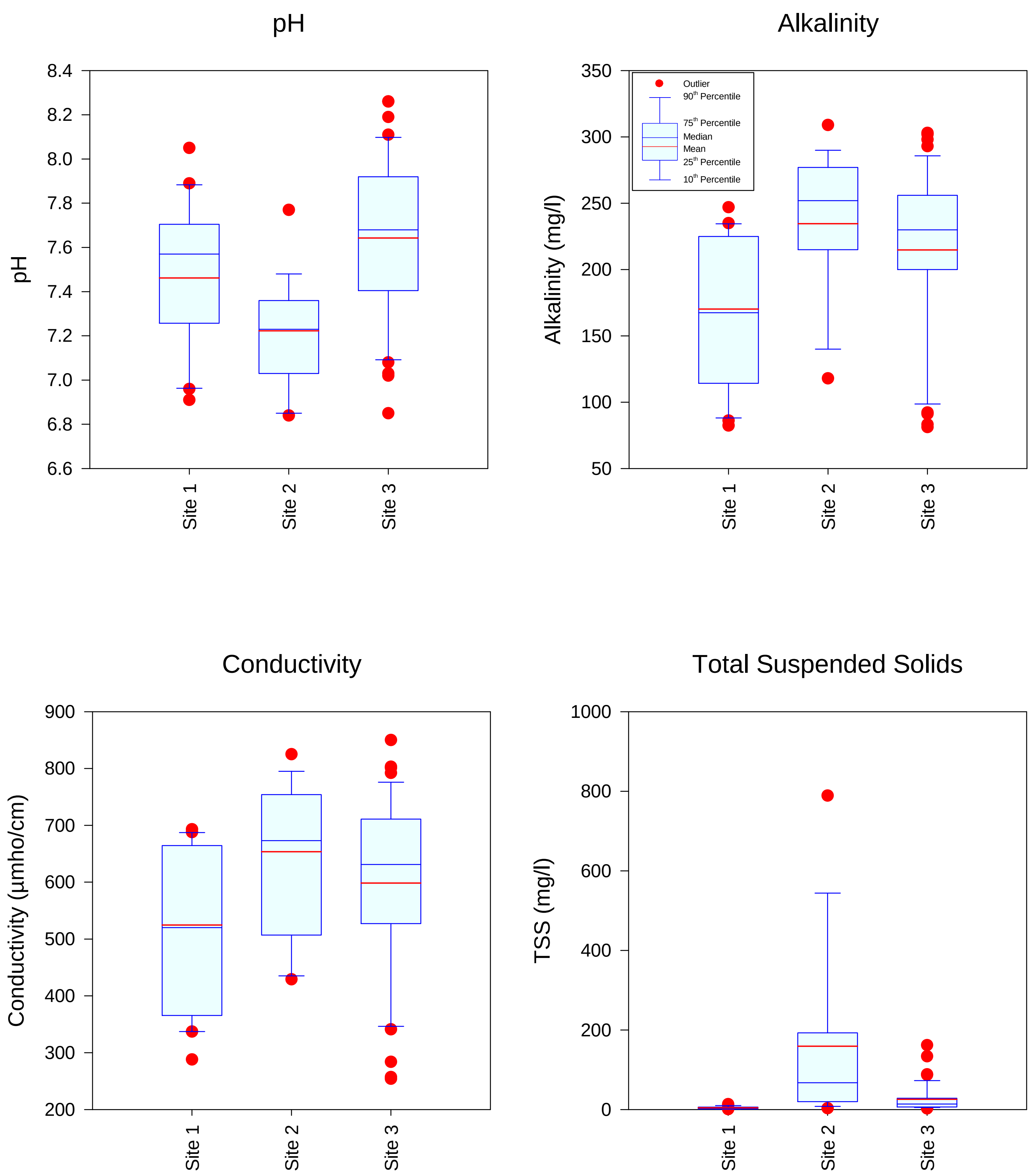


Figure 4-16. Statistical Comparison of pH, Alkalinity, Conductivity, and TSS in Inflows and Outflows to Pond 1.

A statistical comparison of concentrations of nitrogen species in inflows and outflows to Pond 1 is given on Figure 4-17. Relatively low levels of ammonia concentrations were measured in the inflows through the western channel at Site 1 with more elevated concentrations measured in the inflow through the 48-inch RCP (Site 2). However, relatively low levels of ammonia were observed in the pond discharges, suggesting a significant uptake of ammonia within the pond. A similar pattern is also apparent for concentrations of NO_x which were typically low in value in the western inflow channel (Site 1) and elevated in value at the 48-inch RCP inflow (Site 2). Even though the inflows from the 48-inch RCP provide the dominant hydrologic inputs, concentrations of NO_x in the discharge are substantially lower in value, reflecting a significant uptake of NO_x within the pond. Similar patterns are also apparent for particulate nitrogen and total nitrogen, with relatively low input concentrations occurring at Site 1 and substantially more elevated input concentrations at the dominant inflow at Site 2. However, the pond appears to provide substantial removal for both particulate nitrogen and total nitrogen based upon samples collected at the pond outfall.

A statistical comparison of concentrations of phosphorus species in inflows and outflows to Pond 1 is given on Figure 4-18. In contrast to the trends observed for total nitrogen, the most elevated concentrations of SRP appear to occur through the western inflow channel (Site 1), with a much lower SRP concentration occurring at Site 2. Low concentrations of SRP are also present in the discharge from Pond 1, suggesting a significant uptake of SRP within the pond. Measured concentrations of dissolved organic phosphorus appear to be relatively similar between the inflows at Site 1 and Site 2 compared with the discharge at Site 3, suggesting that the pond has a relatively low ability to remove this particular phosphorus species. Concentration patterns for particulate phosphorus and total phosphorus appear to be relatively similar for the inflows and outflows to Pond 1 since particulate phosphorus comprises the dominant portion of total phosphorus at each of the three sites. Site 1 is characterized by low input concentrations of both particulate phosphorus and total phosphorus, with more substantially elevated concentrations observed at Site 2. However, the discharge concentrations of particulate phosphorus and total phosphorus appear to be equal to or less than input concentrations at each of the two sites, suggesting a significant removal potential for phosphorus in the pond.

A statistical comparison of turbidity, color, and BOD concentrations in inflows and outflows to Pond 1 is given in Figure 4-19. Inflows through the western channel are characterized by low turbidity values since the inflow primarily reflects discharges from wet detention systems. Substantially more elevated turbidity concentrations were observed at the inflow from the 48-inch RCP (Site 2) since this site reflects roadway and residential drainage. However, the pond appears to remove a substantial portion of the turbidity with relatively low concentrations at the discharge structure. No substantial changes in concentrations appear to occur for color within the pond which is typically not removed to a substantial extent in wet detention ponds. Measured BOD concentrations in the inflows and outflow to the pond were generally low in value, with discharge concentrations equal to or less than input concentrations for Pond 1.

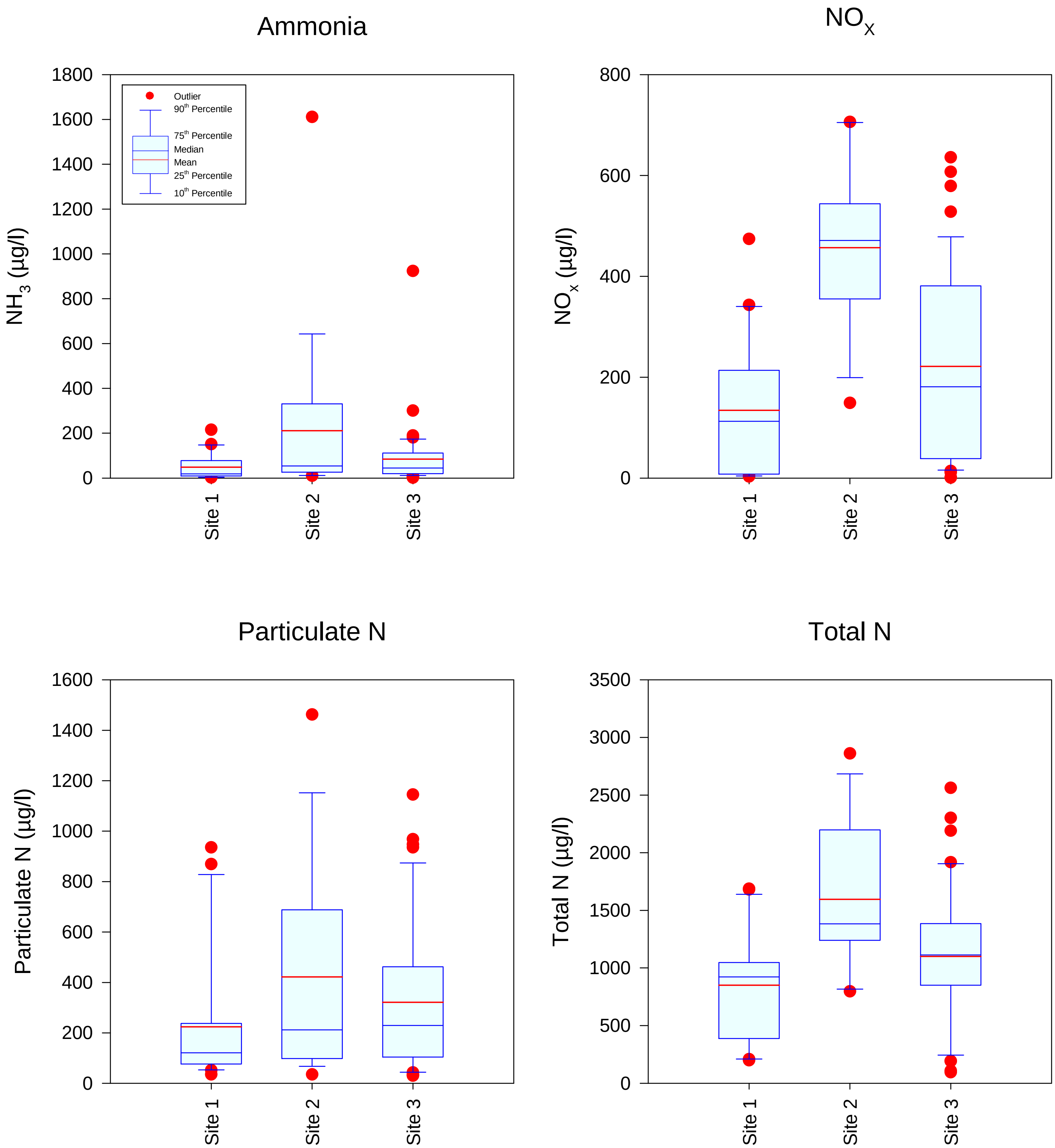


Figure 4-17. Statistical Comparison of Concentrations of Nitrogen Species in Inflows and Outflows to Pond 1.

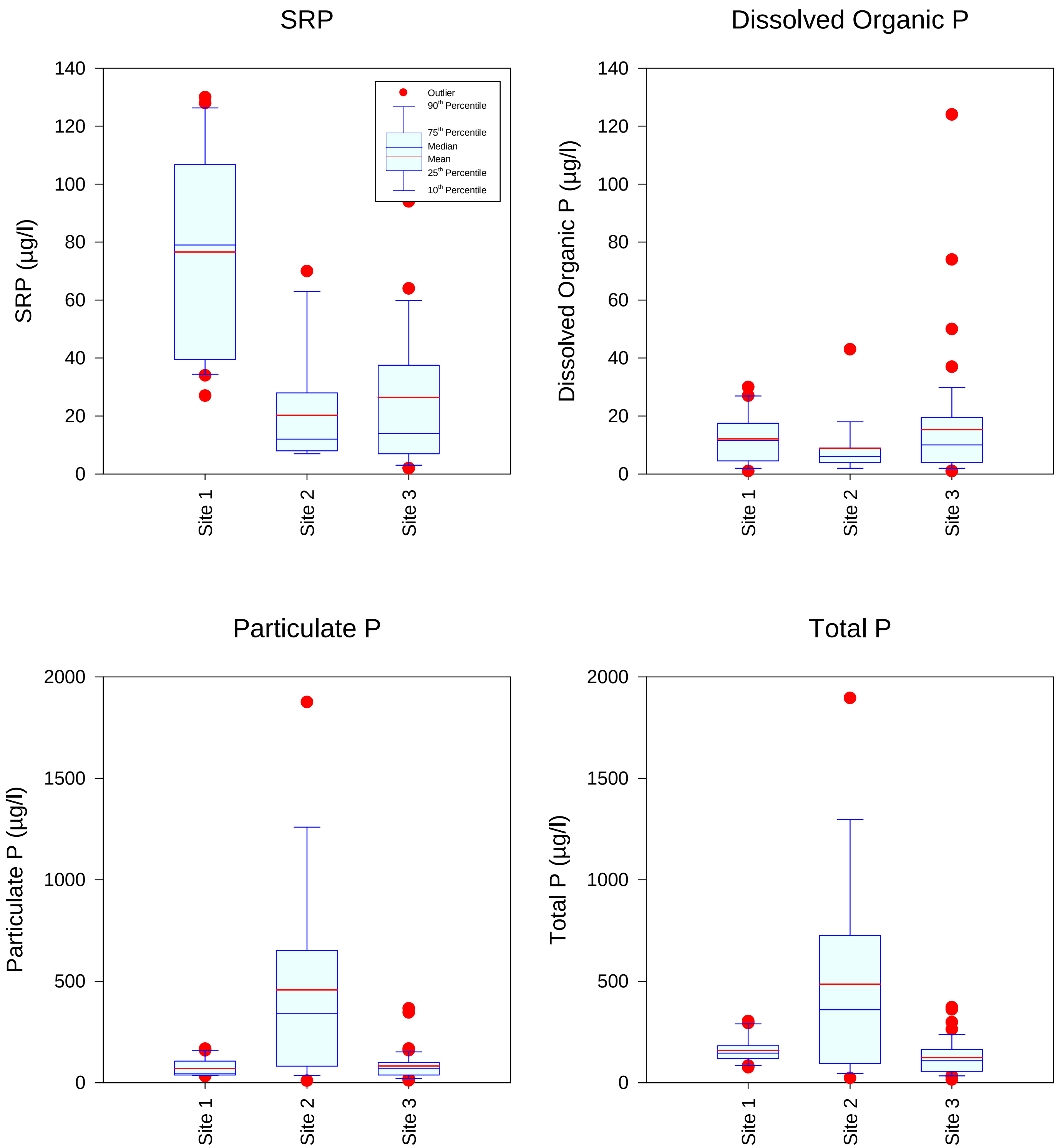


Figure 4-18. Statistical Comparison of Concentrations of Phosphorus Species in Inflows and Outflows to Pond 1.

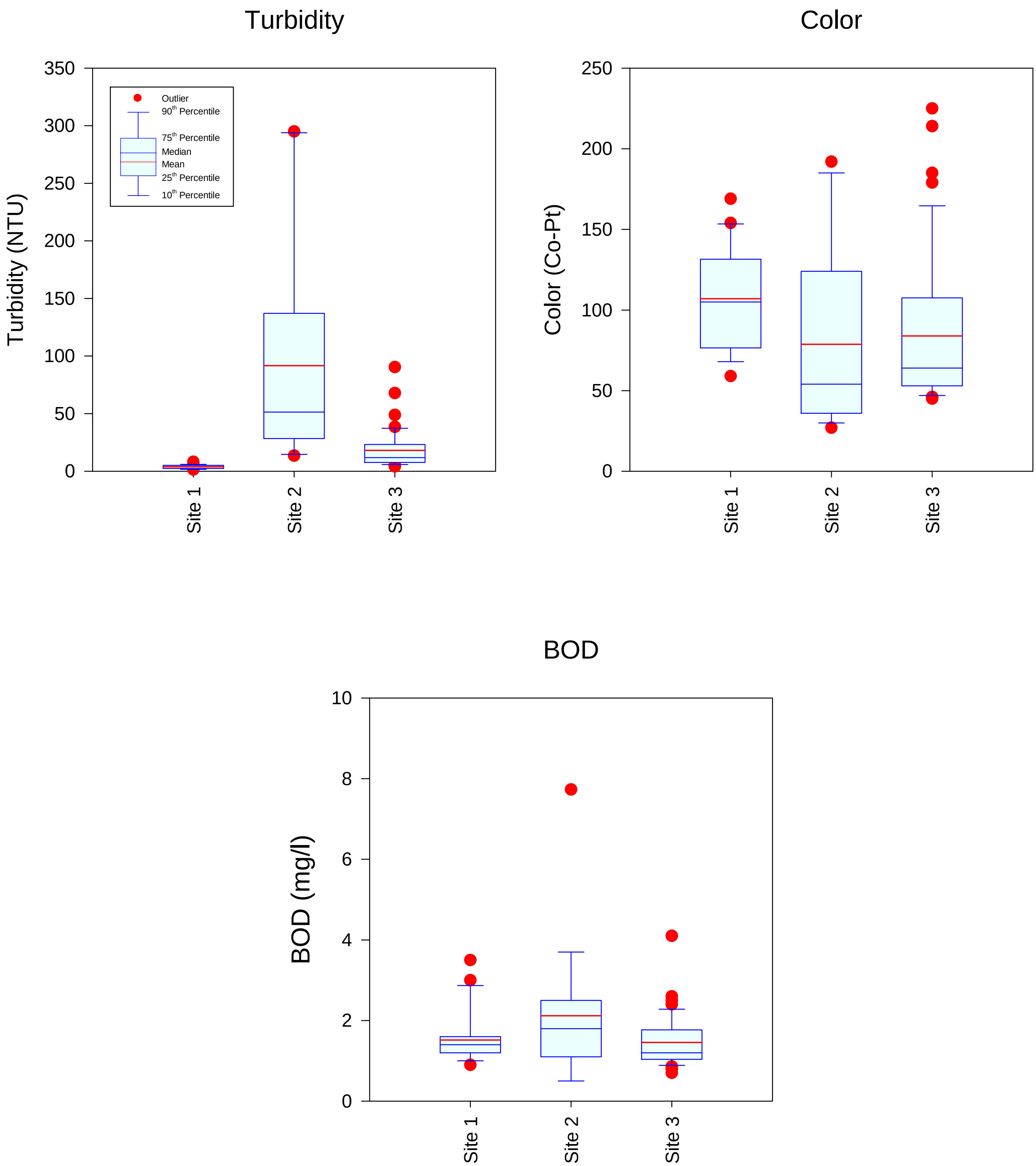


Figure 4-19. Statistical Comparison of Turbidity, Color, and BOD in Inflows and Outflows to Pond 1.

4.3.2 Temporal Variability in Inflow and Outflow Characteristics

A graphical summary of temporal variability in concentrations of nitrogen species in inputs and outputs to Tropical Farms Pond 1 from May 2011-April 2012 is given on Figure 4-20. Input concentrations of ammonia at Site 1 were substantially elevated during the initial 4-5 months of the field monitoring program which resulted in a slight increase in ammonia concentrations measured at the discharge from Pond 1. However, after this point, inflow and outflow concentrations of ammonia were relatively similar for the remainder of the field monitoring program.

Input concentrations of NO_x into Pond 1 from Site 2 were highly variable during the field monitoring program and elevated in value, particularly during the second half of the field monitoring program. Input concentrations of NO_x from Site 1 were generally low in value with the exception of the period from approximately October-January when more elevated concentrations were observed. In general, measured NO_x concentrations at the pond outfall (Site 3) were lower than concentrations measured at Site 2 which reflects the dominant hydrologic input into the system.

Measured concentrations of particulate nitrogen were also highly variable in the inflow at Site 2, particularly during the first half of the field monitoring program. Elevated concentrations of particulate nitrogen were also observed at Site 1 during this period. However, concentrations of particulate nitrogen at the pond outfall (Site 3) were lower than input concentrations at Site 2 during periods of elevated particulate nitrogen inputs, but appear to be higher in concentration than inputs during periods when input concentrations are low in value.

Overall, total nitrogen concentrations at the pond outfall are lower in value throughout most of the field monitoring program than total nitrogen concentrations measured at Site 2 which reflect the dominant inflow into the system. Total nitrogen concentrations at the outfall appear to follow the same general pattern as total nitrogen concentrations measured at the Site 2 inflow.

A graphical comparison of temporal variability in phosphorus species in inputs and outputs to Pond 1 during the field monitoring program is given on Figure 4-21. Relatively elevated levels of SRP were observed entering Pond 1 from Site 1 during the period of time when Site 1 was contributing inflow to the pond. During this time, measured SRP concentrations in discharges from the pond appear to mimic the inflow concentrations at Site 1. However, when inflows were not occurring from Site 1, discharge concentrations of SRP appear to mimic the inflow concentrations observed at Site 2.

In general, input and output concentrations for dissolved organic phosphorus appear to be relatively similar during the field monitoring program with the exception of peaks in dissolved organic phosphorus concentrations in the pond discharge observed on several occasions. Measured concentrations of particulate phosphorus were low in value in the pond discharge throughout a majority of the field monitoring program in spite of elevated concentrations of particulate phosphorus measured in the Site 2 inflow during portions of the field monitoring program. Overall, total phosphorus concentrations in discharges from Pond 1 were generally lower in value than concentrations measured at the inflows at Site 1 or Site 2 throughout much of the field monitoring program.

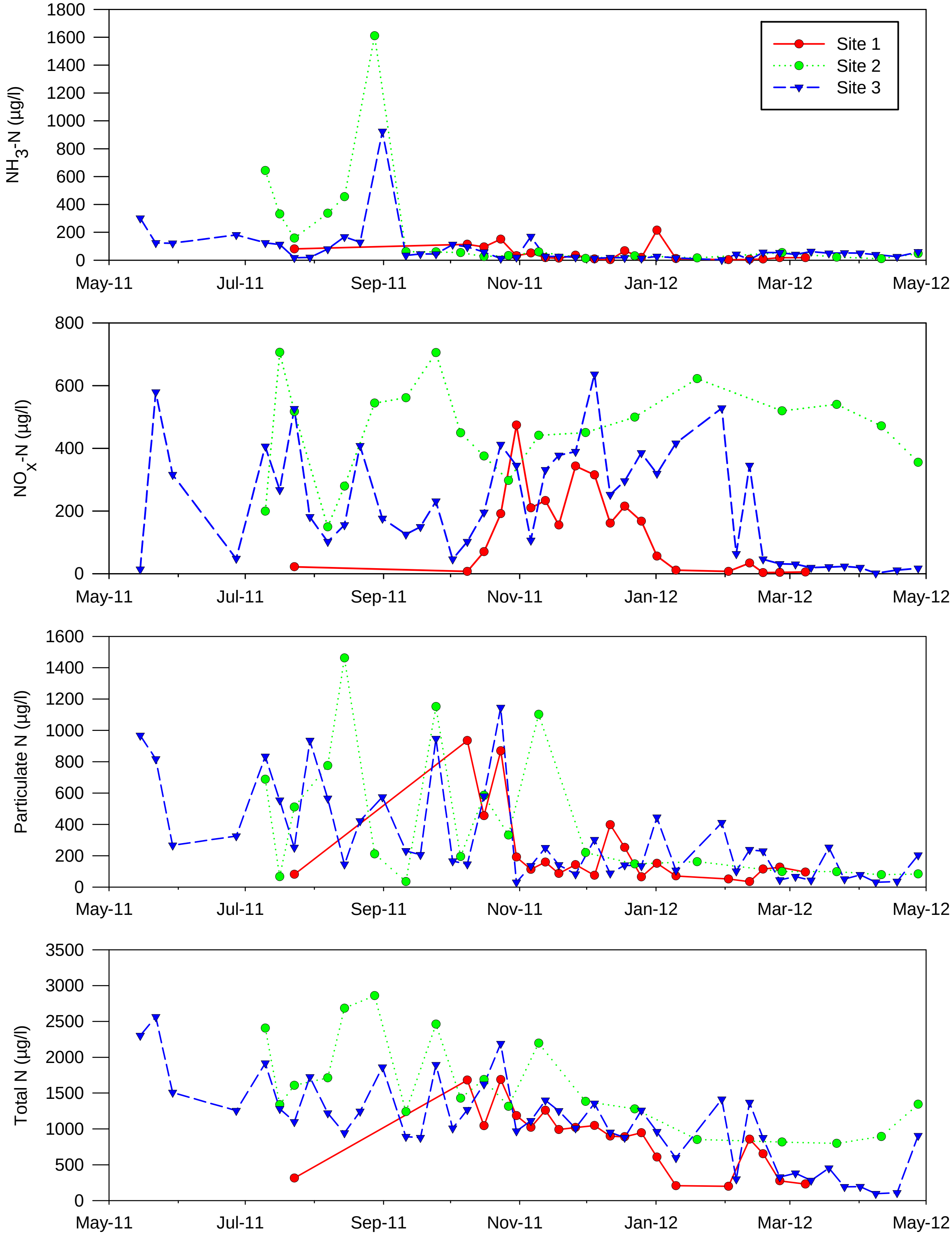


Figure 4-20. Temporal Variability of Inputs and Outputs of Nitrogen Species to Tropical Farms Pond 1 from May 2011-April 2012.

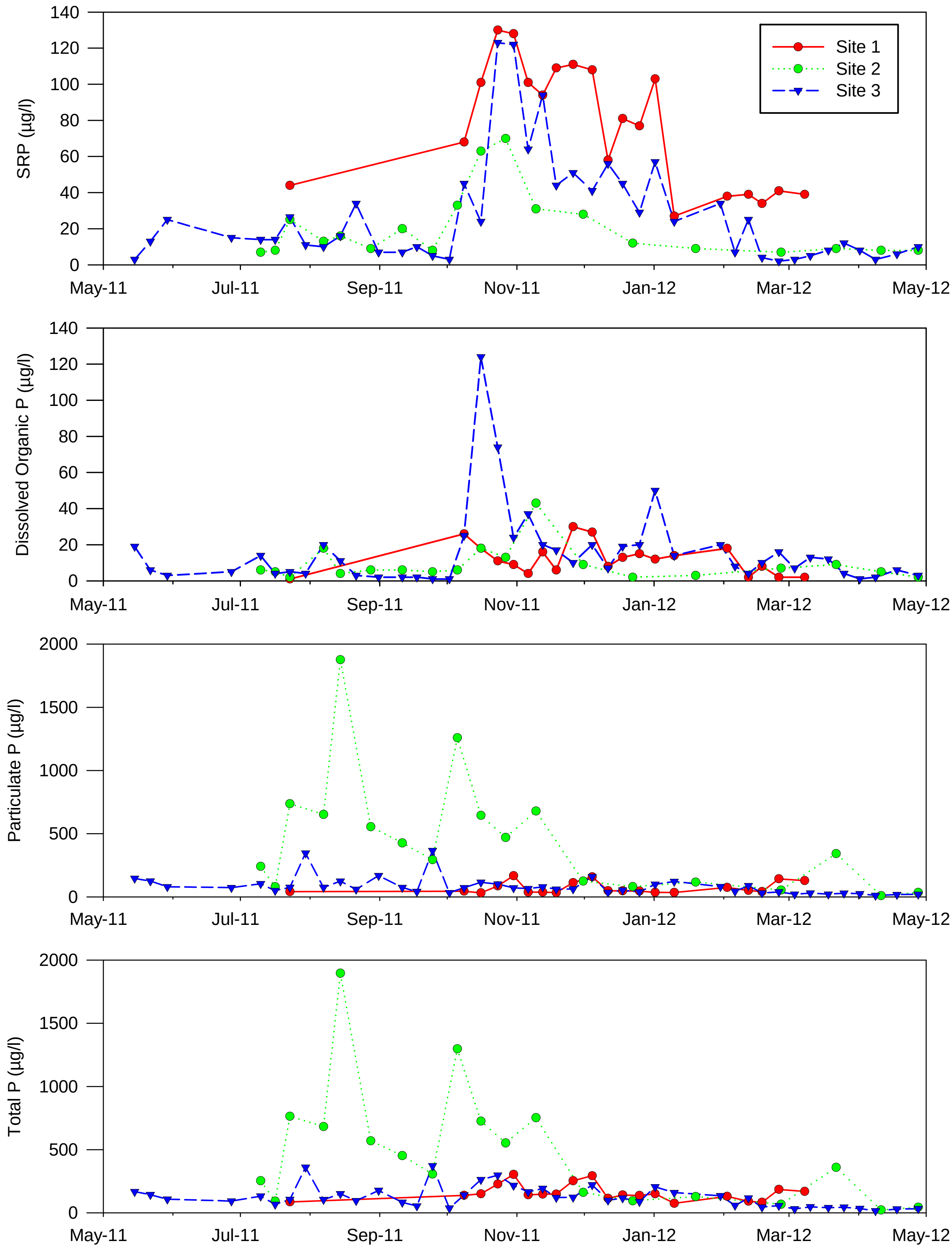


Figure 4-21. Temporal Variability of Inputs and Outputs of Phosphorus Species to Tropical Farms Pond 1 from May 2011-April 2012.

A graphical summary of temporal variability in turbidity, color, BOD, and TSS in inflows and outflows at Pond 1 during the field monitoring program is given on Figure 4-22. Outflow concentrations of turbidity from Pond 1 were generally low in value and lower than turbidity concentrations measured at the inflow at Site 2. Measured color concentrations at Sites 1, 2, and the pond discharge appear to be relatively similar in value throughout much of the field monitoring program. Measured BOD concentrations at the pond outfall are lower in value throughout much of the monitoring program than BOD values measured at the inputs at Sites 1 and 2. A similar pattern is also apparent for measured TSS concentrations which are generally lower in value in the pond discharge than observed in the pond inflows.

4.3.3 Calculated Mass Removal Efficiencies

Mass loadings were calculated for each of the identified inflows and outflows to Pond 1 over the 12-month monitoring program from May 2011-April 2012. Mass inputs into Pond 1 were calculated for inflows at Sites 1 and 2, along with inputs from bulk precipitation and groundwater inflow Mass losses were calculated for discharges through the pond outfall at Site 3. Due to the large degree of variability in the hydrologic budget for Pond 1, mass inputs and losses were calculated on a monthly basis. Information on monthly hydrologic inputs and losses for Pond 1 were obtained from the monthly hydrologic budgets summarized in Table 4-11. Estimates of monthly water quality characteristics for the inputs and outputs were calculated as the log-normal mean of the water quality data provided in Appendix C for the inflow/outflow samples, bulk precipitation, and groundwater, summarized on a monthly basis. Samples with collection periods that extended into two separate months were included in estimation of log-normal mean values for each of the monthly periods during which sample collection occurred. If samples were not collected at a site during a monthly period for which measurable flow was recorded, the mean monthly concentration for a given parameter is calculated as the mean of concentrations measured during the preceding and following monthly periods.

A summary of mean monthly concentrations of measured parameters in Pond 1 inflow/ outflow, bulk precipitation, and groundwater samples is given in Appendix E.1. Mean monthly concentrations are provided for each of the laboratory measured parameters, including general parameters, species of nitrogen and phosphorus, BOD, and TSS.

Estimates of monthly mass loadings were generated for each evaluated parameter at each of the inflow/outflow sites, bulk precipitation, and groundwater monitoring sites. Monthly mass loadings were calculated by multiplying the mean monthly concentrations for each input and output (summarized in Appendix E.1) times the estimated monthly hydrologic inputs and losses for Pond 1 (summarized in Table 4-11). Tabular summaries of estimated monthly mass loadings into Pond 1 are given in Appendix E.2.

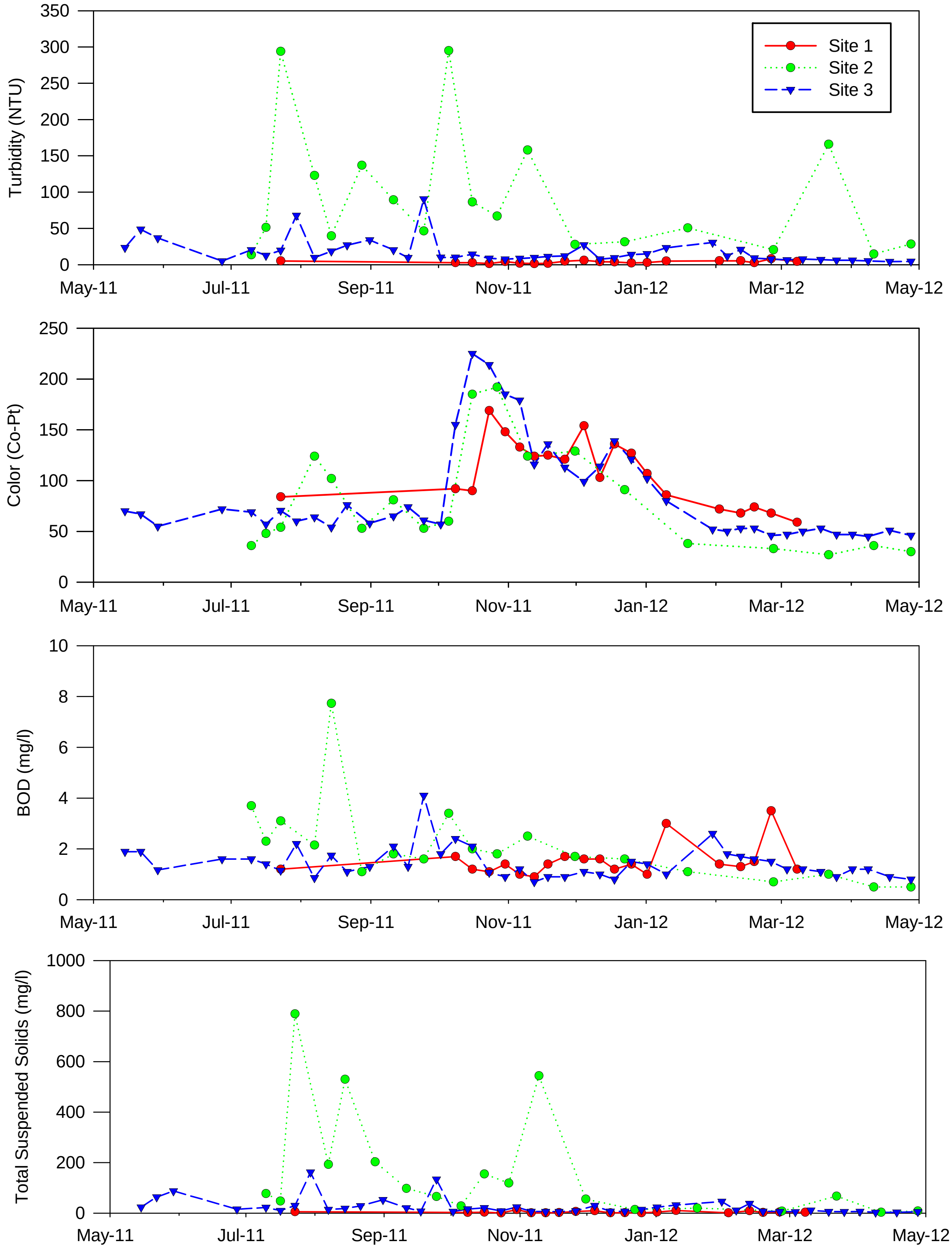


Figure 4-22. Temporal Variability of Inputs and Outputs of Turbidity, Color, BOD, and TSS to Tropical Farms Pond 1 from May 2011-April 2012.

A complete summary of calculated monthly mass balances for evaluated parameters in Pond 1 is given in Appendix E.3. A graphical summary of monthly mass removal efficiencies for evaluated parameters in Pond 1 at the Tropical Farms site is given on Figure 4-23. In general, removal efficiencies for nitrogen species in Pond 1 were highly variable, with mass load reductions occurring during some months and mass export occurring during other months. The most consistent removals within the pond occurred for ammonia and NO_x which were removed relatively consistently during the field monitoring program with the exception of the period from November-January. A similar pattern was also observed for total nitrogen, with positive removal efficiencies occurring throughout most of the field monitoring program with the exception of the period from November-February. The lack of removal during this period may be due to vegetation die-off and resulting nutrient loadings into Pond 1. Removal efficiencies for dissolved organic nitrogen and particulate nitrogen were also highly variable with no apparent seasonal trend.

Consistently positive removal efficiencies were observed in Pond 1 for particulate phosphorus and total phosphorus during each month of the field monitoring program with the exception of the period of December to mid-January when a net export occurred from the pond. This export is likely related to seasonal vegetation die-off and the resulting nutrient release into the pond. A similar pattern was also observed for SRP, although a negative removal efficiency was observed for SRP from approximately July-August. Removal efficiencies for dissolved organic phosphorus were highly variable, although the general trend appears to follow removal efficiencies for other phosphorus species.

Observed removal efficiencies for TSS in Pond 1 appear to follow a pattern similar to that exhibited by phosphorus species, with positive removal efficiencies occurring during each month of the field monitoring program with the exception of December-February. A consistent positive removal occurred for BOD within Pond 1, with the exception of the final few months of the field monitoring program.

A tabular summary of the overall mass balance for Pond 1 at the Tropical Farms site from May 2011-April 2012 is given on Table 4-24. The information summarized in this table reflects the sum of the monthly mass inputs and losses for Pond 1 for each evaluated parameter over the 12-month monitoring program, based on the analysis contained in Appendix E.3. Overall, Pond 1 achieved a removal efficiency of approximately 50% for ammonia, 28% for NO_x, 5% for dissolved organic nitrogen, 19% for particulate nitrogen, and 14% for total nitrogen. These observed removal efficiencies are somewhat lower than removal efficiencies commonly observed in wet detention systems which are likely related to the short hydraulic residence time of 3.6 days within Pond 1. For phosphorus species, Pond 1 removed approximately 29% of the SRP, 74% of the particulate phosphorus, and 60% of the total phosphorus, while exporting approximately 68% of the dissolved organic phosphorus. Dissolved organic phosphorus appeared to have been generated within the pond which could be a result of release of organic phosphorus from soils associated with the vegetation planting. Pond 1 exhibited a removal efficiency of approximately 70% for TSS and 26% for BOD.

In general, the observed removal efficiencies for Tropical Farms Pond 1 are slightly lower than removal efficiencies commonly observed in wet detention pond. However, the removal efficiencies appear to be consistent with the short mean hydraulic residence time for the pond of approximately three days.

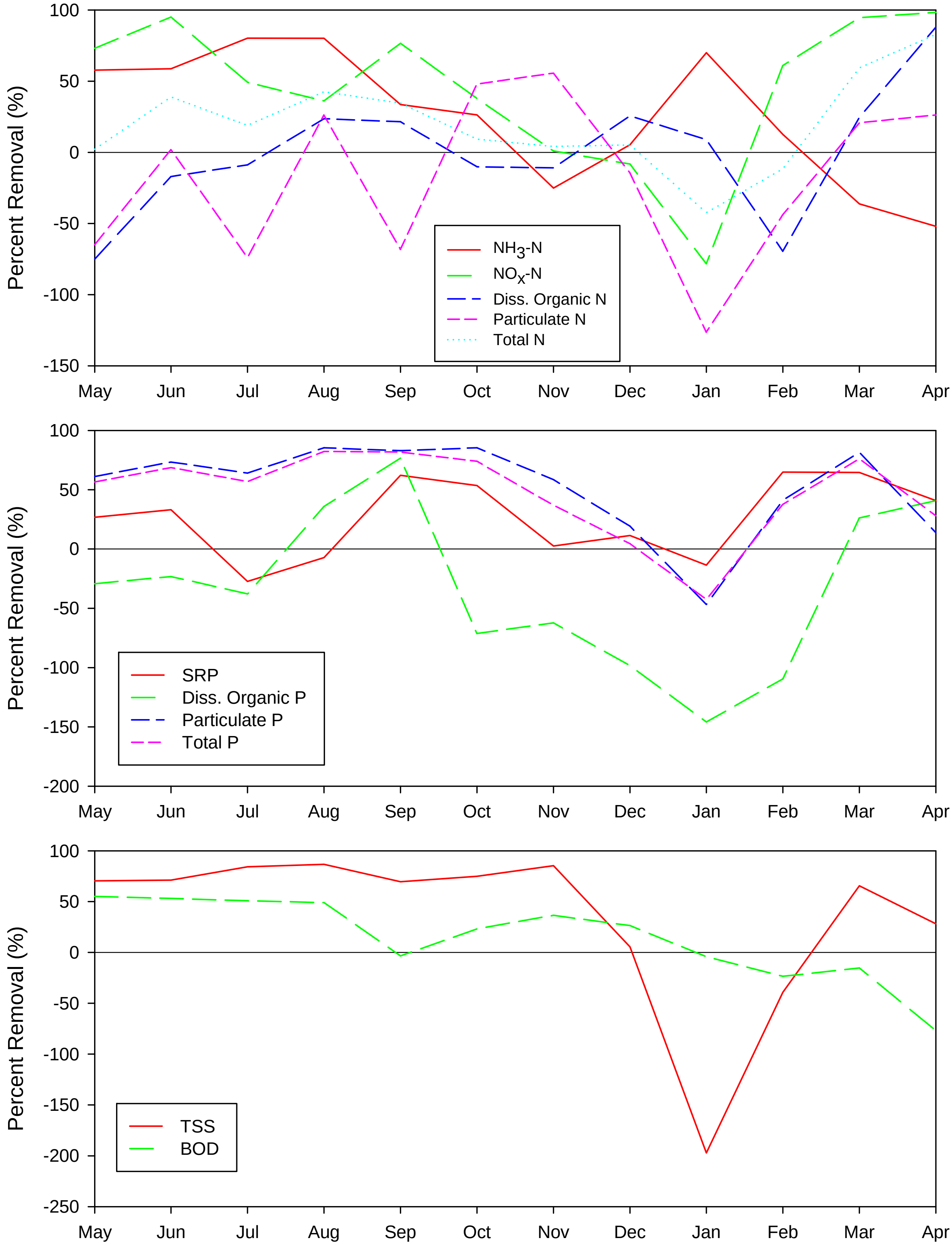


Figure 4-23. Monthly Mass Removal Efficiencies for Evaluated Parameters in Pond 1 at the Tropical Farms Site.

TABLE 4-24

OVERALL MASS BALANCE FOR POND 1 AT TROPICAL FARMS FROM MAY 2011-APRIL 2012

PARAMETER	MASS INPUTS (kg)					LOSSES (kg)	MASS REMOVAL (%)
	Precipitation	Site 1	Site 2	Ground-water	Total		
Ammonia	1.05	9.0	42.6	0.63	53.3	26.4	50
NO_x	1.00	37.6	164	0.22	203	147	28
Diss. Organic N	1.49	115	220	3.88	340	323	5
Particulate N	0.72	58.9	108	0.00	168	135	19
Total N	4.77	245	576	5.05	830	713	14
SRP	0.16	20.8	10.6	0.07	31.6	22.5	29
Diss. Organic P	0.11	3.03	2.95	0.13	6.21	10.4	-68
Particulate P	0.07	15.7	153	0.00	169	44.3	74
Total P	0.38	41.0	169	0.22	211	84.5	60
TSS	16.39	703	32,990	0.00	33,710	10,125	70
BOD	5.36	332	777	10.79	1,125	828	26

4.4 Performance Efficiency of Ponds 2-5

An evaluation of the performance efficiency of Ponds 2-5 at the Tropical Farms treatment system site is given in this section. Similar to the evaluation previously provided for Pond 1, this analysis is conducted using three separate techniques, including a comparison of inflow and outflow characteristics, evaluation of temporal variability in inflow and outflow characteristics, and calculations for mass removal efficiencies. A discussion of each of these components is given in the following sections.

4.4.1 Comparison of Inflow and Outflow Characteristics

A statistical comparison of measured values for pH, alkalinity, conductivity, and TSS in inflows and outflows to Ponds 2-5 is given on Figure 4-24. The primary inflow into Ponds 2-5 is the discharge from Pond 1 which is reflected by the chemical characteristics monitored at Site 3. The primary discharge from Ponds 2-5 occurs through the outfall structure which is referred to as Site 6. Sites 4 and 5 reflect intermediate locations within the pond treatment system to allow evaluation of changes in water quality characteristics through vegetated and unvegetated portions of the treatment area.

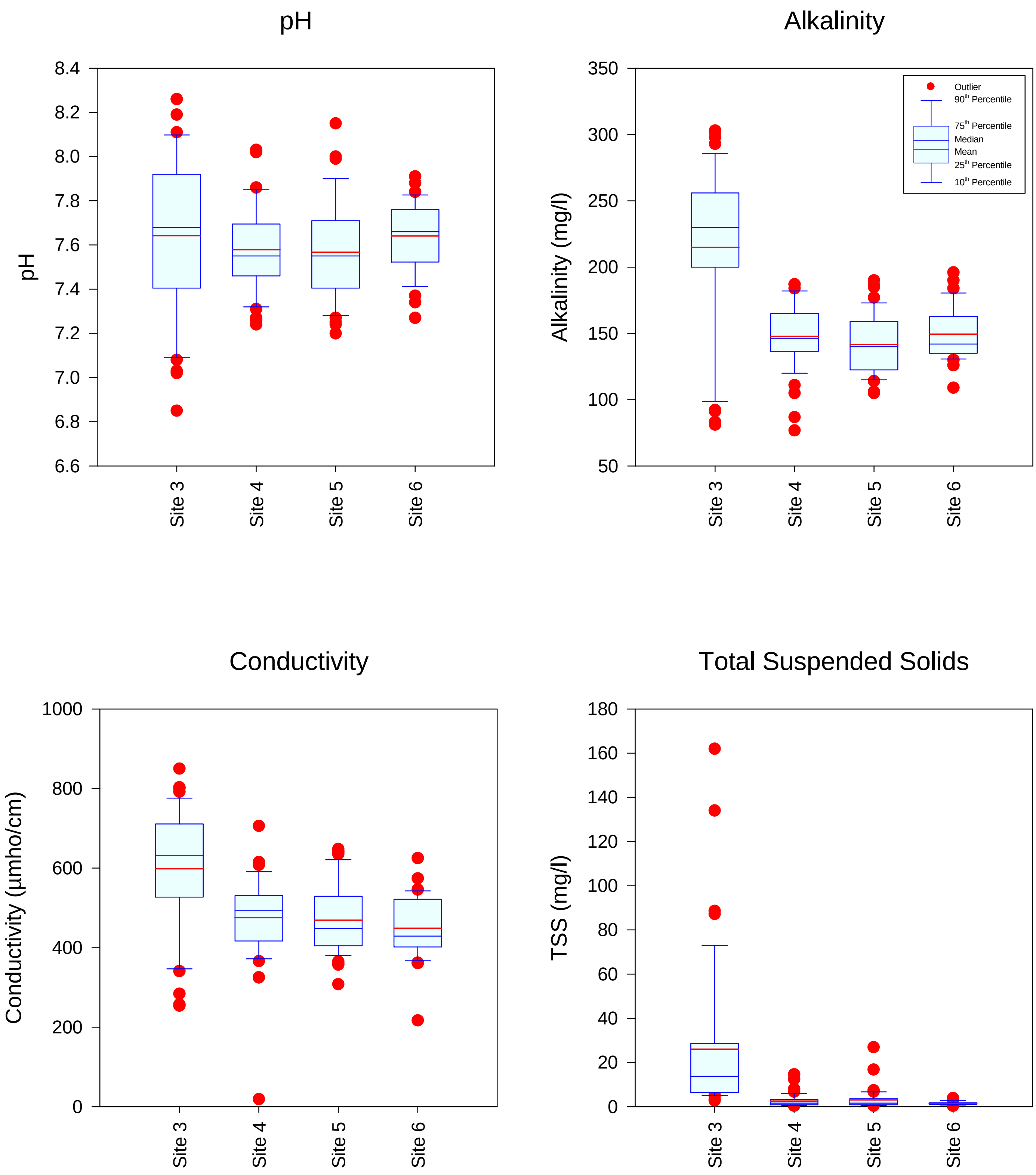


Figure 4-24. Statistical Comparison of Input/Output Concentrations of pH, Alkalinity, Conductivity, and TSS for Ponds 2-5 at the Tropical Farms Site from May 2011-April 2012.

In general, inflow values of pH into Ponds 2-5 were highly variable, with a median value of approximately 7.7. Measured pH values within the treatment system were generally less variable, with slightly lower pH values measured at Sites 4 and 5 before increasing at Site 6 to values near the input value. A similar pattern is also apparent for alkalinity which exhibited a high degree of variability in the inflows at Site 3. Measured alkalinity values within the pond system were substantially lower in value and exhibited a lower degree of variability. Measured conductivity values followed a similar pattern, with more elevated and highly variable concentrations of conductivity at the inflow to the treatment ponds at Site 3 compared with lower concentrations and a lower degree of variability within the pond and at the pond outfall. Measured concentrations for TSS follow the same general pattern, with more elevated and more variable concentrations in the pond inflow and lower and less variable concentrations within the pond and at the pond discharge.

A statistical comparison of input and output concentrations of nitrogen species for Ponds 2-5 at the Tropical Farms site is given on Figure 4-25. In general, input concentrations of ammonia, NO_x, particulate nitrogen, and total nitrogen were both higher in concentration and higher in variability at the inflow to Ponds 2-5 than measured within the pond or at the pond outfall. For ammonia, a steady decrease in ammonia appears to occur during migration through Ponds 2-5. A substantial reduction in NO_x occurs between the inflow and Sites 4 and 5, followed by a slight increase in NO_x at the pond discharge. Steady decreases in concentrations of particulate nitrogen also occur during migration through the pond system, with relatively low concentrations of particulate nitrogen measured in the pond outfall. Overall, a reduction in total nitrogen occurs within the pond system between the inflow and Site 4. Total nitrogen concentrations at the remaining downstream monitoring sites appear to be relatively similar to the values measured at Site 4.

A statistical comparison of input and output concentrations of phosphorus species for Ponds 2-5 at the Tropical Farms site is given on Figure 4-26. Similar to the patterns observed for species of nitrogen, phosphorus species at the pond inflow also appear to be both higher in concentration and higher in variability than measurements conducted within the pond or at the pond outfall. Steady decreases in measured concentrations of phosphorus species appear to occur between the inflow and Site 5. However, slight increases in concentrations of phosphorus species appear to occur between Site 5 and the pond outfall for SRP, dissolved organic phosphorus, and total phosphorus, although the increase in concentration is relatively small.

A statistical comparison of input and output concentrations of turbidity, color, and BOD in Ponds 2-5 at the Tropical Farms site is given on Figure 4-27. Measured concentrations of turbidity in the inflow to Ponds 2-5 was highly variable and moderate in value. A substantial decrease in turbidity appears to occur during migration through the pond system, with extremely low concentrations measured in the discharge at Site 6. Measured color concentrations appear to decrease slightly during migration through Ponds 2-5, although median values for the input at Site 3 and the outflow at Site 6 appear to be relatively similar. Measured BOD concentrations appear to increase in mid-portions of the treatment system at Ponds 4 and 5 before decreasing at Site 6 to values less than the inflow BOD concentration at Site 3.

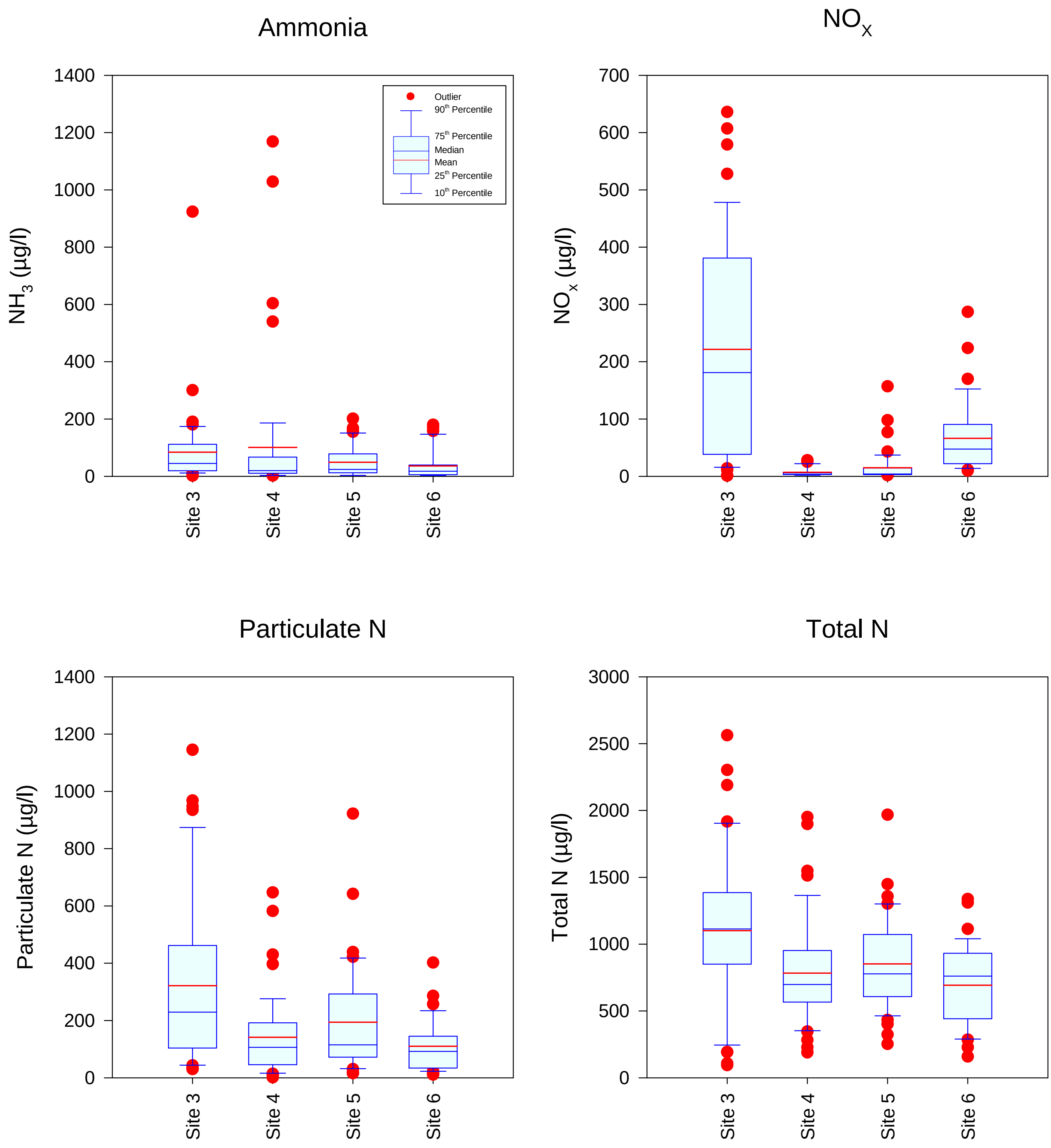


Figure 4-25. Statistical Comparison of Input/Output Concentrations of Nitrogen Species for Ponds 2-5 at the Tropical Farms Site from May 2011-April 2012.

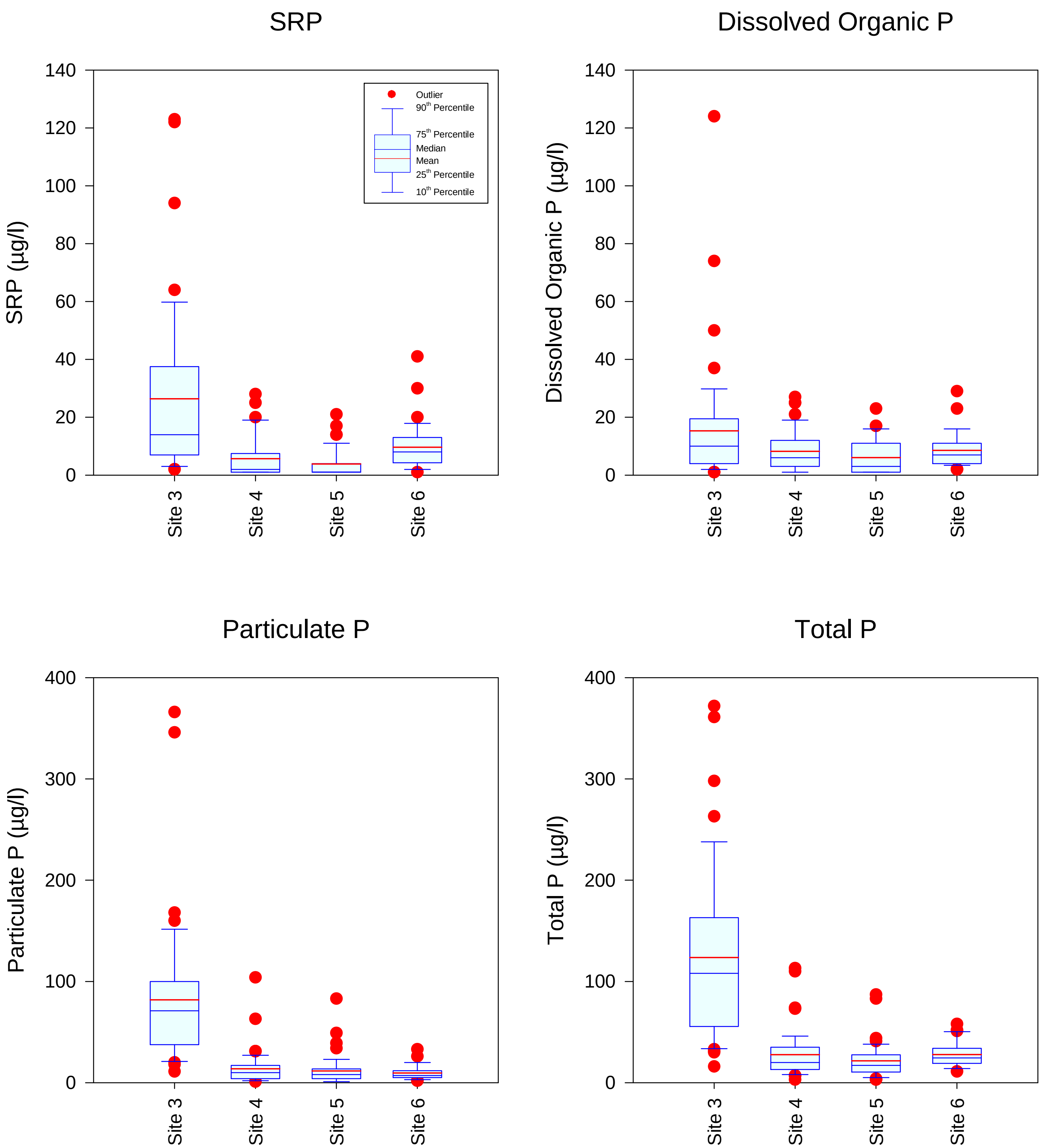


Figure 4-26. Statistical Comparison of Input/Output Concentrations of Phosphorus Species for Ponds 2-5 at the Tropical Farms Site from May 2011-April 2012.

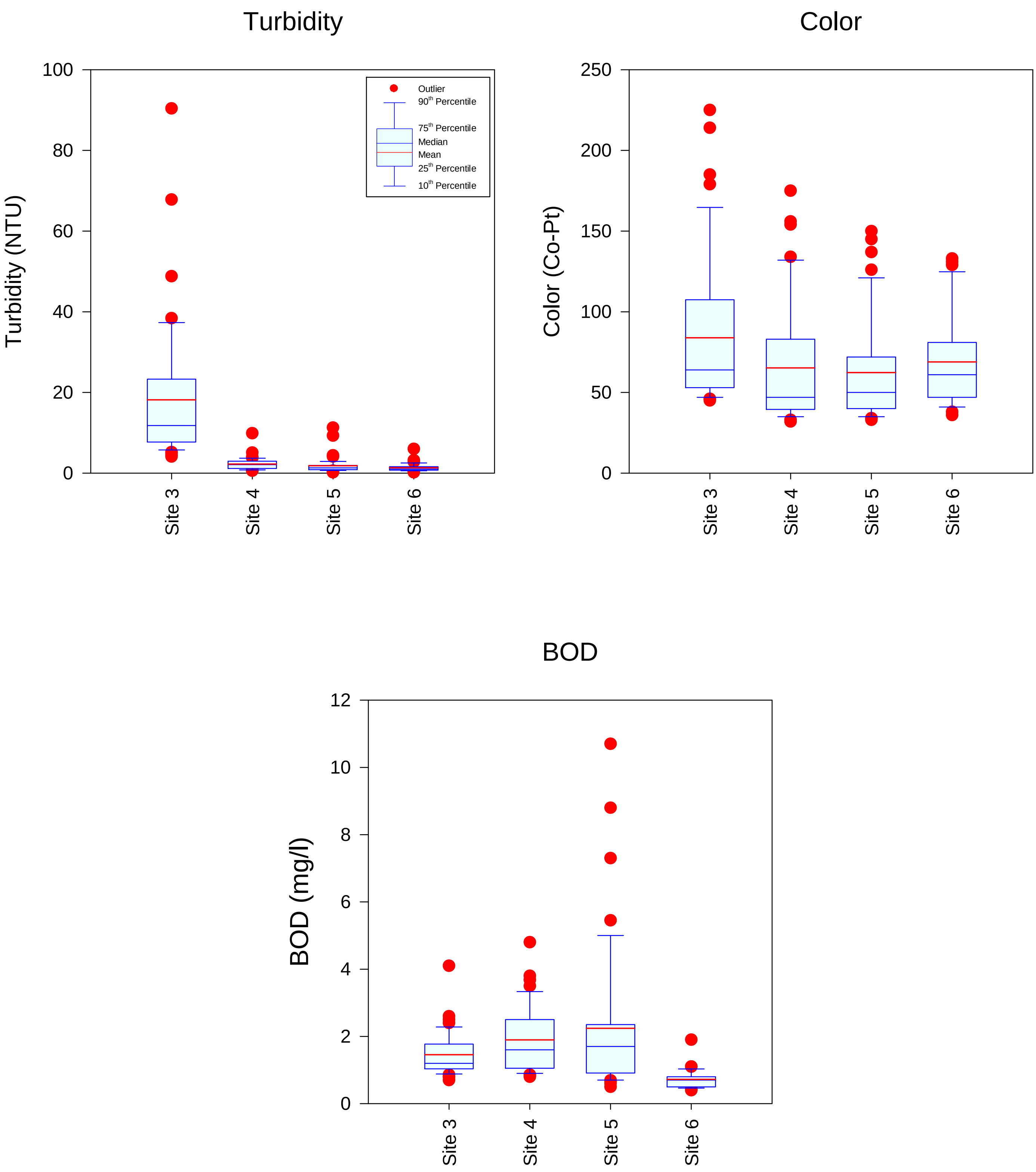


Figure 4-27. Statistical Comparison of Input/Output Concentrations of Turbidity, Color, and BOD for Ponds 2-5 at the Tropical Farms Site from May 2011-April 2012.

4.4.2 Temporal Variability of Inflow and Outflow Characteristics

A graphical summary of temporal variability in measured concentrations of nitrogen species in Ponds 2-5 at the Tropical Farms site is given on Figure 4-28. In general, measured concentrations of ammonia in the inflows and outflows to Ponds 2-5 were low in value throughout most of the field monitoring program with the exception of several peaks in concentrations which occurred periodically at Sites 3 and 4. In general, the pond discharge at Site 6 exhibited ammonia concentrations lower than measured in other parts of the treatment system. Measured concentrations of NO_x entering Ponds 2-5 at Site 3 were highly variable during the field monitoring program. In general, concentrations of NO_x within the treatment system appear to mimic the general pattern of inflows from Site 3, although the observed concentrations are substantially lower in value, suggesting a significant potential for uptake of NO_x within the treatment system.

Highly variable concentrations of particulate nitrogen entered Ponds 2-5 through Site 3 during the field monitoring program. Measured concentrations of particulate nitrogen at Sites 4 and 5 often mimic the general pattern for inputs at Site 3, although at substantially lower concentrations. Measured concentrations of particulate nitrogen in the outfall were typically lower than concentrations measured within the pond system. Overall, input concentrations of total nitrogen for Ponds 2-5 were highly variable throughout the field monitoring program. In some instances, monitored total nitrogen concentrations at Sites 4 and 5 follow a pattern similar to the inflow concentrations, although at substantially lower values. Measured concentrations of total nitrogen in the discharge at Site 6 are similar to nitrogen concentrations measured within the pond at Sites 4 and 5.

A graphical summary of temporal variability in measured concentrations of phosphorus species in Ponds 2-5 at the Tropical Farms site is given on Figure 4-29. Highly variable concentrations of SRP, particulate phosphorus, and total phosphorus were input into the Ponds 2-5 system at Site 3. However, phosphorus concentrations for these species within the treatment system at Sites 4 and 5 were substantially lower in value and exhibited a much lower degree of variability, suggesting a significant potential for uptake of phosphorus species within the treatment system. In general, phosphorus concentrations in discharges through the outfall structure were similar to phosphorus concentrations measured within the pond at Sites 4 and 5.

A graphical summary of temporal variability in input and output concentrations of turbidity, color, BOD, and TSS in Ponds 2-5 at the Tropical Farms site is given on Figure 4-30. Measured concentrations of turbidity in the inflow to Ponds 2-5 at Site 3 were highly variable throughout the field monitoring program. However, turbidity values within the treatment system and at the pond discharge exhibited relatively consistent low values. Measured color concentrations in the inflows at Site 3 were also higher in value throughout much of the field monitoring program than concentrations observed within the pond system. A slight reduction in color appears to occur within the treatment system, with color concentrations at Sites 4 and 5 and at the pond outfall relatively similar in value.

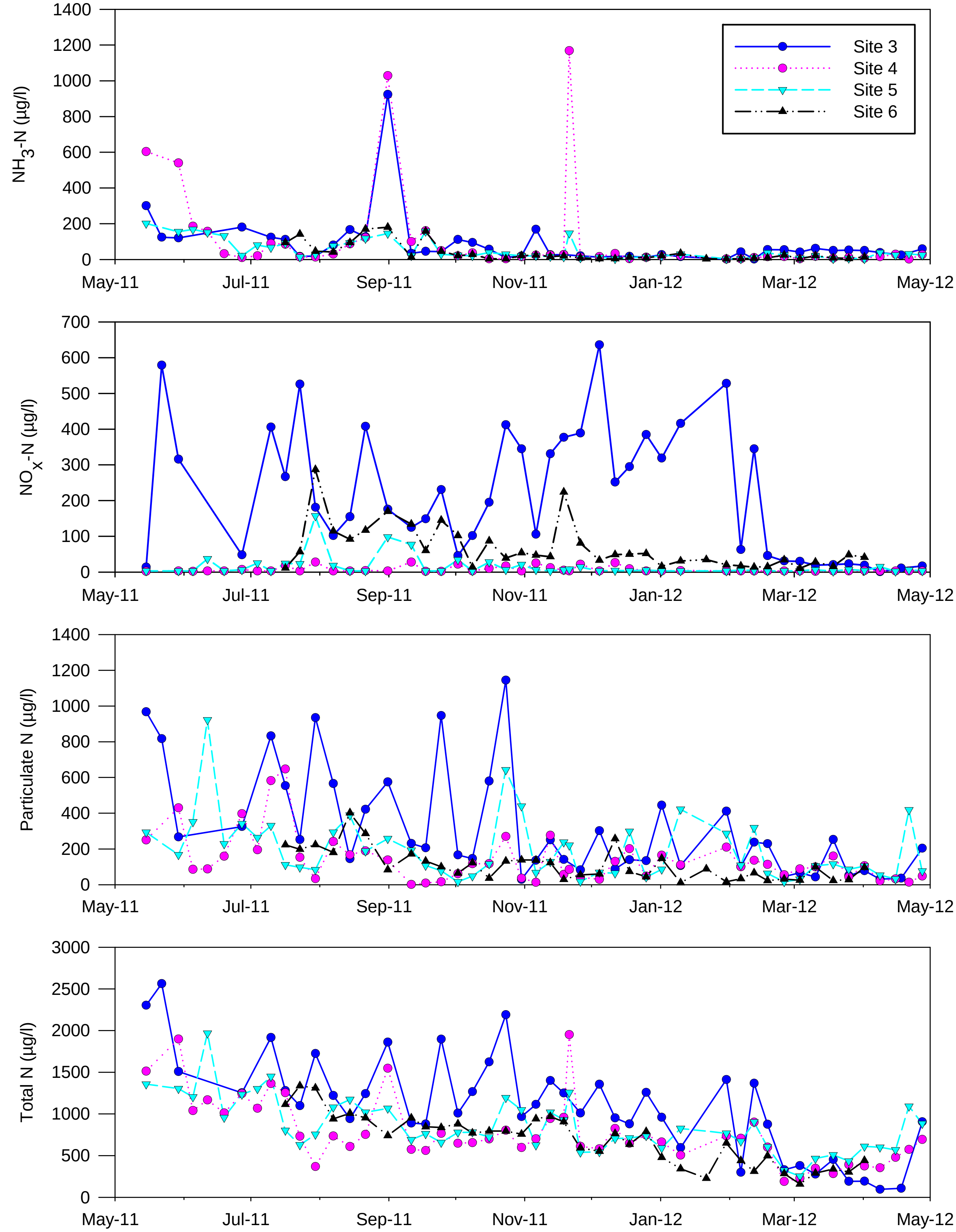


Figure 4-28. Temporal Variability of Inputs and Outputs of Nitrogen Species to Tropical Farms Ponds 2-5 from May 2011-April 2012.

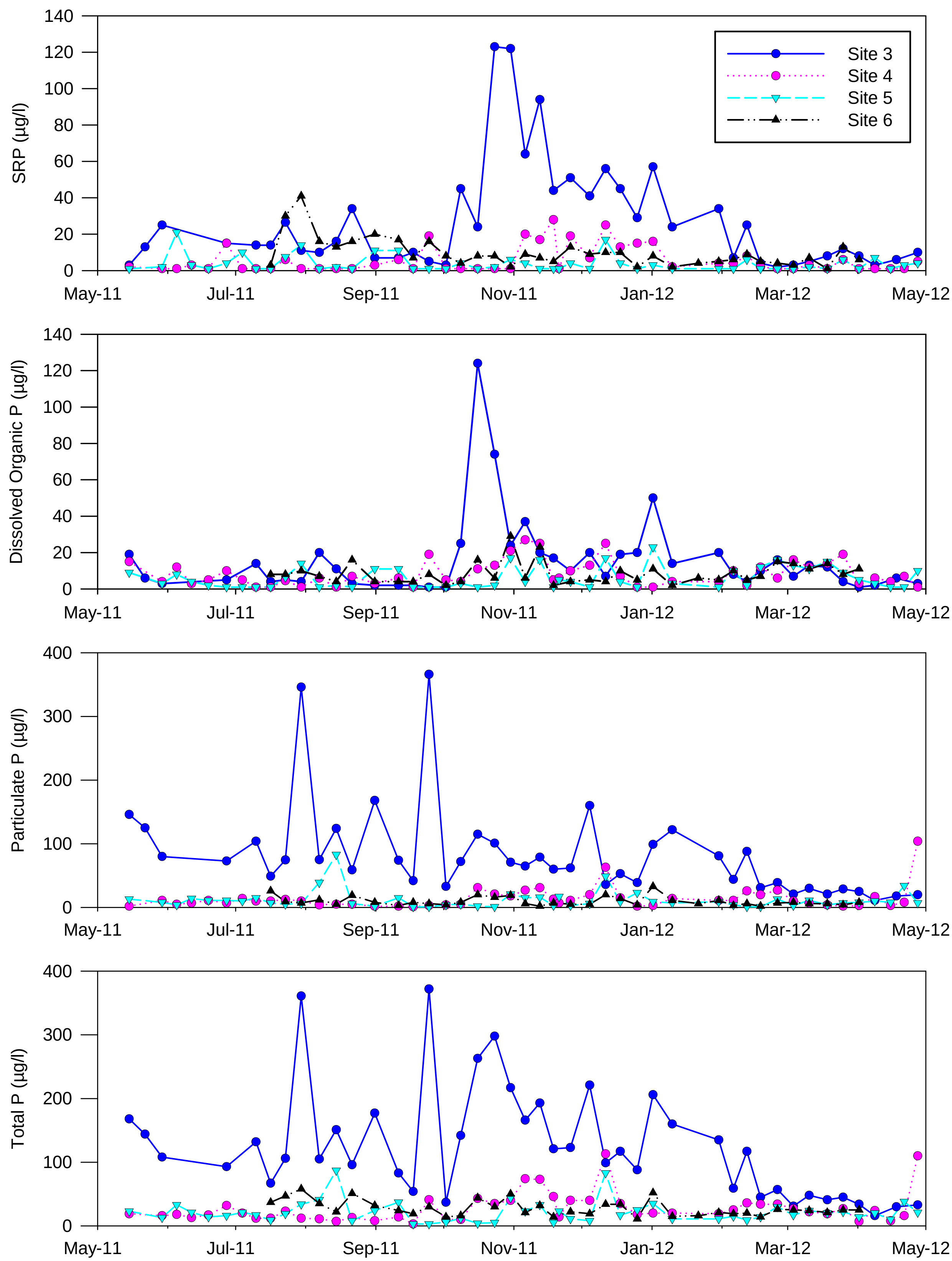


Figure 4-29. Temporal Variability of Inputs and Outputs of Phosphorus Species to Tropical Farms Ponds 2-5 from May 2011-April 2012.

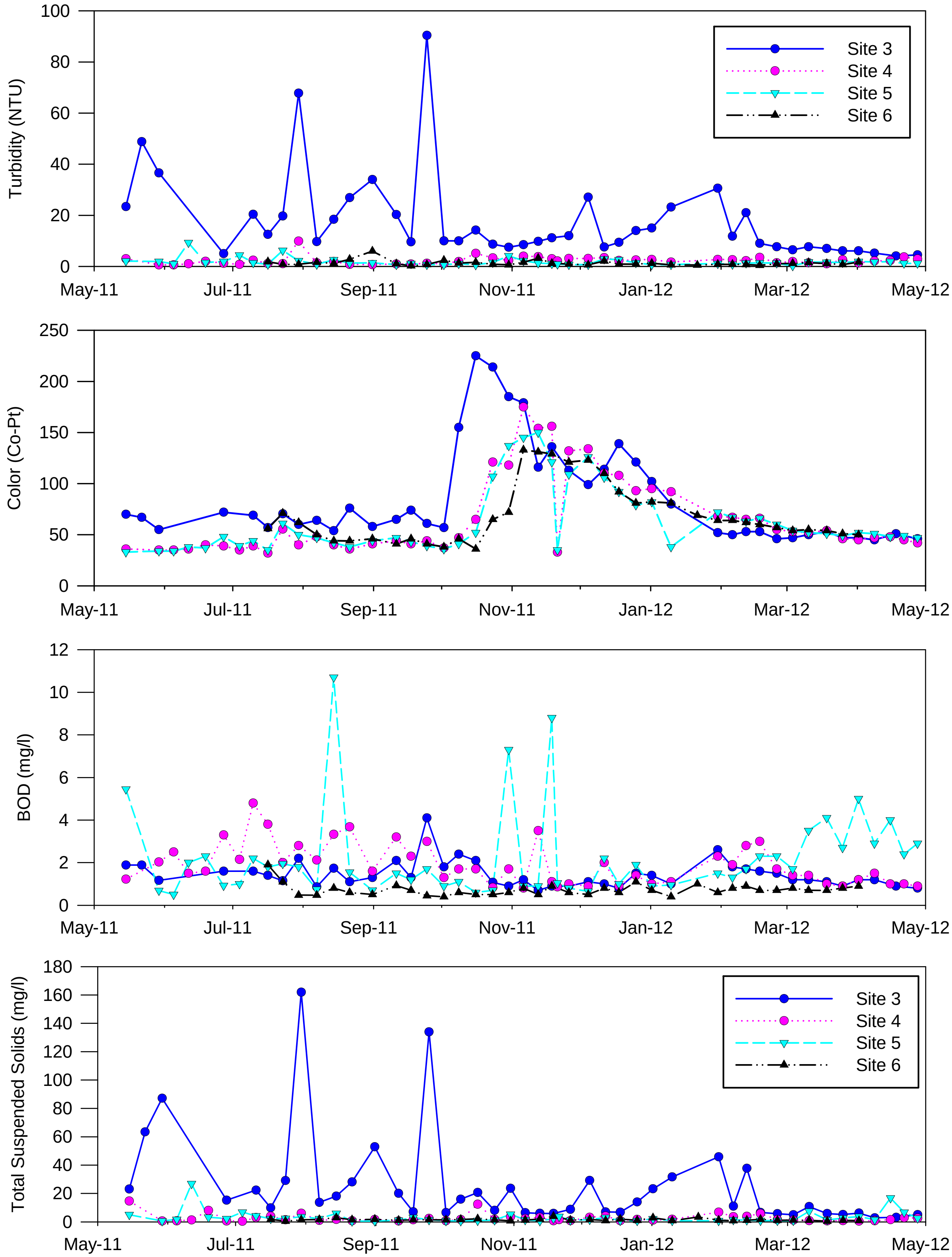


Figure 4-30. Temporal Variability of Inputs and Outputs of Turbidity, Color, BOD, and TSS to Tropical Farms Ponds 2-5 from May 2011-April 2012.

Relatively low input concentrations of BOD entered Ponds 2-5 from Site 3. However, increases in BOD were observed at Sites 4 and 5 on multiple occasions, suggesting an increase in oxygen-demanding organic material within the pond system. This increase may be due to the presence of waterfowl or degradation of vegetation within the system. Measured BOD concentrations at the pond outfall were generally lower in value than observed in mid-portions of the pond. Measured concentrations of TSS in the pond inflow were highly variable, ranging from low to elevated. However, TSS concentrations within the pond and at the pond outfall were generally low in value, suggesting a significant potential for uptake of TSS within Ponds 2-5.

4.4.3 Mass Removal Efficiencies

Monthly mass loadings and removal efficiencies were calculated for species of ammonia, phosphorus, TSS, and BOD for Ponds 2-5 using the same methodology outlined in Section 4.3.3 for Pond 1. The calculated monthly mass loadings are based upon mean monthly characteristics for each evaluated parameter (summarized in Appendix E.1) and the monthly hydrologic inputs and losses for Ponds 2-5 (summarized on Table 4-12). A summary of monthly mass loadings for Ponds 2-5 are given in Appendix E.2. A complete listing of calculated monthly mass removal efficiencies for evaluated parameters in Ponds 2-5 is given in Appendix E.4.

A graphical summary of monthly mass removal efficiencies for evaluated parameters in Ponds 2-5 at the Tropical Farms site is given on Figure 4-31. Removal efficiencies for ammonia ranged from approximately 50-100% during the field monitoring program. A wider range of removal efficiencies was observed for particulate nitrogen and dissolved organic nitrogen which exhibited a net export on several occasions, primarily during the period from mid-October to mid-December when vegetation leaf fall may be occurring. Overall, Ponds 2-5 exhibited a net positive removal for total nitrogen throughout the field monitoring program, with monthly mass removal efficiencies ranging from approximately 10-100%.

Measured removal efficiencies for particulate phosphorus and total phosphorus were relatively consistent during the field monitoring program, ranging from approximately 70-100%. More variable removal efficiencies were observed for dissolved organic phosphorus which ranged from 20-100%. Good removals were observed for SRP with the exception of the period of approximately mid-July to September when a net release of SRP was observed.

Relatively consistent and high removal efficiencies were observed for TSS in Ponds 2-5 throughout the entire field monitoring program. However, measured removal efficiencies for BOD were somewhat more variable, ranging from 20-100%. The lowest removal efficiencies for BOD appear to coincide with the net release observed for total nitrogen during the fall period.

An overall mass balance for Ponds 2-5 at the Tropical Farms site from May 2011-April 2012 is given on Table 4-25. The values summarized in this table reflect the summation of the monthly mass balances for each of the evaluated parameters provided in Appendix E.4.

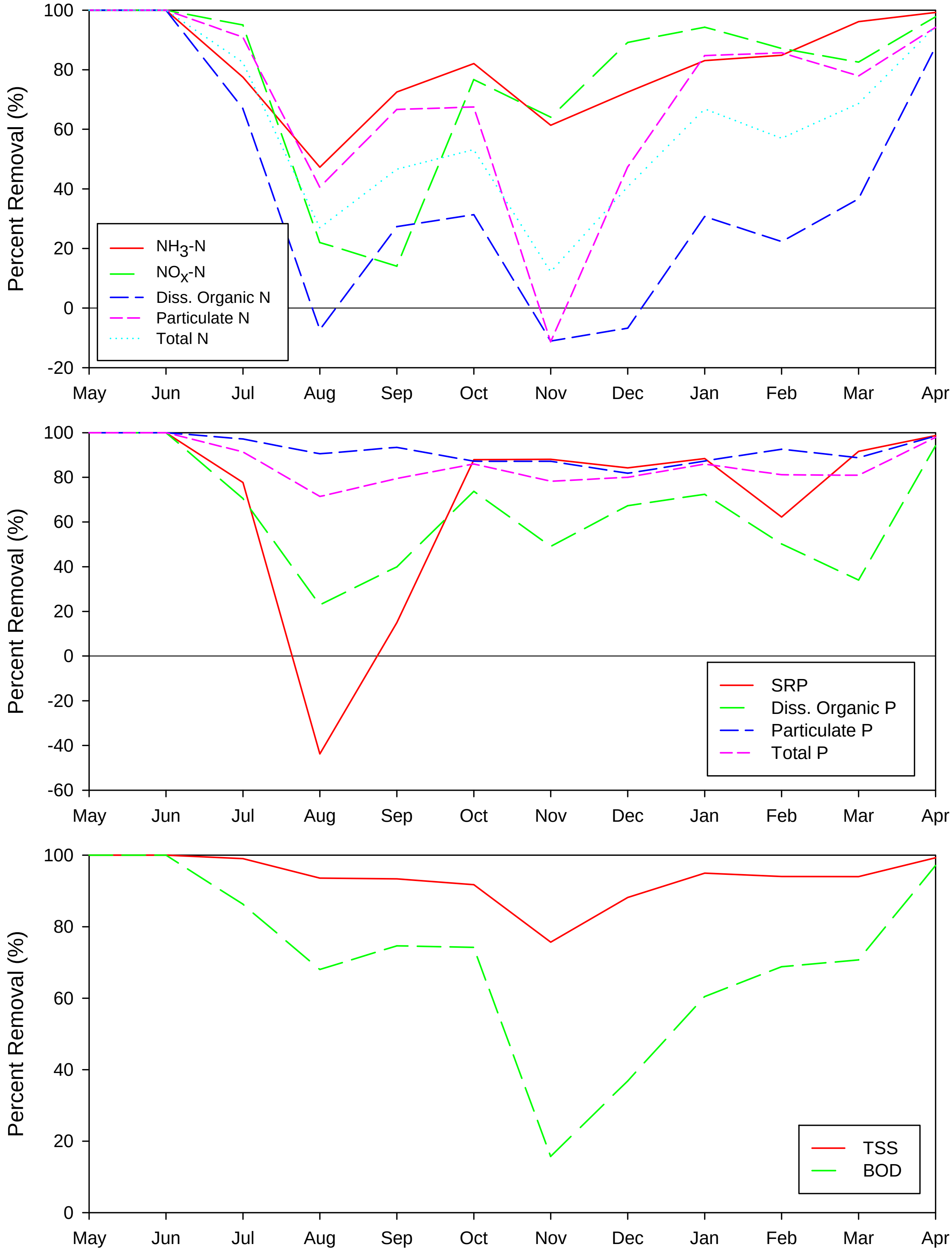


Figure 4-31. Monthly Mass Removal Efficiencies for Evaluated Parameters in Ponds 2-5 at the Tropical Farms Site.

TABLE 4-25

OVERALL MASS BALANCE FOR PONDS 2-5 AT TROPICAL FARMS FROM MAY 2011-APRIL 2012

PARAMETER	MASS INPUTS (kg)				LOSSES (kg)	MASS REMOVAL (%)
	Precipitation	Site 2	Groundwater	Total		
Ammonia	7.05	26.4	7.70	41.1	9.9	76
NO_x	6.73	146.7	0.85	154	32	80
Diss. Organic N	10.04	323	37.26	370	301	19
Particulate N	4.84	135.3	0.00	140	53	62
Total N	32.10	713	49.55	795	416	48
SRP	1.09	22.5	0.66	24.2	4.1	83
Diss. Organic P	0.75	10.44	0.52	11.72	4.0	66
Particulate P	0.46	44.3	0.00	45	5.6	88
Total P	2.58	84.5	1.39	88	15.3	83
TSS	110.41	10125	0.00	10,236	837	92
BOD	36.11	828	64.99	929	367	60

Overall, Ponds 2-5 achieved excellent removal efficiencies for nitrogen species, with an overall removal of 76% for ammonia, 80% for NO_x, 19% for dissolved organic nitrogen, 62% for particulate nitrogen, and 48% for total nitrogen. The ponds also achieved excellent removal efficiencies for phosphorus, with an 83% removal for SRP, 66% removal for dissolved organic phosphorus, 85% removal for particulate phosphorus, and 83% removal for total phosphorus. Ponds 2-5 also removed approximately 92% of the TSS and 60% of the incoming BOD.

Ponds 2-5 appear to achieve a substantially higher removal efficiency than observed in Pond 1. The primary reasons for this difference in efficiency are the extended residence time of approximately 39 days provided by Ponds 2-5, compared with a residence time of only 3.6 days provided by Pond 1, along with the substantial vegetation which is incorporated into the Ponds 2-5 system.

4.5 Performance Efficiency of the Overall System

An overall mass balance for the Tropical Farms treatment system was generated by combining the individual mass balances for Ponds 1 and Ponds 2-5. Inputs into the overall treatment system are included for precipitation, inflow through the western channel at Site 1, inputs from the 48-inch RCP at Site 2, and groundwater inflow. Losses for the overall treatment system are assumed to occur as a result of discharges from Ponds 2-5 at Site 6.

A tabular summary of the overall mass balance for the Tropical Farms treatment system is given on Table 4-26. Overall, the treatment system provided good to excellent removal efficiencies for all parameters except dissolved organic nitrogen. The overall treatment system removed approximately 86% of the mass inputs of ammonia, 85% for NO_x, 69% for particulate nitrogen, and 54% for total nitrogen. The treatment system also provided excellent removal efficiencies for phosphorus species, with a load reduction of 88% for SRP, 97% for particulate phosphorus, and 93% for total phosphorus. The overall treatment system removed approximately 98% of the incoming TSS and 70% of the incoming BOD. During the 12-month field monitoring program, the Tropical Farms facility removed approximately 496 kg of total nitrogen, 200 kg of total phosphorus, and 32,983 kg of TSS.

TABLE 4-26

OVERALL MASS BALANCE FOR THE TROPICAL FARMS TREATMENT SYSTEM FROM MAY 2011-APRIL 2012

PARAMETER	MASS INPUTS (kg)					OUTFALL LOSSES (kg)	MASS REMOVAL	
	Precipitation	Site 1	Site 2	Ground-water	Total		kg	% of Total Inputs
Ammonia	8.10	9.0	43	8.33	68	10	58	86
NO_x	7.73	37.6	164	1.07	211	32	179	85
Diss. Organic N	11.53	115	220	41.14	387	301	86	22
Particulate N	5.55	58.9	108	0.00	173	53	120	69
Total N	36.86	245	576	54.60	912	416	496	54
SRP	1.25	20.8	11	0.73	33	4	29	88
Diss. Organic P	0.87	3.0	3	0.65	7	4	3	46
Particulate P	0.52	15.7	153	0.00	169	6	163	97
Total P	2.96	41.0	169	1.62	215	15	200	93
TSS	127	703	32,990	0.00	33,820	837	32,983	98
BOD	41.47	332	777	75.78	1226	367	859	70

In general, the Tropical Farms treatment system provides excellent removal efficiencies for each of the evaluated parameters. The overall treatment concept consisting of a small pond which receives the primary inflows into the system, followed by an extended detention time system with extensive vegetation, appears to provide excellent removal efficiencies for the evaluated parameters.

4.6 Impacts of Vegetated Treatment Cell at Pond 4a

One of the objectives of this project was to evaluate the effectiveness of the densely planted vegetation in Pond 4a for reducing concentrations of measured constituents in the overall treatment system. An overview of the vegetated cell at Pond 4a, including field monitoring sites, is given on Figure 4-32. The date of the aerial photograph is April 12, 2012 which was near the end of the field monitoring program. Vegetation coverage is nearly 100% in the photo. Pond 4a is a shallow portion of the treatment system, ranging from approximately 2-4 ft in depth, which was densely planted with aquatic vegetation. Field monitoring was conducted at the inflow and outflow for the vegetated portion of the cell to assist in evaluating any potential treatment enhancement caused by vegetative uptake.

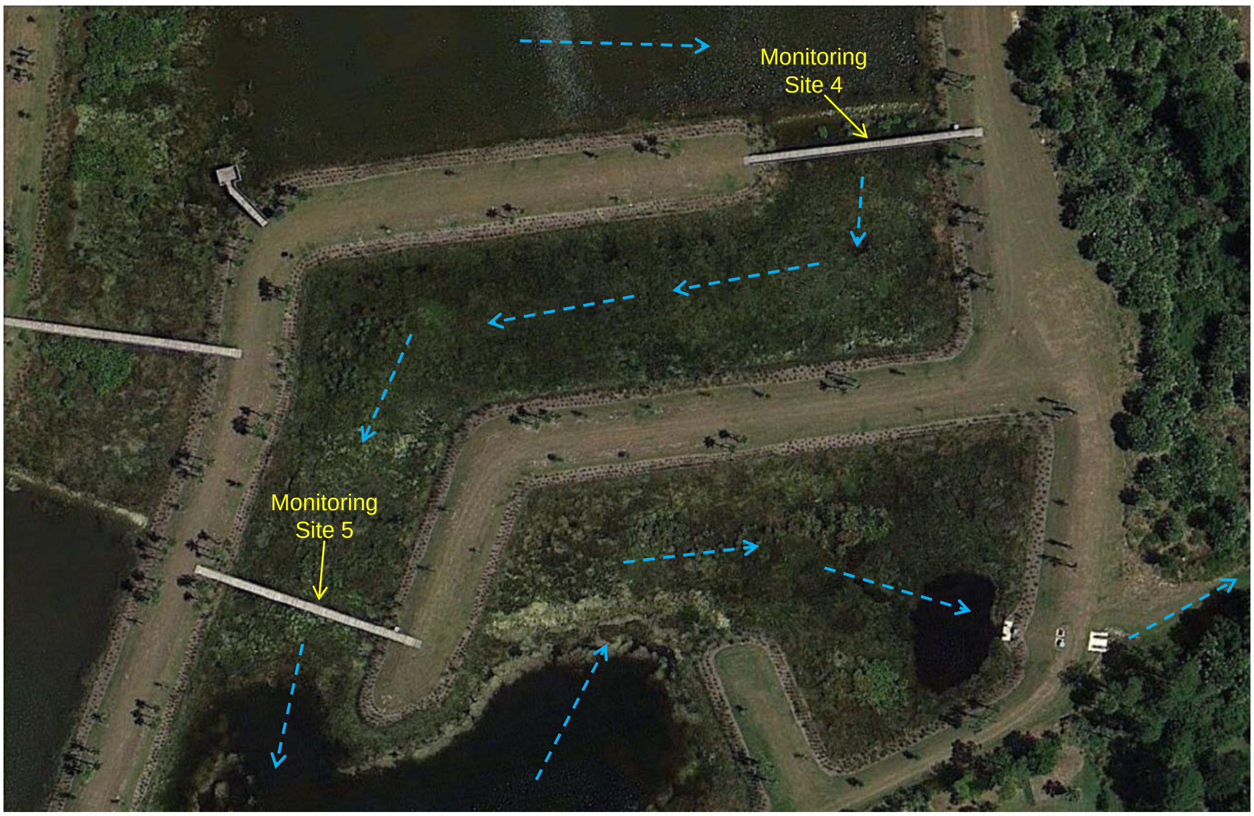


Figure 4-32. Overview of the Vegetated Cell at Pond 4a and Field Monitoring Sites.
(Aerial Photograph Date: April 12, 2012)

A tabular summary of changes in chemical characteristics during migration through the vegetated treatment cell at Pond 4a is given in Table 4-27. Calculated mean values are provided for monitoring conducted at Sites 4 and 5, along with a calculated percent change in concentration between the two sites. Water which migrated through the vegetated area exhibited virtually no change in pH, with a 4% reduction in measured alkalinity. Virtually no change occurred in measured concentrations of either conductivity or ammonia. However, concentrations of NO_x increased approximately 46%, although the measured concentrations are extremely low in value and near the limits of detection for the NO_x laboratory tests. Therefore, the observed change in concentrations may not be statistically significant. A 16% increase was observed in concentrations of dissolved organic nitrogen, with a 52% increase in particulate nitrogen and 14% increase in total nitrogen. It appears that the vegetation has little affinity for removal of dissolved organic nitrogen or particulate nitrogen. The most likely nitrogen species to be removed by the vegetation is ammonia and NO_x, both of which were extremely low in value in the input to the vegetated cell. If the input concentrations for ammonia and NO_x had been substantially higher, a net reduction in concentration may have been observed for these parameters.

TABLE 4-27

CHANGES IN CHEMICAL CHARACTERISTICS DURING MIGRATION THROUGH THE VEGETATED TREATMENT CELL AT POND 4a

PARAMETER	UNITS	GEOMETRIC MEAN		PERCENT CHANGE (%)
		Site 4	Site 5	
pH	s.u.	7.58	7.56	0
Alkalinity	mg/l	146	140	-4
Conductivity	µmho/cm	448	462	3
Ammonia	µg/l	25	26	4
NO_x	µg/l	5	7	46
Diss. Organic N	µg/l	485	563	16
Particulate N	µg/l	86	131	52
Total N	µg/l	695	790	14
SRP	µg/l	3	2	-18
Diss. Organic P	µg/l	6	4	-36
Particulate P	µg/l	9	7	-18
Total P	µg/l	21	16	-23
Turbidity	NTU	1.9	1.4	-26
TSS	mg/l	1.7	1.9	9
BOD	mg/l	1.7	1.7	0
Color	Pt-Co	57	56	-2

However, the vegetated cell did reduce concentrations of SRP, dissolved organic phosphorus, particulate phosphorus, and total phosphorus based upon measurements conducted at the inflow and outflow to the vegetated cell. It should be noted that the input concentrations for SRP, dissolved organic phosphorus, and particulate phosphorus were extremely low in value initially, so the observed reductions in concentrations may not be statistically significant. The observed reductions in concentrations for these species may have been greater if the initial input concentrations had been higher. The vegetated treatment area also reduced turbidity levels by approximately 26%, with a slight increase in TSS, and no significant change in BOD or color.

Overall, the vegetated cell appeared to export nitrogen while retaining species of phosphorus. However, it should be noted that input concentrations of inorganic nitrogen and phosphorus were extremely low in value, and the observed results may have been different if the input concentrations had been higher.

4.7 Pollutant Removal Costs

An analysis was conducted to calculate mass removal costs for total nitrogen, total phosphorus, and TSS in the Tropical Farms treatment system. A summary of this analysis is given in Table 4-28. Inputs of nitrogen, phosphorus, and TSS into the Tropical Farms treatment system are assumed to occur as a result of inflows at Sites 1 and 2, bulk precipitation, and groundwater inputs. Losses from the system are assumed to occur through the discharge structure at Site 6. The difference between the calculated inputs and losses is the mass of pollutants removed by the treatment system.

TABLE 4-28

CALCULATED MASS REMOVAL COSTS FOR THE TROPICAL FARMS TREATMENT SYSTEM

CONDITION	PARAMETER	UNITS	VALUE
System Inputs	Total N Input	kg/yr	912
	Total P Input	kg/yr	215
	TSS Input	kg/yr	33,820
System Losses	Total N Discharge	kg/yr	416
	Total P Discharge	kg/yr	15.3
	TSS Discharge	kg/yr	837
System Removals	Total N Removed	kg/yr	496
	Total P Removed	kg/yr	200
	TSS Removed	kg/yr	32,983
Project Cost Analysis	Project Capital Cost	$	4,055,901
	Annual O&M Cost	$	20,000
	Analysis Duration	years	20
	Interest Rate	%	4
	P/A Factor	--	13.59
	20-Year Present Worth	$	4,327,701
Removal Costs	Total N Removal Cost	$/kg	436
	Total P Removal Cost	$/kg	1,082
	TSS Removal Cost	$/kg	6.58

As indicated on Table 1-3, the project capital costs for the Tropical Farms system was approximately $4,055,901, with an assumed annual O&M cost of approximately $20,000. The present worth cost is calculated based upon a 20-year analysis cycle and a 4% interest rate. The resulting 20-year present worth cost for the treatment system is approximately $4,327,701.

Mass removal costs are provided at the bottom of Table 4-28. These costs are calculated by dividing the 20-year present worth cost by 20 years of estimated mass load reductions for nitrogen, phosphorus, and TSS. This analysis results in an estimated total nitrogen removal cost of $436/kg, $1,082/kg for total phosphorus, and $6.58/kg for TSS. These removal costs are on the lower end of removal costs commonly associated with wet detention systems and are substantially lower than removal costs associated with BMPs such as baffle boxes, gross pollutant separators, and underground exfiltration systems.

4.8 <u>Quality Assurance</u>

Supplemental samples (such as equipment blanks and duplicate samples) were collected during the field monitoring program for quality assurance purposes. In addition, a number of supplemental laboratory analyses were performed to evaluate precision and accuracy of the collected data. Overall, more than 1,000 additional laboratory analyses were conducted for quality assurance purposes. A summary of QA data collected as part of this project is given in Appendix F.

SECTION 5

SUMMARY

A field monitoring program was conducted by ERD from May 2011-April 2012 to evaluate the performance efficiency of the Tropical Farms stormwater retrofit project facility. The Tropical Farms site is located in Martin County, southwest of the City limits of Stuart. The targeted drainage basin is known as the Tropical Farms/Roebuck Creek Basin in central Martin County. The Tropical Farms facility is designed to reduce pollutant loadings from a 468-acre residential watershed, much of which has no current stormwater treatment facilities. The Tropical Farms treatment system consists of approximately 16.6 acres of wet detention ponds and vegetated stormwater areas which form a linear meandering pathway for runoff inflows. The treatment system consists of five separate wet detention ponds separated by earthen channel or rock gabion structures.

Automatic samplers with integral flow meters were installed at the two significant inflows to the treatment system, as well as the treatment system outfall to provide a continuous record of hydrologic inputs and losses and to collect runoff and outflow samples in a flow-weighted mode. A recording rain gauge and pan evaporimeter were also installed at the monitoring site. Digital water level recorders were installed inside each of the five ponds to assist in evaluating changes in water surface elevations. Monitoring sites were also established within the treatment train at locations upstream and downstream from one of the densely vegetated cells to evaluate nutrient uptake achieved by the aquatic vegetation.

Continuous inflow and outflow hydrographs were recorded at the Tropical Farms site at 10-minute intervals from May 1, 2011-April 30, 2012. During this time, approximately 37% of the hydrologic inputs into the initial treatment pond originated from the western inflow channel (Site 1), with 60% of the hydrologic inputs originating through the 48-inch RCP (Site 2) which provides drainage from a residential community. An additional 2% of the hydrologic inputs was contributed by direct precipitation, with 1% by groundwater flow. The mean residence time for the initial pond in the treatment system during the field monitoring program was 3.6 days.

The second series of ponds, designated as Ponds 2-5, consist of a linear train of wet detention ponds. The dominant inflow into these ponds during the field monitoring program was the discharge from Pond 1 which contributed approximately 86% of the hydrologic inputs to Ponds 2-5. An additional 9% of the hydrologic inputs occurred as a result of direct precipitation, with 5% contributed by groundwater inflow. The mean annual residence time for water in Ponds 2-5 was approximately 38.9 days.

Over the 12-month field monitoring program, 120 composite inflow and outflow samples were collected at the Tropical Farms site, with an additional 98 samples collected at the inflow and outflow to one of the densely vegetated cells, 24 samples collected of bulk precipitation, and 96 samples collected from shallow monitoring wells. Physical-chemical field measurements of pH, temperature, specific conductivity, dissolved oxygen, dissolved oxygen saturation, and ORP were conducted in each of the five treatment ponds during each weekly visit. In addition, field measurements of discharge rates were conducted at each of the inflow/outflow monitoring sites for use in calibration and verification of discharge measurements collected by the flow monitoring equipment.

During the field monitoring program, the initial pond in the treatment system (Pond 1) removed approximately 14% of the total nitrogen loadings, 60% of the total phosphorus loadings, 70% of the TSS loadings, and 26% of the BOD loadings. Inflow concentrations into Pond 1 were highly variable, with elevated concentrations for many parameters. Discharges from Pond 1 became the input to Ponds 2-5. Good to excellent mass removal efficiencies were achieved in Ponds 2-5, with a 48% reduction in loadings of total nitrogen, 83% reduction for total phosphorus, 92% reduction for TSS, and 60% reduction for BOD. The enhanced load reductions achieved in Ponds 2-5 is attributed to the enhanced detention time and the presence of extensive wetland vegetation.

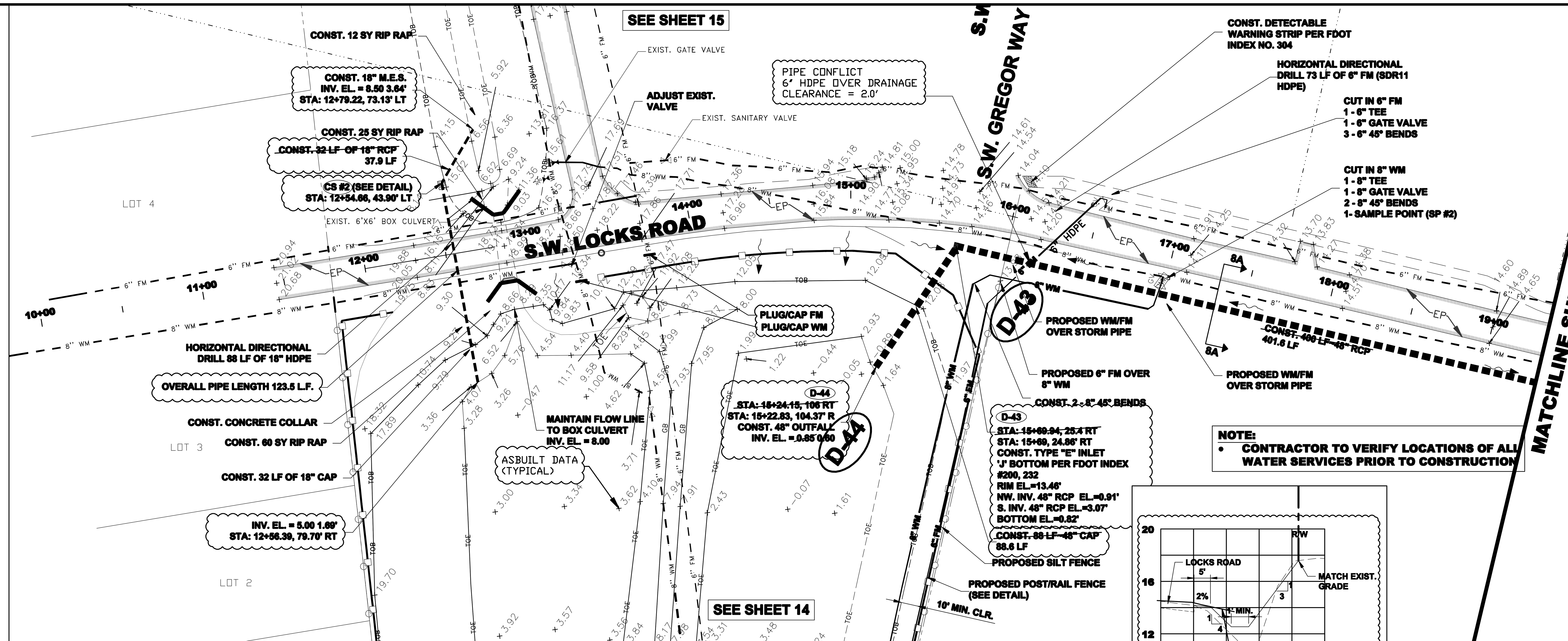
During the 12-month monitoring program, the overall Tropical Farms treatment system removed approximately 496 kg of total nitrogen, 200 kg of total phosphorus, 32,983 kg of TSS, and 859 kg of BOD. Overall, the Tropical Farms treatment system removed approximately 54% of the total nitrogen, 93% of the total phosphorus, 98% of the TSS, and 70% of the BOD inputs. These removal efficiencies are substantially greater than removal efficiencies normally associated with wet detention systems, and appear to be related to the unique design of the meandering pond system as well as the presence of the extensive aquatic vegetation.

The Tropical Farms treatment system was constructed for a capital cost of approximately $4,055,901, with funding provided by Martin County and FDEP. The estimated annual O&M cost for the facility is approximately $20,000. The calculated 20-year present worth cost for the facility, which includes capital costs and 20 years of annual O&M costs, using a 4% interest rate, is $4,327,701. Mass removal costs for the Tropical Farms system are attractive and on the lower end of costs commonly associated with wet detention ponds. The estimated nitrogen removal cost is approximately $436/kg, with a phosphorus removal cost of $1,082/kg and a TSS removal cost of $6.58/kg.

APPENDICES

APPENDIX A

SELECTED CONSTRUCTION DRAWINGS FOR THE TROPICAL FARMS TREATMENT SYSTEM SITE



LEGEND

- OPEN CUT/RESTORE PAVEMENT (PER DETAIL)
- PROPOSED PIPE
- EXISTING SWALE
- ALIGNMENT CENTERLINE
- PROPOSED STRUCTURE
- PROPOSED MITERED END SECTION
- PROPOSED STRUCTURE NUMBER
- EXISTING RIGHT-OF-WAY
- PROPOSED POST/RAIL FENCE
- PROPOSED CONFLICT/SERVICE ADJUSTMENT (SEE DETAIL)
- PROPOSED SIDEWALK REPLACEMENT
- PROPOSED DRIVEWAY REPLACEMENT (SEE DETAIL-SHEET 21)
- PROPERTY LINE
- EXISTING 8" WATERMAIN
- EXISTING 6" FORCEMAIN
- OVERHEAD ELECTRIC
- BURIED ELECTRIC
- EXISTING EDGE OF PAVEMENT
- EXISTING WATER SERVICE
- WOODEN POWER POLE

NOTES:

1. AREAS SURROUNDING ALL PROPOSED INLETS TO BE REGRADED TO POSITIVELY DRAIN TO INLETS.
2. STRUCTURES SHOULD BE CONSTRUCTED IN TWO PIECES SUCH THAT FIELD ADJUSTMENTS CAN BE MADE TO GRATE/TOP ELEVATIONS IF NECESSARY.
3. ALL DRAINAGE AND UTILITY EASEMENTS ARE EXISTING.
4. ALL DISTURBED AREAS TO BE SODDED.
5. CONTRACTOR TO REPAIR/REPLACE ALL UTILITIES DAMAGED DURING CONSTRUCTION.
6. CONTRACTOR TO LOCATE (POTHOLE) ALL WATER AND SEWER MAINS AT CONFLICTS PRIOR TO COMMENCING WORK OR SUBMITTING SHOP DRAWING FOR REVIEW.
7. MITERED END SECTION (M.E.S.) SHALL BE PER FDOT INDEX NO. 272/273. COST OF PIPE TO BE INCLUDED WITH M.E.S.
8. CONTRACTOR SHALL CONTACT FIELD REP FOR VERIFICATION OF STAKED STRUCTURE PLACEMENT PRIOR TO INSTALLATION.
9. PROPOSED SIDEWALKS TO BE COMPLIANT WITH ADA GUIDELINES. CROSS SLOPE SHALL BE 2% MAX. LONGITUDINAL SLOPE SHALL BE 1:12 MAX.
10. CONTRACTOR TO LOCATE ALL WATERMAIN SERVICES AND ADJUST AS NEEDED.

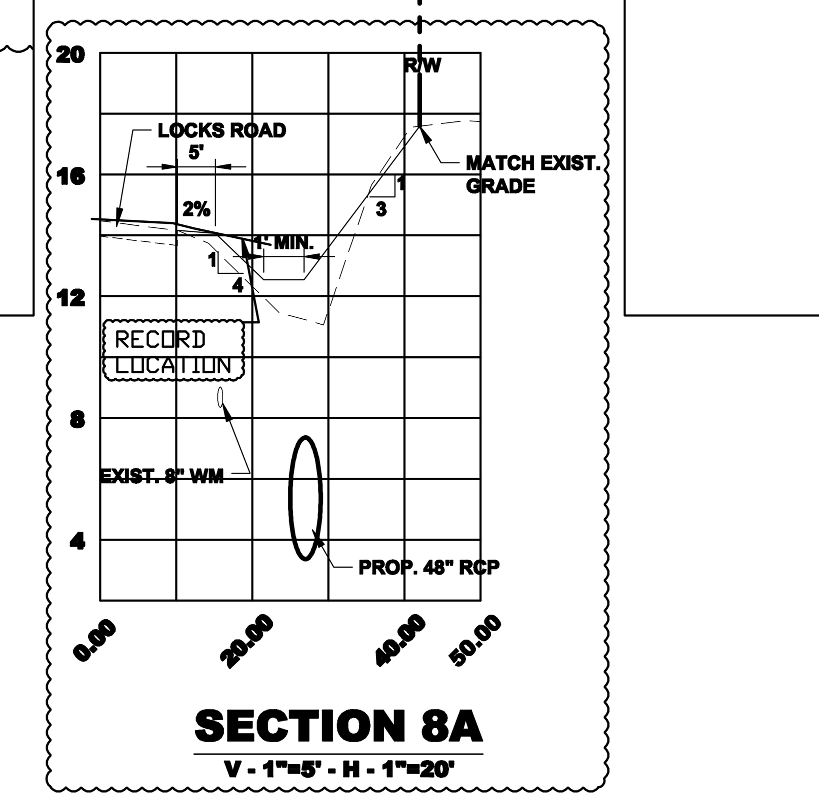
UTILITY NOTES:

1. UTILITY WORK DEPICTED ON THIS PAGE TO BE PERFORMED AFTER WORK DEPICTED ON SHEET 15 & 16 IN ORDER TO MAINTAIN SERVICE. ADJUSTMENTS TO BOTH (WM & FM) PRIOR TO ANY WORK ON THIS SHEET.
2. PROPOSED WM/FM IMPROVEMENTS TO BE CONSTRUCTED AND APPROVED BY MARTIN COUNTY UTILITIES PRIOR TO DISRUPTION OF EXISTING SERVICE. AFTER APPROVAL OF PROPOSED LINES, CONNECTION TO EXISTING LINES MAY BE MADE UNDER DIRECT SUPERVISION OF E.O.R. AND M.C.U. 15 FULL BUSINESS DAYS PRIOR TO COMMENCING UTILITY WORK.

FORCE MAIN NOTES:

CONTRACTOR TO DETERMINE LOCATION AND DEPTH OF EXISTING FORCE MAIN PRIOR TO HORIZONTAL DIRECTIONAL DRILL. COORDINATE WITH MARTIN COUNTY UTILITIES 5 FULL BUSINESS DAYS PRIOR TO WORK.

RECORD DRAWING



SECTION 8A

V - 1"=5' - H - 1"=20'

NOTE: SEE SHEET 14 FOR WATER AND FORCE MAIN RECORD DATA.

BETSY LINDSAY, INC.
SURVEYING AND MAPPING
7997 S.W. JACK JAMES DRIVE STUART, FLORIDA 34997
(772)286-5753 (772)286-5933 FAX
LICENSED BUSINESS NO. 6852
RECORD SURVEY
JULY 7, 2011 JOB NO. 08-66

RECORD LEGEND

ARV	AIR RELEASE VALVE
CONST.	CONSTRUCTION
E	EASTING
EL.	ELEVATION
EP	EDGE OF PAVEMENT
GV	GATE VALVE
HDPE	HIGH DENSITY POLYETHYLENE PIPE
INV.	INVERT
IRC	IRON ROD AND CAP
LB	LICENSED BUSINESS
L.F.	LINEAR FEET
M.E.S.	MITRED END SECTION
N	NORTHING
NO.	NUMBER
P.S.M.	PROFESSIONAL SURVEYOR & MAPPER
PT.	POINT
RCP	REINFORCED CONCRETE PIPE
STA	STATION
TOB	TOP OF BANK
TOE	TOE OF SLOPE
TOF	TOP OF FLANGE
TON	TOP OF NUT
TOP	TOP OF PIPE
TRAV	TRAVERSE
(cloud)	RECORD DATA

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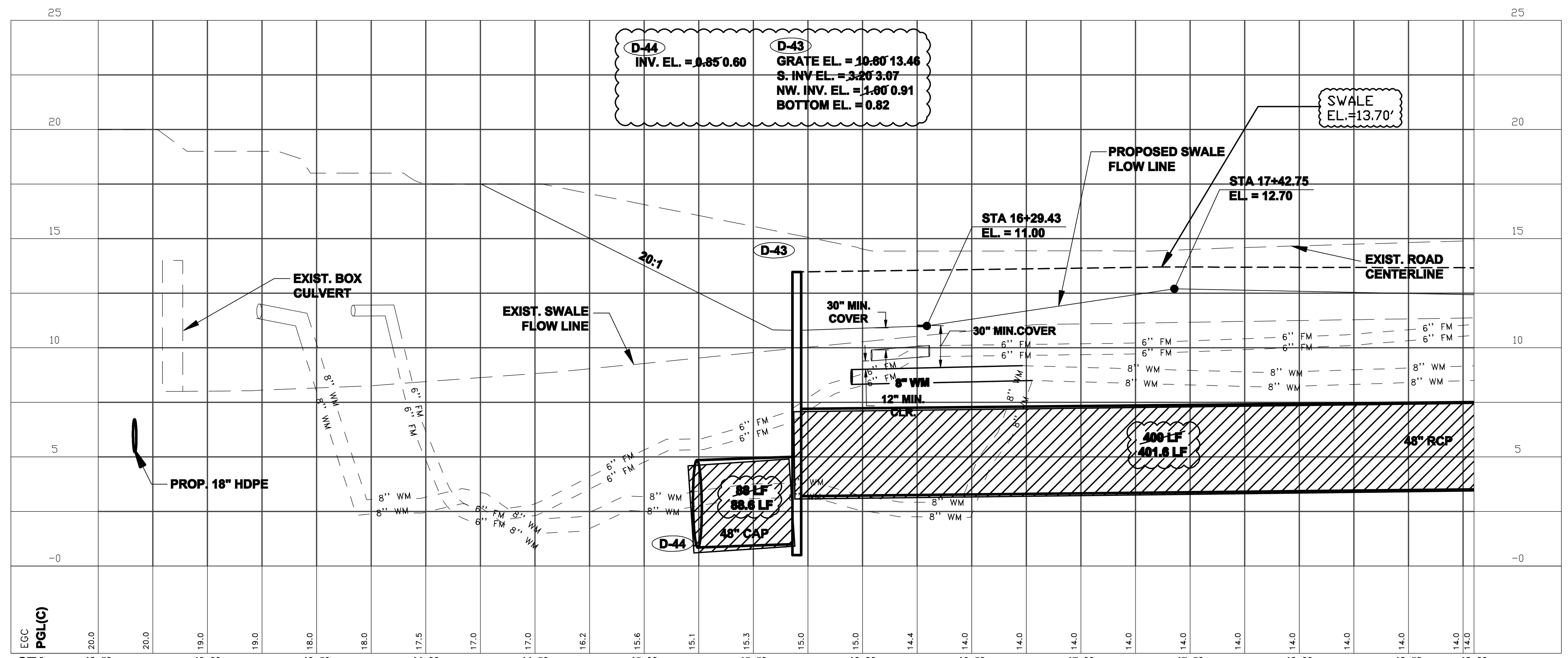
SUNSHINE STATE ONE CALL OF FLORIDA, INC.

PROFILE SCALE

HORIZ: 1" = 40'
VERT: 1" = 4'

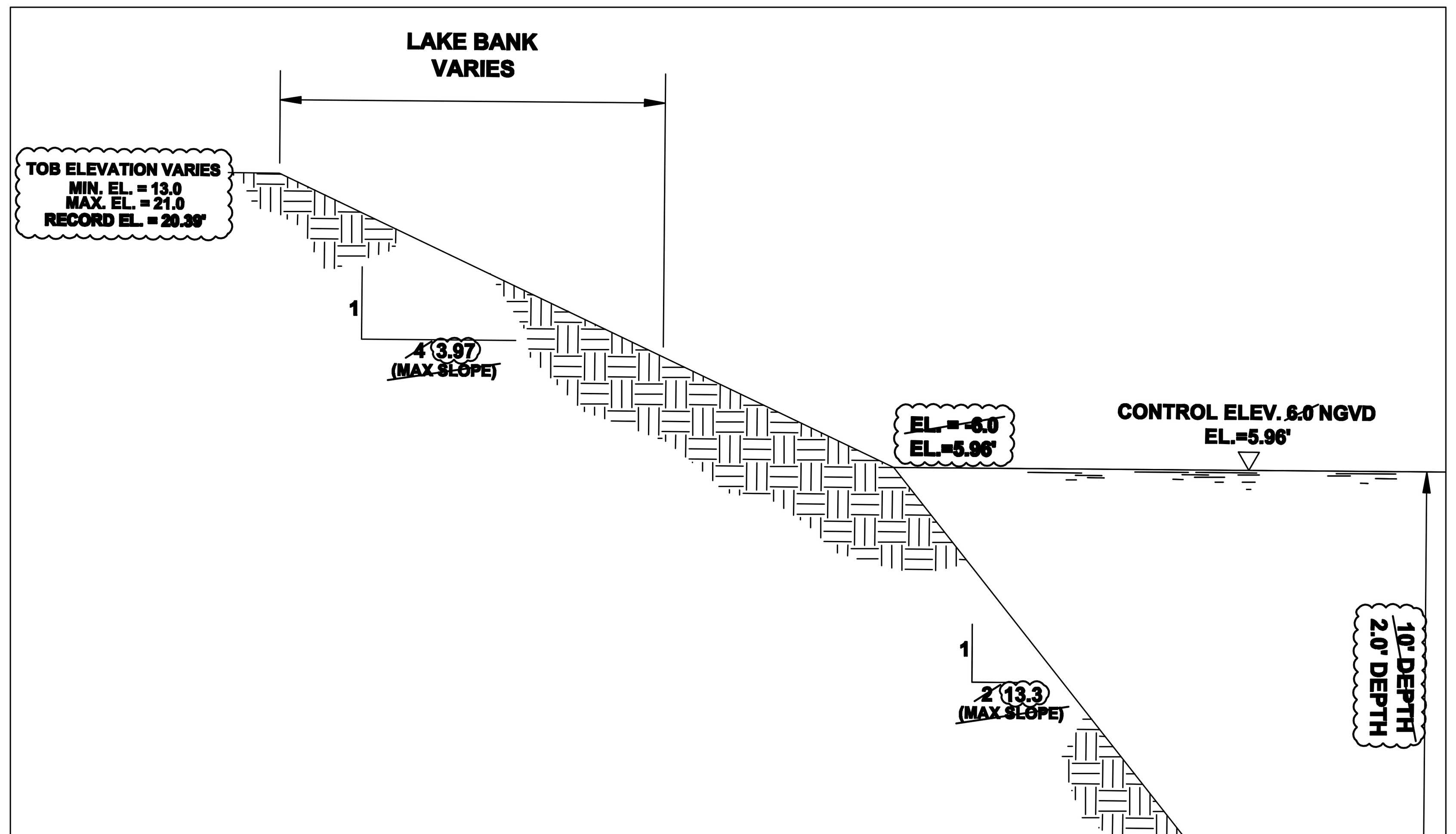


TROPICAL FARMS WATER QUALITY RETROFIT
MARTIN COUNTY, FLORIDA
SW LOCKS ROAD PLAN AND PROFILE

CAPTEC Engineering, Inc.
Civil Engineering Professionals

Joseph W. Capra
301 N.W. Flagler Ave., Ste. 201
Stuart, Florida 34994
P.E. No. 37638

JOB No.: 830.3
SHEET 8 OF 26

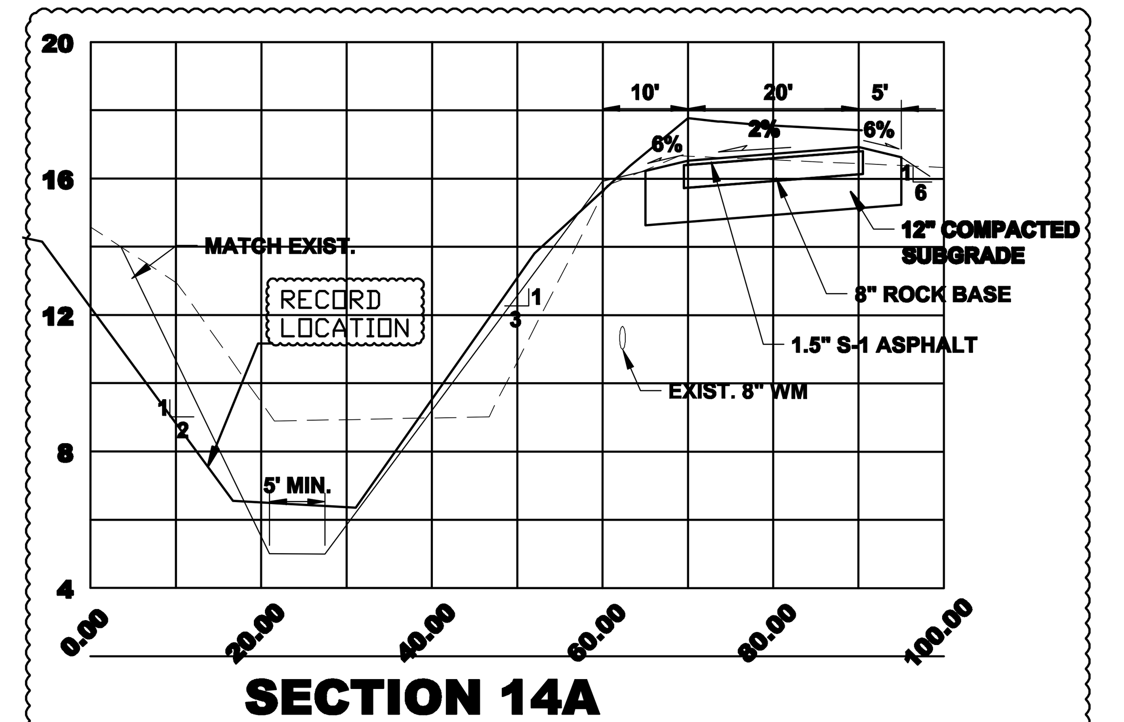


TYPICAL LAKE SECTION

NTS

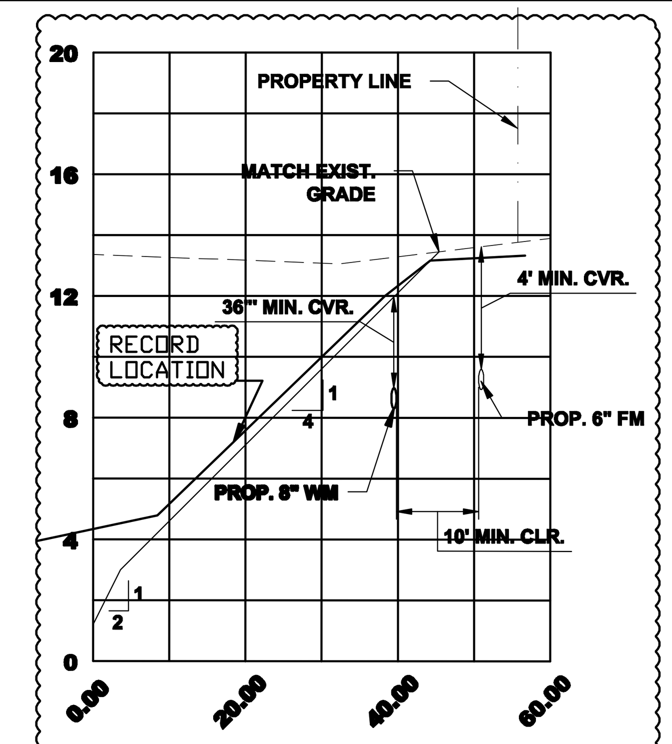
LEGEND

- OPEN CUT/RESTORE PAVEMENT (PER DETAIL)
- PROPOSED PIPE
- EXISTING SWALE
- ALIGNMENT CENTERLINE
- PROPOSED STRUCTURE
- PROPOSED MITERED END SECTION
- PROPOSED STRUCTURE NUMBER
- EXISTING RIGHT-OF-WAY
- PROPOSED POST/RAIL FENCE
- PROPOSED CONFLICT/SERVICE ADJUSTMENT (SEE DETAIL)
- PROPOSED SIDEWALK REPLACEMENT
- PROPOSED DRIVEWAY REPLACEMENT (SEE DETAIL-SHEET 21)
- PROPERTY LINE
- EXISTING 8" WATERMAIN
- EXISTING 6" FORCEMAIN
- OVERHEAD ELECTRIC
- BURIED ELECTRIC
- EXISTING EDGE OF PAVEMENT
- EXISTING WATER SERVICE
- WOODEN POWER POLE
- SOIL BORING LOCATION. SEE "A.A.C.E." SOILS REPORT FOR INFORMATION/BORING LOG



SECTION 14A

V - 1"=5' - H - 1"=20'



SECTION 14B

V - 1"=5' - H - 1"=20'

NOTES:

1. AREAS SURROUNDING ALL PROPOSED INLETS TO BE REGRADED TO POSITIVELY DRAIN TO INLETS.
2. STRUCTURES SHOULD BE CONSTRUCTED IN TWO PIECES SUCH THAT FIELD ADJUSTMENTS CAN BE MADE TO GRATE/TOP ELEVATIONS IF NECESSARY.
3. ALL DRAINAGE AND UTILITY EASEMENTS ARE EXISTING.
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10. CONTRACTOR TO LOCATE ALL WATERMAIN SERVICES AND ADJUST AS NEEDED.

UTILITY NOTES:

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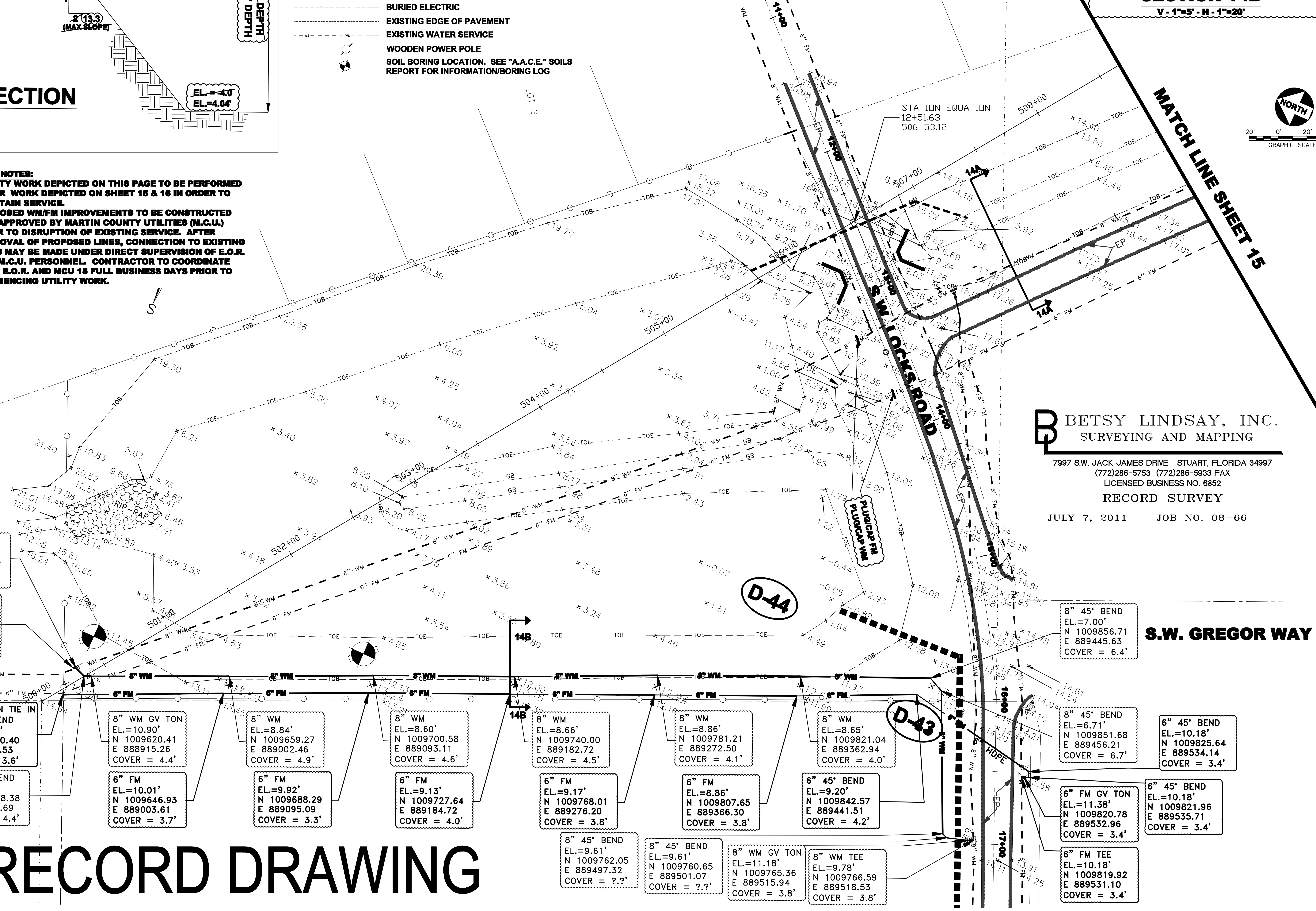
RECORD LEGEND

ARV	AIR RELEASE VALVE
CONST.	CONSTRUCTION
E	EASTING
EL.	ELEVATION
EP	EDGE OF PAVEMENT
GV	GATE VALVE
HDPE	HIGH DENSITY POLYETHLENE PIPE
INV.	INVERT
IRC	IRON ROD AND CAP
LB	LICENSED BUSINESS
L.F.	LINEAR FEET
M.E.S.	MITRED END SECTION
N	NORTHING
NO.	NUMBER
P.S.M.	PROFESSIONAL SURVEYOR & MAPPER
PT.	POINT
RCP	REINFORCED CONCRETE PIPE
STA	STATION
TOB	TOP OF BANK
TOE	TOE OF SLOPE
TOF	TOP OF FLANGE
TON	TOP OF NUT
TOP	TOP OF PIPE
TRAV	TRAVERSE
(cloud)	RECORD DATA



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RECORD DRAWING

CAPTEC Engineering, Inc.
301 NW Flagler Ave, Ste. 201
Stuart, Florida 34994
Phone: (772) 692-4344
Fax: (772) 692-4341
Engineering Business No. EB-0007657
Civil Engineering Professionals

DATE:	07/17/07
DRAWN BY:	DHR
DESIGNED BY:	RRK
CHECKED BY:	JWC
PROJECT No.:	830.3
HORZ. SCALE:	1" = 40'
VERT. SCALE:	AS SHOWN
CADD FILE:	PIPE SYSTEM

NO.	DATE	BY	REVISIONS
2	07-21-08	RRK	BID SET
1	12/07/07	MS	REVISION PER ADDITIONAL TOPO

SCALE VERIFICATION
0 — 1
SOLID BAR IS EQUAL TO ONE INCH ON ORIGINAL DRAWING, ADJUST ALL SCALED DIMENSIONS ACCORDINGLY

TROPICAL FARMS WATER QUALITY RETROFIT

MARTIN COUNTY, FLORIDA

LAKE PLAN AND SECTION

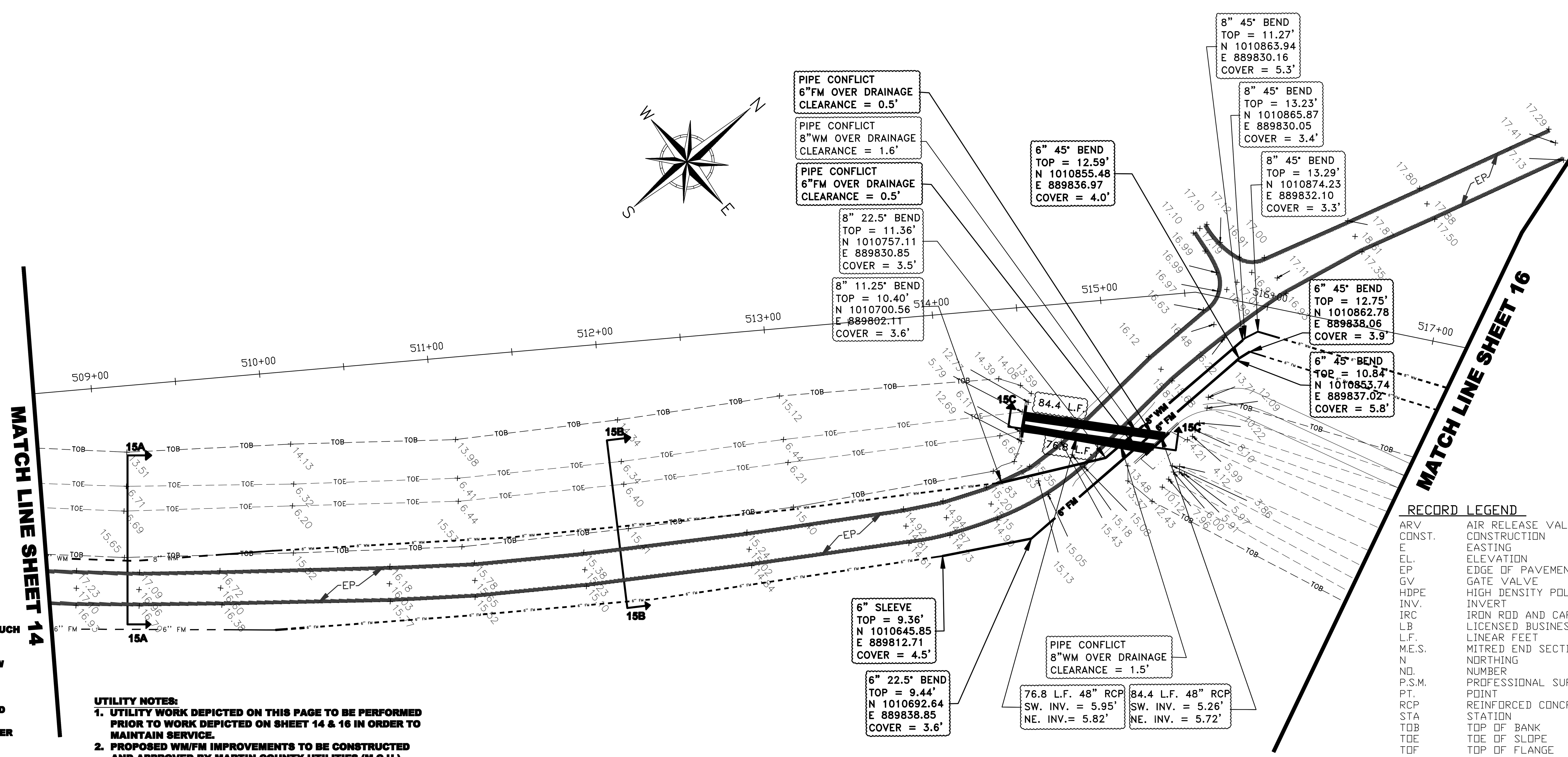
Joseph W. Capra
301 N.W. Flagler Ave., Ste. 201
Stuart, Florida 34994
P.E. No. 37638

Printed Date:

JOB No.: 830.3
SHEET 14 OF 26

LEGEND

	OPEN CUT/RESTORE PAVEMENT (PER DETAIL)
	PROPOSED PIPE
	EXISTING SWALE
	ALIGNMENT CENTERLINE
	PROPOSED STRUCTURE
	PROPOSED MITERED END SECTION
	PROPOSED STRUCTURE NUMBER
	EXISTING RIGHT-OF-WAY
	PROPOSED POST/RAIL FENCE
	PROPOSED CONFLICT/SERVICE ADJUSTMENT (SEE DETAIL)
	PROPOSED SIDEWALK REPLACEMENT
	PROPOSED DRIVEWAY REPLACEMENT (SEE DETAIL-SHEET 21)
	PROPERTY LINE
	EXISTING 8" WATERMAIN
	EXISTING 6" FORCEMAIN
	OVERHEAD ELECTRIC
	BURIED ELECTRIC
	EXISTING EDGE OF PAVEMENT
	EXISTING WATER SERVICE
	WOODEN POWER POLE



RECORD LEGEND

ARV	AIR RELEASE VALVE
CONST.	CONSTRUCTION
E	EASTING
EL.	ELEVATION
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M.E.S.	MITRED END SECTION
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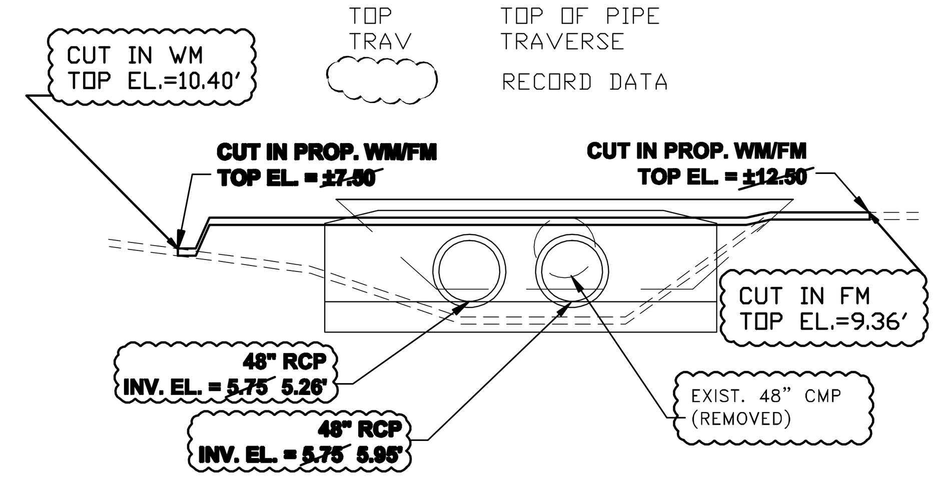
TOB	TOP OF BANK
TOE	TOE OF SLOPE
TOF	TOP OF FLANGE
TON	TOP OF NUT
TOP	TOP OF PIPE
TRAV	TRAVERSE
	RECORD DATA



NOTES:

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2. STRUCTURES SHOULD BE CONSTRUCTED IN TWO PIECES SUCH THAT FIELD ADJUSTMENTS CAN BE MADE TO GRATE/TOP ELEVATIONS IF NECESSARY.
3. ALL DRAINAGE STRUCTURES SHALL HAVE 18" SUMP BELOW PIPE INVERT ELEVATIONS.
4. ALL DRAINAGE AND UTILITY EASEMENTS ARE EXISTING.
5. ALL DISTURBED AREAS TO BE SODDED.
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UTILITY NOTES:

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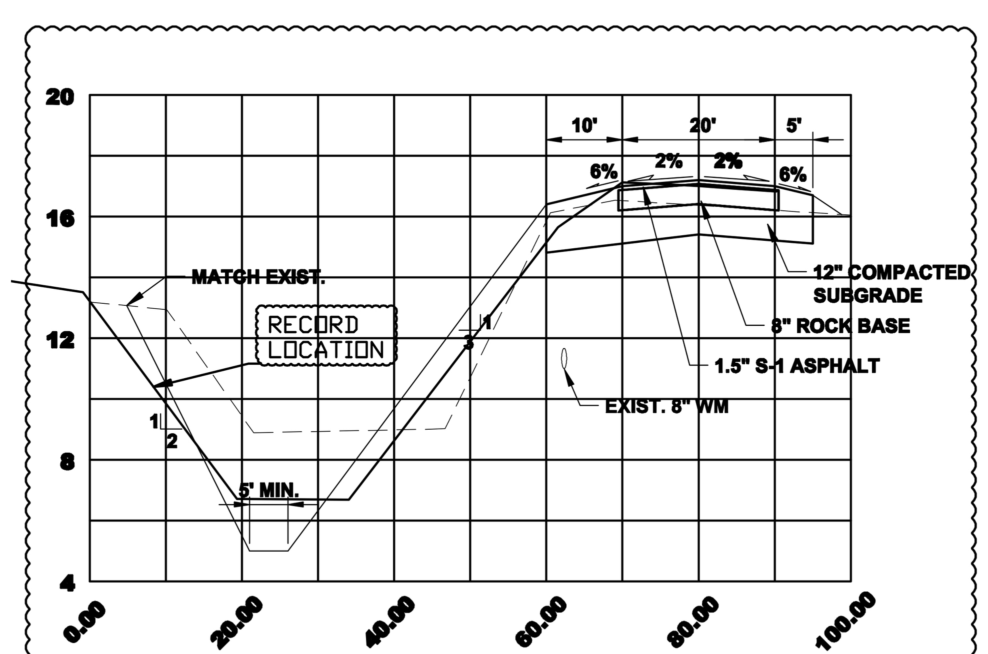
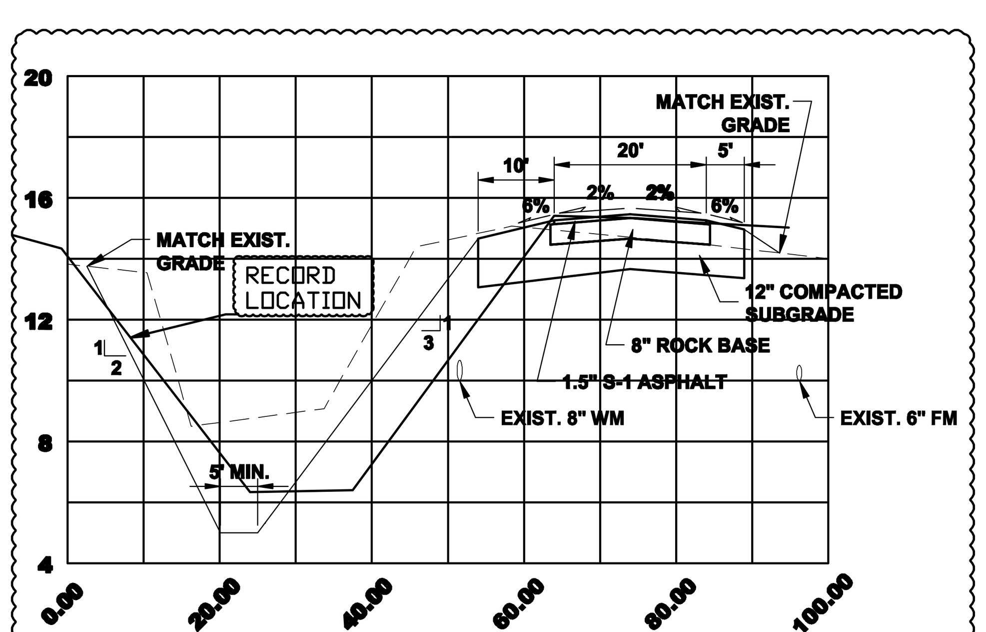
RECORD DRAWING



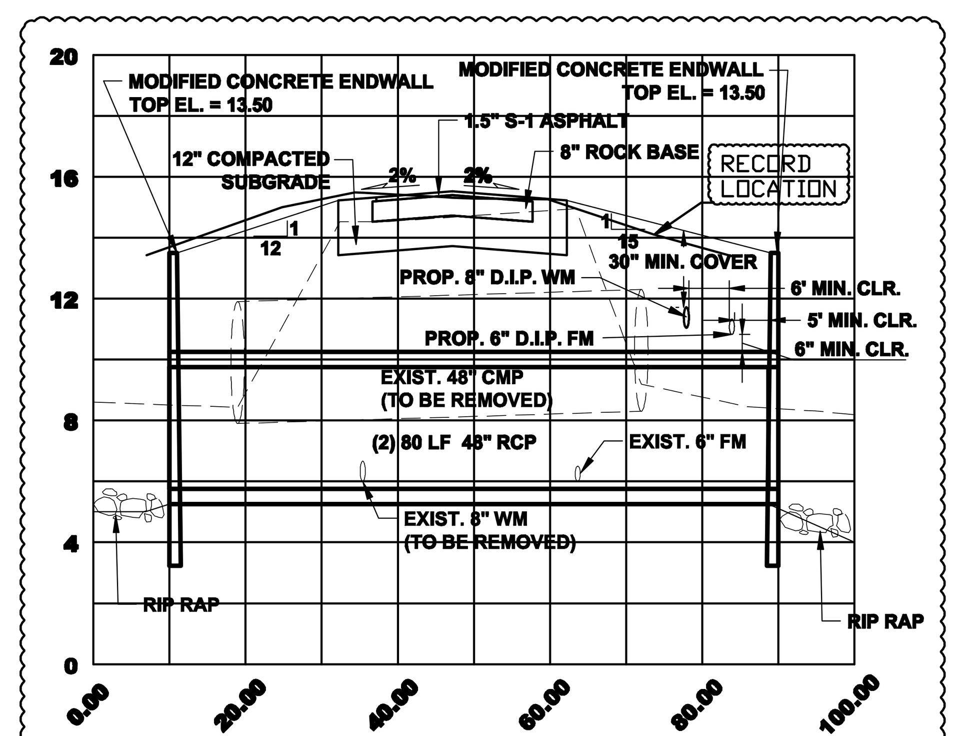
SECTION 15A

V - 1"=5' - H - 1"=20'



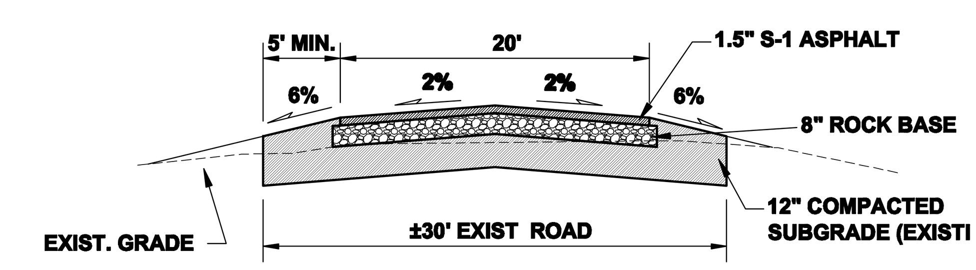
SECTION 15B

V - 1"=5' - H - 1"=20'



SECTION 15C

V - 1"=5' - H - 1"=20'



TYPICAL ROADWAY SECTION

NTS

ROAD CONSTRUCTION NOTES:

1. REGRADE EXISTING ROAD TO SLOPE PER SECTION.
2. COMPACT EXISTING ROAD AS SUBGRADE - 98% DENSITY PER AASHTO T-180.
3. ADD 6" COQUINA BASE, COMPACTED TO 98% DENSITY - LBR 100.
4. ADD 1.5" S-1 ASPHALT.

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7997 S.W. JACK JAMES DRIVE STUART, FLORIDA 34997
(772)286-5753 (772)286-5933 FAX
LICENSED BUSINESS NO. 6852
RECORD SURVEY

JULY 7, 2010 JOB NO. 08-66

CAPTEC Engineering Inc.
Civil Engineering Professionals
301 NW Flagler Ave., Ste. 201
Stuart, Florida 34994
Phone: (772) 692-4344
Fax: (772) 692-4341
Engineering Business No. EB-0007657

DATE:	07/17/07
DRAWN BY:	DHR
DESIGNED BY:	RRK
CHECKED BY:	JWC
PROJECT No.:	830.3
HORIZ. SCALE:	1" = 40'
VERT. SCALE:	AS SHOWN
CADD FILE:	PIPE SYSTEM

NO.	DATE	BY	REVISIONS
1	12/07/07	MS	REVISION PER ADDITIONAL TOPO
2	07-21-08	RRK	BID SET

SCALE VERIFICATION
SOLID BAR IS EQUAL TO ONE INCH ON ORIGINAL DRAWING, ADJUST ALL SCALED DIMENSIONS ACCORDINGLY

TROPICAL FARMS WATER QUALITY RETROFIT
MARTIN COUNTY, FLORIDA

PHIPPS PARK ENTRANCE ROAD

Joseph W. Capra
301 N.W. Flagler Ave., Ste. 201
Stuart, Florida 34994
P.E. No. 37638

Printed Date:

JOB No.: 830.3
SHEET 15 OF 26

LEGEND

- OPEN CUT/RESTORE PAVEMENT (PER DETAIL)
- PROPOSED PIPE
- EXISTING SWALE
- ALIGNMENT CENTERLINE
- PROPOSED STRUCTURE
- PROPOSED MITERED END SECTION
- PROPOSED STRUCTURE NUMBER
- EXISTING RIGHT-OF-WAY
- PROPOSED POST/RAIL FENCE
- PROPOSED CONFLICT/SERVICE ADJUSTMENT (SEE DETAIL)
- PROPOSED SIDEWALK REPLACEMENT
- PROPOSED DRIVEWAY REPLACEMENT (SEE DETAIL-SHEET 21)
- PROPERTY LINE
- EXISTING 8" WATERMAIN
- EXISTING 6" FORCEMAIN
- OVERHEAD ELECTRIC
- BURIED ELECTRIC
- EXISTING EDGE OF PAVEMENT
- EXISTING WATER SERVICE
- WOODEN POWER POLE
- SOIL BORING LOCATION. SEE "A.A.C.E." SOILS REPORT FOR INFORMATION/BORING LOG

NOTES:

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10. CONTRACTOR TO LOCATE ALL WATERMAIN SERVICES AND ADJUST AS NEEDED.

CLEARING AND GRUBBING NOTES

1. THE CONTRACTOR WILL NOT CLEAR AND GRUB ANY SITE WITHOUT PRIOR CONFIRMATION OF WETLAND AND UPLAND PRESERVATION REQUIREMENTS. ALL PRESERVATION AREAS WILL BE FENCED TO AVOID ENCROACHMENT AND WILL BE STRICTLY ENFORCED. CAPTEC ENGINEERING, INC., WILL NOT BE RESPONSIBLE FOR ENCROACHMENT BY CONTRACTOR WITHIN WETLAND/UPLAND PRESERVATION AREAS. CONTRACTOR IS CAUTIONED TO REVIEW ALL PERMITS AND CONSTRUCTION DOCUMENTS PRIOR TO THE CLEARING/GRUBBING PHASE.
2. THE CONTRACTOR WILL NOT CLEAR OR GRUB ANY AREAS WITHIN THE WETLANDS OR THE WETLAND UPLAND BUFFER.
3. CONTRACTOR IS RESPONSIBLE FOR INSTALLING AND MAINTAINING PERIMETER EROSION AND SEDIMENT CONTROL UNTIL THE PROJECT IS COMPLETE.

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SOIL EROSION NOTES

1. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL SUBMIT A SPECIFIC SOIL EROSION PLAN. IN GENERAL, THE SOIL EROSION PLAN SHALL REQUIRE THAT ALL ON-SITE SOILS WILL REMAIN ON-SITE AND WILL NOT ERODE INTO THE ADJACENT ROADSIDE SWALES, ADJACENT PROPERTIES, OR RETENTION DITCHES. ALL EXIST. SWALES SHALL REMAIN SODDED DURING CONSTRUCTION. THE CONTRACTOR SHALL SCARIFY ONLY AS NECESSARY TO CONSTRUCT THE PROJECT. THE CONTRACTOR SHALL SCARIFY AREAS TO PLACE VARIOUS PIPE WORK. AFTER PLACEMENT OF THE PIPE, THESE TRENCHES SHALL BE BACKFILLED AND COMPACTED 98% DENSITY. SILTATION BARRIERS AND HAY BALES SHALL BE UTILIZED AS PER FLORIDA DEPARTMENT OF TRANSPORTATION INDEX 102. UPON COMPLETION OF THE SITE WORK, ALL AREAS SHALL BE SODDED WITHIN SEVEN DAYS TO AVOID EROSION. CONTRACTOR IS REQUIRED TO COMPLY WITH ALL STATE WATER QUALITY CRITERIA, SPECIFICALLY, NO OFF-SITE DISCHARGES WILL BE ALLOWED.
2. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IN ACCORDANCE WITH THE GUIDELINES AND SPECIFICATIONS IN CHAPTER 6 OF THE FLORIDA LAND DEVELOPMENT MANUAL: A GUIDE TO SOUND LAND AND WATER MANAGEMENT (FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION, 1988).
3. ALL INLETS AND PIPE SHALL BE PROTECTED DURING CONSTRUCTION TO PREVENT SILTATION IN THE DRAINAGE SYSTEMS BY WAY OF TEMPORARY PLUGS AND PLYWOOD OR PLASTIC COVERS OVER THE INLETS. THE ENTIRE DRAINAGE SYSTEMS SHALL BE CLEANED OF ALL DEBRIS PRIOR TO FINAL ACCEPTANCE.

SWPPP NOTES

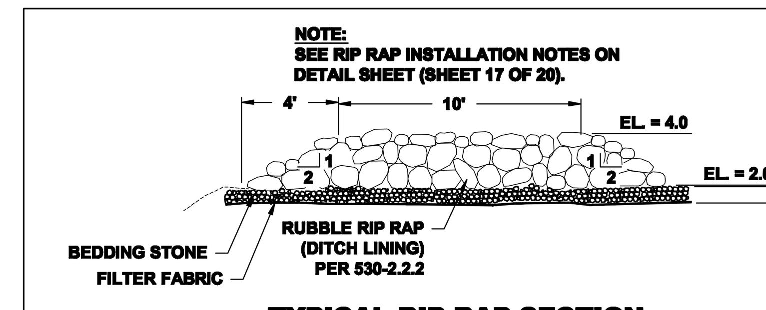
1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION (FDEP) NOTICE OF INTENT TO USE GENERAL PERMIT FOR STORMWATER DISCHARGE FROM LARGE AND SMALL CONSTRUCTION ACTIVITIES (NOI; RULE 62-621, 300 (4), F.A.C.) PRIOR TO MOBILIZATION.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING AND MAINTAINING PERIMETER SEDIMENT AND EROSION CONTROL AND TURBIDITY CONTROL PRIOR TO COMMENCING WORK. CONTRACTOR SHALL COORDINATE WITH CITY OF PORT ST. LUCIE NPDES INSPECTOR FOR INSPECTION OF PERIMETER MEASURES PRIOR TO OBTAINING ENGINEERING PERMIT.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLATION OF STABILIZED CONSTRUCTION ENTRANCE TO PREVENT TRACKOUT. PAVED ROADS SHALL BE SWEPT AND KEPT CLEAR OF TRANSPORTED SOILS.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR HAVING WATER TRUCK AVAILABLE FOR TEMPORARY STABILIZATION OF DISTURBED AREAS PRIOR TO SODDING/SEEDING HAY.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER STORAGE AND DISPOSAL OF ALL DEBRIS, CHEMICALS, LITTER, AND SANITARY WASTES PER LOCAL, STATE AND FEDERAL GUIDANCES. ANY FERTILIZERS, HERBICIDES, OR PESTICIDES USED SHALL BE APPLIED PER THE METHODS AND RATES RECOMMENDED BY THE MANUFACTURER BY A QUALIFIED PERSON.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL ON-SITE VEHICLES IN GOOD WORKING ORDER TO PREVENT ANY FLUID LEAKAGES.
7. THE CONTRACTOR IS RESPONSIBLE FOR VISUALLY INSPECTING ALL PERIMETER SEDIMENT CONTROLS, TURBIDITY BARRIERS, AND ENTRANCE/EXIT SOIL TRACKING DEVICES ON A REGULAR BASIS AS REQUIRED BY NPDES PERMIT. A THOROUGH INSPECTION SHALL BE CONDUCTED ONCE PER WEEK AND WITHIN 24 OURS OF THE END OF A STORM THAT IS 0.50 INCHES OR GREATER. ALL DEFICIENCIES SHALL BE NOTED ON THE SUPPLIED INSPECTION FORM AND BE REPAIRED PRIOR TO THE NEXT INSPECTION.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL INSPECTION REPORTS, RAINFALL REPORTS, AND ANY TURBIDITY ANALYSES ON SITE DURING CONSTRUCTION AND FOR A MINIMUM PERIOD OF THREE YEARS FOLLOWING CONSTRUCTION, OR AS REQUIRED BY NPDES PERMIT.

UTILITY NOTES

PROPOSED WM/FM IMPROVEMENTS TO BE CONSTRUCTED AND APPROVED BY MARTIN COUNTY UTILITIES (M.C.U.) PRIOR TO DISRUPTION OF EXISTING SERVICE. AFTER APPROVAL OF PROPOSED LINES, CONNECTION TO EXISTING LINES MAY BE MADE UNDER DIRECT SUPERVISION OF E.O.R. AND M.C.U. PERSONNEL. CONTRACTOR TO COORDINATE WITH E.O.R. AND MCU 15 FULL BUSINESS DAYS PRIOR TO COMMENCING UTILITY WORK.

NORTH

50' 0' 50' 100'
GRAPHIC SCALE



TYPICAL RIP RAP SECTION
NTS

BETSY LINDSAY, INC.
SURVEYING AND MAPPING
7997 S.W. JACK JAMES DRIVE STUART, FLORIDA 34997
(772)286-5753 (772)286-5933 FAX
LICENSED BUSINESS NO. 6852
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EP	EDGE OF PAVEMENT
GV	GATE VALVE
HDPE	HIGH DENSITY POLYETHLENE PIPE
INV.	INVERT
IRC	IRON ROD AND CAP
LB	LICENSED BUSINESS
L.F.	LINEAR FEET
M.E.S.	MITRED END SECTION
N	NORTHING
NO.	NUMBER
P.S.M.	PROFESSIONAL SURVEYOR & MAPPER
PT.	POINT
RCP	REINFORCED CONCRETE PIPE
STA	STATION
TOB	TOP OF BANK
TOE	TOE OF SLOPE
TOF	TOP OF FLANGE
TON	TOP OF NUT
TOP	TOP OF PIPE
TRAV	TRAVERSE
(cloud)	RECORD DATA

RECORD DRAWING

CAPTEC Engineering, Inc.
Civil Engineering Professionals
301 NW Flagler Ave, Ste. 201
Stuart, Florida 34994
Phone: (772) 692-4344
Fax: (772) 692-4341
Engineering Business No. EB-0007657

DATE:	07/17/07
DRAWN BY:	DHR
DESIGNED BY:	RRK
CHECKED BY:	JWC
PROJECT No.:	830.3
HORZ. SCALE:	1" = 40'
VERT. SCALE:	AS SHOWN
CADD FILE:	PIPE SYSTEM

NO.	DATE	BY	REVISIONS
3	11-06-08	JWC	APPROVED FOR CONSTRUCTION
2	07-21-08	RRK	BID SET
1	12/07/07	MS	REVISION PER ADDITIONAL TOPO

SCALE VERIFICATION
SOLID BAR IS EQUAL TO ONE INCH ON ORIGINAL DRAWING, ADJUST ALL SCALED DIMENSIONS ACCORDINGLY

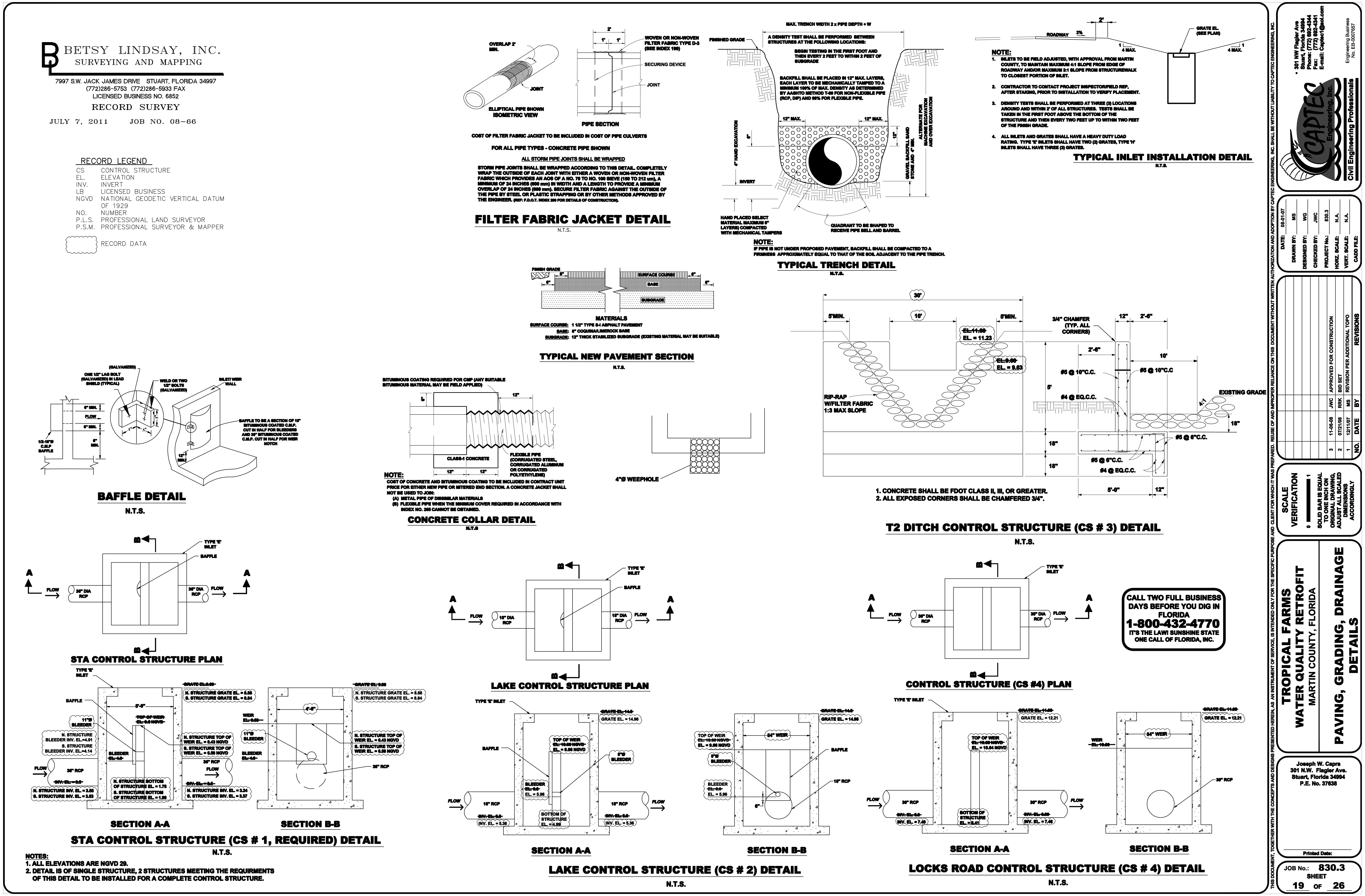
TROPICAL FARMS WATER QUALITY RETROFIT
MARTIN COUNTY, FLORIDA

STA PLAN

Joseph W. Capra
301 N.W. Flagler Ave., Ste. 201
Stuart, Florida 34994
P.E. No. 37638

Printed Date:

JOB No.: 830.3
SHEET 16 B OF 26


BETSY LINDSAY, INC.
SURVEYING AND MAPPING
7997 S.W. JACK JAMES DRIVE STUART, FLORIDA 34997
(772)286-5753 (772)286-5933 FAX
LICENSED BUSINESS NO. 6852
RECORD SURVEY
JULY 7, 2011 JOB NO. 08-66
RECORD LEGEND
CS CONTROL STRUCTURE
EL. ELEVATION
INV. INVERT
LB LICENSED BUSINESS
NGVD NATIONAL GEODETIC VERTICAL DATUM OF 1929
NO. NUMBER
P.L.S. PROFESSIONAL LAND SURVEYOR
P.S.M. PROFESSIONAL SURVEYOR & MAPPER
RECORD DATA
ELLIPTICAL PIPE SHOWN ISOMETRIC VIEW
PIPE SECTION
COST OF FILTER FABRIC JACKET TO BE INCLUDED IN COST OF PIPE CULVERTS
FOR ALL PIPE TYPES - CONCRETE PIPE SHOWN
ALL STORM PIPE JOINTS SHALL BE WRAPPED
FILTER FABRIC JACKET DETAIL
N.T.S.
TYPICAL TRENCH DETAIL
N.T.S.
TYPICAL INLET INSTALLATION DETAIL
N.T.S.
MATERIALS
TYPICAL NEW PAVEMENT SECTION
N.T.S.
BAFFLE DETAIL
N.T.S.
CONCRETE COLLAR DETAIL
4"Ø WEEPHOLE
1. CONCRETE SHALL BE FDOT CLASS II, III, OR GREATER.
2. ALL EXPOSED CORNERS SHALL BE CHAMFERED 3/4".
T2 DITCH CONTROL STRUCTURE (CS # 3) DETAIL
N.T.S.
STA CONTROL STRUCTURE PLAN
LAKE CONTROL STRUCTURE PLAN
CONTROL STRUCTURE (CS #4) PLAN
CALL TWO FULL BUSINESS DAYS BEFORE YOU DIG IN FLORIDA
1-800-432-4770
IT'S THE LAW! SUNSHINE STATE ONE CALL OF FLORIDA, INC.
SECTION A-A
SECTION B-B
STA CONTROL STRUCTURE (CS # 1, REQUIRED) DETAIL
N.T.S.
NOTES:
1. ALL ELEVATIONS ARE NGVD 29.
2. DETAIL IS OF SINGLE STRUCTURE, 2 STRUCTURES MEETING THE REQUIRMENTS OF THIS DETAIL TO BE INSTALLED FOR A COMPLETE CONTROL STRUCTURE.
LAKE CONTROL STRUCTURE (CS # 2) DETAIL
N.T.S.
LOCKS ROAD CONTROL STRUCTURE (CS # 4) DETAIL
N.T.S.
CAPTEC Engineering Inc.
Civil Engineering Professionals
TROPICAL FARMS
WATER QUALITY RETROFIT
MARTIN COUNTY, FLORIDA
PAVING, GRADING, DRAINAGE DETAILS
SCALE VERIFICATION
Joseph W. Capra
301 N.W. Flagler Ave.
Stuart, Florida 34994
P.E. No. 37638
JOB No.: 830.3
SHEET 19 OF 26

APPENDIX B

PHYSICAL-CHEMICAL FIELD MEASUREMENTS COLLECTED AT THE TROPICAL FARMS SITE FROM MAY 2011-APRIL 2012

Field Measurements Collected at the Tropical Farms Site from May 2011 - April 2012

Site	Date	Time	Temp. (°C)	pH (s.u.)	Conductivity (µmho/cm)	Diss. O2 (mg/L)	DO Satn. (%)	ORP (mV)
P-1	6/23/11	8:34	29.82	7.69	866	3.1	41	196
P-1	7/1/11	11:21	29.72	7.64	577	7.7	101	256
P-1	7/13/11	11:25	31.38	7.59	656	7.7	105	231
P-1	7/26/11	9:31	30.79	7.06	636	4.9	66	287
P-1	8/3/11	9:07	29.52	7.32	627	4.8	64	273
P-1	8/18/11	8:07	27.68	6.98	553	3.9	50	255
P-1	8/25/11	8:36	28.42	7.23	601	5.0	64	293
P-1	9/7/11	10:39	30.27	7.18	726	5.9	79	396
P-1	9/20/11	7:57	28.13	6.79	652	2.5	33	74
P-1	10/5/11	0:00	26.08	7.12	728	5.3	65	199
P-1	10/12/11	0:00	27.33	6.89	340	3.5	44	151
P-1	10/20/11	0:00	22.28	6.84	299	4.4	51	120
P-1	10/27/11	0:00	23.28	6.83	152	3.6	43	49
P-1	11/3/11	0:00	23.35	6.82	343	3.7	44	92
P-1	11/9/11	9:38	24.52	7.14	464	5.0	60	162
P-1	11/16/11	9:22	24.65	6.91	512	4.3	51	3
P-1	11/21/11	8:56	24.76	7.29	550	4.2	51	82
P-1	12/1/11	9:10	18.44	7.19	633	4.8	52	94
P-1	12/8/11	9:52	19.61	7.37	703	4.2	46	103
P-1	12/15/11	9:31	22.27	7.11	296	4.0	46	105
P-1	12/21/11	9:21	21.55	7.12	423	4.8	55	112
P-1	12/30/11	9:10	18.49	7.13	568	4.3	46	137
P-1	1/4/12	9:51	13.18	7.26	620	5.8	55	116
P-1	1/16/12	9:43	16.09	7.42	698	7.0	71	100
P-1	1/27/12	8:48	22.17	7.38	730	3.7	42	183
P-1	2/3/12	8:27	21.39	7.20	726	3.3	38	177
P-1	2/9/12	10:57	21.94	7.43	724	5.6	64	216
P-1	2/15/12	9:10	19.08	7.35	733	4.6	50	207
P-1	2/21/12	9:28	20.46	7.42	754	6.5	72	107
P-1	3/1/12	9:15	23.95	7.45	782	4.8	57	173
P-1	3/6/12	9:18	20.23	7.61	794	7.0	78	182
P-1	3/15/12	8:52	23.04	7.49	733	4.3	51	490
P-1	3/22/12	9:23	24.82	7.47	759	5.0	60	321
P-1	3/22/12	10:19	24.31	7.79	428	6.9	82	313
P-1	3/29/12	9:36	24.56	7.58	783	5.8	70	309
P-1	4/5/12	9:21	26.13	7.38	819	4.9	60	312
P-1	4/12/12	9:20	24.39	7.56	834	6.5	78	304
P-1	4/19/12	8:20	25.57	7.69	857	5.8	72	369
P-1	4/24/12	9:01	20.85	7.83	835	6.2	70	302
P-1	5/1/12	8:50	24.00	7.66	850	3.2	39	293
P-1	5/9/12	7:40	26.55	7.54	824	2.8	35	366
	Geometric Mean:		**23.66**	**7.31**	**606**	**4.7**	**56**	**169**
	Minimum Value:		**13.18**	**6.79**	**152**	**2.5**	**33**	**3**
	Maximum Mean:		**31.38**	**7.83**	**866**	**7.7**	**105**	**490**

Field Measurements Collected at the Tropical Farms Site from May 2011 - April 2012

Site	Date	Time	Temp. (°C)	pH (s.u.)	Conductivity (µmho/cm)	Diss. O2 (mg/L)	DO Satn. (%)	ORP (mV)
P-2	6/23/11	11:01	32.44	8.09	671	4.3	59	187
P-2	7/13/11	10:33	31.69	8.09	608	7.9	108	251
P-2	7/20/11	11:13	31.91	7.73	581	6.5	89	197
P-2	7/26/11	11:38	32.14	7.85	570	9.2	127	238
P-2	8/3/11	9:34	31.25	7.67	547	6.2	84	261
P-2	8/11/11	9:09	29.51	7.58	546	3.4	44	292
P-2	8/18/11	10:26	30.92	7.55	540	5.4	73	154
P-2	8/25/11	8:51	29.37	7.59	546	5.3	70	272
P-2	9/7/11	9:05	28.60	7.70	566	5.8	75	390
P-2	10/5/11	0:00	27.03	7.65	580	6.0	76	159
P-2	10/12/11	0:00	27.30	7.45	234	5.3	66	137
P-2	10/20/11	0:00	25.21	7.30	378	5.0	61	15
P-2	10/27/11	0:00	25.06	7.25	374	4.5	54	169
P-2	11/3/11	0:00	24.33	7.17	340	4.4	52	103
P-2	11/9/11	10:59	25.69	7.87	368	7.4	91	204
P-2	11/16/11	10:10	26.10	7.35	421	4.0	49	58
P-2	11/21/11	11:30	26.16	7.61	450	5.9	73	53
P-2	12/1/11	10:21	21.43	8.07	355	7.1	80	78
P-2	12/8/11	10:44	21.15	8.02	520	6.3	71	68
P-2	12/15/11	11:33	22.90	7.51	300	5.1	59	58
P-2	12/21/11	10:19	22.57	7.57	351	6.0	69	99
P-2	12/30/11	10:12	20.16	7.67	407	5.5	61	117
P-2	1/4/12	10:56	17.20	8.01	432	7.0	73	69
P-2	1/16/12	11:44	19.20	8.14	485	7.1	77	66
P-2	1/27/12	9:59	21.85	7.53	531	3.1	36	189
P-2	2/3/12	9:46	21.55	7.60	551	4.0	45	225
P-2	2/9/12	9:36	21.24	7.80	577	5.2	58	231
P-2	2/15/12	12:00	23.19	8.00	575	6.9	80	131
P-2	2/21/12	10:39	22.15	8.11	604	7.6	88	143
P-2	3/1/12	10:20	25.37	8.05	624	6.5	80	156
P-2	3/6/12	10:19	21.91	8.07	634	5.5	63	157
P-2	3/15/12	10:58	24.89	8.13	626	6.2	76	312
P-2	3/22/12	10:24	25.07	8.01	641	6.9	84	279
P-2	3/29/12	10:46	25.86	8.04	685	6.5	80	310
P-2	4/5/12	8:52	26.21	7.97	656	6.0	74	329
P-2	4/12/12	10:08	25.29	8.05	657	6.7	82	359
P-2	4/19/12	10:08	26.39	7.81	676	5.8	72	175
P-2	4/24/12	9:44	21.64	8.20	651	6.9	79	292
P-2	5/1/12	9:22	24.22	7.41	676	2.4	29	292
P-2	5/9/12	8:34	25.96	8.08	662	5.1	62	315
	Geometric Mean:		**25.02**	**7.78**	**514**	**5.6**	**68**	**159**
	Minimum Value:		**17.20**	**7.17**	**234**	**2.4**	**29**	**15**
	Maximum Mean:		**32.44**	**8.20**	**685**	**9.2**	**127**	**390**

Field Measurements Collected at the Tropical Farms Site from May 2011 - April 2012

Site	Date	Time	Temp. (°C)	pH (s.u.)	Conductivity (µmho/cm)	Diss. O2 (mg/L)	DO Satn. (%)	ORP (mV)
P-3	6/23/11	10:01	31.79	8.40	453	7.0	95	174
P-3	7/1/11	10:19	29.17	8.13	524	7.6	99	237
P-3	7/13/11	10:22	31.60	8.46	502	9.9	135	243
P-3	7/20/11	12:14	34.34	8.41	473	12.1	172	187
P-3	7/26/11	11:12	32.78	8.24	492	10.4	145	232
P-3	8/3/11	10:33	31.97	7.76	458	7.2	99	249
P-3	8/11/11	9:32	29.27	7.34	515	3.1	41	277
P-3	8/18/11	11:12	31.48	7.66	495	7.1	96	206
P-3	10/5/11	0:00	25.38	7.26	499	3.0	37	111
P-3	10/12/11	0:00	27.66	7.60	489	5.8	74	144
P-3	10/20/11	0:00	26.01	7.56	449	5.5	68	36
P-3	10/27/11	0:00	24.89	7.44	416	4.5	54	117
P-3	11/3/11	0:00	24.17	7.33	379	3.7	45	127
P-3	11/9/11	11:22	25.17	7.92	363	7.3	88	188
P-3	11/16/11	9:55	24.47	7.58	383	4.5	54	10
P-3	11/21/11	11:37	25.51	7.65	405	5.8	71	34
P-3	12/1/11	10:39	21.91	7.80	421	5.8	66	74
P-3	12/8/11	10:57	19.41	7.92	441	7.1	77	81
P-3	12/15/11	11:03	23.29	7.53	339	4.4	52	16
P-3	12/21/11	10:47	21.74	7.69	367	5.6	64	89
P-3	12/30/11	10:25	19.04	7.83	370	5.5	60	108
P-3	1/4/12	11:06	13.99	7.92	379	6.9	67	72
P-3	1/16/12	12:29	19.52	8.38	399	9.2	100	36
P-3	1/27/12	10:33	21.42	7.68	416	3.9	44	169
P-3	2/3/12	9:42	21.09	8.11	394	6.8	76	222
P-3	2/9/12	9:21	20.87	7.58	436	4.5	51	254
P-3	2/15/12	11:27	22.17	7.82	435	8.0	92	151
P-3	2/21/12	11:02	21.47	7.87	470	8.2	93	128
P-3	3/1/12	10:34	24.86	8.07	491	7.1	86	131
P-3	3/6/12	10:45	21.97	7.97	500	5.4	62	141
P-3	3/15/12	11:19	24.09	7.87	510	5.3	64	301
P-3	3/22/12	10:39	24.76	7.76	530	5.8	70	278
P-3	3/29/12	11:01	25.48	7.84	538	6.2	75	257
P-3	4/5/12	9:09	25.39	7.62	554	3.6	44	298
P-3	4/12/12	10:35	25.38	7.69	555	6.1	75	360
P-3	4/19/12	10:40	26.96	7.53	573	3.3	42	213
P-3	4/24/12	10:01	21.50	7.85	555	4.5	51	263
P-3	5/1/12	9:55	24.33	7.68	580	3.0	36	316
P-3	5/9/12	9:14	26.48	7.81	583	3.3	41	292
	Geometric Mean:		**24.57**	**7.80**	**460**	**5.6**	**68**	**138**
	Minimum Value:		**13.99**	**7.26**	**339**	**3.0**	**36**	**10**
	Maximum Mean:		**34.34**	**8.46**	**583**	**12.1**	**172**	**360**

Field Measurements Collected at the Tropical Farms Site from May 2011 - April 2012

Site	Date	Time	Temp. (°C)	pH (s.u.)	Conductivity (µmho/cm)	Diss. O2 (mg/L)	DO Satn. (%)	ORP (mV)
P-4a	5/26/11	10:56	29.14	7.71	634	3.2	42	154
P-4a	6/23/11	11:14	32.21	8.30	623	3.8	52	183
P-4a	7/1/11	10:28	27.17	7.92	554	5.3	67	246
P-4a	7/13/11	9:58	28.22	8.30	529	7.1	91	262
P-4a	7/20/11	12:03	31.01	7.23	517	4.2	56	216
P-4a	7/26/11	11:23	30.05	8.01	517	6.1	81	235
P-4a	8/3/11	10:22	28.53	8.04	526	6.3	81	251
P-4a	8/11/11	9:20	28.92	7.32	526	3.9	51	302
P-4a	8/18/11	11:01	29.16	8.04	481	6.5	85	200
P-4a	9/7/11	10:07	28.60	7.29	521	5.1	55	382
P-4a	10/5/11	0:00	25.30	7.29	527	5.2	63	136
P-4a	10/20/11	0:00	23.56	7.23	492	3.2	38	71
P-4a	10/27/11	0:00	24.23	7.25	437	3.7	44	169
P-4a	11/3/11	0:00	23.91	7.20	394	2.3	28	128
P-4a	11/9/11	11:08	25.07	7.56	389	4.9	59	206
P-4a	11/21/11	12:01	26.82	8.20	391	6.3	79	72
P-4a	12/1/11	10:29	19.41	7.48	438	4.9	53	95
P-4a	12/8/11	10:50	19.93	7.57	453	5.3	58	81
P-4a	12/15/11	11:21	22.67	7.40	322	3.7	43	13
P-4a	12/21/11	10:26	22.09	7.51	346	5.0	58	98
P-4a	12/30/11	10:17	18.91	7.56	371	5.7	61	113
P-4a	1/4/12	11:12	14.05	7.95	370	7.7	75	72
P-4a	1/16/12	12:18	19.16	8.15	390	7.4	80	66
P-4a	1/27/12	10:20	21.19	7.74	373	4.8	54	177
P-4a	2/3/12	9:52	21.38	7.53	403	4.3	48	201
P-4a	2/9/12	9:27	20.62	7.51	405	5.3	59	239
P-4a	2/15/12	11:32	22.18	7.77	418	7.5	86	163
P-4a	2/21/12	10:47	22.14	7.97	416	9.4	108	138
P-4a	3/1/12	10:25	26.12	7.86	423	6.4	79	147
P-4a	3/6/12	10:30	22.06	8.43	410	9.0	104	134
P-4a	3/15/12	11:04	25.45	8.12	436	8.2	100	313
P-4a	3/22/12	10:29	24.64	7.73	446	8.2	99	267
P-4a	3/29/12	10:53	25.88	8.16	436	10.3	127	293
P-4a	4/5/12	9:02	24.02	7.64	449	4.3	52	299
P-4a	4/12/12	10:22	24.39	7.72	420	8.1	97	332
P-4a	4/19/12	10:58	26.87	7.67	415	5.2	65	270
P-4a	4/24/12	9:49	20.32	7.53	461	4.9	54	273
P-4a	5/1/12	9:29	23.38	7.60	464	4.3	51	295
P-4a	5/9/12	9:02	25.61	7.55	456	2.6	32	304
	Geometric Mean:		**24.16**	**7.71**	**446**	**5.3**	**63**	**167**
	Minimum Value:		**14.05**	**7.20**	**322**	**2.3**	**28**	**13**
	Maximum Mean:		**32.21**	**8.43**	**634**	**10.3**	**127**	**382**

Field Measurements Collected at the Tropical Farms Site from May 2011 - April 2012

Site	Date	Time	Temp. (°C)	pH (s.u.)	Conductivity (μmho/cm)	Diss. O2 (mg/L)	DO Satn. (%)	ORP (mV)
P-4b	6/23/11	9:19	30.05	8.02	754	3.9	52	161
P-4b	7/1/11	10:47	29.72	7.82	601	6.1	80	248
P-4b	7/13/11	10:28	32.53	8.18	567	9.7	135	248
P-4b	7/20/11	10:56	32.97	7.61	554	8.1	113	186
P-4b	7/26/11	11:41	33.14	7.86	552	9.8	136	236
P-4b	8/3/11	9:41	31.55	7.55	530	7.5	101	261
P-4b	8/11/11	9:04	28.85	7.38	530	4.4	57	311
P-4b	8/18/11	10:08	31.08	7.58	513	8.3	112	190
P-4b	9/7/11	10:09	27.63	7.53	520	6.7	85	342
P-4b	10/5/11	0:00	25.43	7.20	540	4.8	59	144
P-4b	10/12/11	0:00	26.61	7.38	499	4.2	53	163
P-4b	10/20/11	0:00	25.55	7.23	493	5.3	65	31
P-4b	10/27/11	0:00	23.75	7.48	456	5.4	64	185
P-4b	11/3/11	0:00	24.25	7.27	430	3.9	47	138
P-4b	11/9/11	10:55	24.71	8.01	388	7.7	93	217
P-4b	11/16/11	10:14	24.65	7.91	395	6.7	80	57
P-4b	11/21/11	11:28	27.12	8.22	397	8.0	101	28
P-4b	12/1/11	10:16	19.16	7.72	391	6.0	65	101
P-4b	12/8/11	10:39	19.78	8.08	438	8.1	89	86
P-4b	12/15/11	11:27	22.20	7.66	323	4.2	48	39
P-4b	12/21/11	10:15	21.00	7.63	444	5.7	64	115
P-4b	12/30/11	10:08	18.93	7.65	387	5.3	57	121
P-4b	1/4/12	10:53	14.37	7.93	387	7.3	72	74
P-4b	1/16/12	11:37	18.56	8.23	396	8.0	85	70
P-4b	1/27/12	9:55	20.88	8.04	385	6.6	74	182
P-4b	2/3/12	10:06	21.82	7.70	416	4.5	52	203
P-4b	2/9/12	9:32	20.83	7.96	403	7.1	79	233
P-4b	2/15/12	12:03	22.97	8.54	400	10.0	117	128
P-4b	2/21/12	10:36	21.18	8.52	313	10.5	119	141
P-4b	3/1/12	10:16	24.74	8.29	411	7.3	88	153
P-4b	3/6/12	10:14	21.12	8.09	425	7.2	81	164
P-4b	3/15/12	10:48	24.48	8.35	397	8.1	97	317
P-4b	3/29/12	10:42	25.26	7.90	432	7.8	95	310
P-4b	4/5/12	8:44	25.52	7.50	453	3.1	38	339
P-4b	4/12/12	10:00	25.09	7.72	462	6.4	77	347
P-4b	4/19/12	9:50	26.33	7.68	471	4.2	52	185
P-4b	4/24/12	9:35	22.49	7.93	460	6.3	73	301
P-4b	5/1/12	9:17	24.10	7.80	482	4.9	59	308
P-4b	5/9/12	8:39	26.63	7.64	476	3.3	42	325
	Geometric Mean:		**24.42**	**7.81**	**451**	**6.2**	**74**	**160**
	Minimum Value:		**14.37**	**7.20**	**313**	**3.1**	**38**	**28**
	Maximum Mean:		**33.14**	**8.54**	**754**	**10.5**	**136**	**347**

Field Measurements Collected at the Tropical Farms Site from May 2011 - April 2012

Site	Date	Time	Temp. (°C)	pH (s.u.)	Conductivity (µmho/cm)	Diss. O2 (mg/L)	DO Satn. (%)	ORP (mV)
P-5	7/20/11	11:36	31.29	7.16	619	3.8	52	217
P-5	7/26/11	11:55	32.27	7.53	605	5.0	69	242
P-5	8/3/11	10:08	29.14	7.44	628	3.0	40	273
P-5	8/11/11	8:41	26.73	7.41	539	3.0	37	313
P-5	8/18/11	10:44	29.23	7.34	547	3.5	46	212
P-5	8/25/11	9:04	29.96	7.35	563	3.9	51	275
P-5	9/7/11	9:31	27.67	7.48	529	4.4	57	408
P-5	10/5/11	0:00	25.74	7.03	527	3.5	43	200
P-5	10/12/11	0:00	27.26	7.38	538	4.5	57	194
P-5	10/20/11	0:00	24.55	7.31	403	4.3	51	21
P-5	10/27/11	0:00	23.20	7.65	471	5.7	67	144
P-5	11/3/11	0:00	23.69	7.49	462	5.1	60	212
P-5	11/9/11	10:41	23.33	7.76	398	5.6	66	205
P-5	11/16/11	10:22	24.75	7.77	403	5.8	70	69
P-5	11/21/11	11:05	24.66	7.54	407	4.9	60	24
P-5	12/1/11	9:51	16.84	7.84	408	5.9	61	92
P-5	12/8/11	10:16	19.25	7.85	447	5.5	60	84
P-5	12/15/11	11:49	22.95	7.86	407	5.3	62	34
P-5	12/21/11	9:58	21.12	7.64	334	5.0	56	110
P-5	12/30/11	9:49	17.12	7.79	382	5.5	58	118
P-5	1/4/12	10:41	10.13	7.86	392	6.6	59	64
P-5	1/16/12	12:03	18.03	8.09	406	5.9	63	42
P-5	1/27/12	9:41	21.48	8.02	413	4.7	54	161
P-5	2/3/12	9:27	21.36	8.07	416	5.5	62	222
P-5	2/9/12	9:50	20.90	7.97	419	6.8	77	230
P-5	2/15/12	11:55	21.26	8.02	418	7.4	83	120
P-5	2/21/12	10:19	19.23	7.83	414	6.5	71	145
P-5	3/1/12	9:57	23.26	7.93	439	5.7	67	147
P-5	3/6/12	9:51	18.17	7.83	438	6.4	68	175
P-5	3/15/12	10:28	22.87	7.88	434	7.0	81	258
P-5	3/29/12	10:11	22.56	7.93	437	6.5	76	311
P-5	4/5/12	8:40	25.70	7.92	453	5.8	71	340
	Geometric Mean:		**22.78**	**7.68**	**454**	**5.1**	**60**	**142**
	Minimum Value:		**10.13**	**7.03**	**334**	**3.0**	**37**	**21**
	Maximum Mean:		**32.27**	**8.09**	**628**	**7.4**	**83**	**408**

APPENDIX C

CHEMICAL CHARACTERISTICS OF INFLOW / OUTFLOW SAMPLES COLLECTED AT THE TROPICAL FARMS SITE FROM MAY 2011-APRIL 2012

1. **Site 1 (Western Inflow Channel to Pond 1)**
2. **Site 2 (48-inch RCP Inflow to Pond 1)**
3. **Site 3 (Pond 1 Discharge)**
4. **Site 6 (Ponds 2-5 Discharge)**
5. **Bulk Precipitation**
6. **Groundwater Samples**

1. Site 1 (Western Inflow Channel to Pond 1)

Characteristics of Runoff Inflow Samples Collected at Tropical Farms Site 1

Site	Date Collected	pH (s.u.)	Alkalinity (mg/L)	Conductivity (µmho/cm)	Ammonia (µg/L)	NOX (µg/L)	Diss. Org. N (µg/L)	Part. N (µg/L)	Total N (µg/L)	SRP (µg/L)	Diss. Org. P (µg/L)	Part. P (µg/L)	Total P (µg/L)	Turbidity (NTU)	TSS (mg/L)	BOD (mg/L)	Color (Pt-Co)
Site 1	10/5/11 - 10/12/11	7.02	82.4	288	114	7	625	935	1,681	68	26	45	139	2.7	2.6	1.7	92
Site 1	10/12/11 - 10/20/11	6.99	86.2	340	95	70	423	456	1,044	101	18	32	151	2.7	4.0	1.2	90
Site 1	10/20 - 10/27/11	6.91	124	475	151	191	477	869	1,688	130	11	87	228	1.5	1.0	1.1	169
Site 1	10/27/11 - 11/3/11	7.28	106	349	32	474	487	192	1,185	128	9	167	304	4.3	13.6	1.4	148
Site 1	11/3/11 - 11/9/11	7.25	137	415	51	210	647	113	1,021	101	4	38	143	2.1	1.2	1.0	133
Site 1	11/9/11 - 11/16/11	7.59	156	474	18	233	849	160	1,260	94	16	38	148	1.5	1.4	0.9	124
Site 1	11/16/11 - 11/21/11	7.69	169	508	14	155	735	87	991	109	6	34	149	1.8	2.1	1.4	125
Site 1	11/21 - 12/1/11	7.89	192	532	36	343	498	143	1,020	111	30	113	254	4.8	6.5	1.7	121
Site 1	12/1/11 - 12/8/11	8.05	222	653	9	315	649	75	1,048	108	27	159	294	6.0	9.5	1.6	154
Site 1	12/8/11 - 12/15/11	7.73	111	341	3	161	336	398	898	58	8	49	115	4.1	1.3	1.6	103
Site 1	12/15/11 - 12/21/11	6.96	108	337	67	215	355	253	890	81	13	48	142	3.8	1.6	1.2	136
Site 1	12/21/11 - 12/30/11	7.29	166	484	19	167	695	65	946	77	15	46	138	2.3	1.3	1.4	127
Site 1	12/30/11 - 1/4/12	7.82	140	668	215	56	184	152	607	103	12	36	151	2.9	4.2	1.0	107
Site 1	1/4/12 - 1/16/12	7.33	221	688	11	11	115	71	208	27	14	35	76	5.0	10.2	3.0	86
Site 1	1/16/11 - 1/27/12	7.29	247	620	81	22	131	81	315	44	1	42	87	5.1	5.2	1.2	84
Site 1	1/27/12 - 2/9/12	7.65	235	682	3	7	137	52	199	38	18	75	131	5.3	1.4	1.4	72
Site 1	2/9/12 - 2/15/12	7.71	229	654	6	34	781	35	856	39	2	51	92	5.3	9.2	1.3	68
Site 1	2/15/12 -2/21/12	7.56	228	693	8	3	528	115	654	34	8	42	84	2.8	2.8	1.5	74
Site 1	2/21/12 - 3/1/12	7.58	226	682	18	4	126	127	275	41	2	143	186	8.1	4.4	3.5	68
Site 1	3/1/12 - 3/15/12	7.65	220	609	18	5	111	96	230	39	2	129	170	4.4	3.2	1.2	59
Geometric Mean:		**7.45**	**161**	**505**	**25**	**54**	**362**	**145**	**708**	**68**	**9**	**60**	**148**	**3.4**	**3.2**	**1.4**	**102**
Minimum Value:		**6.91**	**82.4**	**288**	**3**	**3**	**111**	**35**	**199**	**27**	**1**	**32**	**76**	**1.5**	**1.0**	**0.9**	**59**
Maximum Value:		**8.05**	**247**	**693**	**215**	**474**	**849**	**935**	**1,688**	**130**	**30**	**167**	**304**	**8.1**	**13.6**	**3.5**	**169**

2. Site 2 (48-inch RCP Inflow to Pond 1)

Characteristics of Runoff Inflow Samples Collected at Tropical Farms Site 2

Site	Date Collected	pH (s.u.)	Alkalinity (mg/L)	Conductivity (µmho/cm)	Ammonia (µg/L)	NOX (µg/L)	Diss. Org. N (µg/L)	Part. N (µg/L)	Total N (µg/L)	SRP (µg/L)	Diss. Org. P (µg/L)	Part. P (µg/L)	Total P (µg/L)	Turbidity (NTU)	TSS (mg/L)	BOD (mg/L)	Color (Pt-Co)
Site 2	7/7/11 - 7/13/11	6.85	288	768	643	199	878	688	2,408	7	6	241	254	13.5	77.4	3.7	36
Site 2	7/13/11 - 7/20/11	7.03	221	609	331	706	234	67	1,338	8	5	80	93	51.4	47.7	2.3	48
Site 2	7/20/11 - 7/26/11	7.20	259	732	158	517	421	511	1,607	25	2	737	764	294	789	3.1	54
Site 2	8/3/11 - 8/11/11	6.93	252	736	336	149	453	775	1,713	13	18	652	683	123	193	2.2	124
Site 2	8/11/11 - 8/18/11	6.84	241	501	455	279	488	1,462	2,684	16	4	1,876	1,896	40	530	7.7	102
Site 2	8/18/11 - 9/7/11	7.32	309	754	1,611	544	494	212	2,861	9	6	555	570	137	203	1.1	53
Site 2	9/7/11 - 9/15/11	7.43	242	653	61	561	583	35	1,240	20	6	427	453	89.3	97.8	1.8	81
Site 2	9/20/11 - 9/29/11	7.36	277	790	59	705	545	1,152	2,461	8	5	294	307	46.5	65.8	1.6	53
Site 2	9/29/11 - 10/12/11	7.34	172	507	54	449	731	195	1,429	33	6	1,259	1,298	295	28.2	3.4	60
Site 2	10/12/11 - 10/20/11	7.23	140	469	26	375	702	585	1,688	63	18	645	726	86.4	155	2.0	185
Site 2	10/20/11 - 11/3/11	7.30	118	429	33	297	654	332	1,316	70	13	470	553	67.0	119	1.8	192
Site 2	11/3/11 - 11/16/11	7.01	215	625	59	441	596	1,102	2,198	31	43	679	753	158	544	2.5	124
Site 2	11/16/11 - 12/15/11	7.48	145	435	12	450	701	220	1,383	28	9	125	162	28.0	55.2	1.7	129
Site 2	12/15/11 - 12/30/11	7.33	218	624	31	499	601	148	1,279	12	2	81	95	31.5	14.3	1.6	91
Site 2	2/1/11 - 2/9/12	7.77	258	753	16	622	52	162	852	9	3	117	129	50.7	19.8	1.1	38
Site 2	3/8/12 - 3/15/12	7.36	258	673	54	519	145	99	817	7	7	54	68	20.5	7.9	0.7	33
Site 2	3/15/12 - 3/29/12	7.22	270	740	21	540	139	98	798	9	9	342	360	166	67.5	1.0	27
Site 2	4/17/12 - 4/24/12	7.21	290	795	10	471	333	79	893	8	5	10	23	14.7	3.2	0.5	36
Site 2	4/24/12 - 5/1/12	7.03	283	825	46	355	859	84	1,344	8	2	35	45	28.4	8.5	0.5	30
Geometric Mean:		**7.22**	**227**	**640**	**73**	**427**	**422**	**248**	**1,480**	**15**	**6**	**245**	**282**	**61.5**	**64.6**	**1.7**	**65**
Minimum Value:		**6.84**	**118**	**429**	**10**	**149**	**52**	**35**	**798**	**7**	**2**	**10**	**23**	**13.5**	**3.2**	**0.5**	**27**
Maximum Value:		**7.77**	**309**	**825**	**1,611**	**706**	**878**	**1,462**	**2,861**	**70**	**43**	**1,876**	**1,896**	**295**	**789**	**7.7**	**192**

3. Site 3 (Pond 1 Discharge)

Characteristics of Runoff Inflow Samples Collected at Tropical Farms Site 3

Site	Date Collected	pH (s.u.)	Alkalinity (mg/L)	Conductivity (µmho/cm)	Ammonia (µg/L)	NOX (µg/L)	Diss. Org. N (µg/L)	Part. N (µg/L)	Total N (µg/L)	SRP (µg/L)	Diss. Org. P (µg/L)	Part. P (µg/L)	Total P (µg/L)	Turbidity (NTU)	TSS (mg/L)	BOD (mg/L)	Color (Pt-Co)
Site 3	5/12/11 - 5/18/11	7.57	303	756	301	14	1,020	968	2,303	3	19	146	168	23.4	23.1	1.9	70
Site 3	5/18/11 - 5/26/11	8.07	229	648	124	579	1,043	817	2,563	13	6	125	144	48.8	63.4	1.9	67
Site 3	5/26/11 - 6/2/11	8.11	206	627	121	316	804	267	1,508	25	3	80	108	36.6	87.2	1.2	55
Site 3	6/16/11 - 6/23/11	7.98	213	741	190	1	444	479	1,114	2	14	78	94	38.4	88.6	2.5	56
Site 3	6/23/11 - 7/1/11	7.70	223	668	181	48	700	325	1,254	15	5	73	93	5.0	15.3	1.6	72
Site 3	7/7/11 - 7/13/11	7.86	234	609	124	406	554	833	1,917	14	14	104	132	20.4	22.4	1.6	69
Site 3	7/13/11 - 7/20/11	7.40	205	549	112	267	347	554	1,280	14	4	49	67	12.5	9.9	1.4	57
Site 3	7/20/11 - 7/26/11	7.75	203	523	29	607	449	286	1,371	24	6	50	80	13.8	13.0	1.1	85
Site 3	7/26/11 - 8/3/11	7.41	233	636	19	181	589	935	1,724	11	4	346	361	67.8	162	2.2	60
Site 3	8/3/11 - 8/11/11	7.43	215	548	80	102	472	566	1,220	10	20	75	105	9.7	13.7	0.9	64
Site 3	8/11/11 - 8/18/11	7.35	234	531	167	155	476	145	943	16	11	124	151	18.4	18.1	1.7	54
Site 3	8/18/11 - 8/25/11	8.26	203	509	127	408	286	422	1,243	34	3	59	96	26.9	28.1	1.1	76
Site 3	8/25/11 - 9/7/11	7.51	255	645	924	176	186	575	1,861	7	2	168	177	34.0	52.9	1.3	58
Site 3	9/7/11 - 9/15/11	7.54	241	668	34	125	501	231	891	7	2	74	83	20.3	20.1	2.1	65
Site 3	9/15/11 - 9/20/11	7.16	230	607	45	149	478	206	878	10	2	42	54	9.6	7.1	1.3	74
Site 3	9/20/11-9/29/11	7.45	260	684	44	231	675	947	1,897	5	1	366	372	90.4	134	4.1	61
Site 3	9/29/11 - 10/5/11	7.60	254	631	112	46	685	166	1,009	3	1	33	37	10.0	6.5	1.8	57
Site 3	10/5/11 - 10/12/11	7.10	109	369	95	102	924	146	1,267	45	25	72	142	10.0	16.0	2.4	155
Site 3	10/12/11 - 10/20/11	7.03	83	257	57	195	792	580	1,624	24	124	115	263	14.2	20.7	2.1	225
Site 3	10/20/11 - 10/27/11	6.85	92	350	11	412	622	1,145	2,190	123	74	101	298	8.7	8.1	1.1	214
Site 3	10/27/11 - 11/3/11	7.02	91	254	19	345	574	30	968	122	24	71	217	7.5	23.6	0.9	185
Site 3	11/3/11 - 11/9/11	7.16	131	396	169	106	703	136	1,114	64	37	65	166	8.5	6.4	1.2	179
Site 3	11/9/11 - 11/16/11	7.63	148	453	26	331	792	251	1,400	94	20	79	193	9.8	6.0	0.7	116
Site 3	11/16/11 - 11/21/11	7.38	178	561	27	377	706	141	1,251	44	17	60	121	11.2	5.9	0.9	136
Site 3	11/21/11 - 12/1/11	8.06	197	542	20	389	520	82	1,011	51	10	62	123	12.0	8.8	0.9	113
Site 3	12/1/11 - 12/8/11	8.19	222	634	13	636	405	302	1,356	41	20	160	221	27.1	29.2	1.1	99
Site 3	12/8/11 - 12/15/11	7.25	81	284	18	252	594	88	952	56	7	36	99	7.6	7.0	1.0	114
Site 3	12/15/11 - 12/21/11	7.08	103	341	17	295	428	140	880	45	19	53	117	9.4	6.8	0.8	139
Site 3	12/21/11 - 12/30/11	7.69	149	475	12	385	727	134	1,258	29	20	39	88	14.0	14.0	1.5	121
Site 3	12/30/11 - 1/4/12	8.04	206	607	27	319	169	445	960	57	50	99	206	15.0	23.3	1.4	102
Site 3	1/4/12 - 1/16/12	8.09	228	646	16	416	56	107	595	24	14	122	160	23.2	31.6	1.0	80
Site 3	1/16/11 - 1/27/12	8.26	241	664	4	445	158	219	826	29	4	99	132	25.6	45.3	1.2	56
Site 3	1/27/12 - 2/3/12	8.02	238	691	2	528	472	411	1,413	34	20	81	135	30.6	45.9	2.6	52
Site 3	2/3/12 - 2/9/12	7.56	245	601	42	63	93	101	299	7	8	44	59	11.8	11.0	1.8	50
Site 3	2/9/12 - 2/15/12	8.01	236	599	2	345	782	238	1,367	25	4	88	117	21.0	37.8	1.7	53
Site 3	2/15/12 -2/21/12	7.74	262	731	55	46	546	229	876	4	10	31	45	9.0	6.6	1.6	53
Site 3	2/21/12 - 3/1/12	7.69	264	741	54	31	199	45	329	2	16	39	57	7.7	5.7	1.5	46
Site 3	3/1/12 - 3/6/12	7.73	269	803	41	30	243	67	381	3	7	21	31	6.5	5.0	1.2	47
Site 3	3/6/12 - 3/15/12	7.73	254	745	62	19	155	43	279	5	13	30	48	7.7	10.8	1.2	50
Site 3	3/15/12 - 3/22/12	7.53	257	736	50	21	129	253	453	8	12	21	41	7.0	5.8	1.1	53
Site 3	3/22/12 - 3/29/12	7.68	263	765	52	23	66	51	192	12	4	29	45	6.1	5.2	0.9	47
Site 3	3/29/12 - 4/5/12	7.85	281	792	50	19	46	78	193	8	1	25	34	6.1	6.2	1.2	47
Site 3	4/5/12 - 4/12/12	7.85	293	801	39	1	24	31	95	3	2	11	16	5.2	2.8	1.2	45
Site 3	4/12/12 - 4/24/12	7.86	298	656	25	11	36	36	108	6	6	18	30	4.1	3.2	0.9	51
Site 3	4/24/12 - 5/1/12	7.67	302	850	59	17	626	204	906	10	3	20	33	4.5	5.1	0.8	46
Geometric Mean:			**204**	**575**	**43**	**110**	**350**	**209**	**887**	**15**	**8**	**62**	**98**	**13.6**	**15.1**	**1.4**	**75**
Minimum Value:		**6.85**	**81.2**	**254**	**2**	**1**	**24**	**30**	**95**	**2**	**1**	**11**	**16**	**4.1**	**2.8**	**0.7**	**45**
Maximum Value:		**8.26**	**303**	**850**	**924**	**636**	**1,043**	**1,145**	**2,563**	**123**	**124**	**366**	**372**	**90.4**	**162**	**4.1**	**225**

4. Site 6 (Ponds 2-5 Discharge)

Characteristics of Runoff Inflow Samples Collected at Tropical Farms Site 6

Site	Date Collected	pH (s.u.)	Alkalinity (mg/L)	Conductivity (µmho/cm)	Ammonia (µg/L)	NOX (µg/L)	Diss. Org. N (µg/L)	Part. N (µg/L)	Total N (µg/L)	SRP (µg/L)	Diss. Org. P (µg/L)	Part. P (µg/L)	Total P (µg/L)	Turbidity (NTU)	TSS (mg/L)	BOD (mg/L)	Color (Pt-Co)
Site 6	7/13/11 - 7/20/11	7.54	171	574	94	11	786	223	1,114	3	8	26	37	1.8	1.8	1.9	56
Site 6	7/20/11 - 7/26/11	7.84	190	546	142	57	941	198	1,338	30	8	9	47	0.8	0.4	1.1	71
Site 6	7/26/11 - 8/3/11	7.63	196	625	46	287	754	224	1,311	41	10	7	58	0.8	1.4	0.5	62
Site 6	8/3/11 - 8/11/11	7.64	163	541	41	115	604	180	940	16	7	12	35	1.6	1.6	0.5	50
Site 6	8/11/11 - 8/18/11	7.43	158	522	94	92	420	402	1,008	13	4	5	22	1.2	2.9	0.8	44
Site 6	8/18/11 - 8/25/11	7.65	150	502	170	117	379	286	952	16	16	19	51	2.8	1.4	0.6	44
Site 6	8/25/11 - 9/7/11	7.72	163	528	180	170	306	84	740	20	4	8	32	6.0	1.8	0.5	46
Site 6	9/7/11 - 9/15/11	7.68	166	536	12	134	633	172	951	17	4	3	24	1.0	1.0	0.9	41
Site 6	9/15/11 - 9/20/11	7.27	150	509	158	60	495	132	845	7	4	8	19	0.2	1.4	0.7	46
Site 6	9/20/11 - 9/29/11	7.53	176	536	46	145	546	100	837	16	8	6	30	0.7	1.5	0.4	41
Site 6	9/29/11 - 10/5/11	7.48	179	520	21	102	693	64	880	8	2	4	14	2.4	1.3	0.4	38
Site 6	10/5/11 - 10/12/11	7.52	184	538	28	14	607	122	771	4	4	8	16	1.3	1.7	0.6	46
Site 6	10/12/11 - 10/20/11	7.71	162	484	3	87	669	36	795	8	16	20	44	1.6	2.1	0.5	36
Site 6	10/20/11 - 10/27/11	7.67	150	454	3	39	621	132	795	8	6	16	30	0.8	1.4	0.5	65
Site 6	10/27/11 - 11/3/11	7.57	153	456	21	54	544	138	757	2	29	19	50	0.6	0.7	0.6	72
Site 6	11/3/11 - 11/9/11	7.51	160	403	24	47	734	137	942	9	6	6	21	1.6	1.2	0.8	133
Site 6	11/9/11 - 11/16/11	7.52	135	401	16	43	786	123	968	7	23	2	32	3.2	1.9	0.5	131
Site 6	11/16/11 - 11/21/11	7.37	135	413	19	224	634	29	906	5	2	7	14	1.2	3.9	0.9	129
Site 6	11/21/11 - 12/1/11	7.76	139	371	8	81	449	54	592	13	4	5	22	0.9	1.1	0.6	121
Site 6	12/1/11 - 12/8/11	7.82	154	420	4	33	454	60	551	9	5	5	19	0.6	1.7	0.5	123
Site 6	12/8/11 - 12/15/11	7.69	137	376	4	49	455	257	765	10	4	20	34	2.1	0.9	0.8	110
Site 6	12/15/11 - 12/21/11	7.34	109	217	12	50	499	74	635	10	10	14	34	0.9	1.9	0.6	92
Site 6	12/21/11 - 12/30/11	7.77	130	361	8	52	685	44	789	2	5	4	11	0.9	1.0	1.1	81
Site 6	12/30/11 - 1/4/12	7.70	140	406	20	16	295	147	478	8	11	33	52	1.2	2.8	0.7	82
Site 6	1/4/12 - 1/16/12	7.63	131	384	34	31	266	11	342	2	2	11	15	0.6	0.9	0.4	81
Site 6	1/16/12 - 1/27/12	7.91	143	401	3	35	102	88	228	4	6	6	16	0.5	3.4	1.0	69
Site 6	1/27/12 - 2/3/12	7.80	140	408	3	20	611	16	650	5	5	11	21	0.8	1.1	0.6	64
Site 6	2/3/12 - 2/9/12	7.69	135	416	3	17	388	33	441	6	10	3	19	0.8	0.8	0.8	64
Site 6	2/9/12 - 2/15/12	7.80	139	417	7	14	224	66	311	9	5	6	20	0.7	1.1	0.9	62
Site 6	2/15/12 -2/21/12	7.88	126	387	9	15	451	22	497	5	7	2	14	0.4	1.8	0.7	60
Site 6	2/21/12 - 3/1/12	7.76	138	415	24	34	196	31	285	4	15	7	26	1.0	1.0	0.7	57
Site 6	3/1/12 - 3/6/12	7.56	138	429	3	10	121	25	159	3	14	8	25	1.2	1.2	0.8	54
Site 6	3/6/12 - 3/15/12	7.47	134	430	21	28	143	99	291	7	11	6	24	1.5	1.0	0.7	55
Site 6	3/15/12 - 3/22/12	7.76	133	362	8	16	292	23	339	1	14	6	21	1.1	0.4	0.7	54
Site 6	3/22/12 - 3/29/12	7.79	132	429	5	48	221	28	302	13	8	4	25	0.7	1.0	0.8	51
Site 6	3/29/12 - 4/5/12	7.65	141	436	13	41	292	96	442	6	11	8	25	1.7	0.9	0.9	50
Geometric Mean:		**7.64**	**148**	**441**	**16**	**46**	**424**	**78**	**617**	**7**	**7**	**8**	**25**	**1.1**	**1.3**	**0.7**	**64**
Minimum Value:		**7.27**	**109**	**217**	**3**	**10**	**102**	**11**	**159**	**1**	**2**	**2**	**11**	**0.2**	**0.4**	**0.4**	**36**
Maximum Value:		**7.91**	**196**	**625**	**180**	**287**	**941**	**402**	**1,338**	**41**	**29**	**33**	**58**	**6.0**	**3.9**	**1.9**	**133**

5. Bulk Precipitation

Characteristics of Bulk Precipitation Samples Collected at the Tropical Farms Site from May 2011 - April 2012

Date Collected	pH (s.u.)	Alkalinity (mg/L)	Conductivity (µmho/cm)	Ammonia (µg/L)	NOX (µg/L)	Diss. Org. N (µg/L)	Part. N (µg/L)	Total N (µg/L)	SRP (µg/L)	Diss. Org. P (µg/L)	Part. P (µg/L)	Total P (µg/L)	Turbidity (NTU)	TSS (mg/L)	BOD (mg/L)	Color (Pt-Co)
5/12/11 - 5/18/11	6.06	8.2	54	222	256	241	578	1,297	1	27	49	77	3.3	8.9	0.8	8
5/18/11 - 6/2/11	6.12	7.2	41	87	245	441	327	1,100	14	11	40	65	1.0	6.0	1.0	7
6/2/11 - 6/15/11	7.16	56.2	164	357	206	311	243	1,117	38	9	11	58	0.7	2.0	0.8	11
6/15/11 - 7/1/11	5.86	4.2	33	128	196	279	477	1,080	1	1	5	7	0.6	0.9	0.5	5
7/1/11 - 7/7/11	7.45	57.0	166	15	86	249	163	513	29	1	8	38	0.9	1.0	0.5	2
7/7/11 - 7/13/11	6.04	5.0	22	301	150	444	104	999	1	29	9	39	0.6	1.2	0.7	4
7/13/11 - 7/20/11	5.78	4.8	31	119	110	108	47	384	2	2	2	6	0.4	0.9	0.4	3
7/20/11 - 8/3/11	6.07	4.0	23	56	140	196	6	398	1	2	1	4	0.4	1.4	0.2	3
8/3/11 - 8/11/11	5.99	4.2	21	65	138	122	87	412	4	7	11	22	1.0	1.2	0.4	11
8/11/11 - 8/18/11	5.76	4.0	37	135	181	316	49	681	1	11	4	16	1.1	0.8	0.5	4
8/18/11 - 9/7/11	6.25	8.6	48	609	137	156	104	1,006	3	46	16	65	1.3	1.6	0.4	12
9/7/11 - 9/15/11	5.89	7.4	18	43	80	179	150	452	10	6	1	17	0.6	0.9	0.8	7
9/15/11-9/29/11	6.11	5.0	20	33	62	52	3	150	48	1	5	54	0.5	0.7	0.4	3
9/29/11 - 10/12/11	5.95	6.2	61	17	10	90	61	178	19	3	1	23	0.4	0.8	0.3	7
10/12/11 - 10/20/11	5.95	3.2	23	90	28	42	4	164	5	6	1	12	0.5	1.8	0.4	7
10/20/11 - 11/3/11	5.89	3.6	43	17	19	61	51	148	12	12	7	31	0.5	0.5	0.3	3
11/3/11 - 11/16/11	5.93	4.4	61	156	74	304	75	609	13	12	13	38	2.0	3.6	0.9	6
11/16/11 - 11/21/11	6.05	5.8	81	80	118	65	172	435	39	6	22	67	2.4	5.5	1.7	7
11/21/11 - 12/15/11	4.73	0.6	27	109	8	39	22	178	5	11	1	17	0.9	0.6	0.9	7
12/15/11 - 2/3/12	7.08	20.0	65	355	55	641	271	1,322	30	89	25	144	2.8	3.0	0.8	13
2/3/12 - 2/9/12	6.12	3.2	53	329	115	432	791	1,667	16	13	23	52	1.6	3.0	2.1	11
2/9/12 - 3/15/12	5.96	3.6	56	73	72	71	3	219	61	9	3	73	0.9	1.5	0.4	8
3/15/12 - 3/29/12	6.29	6.2	45	404	149	376	297	1,226	83	10	4	97	2.0	3.7	0.8	10
3/29/12 - 4/24/12	6.32	6.8	49	127	307	107	3	544	57	23	13	93	2.5	3.0	1.0	11
Geometric Mean:	**6.10**	**6.0**	**43**	**105**	**89**	**165**	**66**	**522**	**9**	**8**	**6**	**33**	**1.0**	**1.7**	**0.6**	**6.3**
Minimum Value:	**4.73**	**0.6**	**18**	**15**	**8**	**39**	**3**	**148**	**1**	**1**	**1**	**4**	**0.4**	**0.5**	**0.2**	**2.0**
Maximum Value:	**7.45**	**57.0**	**166**	**609**	**307**	**641**	**791**	**1,667**	**83**	**89**	**49**	**144**	**3.3**	**8.9**	**2.1**	**13.0**

6. Groundwater Samples

Characteristics of Groundwater Monitoring Well Samples Collected at the Tropical Farms Site from May 2011 - April 2012

Site	Date Collected	pH (s.u.)	Alkalinity (mg/L)	Conductivity (µmho/cm)	Ammonia (µg/L)	NOX (µg/L)	Organic N (µg/L)	Total N (µg/L)	SRP (µg/L)	Organic P (µg/L)	Total P (µg/L)	Color (Pt-Co)	BOD (mg/L)
MW-1	5/26/11	5.09	8.2	219	269	7	247	523	1	6	7	190	12.2
MW-1	6/23/11	5.32	16.6	222	306	19	174	499	3	5	8	176	7.0
MW-1	7/20/11	5.47	20.2	246	212	9	351	572	6	9	15	181	3.5
MW-1	8/18/11	6.35	35.2	204	274	14	220	508	1	22	23	218	3.8
MW-1	9/20/11	5.59	29.2	182	149	8	525	682	5	13	18	267	2.5
MW-1	10/20/11	6.31	80.5	241	42	6	1,038	1,086	1	16	17	156	3.6
MW-1	11/21/11	7.21	103	270	38	21	619	678	1	6	7	152	1.4
MW-1	12/15/11	6.57	82.4	239	41	52	443	536	1	2	3	152	1.0
MW-1	1/16/12	5.88	77.2	250	18	27	277	322	1	5	6	139	0.8
MW-1	2/15/12	5.92	79.4	266	66	47	246	359	3	20	23	143	1.2
MW-1	3/15/12	6.70	57.0	244	110	3	313	426	11	10	21	186	0.9
MW-1	4/19/12	5.91	49.4	232	720	18	288	1,026	42	21	63	199	0.7
Geometric Mean:		6.00	42.4	233	113	14	347	564	3	9	13	177	2.1
Minimum Value:		5.09	8.2	182	18	3	174	322	1	2	3	139	0.7
Maximum Value:		7.21	103.0	270	720	52	1038	1086	42	22	63	267	12.2
MW-2	5/26/11	5.48	5.6	97	1,096	2	1,096	2,194	4	10	14	189	16.2
MW-2	6/23/11	5.67	8.8	384	401	37	920	1,358	9	37	46	259	18.6
MW-2	7/20/11	5.52	11.2	143	158	2	589	749	32	53	85	281	4.4
MW-2	8/18/11	6.23	22.2	117	320	3	425	748	13	60	73	252	7.1
MW-2	9/20/11	5.27	10.8	118	455	4	499	958	39	36	75	271	3.7
MW-2	10/20/11	5.71	13.6	137	74	7	1,083	1,164	14	39	53	404	1.7
MW-2	11/21/11	6.52	19.2	95	84	44	205	333	3	19	22	221	1.7
MW-2	12/15/11	5.76	20.4	90	13	2	517	532	6	9	15	243	0.6
MW-2	1/16/12	5.26	10.6	93	15	15	434	464	2	14	16	116	0.7
MW-2	2/15/12	5.31	8.0	86	20	48	345	413	1	11	12	75	1.6
MW-2	3/15/12	6.45	27.0	155	72	21	160	253	3	30	33	212	1.6
MW-2	4/19/12	7.21	165	603	333	14	105	452	53	52	105	152	0.8
Geometric Mean:		5.84	15.9	141	116	9	427	663	8	25	35	206	2.6
Minimum Value:		5.26	5.6	86	13	2	105	253	1	9	12	75	0.6
Maximum Value:		7.21	165.0	603	1096	48	1096	2194	53	60	105	404	18.6

Characteristics of Groundwater Monitoring Well Samples Collected at the Tropical Farms Site from May 2011 - April 2012

Site	Date Collected	pH (s.u.)	Alkalinity (mg/L)	Conductivity (µmho/cm)	Ammonia (µg/L)	NOX (µg/L)	Organic N (µg/L)	Total N (µg/L)	SRP (µg/L)	Organic P (µg/L)	Total P (µg/L)	Color (Pt-Co)	BOD (mg/L)
MW-3	5/26/11	5.32	9.8	354	238	19	873	1,130	10	11	21	53	11.1
MW-3	6/23/11	5.78	22.4	367	303	41	948	1,292	10	36	46	267	17.9
MW-3	7/20/11	6.17	32.2	371	278	10	2,154	2,442	38	57	95	770	3.5
MW-3	8/18/11	6.79	73.2	326	231	13	1,065	1,309	16	65	81	743	6.2
MW-3	9/20/11	5.77	40.2	297	374	13	1,070	1,457	35	42	77	516	6.4
MW-3	10/20/11	7.04	94.0	321	535	7	669	1,211	30	30	60	448	2.2
MW-3	11/21/11	7.27	66.2	381	120	6	1,070	1,196	20	38	58	358	1.5
MW-3	12/15/11	7.21	92.0	303	105	7	1,071	1,183	13	32	45	548	1.1
MW-3	1/16/12	5.47	14.2	318	46	133	511	690	10	14	24	135	0.8
MW-3	2/15/12	4.99	5.0	281	50	21	461	532	11	12	23	60	1.2
MW-3	3/15/12	5.74	7.8	321	83	13	370	466	18	15	33	93	1.3
MW-3	4/19/12	5.72	17.4	285	334	11	233	578	15	14	29	168	1.5
Geometric Mean:		6.06	26.4	325	174	15	750	1012	17	26	44	245	2.8
Minimum Value:		4.99	5.0	281	46	6	233	466	10	11	21	53	0.8
Maximum Value:		7.27	94.0	381	535	133	2154	2442	38	65	95	770	17.9
MW-4	5/26/11	6.19	42.2	249	1,470	4	453	1,927	33	9	42	155	12.9
MW-4	6/23/11	6.40	58.6	496	990	10	254	1,254	23	123	146	240	19.6
MW-4	7/20/11	6.67	100	328	229	3	788	1,020	32	70	102	399	2.7
MW-4	8/18/11	6.81	52.4	153	215	23	228	466	229	44	273	327	3.3
MW-4	9/20/11	6.65	129	380	749	4	467	1,220	83	60	143	305	2.9
MW-4	10/20/11	7.05	75.8	385	22	3	1,192	1,217	39	24	63	320	2.5
MW-4	11/21/11	7.66	179	496	118	67	908	1,093	40	28	68	110	1.3
MW-4	12/15/11	7.20	68.4	236	68	55	290	413	58	11	69	118	0.6
MW-4	1/16/12	6.75	134	669	180	177	320	677	44	11	55	52	0.4
MW-4	2/15/12	6.70	99.6	476	77	119	619	815	84	23	107	91	0.9
MW-4	3/15/12	7.19	78.2	398	62	30	220	312	84	29	113	152	1.0
MW-4	4/19/12	6.82	157	586	329	6	309	644	56	61	117	148	0.6
Geometric Mean:		6.83	89.2	376	193	17	431	815	55	31	95	172	1.9
Minimum Value:		6.19	42.2	153	22	3	220	312	23	9	42	52	0.4
Maximum Value:		7.66	179.0	669	1470	177	1192	1927	229	123	273	399	19.6

Characteristics of Groundwater Monitoring Well Samples Collected at the Tropical Farms Site from May 2011 - April 2012

Site	Date Collected	pH (s.u.)	Alkalinity (mg/L)	Conductivity (µmho/cm)	Ammonia (µg/L)	NOX (µg/L)	Organic N (µg/L)	Total N (µg/L)	SRP (µg/L)	Organic P (µg/L)	Total P (µg/L)	Color (Pt-Co)	BOD (mg/L)
MW-5	5/26/11	6.45	94.4	1,659	1,716	22	1,145	2,883	10	21	31	193	2.5
MW-5	6/23/11	6.76	108	1,480	1,007	18	1,625	2,650	12	22	34	255	3.9
MW-5	7/20/11	7.18	114	832	159	159	1,057	1,375	11	13	24	147	1.1
MW-5	8/18/11	6.79	212	721	349	17	1,318	1,684	8	2	10	121	0.9
MW-5	9/20/11	6.43	192	1,676	547	17	1,469	2,033	9	11	20	173	1.0
MW-5	10/20/11	7.08	190	3,021	606	30	3,033	3,669	14	10	24	422	1.9
MW-5	11/21/11	7.97	379	1,277	134	110	1,969	2,213	48	20	68	320	1.5
MW-5	12/15/11	6.91	120	2,172	967	8	1,807	2,782	52	26	78	392	1.3
MW-5	1/16/12	6.46	165	1,933	419	35	1,408	1,862	16	11	27	309	1.1
MW-5	2/15/12	6.73	242	814	20	163	1,500	1,683	21	24	45	419	1.0
MW-5	3/15/12	7.30	256	791	59	25	1,390	1,474	20	28	48	342	0.8
MW-5	4/19/12	6.87	245	1,065	170	3	1,411	1,584	18	28	46	530	1.3
Geometric Mean:		6.90	178.2	1318	289	28	1534	2063	16	15	33	275	1.4
Minimum Value:		6.43	94.4	721	20	3	1057	1375	8	2	10	121	0.8
Maximum Value:		7.97	379.0	3021	1716	163	3033	3669	52	28	78	530	3.9
MW-6	5/26/11	6.71	108	909	1,487	9	184	1,680	1	13	14	182	15.3
MW-6	6/23/11	6.81	107	723	371	9	829	1,209	4	16	20	183	7.6
MW-6	7/20/11	6.89	105	465	178	19	637	834	4	11	15	188	2.8
MW-6	8/18/11	7.14	131	436	132	3	606	741	15	24	39	203	3.1
MW-6	9/20/11	6.71	197	647	192	3	1,214	1,409	12	11	23	237	1.3
MW-6	10/20/11	7.67	212	577	33	3	1,454	1,490	12	6	18	200	1.5
MW-6	11/21/11	7.80	206	490	78	13	1,445	1,536	2	10	12	148	1.2
MW-6	12/15/11	7.76	174	425	88	8	1,133	1,229	16	6	22	141	1.1
MW-6	1/16/12	6.96	246	616	85	4	1,147	1,236	11	5	16	109	0.7
MW-6	2/15/12	6.95	239	606	58	3	1,022	1,083	2	13	15	106	1.1
MW-6	3/15/12	7.45	199	561	86	7	929	1,022	11	23	34	122	0.7
MW-6	4/19/12	7.05	282	763	71	3	847	921	13	13	26	109	0.7
Geometric Mean:		7.15	174.3	586	127	6	857	1165	6	11	20	155	1.8
Minimum Value:		6.71	105.0	425	33	3	184	741	1	5	12	106	0.7
Maximum Value:		7.80	282.0	909	1487	19	1454	1680	16	24	39	237	15.3

Characteristics of Groundwater Monitoring Well Samples Collected at the Tropical Farms Site from May 2011 - April 2012

Site	Date Collected	pH (s.u.)	Alkalinity (mg/L)	Conductivity (µmho/cm)	Ammonia (µg/L)	NOX (µg/L)	Organic N (µg/L)	Total N (µg/L)	SRP (µg/L)	Organic P (µg/L)	Total P (µg/L)	Color (Pt-Co)	BOD (mg/L)
MW-7	5/26/11	6.92	213	625	269	6	100	375	15	3	18	170	12.5
MW-7	6/23/11	6.91	206	718	182	11	93	286	7	27	34	88	5.2
MW-7	7/20/11	6.88	189	488	217	16	449	682	26	41	67	244	5.5
MW-7	8/18/11	7.15	117	354	155	4	489	648	672	55	727	263	18.7
MW-7	9/20/11	6.72	140	356	557	5	376	938	122	53	175	275	2.5
MW-7	10/20/11	7.39	169	552	246	5	1,256	1,507	793	118	911	481	18.0
MW-7	11/21/11	7.50	150	532	519	14	881	1,414	657	140	797	381	2.8
MW-7	12/15/11	7.17	135	380	365	12	715	1,092	334	46	380	251	1.8
MW-7	1/16/12	7.04	199	486	322	154	888	1,364	41	39	80	109	0.5
MW-7	2/15/12	7.14	191	534	313	72	931	1,316	60	13	73	109	1.0
MW-7	3/15/12	7.47	237	608	425	7	309	741	174	36	210	122	1.2
MW-7	4/19/12	7.52	338	803	305	4	455	764	141	30	171	82	0.5
Geometric Mean:		7.15	183	520	301	12	451	829	107	36	161	183	3.0
Minimum Value:		6.72	117	354	155	4	93	286	7	3	18	82	0.5
Maximum Value:		7.52	338	803	557	154	1256	1507	793	140	911	481	18.7
MW-8	5/26/11	6.19	75.6	318	1,970	7	803	2,780	8	22	30	140	23.0
MW-8	6/23/11	6.58	86.5	295	352	18	666	1,036	11	26	37	343	17.6
MW-8	7/20/11	6.81	117	328	218	20	208	446	4	11	15	199	2.8
MW-8	8/18/11	7.22	215	516	211	7	283	501	1	10	11	132	3.0
MW-8	9/20/11	6.76	276	848	100	11	1,050	1,161	6	3	9	139	0.8
MW-8	10/20/11	7.87	149	703	113	32	809	954	1	11	12	109	1.9
MW-8	11/21/11	8.11	319	752	140	73	300	513	1	2	3	102	0.6
MW-8	12/15/11	7.89	296	422	58	69	934	1,061	1	2	3	87	0.4
MW-8	1/16/12	6.78	336	708	45	69	333	447	1	4	5	90	0.5
MW-8	2/15/12	6.99	282	632	23	96	537	656	5	5	10	79	1.0
MW-8	3/15/12	7.59	248	557	22	37	147	206	6	15	21	122	0.8
MW-8	4/19/12	7.32	203	504	178	4	340	522	4	10	14	245	0.6
Geometric Mean:		7.15	195.1	518	123	24	449	693	3	7	11	135	1.6
Minimum Value:		6.19	75.6	295	22	4	147	206	1	2	3	79	0.4
Maximum Value:		8.11	336.0	848	1970	96	1050	2780	11	26	37	343	23.0

APPENDIX D

CHEMICAL CHARACTERISTICS OF POND SAMPLES COLLECTED AT SITES 4 AND 5

1. **Pond 4**
2. **Pond 5**

1. Pond 4

Characteristics of Runoff Inflow Samples Collected at Tropical Farms Site 4

Site	Date Collected	pH (s.u.)	Alkalinity (mg/L)	Conductivity (µmho/cm)	Ammonia (µg/L)	NOX (µg/L)	Diss. Org. N (µg/L)	Part. N (µg/L)	Total N (µg/L)	SRP (µg/L)	Diss. Org. P (µg/L)	Part. P (µg/L)	Total P (µg/L)	Turbidity (NTU)	TSS (mg/L)	BOD (mg/L)	Color (Pt-Co)
Site 4	5/12/11 - 5/18/11	7.67	187	615	604	2	657	250	1,513	2	15	2	19	3.0	14.6	1.2	36
Site 4	5/18 - 5/26/11	8.02	150	528	1,169	3	694	85	1,951	1	6	7	14	2.1	1.5	0.9	33
Site 4	5/26/11 - 6/2/11	7.67	161	531	540	3	925	430	1,898	1	4	11	16	0.6	0.6	2.0	35
Site 4	6/2/11 - 6/8/11	7.56	170	615	186	2	767	86	1,041	1	12	5	18	0.6	0.7	2.5	35
Site 4	6/8/11 - 6/15/11	7.55	165	608	157	3	920	88	1,168	3	3	7	13	1.0	1.3	1.5	36
Site 4	6/15/11 - 6/23/11	7.61	145	706	32	3	816	159	1,010	1	5	11	17	2.0	8.0	1.6	40
Site 4	6/23/11 - 7/1/11	7.64	138	535	10	7	830	397	1,244	15	10	7	32	1.2	0.6	3.3	39
Site 4	7/1/11 - 7/7/11	7.32	140	495	20	3	850	195	1,068	1	5	14	20	0.8	0.4	2.2	35
Site 4	7/7/11 - 7/13/11	7.41	141	506	89	3	691	582	1,365	1	1	10	12	2.4	3.0	4.8	39
Site 4	7/13/11 - 7/20/11	7.46	138	517	85	18	503	647	1,253	1	1	10	12	1.1	3.9	3.8	32
Site 4	7/20/11 - 7/26/11	7.47	138	441	25	3	701	218	947	8	6	8	22	0.9	1.2	2.5	37
Site 4	7/26/11 - 8/3/11	7.24	134	508	13	28	294	33	368	1	1	10	12	9.9	6.0	2.8	40
Site 4	8/3/11 - 8/11/11	7.51	143	491	30	3	461	241	735	1	6	4	11	1.4	1.0	2.1	48
Site 4	8/11/11 - 8/18/11	7.27	151	19	87	3	351	167	608	1	1	5	7	1.9	1.7	3.3	40
Site 4	8/18/11 - 8/25/11	7.45	105	507	122	4	439	189	754	1	7	5	13	0.8	0.8	3.7	36
Site 4	8/25/11 - 9/7/11	7.48	159	516	1,029	3	378	138	1,548	3	3	2	8	0.7	1.6	1.6	41
Site 4	9/7/11 - 9/15/11	7.52	161	507	100	28	445	1	574	6	6	2	14	0.9	0.6	3.2	44
Site 4	9/15/11 - 9/20/11	7.60	163	507	161	2	388	9	560	1	1	1	3	0.9	1.4	2.3	41
Site 4	9/20/11-9/29/11	7.45	165	516	49	2	699	16	766	19	19	3	41	1.2	2.4	3.0	44
Site 4	9/29/11 - 10/5/11	7.70	175	493	20	22	545	61	648	1	5	4	10	1.1	0.8	1.3	37
Site 4	10/5/11 - 10/12/11	7.51	161	387	37	3	498	117	655	1	4	5	10	1.9	1.6	1.7	47
Site 4	10/12/11 - 10/20/11	7.49	160	463	3	10	568	117	698	1	11	31	43	5.1	12.4	1.7	65
Site 4	10/20/11 - 10/27/11	7.53	137	415	3	17	513	270	803	1	13	21	35	3.3	1.7	0.8	121
Site 4	10/27/11 - 11/3/11	7.36	134	403	15	3	542	36	596	1	21	18	40	2.3	3.6	1.7	118
Site 4	11/3/11 - 11/9/11	7.69	120	372	24	25	640	13	702	20	27	27	74	4.0	2.2	0.8	175
Site 4	11/9/11 - 11/16/11	7.33	130	375	24	12	633	276	945	17	25	31	73	3.8	3.1	3.5	154
Site 4	11/16/11 - 11/21/11	7.54	134	418	27	5	869	57	958	28	5	13	46	3.0	0.8	1.1	156
Site 4	11/21/11 - 12/1/11	7.81	140	402	12	22	534	42	610	19	10	11	40	3.1	0.9	1.0	132
Site 4	12/1/11 - 12/8/11	7.74	142	408	16	3	532	30	581	7	13	20	40	3.1	3.2	0.9	134
Site 4	12/8/11 - 12/15/11	7.31	111	325	33	26	635	130	824	25	25	63	113	3.4	4.0	2.0	110
Site 4	12/15/11 - 12/21/11	7.41	76.8	325	4	9	433	201	647	13	7	15	35	2.3	0.9	0.9	108
Site 4	12/21/11 - 12/30/11	7.54	120	366	11	3	685	47	746	15	1	2	18	2.5	1.7	1.4	93
Site 4	12/30/11 - 1/4/12	7.70	125	407	18	3	476	165	662	16	1	3	20	2.7	1.1	1.0	95
Site 4	1/4/12 - 1/16/12	8.03	139	422	20	4	370	111	505	2	4	14	20	1.7	1.8	1.1	92
Site 4	1/16/11 - 1/27/12	7.61	136	422	3	3	421	88	515	4	3	17	24	1.2	1.6	1.5	74
Site 4	1/27/12 - 2/3/12	7.61	86.8	438	3	3	520	210	736	4	4	11	19	2.7	6.8	2.3	68
Site 4	2/3/12 - 2/9/12	7.26	137	449	3	3	601	100	707	4	10	11	25	2.6	3.6	1.9	67
Site 4	2/9/12 - 2/15/12	7.61	151	449	10	3	752	136	901	8	2	26	36	2.2	3.8	2.8	65
Site 4	2/15/12 -2/21/12	7.86	146	466	15	3	470	113	601	2	12	20	34	3.5	5.8	3.0	66
Site 4	2/21/12 - 3/1/12	7.82	153	482	16	3	116	55	190	1	6	27	34	1.4	1.5	1.7	55
Site 4	3/1/12 - 3/6/12	7.52	158	494	3	3	134	88	228	1	16	10	27	1.9	1.1	1.4	53
Site 4	3/6/12 - 3/15/12	7.85	165	520	17	2	228	99	346	3	12	7	22	1.4	0.9	1.4	52
Site 4	3/15/12 - 3/22/12	7.85	165	531	7	3	113	160	283	1	14	4	19	1.0	0.7	1.0	54
Site 4	3/22/12 - 3/29/12	7.75	165	534	11	3	333	44	391	6	19	2	27	2.6	0.9	0.9	46
Site 4	3/29/12 - 4/5/12	7.74	182	546	7	4	257	106	374	1	3	3	7	1.3	0.5	1.2	45
Site 4	4/5/12 - 4/12/12	7.68	179	553	15	3	314	21	353	1	6	17	24	2.1	0.8	1.5	47
Site 4	4/12/12 - 4/19/12	7.46	184	580	29	3	415	32	479	1	4	3	8	2.3	1.5	1.0	48
Site 4	4/19/12 - 4/24/12	7.63	182	572	2	3	555	14	574	1	7	8	16	3.7	2.9	1.0	45
Site 4	4/24/12 - 5/1/12	7.51	187	591	27	3	616	48	694	5	1	104	110	2.9	2.6	0.9	42
Geometric Mean:		**7.58**	**146**	**448**	**25**	**5**	**485**	**86**	**695**	**3**	**6**	**9**	**21**	**1.9**	**1.7**	**1.7**	**57**
Minimum Value:		**7.24**	**77**	**19**	**2**	**2**	**113**	**1**	**190**	**1**	**1**	**1**	**3**	**0.6**	**0.4**	**0.8**	**32**
Maximum Value:		**8.03**	**187**	**706**	**1,169**	**28**	**925**	**647**	**1,951**	**28**	**27**	**104**	**113**	**9.9**	**14.6**	**4.8**	**175**

2. Pond 5

Characteristics of Runoff Inflow Samples Collected at Tropical Farms Site 5

Site	Date Collected	pH (s.u.)	Alkalinity (mg/L)	Conductivity (µmho/cm)	Ammonia (µg/L)	NOX (µg/L)	Diss. Org. N (µg/L)	Part. N (µg/L)	Total N (µg/L)	SRP (µg/L)	Diss. Org. P (µg/L)	Part. P (µg/L)	Total P (µg/L)	Turbidity (NTU)	TSS (mg/L)	BOD (mg/L)	Color (Pt-Co)
Site 5	5/12/11 - 5/18/11	8.15	190	621	201	3	860	293	1,357	1	9	13	23	2.1	5.0	5.5	33
Site 5	5/18 - 5/26/11	7.90	186	641	147	8	882	220	1,257	1	5	17	23	0.9	3.7	1.0	35
Site 5	5/26/11 - 6/2/11	7.69	185	648	155	3	978	167	1,303	2	3	8	13	1.9	0.6	0.7	34
Site 5	6/2/11 - 6/8/11	7.65	148	635	168	3	681	351	1,203	21	8	4	33	1.0	1.7	0.5	34
Site 5	6/8/11 - 6/15/11	7.99	167	641	151	37	858	922	1,968	3	4	14	21	9.3	26.9	2.0	38
Site 5	6/15/11 - 6/23/11	7.85	155	580	131	3	595	228	957	1	2	11	14	1.5	3.2	2.3	37
Site 5	6/23/11 - 7/1/11	7.74	140	556	21	6	866	341	1,234	4	1	11	16	1.9	2.2	0.9	48
Site 5	7/1/11 - 7/7/11	7.73	149	558	80	25	933	263	1,301	10	1	10	21	4.4	6.8	1.0	39
Site 5	7/7/11 - 7/13/11	7.82	150	543	66	3	1,050	330	1,449	1	1	15	17	1.4	4.2	2.2	44
Site 5	7/13/11 - 7/20/11	7.57	156	484	90	24	577	111	802	1	1	7	9	0.8	2.2	1.8	35
Site 5	7/20/11 - 7/26/11	7.81	147	527	24	43	680	106	853	14	11	8	33	11.3	3.7	2.3	50
Site 5	7/26/11 - 8/3/11	7.56	143	535	28	157	485	84	754	14	14	6	34	2.2	3.6	1.8	50
Site 5	8/3/11 - 8/11/11	7.48	162	536	76	18	693	293	1,080	1	1	39	41	0.8	2.2	0.7	47
Site 5	8/11/11 - 8/18/11	7.70	155	528	92	3	689	389	1,173	2	2	83	87	2.6	5.9	10.7	42
Site 5	8/18/11 - 8/25/11	7.55	166	524	117	3	713	187	1,020	1	1	6	8	1.3	0.4	1.6	38
Site 5	8/25/11 - 9/7/11	7.61	166	525	145	98	566	257	1,066	11	11	2	24	1.4	0.5	0.7	44
Site 5	9/7/11 - 9/15/11	7.53	156	469	21	77	399	192	689	11	11	15	37	0.7	1.1	1.5	47
Site 5	9/15/11 - 9/20/11	7.25	166	455	157	3	495	107	762	1	1	1	3	1.1	3.0	1.2	43
Site 5	9/20/11 - 9/29/11	7.37	177	530	29	3	547	77	656	1	1	1	3	0.7	1.4	1.7	39
Site 5	9/29/11 - 10/5/11	7.42	173	524	23	34	705	16	778	1	1	4	6	0.7	0.7	0.9	36
Site 5	10/5/11 - 10/12/11	7.44	173	455	20	3	711	47	781	4	3	5	12	1.1	0.6	1.1	41
Site 5	10/12/11 - 10/20/11	7.51	167	466	38	28	540	116	722	1	1	2	4	0.6	0.9	0.6	52
Site 5	10/20/11 - 10/27/11	7.34	154	441	29	6	517	642	1,194	2	2	1	5	1.5	1.2	0.7	107
Site 5	10/27/11 - 11/3/11	7.31	133	404	19	21	568	439	1,047	6	17	21	44	4.1	5.3	7.3	137
Site 5	11/3/11 - 11/9/11	7.42	128	393	20	6	532	67	625	4	4	15	23	2.2	1.4	0.9	145
Site 5	11/9/11 - 11/16/11	7.29	122	403	16	3	873	128	1,020	1	16	16	33	1.3	0.6	0.9	150
Site 5	11/16/11 - 11/21/11	7.90	134	380	14	6	672	238	930	1	1	3	5	1.1	2.3	8.8	121
Site 5	11/21/11 - 12/1/11	7.49	147	414	8	14	500	18	540	4	4	3	11	0.7	1.0	0.8	109
Site 5	12/1/11 - 12/8/11	7.31	146	429	12	3	461	68	544	1	1	6	8	0.7	1.6	0.7	126
Site 5	12/8/11 - 12/15/11	7.20	124	308	3	4	634	64	705	17	17	49	83	2.9	3.0	2.2	106
Site 5	12/15/11 - 12/21/11	7.24	124	360	10	3	400	298	711	4	4	9	17	2.6	0.9	1.0	92
Site 5	12/21/11 - 12/30/11	7.46	120	365	13	5	678	42	738	1	1	23	25	1.4	0.8	1.9	79
Site 5	12/30/11 - 1/4/12	7.72	114	383	18	3	484	86	591	3	23	9	35	0.7	2.1	0.9	82
Site 5	1/4/12 - 1/16/12	7.39	127	409	29	3	371	422	825	1	3	7	11	0.7	0.8	1.0	38
Site 5	1/16/11 - 1/27/12	7.64	119	357	3	3	308	88	402	1	2	2	5	1.2	1.1	1.6	72
Site 5	1/27/12 - 2/3/12	7.58	132	394	3	3	475	286	767	1	1	9	11	1.1	0.8	1.5	72
Site 5	2/3/12 - 2/9/12	7.28	126	402	3	5	555	108	671	1	10	4	15	0.8	1.4	1.3	67
Site 5	2/9/12 - 2/15/12	7.39	124	421	10	4	570	318	902	6	2	1	9	1.3	1.2	1.7	63
Site 5	2/15/12 -2/21/12	7.61	123	405	37	3	503	63	606	1	12	1	14	1.4	0.9	2.3	66
Site 5	2/21/12 - 3/1/12	7.62	115	408	24	3	281	16	324	1	16	13	30	1.3	0.9	2.3	60
Site 5	3/1/12 - 3/6/12	8.00	115	412	7	3	213	30	253	1	13	3	17	0.2	0.9	1.7	54
Site 5	3/6/12 - 3/15/12	7.82	122	430	20	6	333	105	464	2	11	11	24	1.7	7.4	3.5	52
Site 5	3/15/12 - 3/22/12	7.54	125	447	4	2	387	115	508	1	15	4	20	1.6	1.3	4.1	51
Site 5	3/22/12 - 3/29/12	7.67	114	399	6	7	334	86	433	6	9	7	22	1.5	2.7	2.7	49
Site 5	3/29/12 - 4/5/12	7.45	121	448	3	4	499	104	610	1	5	8	14	1.9	3.7	5.0	52
Site 5	4/5/12 - 4/12/12	7.58	106	426	38	15	493	53	599	7	3	10	20	1.7	1.5	2.9	51
Site 5	4/12/12 - 4/19/12	7.51	105	418	24	2	510	32	568	1	1	8	10	1.9	16.8	4.0	48
Site 5	4/19/12 - 4/24/12	7.27	121	464	31	6	637	418	1,092	3	1	34	38	1.2	6.7	2.4	49
Site 5	4/24/12 - 5/1/12	7.44	125	474	24	3	781	76	884	4	10	7	21	1.2	2.6	2.9	47
	Geometric Mean:	**7.56**	**140**	**462**	**26**	**7**	**563**	**131**	**790**	**2**	**4**	**7**	**16**	**1.4**	**1.9**	**1.7**	**56**
	Minimum Value:	**7.20**	**105**	**308**	**3**	**2**	**213**	**16**	**253**	**1**	**1**	**1**	**3**	**0.2**	**0.4**	**0.5**	**33**
	Maximum Value:	**8.15**	**190**	**648**	**201**	**157**	**1,050**	**922**	**1,968**	**21**	**23**	**83**	**87**	**11.3**	**26.9**	**10.7**	**150**

APPENDIX E

SUPPORTING CALCULATIONS FOR ESTIMATION OF PERFORMANCE EFFICIENCY OF THE TROPICAL FARMS SYSTEM

1. **Mean Monthly Concentrations of Measured Parameters at Each of the Monitoring Sites**

2. **Monthly Mass Loadings of Measured Parameters at Each of the Monitoring Sites**

3. **Monthly Mass Balances for Evaluated Parameters in Pond 1**

4. **Monthly Mass Balances for Evaluated Parameters in Ponds 2-5**

1. Mean Monthly Concentrations of Measured Parameters at Each of the Monitoring Sites

Mean Monthly Characteristics of Bulk Precipitation Samples Collected at the Tropical Farms Site from May 2011- April 2012

Year	Month	Ammonia (µg/L)	NOX (µg/L)	Diss Org. N (µg/L)	Part. N (µg/L)	Total N (µg/L)	SRP (µg/L)	Diss Org. P (µg/L)	Part. P (µg/L)	Total P (µg/L)	TSS (mg/L)	BOD (mg/L)
2011	May	139	250	326	435	1,194	4	17	44	71	7.3	0.9
	June	158	215	337	336	1,099	8	5	13	30	2.2	0.7
	July	74	119	220	47	529	3	3	3	14	1.1	0.4
	August	132	148	185	40	579	2	9	5	17	1.2	0.3
	September	62	51	107	41	332	13	5	3	34	0.9	0.4
	October	30	17	61	23	163	10	6	2	20	0.9	0.3
	November	69	34	83	62	289	13	10	7	34	1.6	0.8
	December	197	21	158	77	485	12	31	5	49	1.3	0.8
2012	January	200	40	207	82	617	19	26	8	64	1.8	0.9
	February	204	77	270	86	784	31	22	12	82	2.4	0.9
	March	155	149	142	14	527	66	13	5	87	2.6	0.7
	April	127	307	107	3	544	57	23	13	93	3.0	1.0

Mean Monthly Characteristics of Site 1 Inflow Samples Collected at the Tropical Farms Site from May 2011- April 2012

Year	Month	Ammonia (µg/L)	NOX (µg/L)	Diss Org. N (µg/L)	Part. N (µg/L)	Total N (µg/L)	SRP (µg/L)	Diss Org. P (µg/L)	Part. P (µg/L)	Total P (µg/L)	TSS (mg/L)	BOD (mg/L)
2011	May	-	-	-	-	-	-	-	-	-	-	-
	June	-	-	-	-	-	-	-	-	-	-	-
	July	-	-	-	-	-	-	-	-	-	-	-
	August	-	-	-	-	-	-	-	-	-	-	-
	September	-	-	-	-	-	-	-	-	-	-	-
	October	85	82	498	516	1,369	103	15	68	195	3.4	1.3
	November	27	262	628	134	1,090	108	10	62	189	3.2	1.2
	December	14	207	482	149	943	79	14	64	160	2.3	1.4
2012	January	28	18	140	82	298	46	7	45	107	4.2	1.5
	February	7	7	290	72	418	38	5	69	117	3.5	1.8
	March	18	5	111	96	230	39	2	129	170	3.2	1.2
	April											

Mean Monthly Characteristics of Site 2 Inflow Samples Collected at the Tropical Farms Site from May 2011- April 2012

Year	Month	Ammonia (µg/L)	NOX (µg/L)	Diss Org. N (µg/L)	Part. N (µg/L)	Total N (µg/L)	SRP (µg/L)	Diss Org. P (µg/L)	Part. P (µg/L)	Total P (µg/L)	TSS (mg/L)	BOD (mg/L)
2011	May	323	417	442	287	1,730	11	4	242	262	143	3.0
	June	323	417	442	287	1,730	11	4	242	262	143	3.0
	July	323	417	442	287	1,730	11	4	242	262	143	3.0
	August	627	283	478	622	2,361	12	8	879	904	275	2.6
	September	133	558	582	202	1,879	15	6	544	566	77.9	1.8
	October	36	368	695	336	1,470	53	11	725	805	80.4	2.3
	November	29	389	649	432	1,587	39	17	342	407	153	2.0
	December	19	474	649	180	1,330	18	4	101	124	28.1	1.6
2012	January	18	543	184	171	1,064	13	4	109	127	23.6	1.3
	February	16	622	52	162	852	9	3	117	129	19.8	1.1
	March	34	529	142	98	807	8	8	136	156	23.1	0.8
	April	21	409	535	81	1,096	8	3	19	32	5.2	0.5

Mean Monthly Characteristics of Site 3 Outflow Samples Collected at the Tropical Farms Site from May 2011- April 2012

Year	Month	Ammonia (µg/L)	NOX (µg/L)	Diss Org. N (µg/L)	Part. N (µg/L)	Total N (µg/L)	SRP (µg/L)	Diss Org. P (µg/L)	Part. P (µg/L)	Total P (µg/L)	TSS (mg/L)	BOD (mg/L)
2011	May	165	137	949	595	2,072	10	7	113	138	50.4	1.6
	June	161	25	630	346	1,282	9	6	77	98	49.1	1.7
	July	67	225	513	526	1,487	15	6	92	119	23.5	1.5
	August	124	183	371	451	1,356	13	6	126	158	35.9	1.4
	September	93	128	460	336	1,227	6	2	91	102	23.1	1.9
	October	42	167	709	217	1,345	34	22	72	155	13.3	1.5
	November	34	282	651	103	1,138	70	20	67	160	8.6	0.9
	December	17	357	417	186	1,065	44	19	65	136	13.5	1.1
2012	January	8	420	163	256	904	34	15	99	156	35.2	1.4
	February	14	110	327	159	699	9	10	52	75	14.8	1.8
	March	51	22	108	78	282	6	5	25	39	6.3	1.1
	April	41	8	71	65	206	6	2	18	27	4.1	1.0

Mean Monthly Characteristics of Site 6 Outflow Samples Collected at the Tropical Farms Site from May 2011- April 2012

Year	Month	Ammonia (µg/L)	NOX (µg/L)	Diss Org. N (µg/L)	Part. N (µg/L)	Total N (µg/L)	SRP (µg/L)	Diss Org. P (µg/L)	Part. P (µg/L)	Total P (µg/L)	TSS (mg/L)	BOD (mg/L)
2011	May	-	-	-	-	-	-	-	-	-	-	-
	June	-	-	-	-	-	-	-	-	-	-	-
	July	85	56	823	215	1,250	15	9	12	47	1.0	1.0
	August	88	143	467	208	974	19	7	9	37	1.7	0.6
	September	51	115	515	104	848	12	4	5	23	1.4	0.6
	October	10	48	625	87	798	5	7	11	27	1.4	0.5
	November	17	72	617	82	820	6	8	6	25	1.5	0.7
	December	8	37	461	94	632	7	6	11	26	1.5	0.7
2012	January	9	24	264	39	395	4	5	12	23	1.8	0.6
	February	7	19	342	30	417	6	8	5	20	1.1	0.7
	March	7	22	183	36	262	4	11	6	24	0.8	0.7
	April	13	41	292	96	442	6	11	8	25	0.9	0.9

Mean Monthly Characteristics of Groundwater Inflow to Pond 1 at the Tropical Farms Site from May 2011- April 2012

Year	Month	Ammonia (µg/L)	NOX (µg/L)	Diss Org. N (µg/L)	Part. N (µg/L)	Total N (µg/L)	SRP (µg/L)	Diss Org. P (µg/L)	Part. P (µg/L)	Total P (µg/L)	TSS (mg/L)	BOD (mg/L)
2011	May	567	6	572	-	1,257	6	9	-	17	-	13.0
	June	438	23	443	-	1,024	9	30	-	40	-	14.6
	July	215	5	770	-	1,016	22	37	-	59	-	3.5
	August	257	11	388	-	694	15	44	-	78	-	4.9
	September	371	6	602	-	1,038	27	33	-	62	-	3.6
	October	78	5	973	-	1,168	11	26	-	43	-	2.4
	November	82	25	593	-	737	7	19	-	28	-	1.5
	December	44	14	516	-	611	8	9	-	19	-	0.8
2012	January	39	56	374	-	514	5	10	-	19	-	0.7
	February	47	49	394	-	504	7	16	-	29	-	1.2
	March	80	13	253	-	354	15	19	-	40	-	1.2
	April	403	11	216	-	645	37	31	-	69	-	0.8

Mean Monthly Characteristics of Groundwater Inflow to Ponds 2-5 at the Tropical Farms Site from May 2011- April 2012

Year	Month	Ammonia (µg/L)	NOX (µg/L)	Diss Org. N (µg/L)	Part. N (µg/L)	Total N (µg/L)	SRP (µg/L)	Diss Org. P (µg/L)	Part. P (µg/L)	Total P (µg/L)	TSS (mg/L)	BOD (mg/L)
2011	May	1,078	10	361	-	1,499	6	12	-	22	-	10.3
	June	393	13	537	-	987	8	22	-	30	-	7.2
	July	191	31	501	-	769	8	16	-	25	-	2.6
	August	197	6	577	-	798	17	13	-	42	-	3.5
	September	277	7	916	-	1,329	17	12	-	29	-	1.3
	October	154	11	1,455	-	1,674	19	17	-	47	-	3.1
	November	166	35	931	-	1,253	16	15	-	37	-	1.3
	December	206	15	1,081	-	1,411	23	11	-	37	-	1.0
2012	January	151	35	831	-	1,088	9	10	-	20	-	0.7
	February	54	43	936	-	1,120	11	12	-	26	-	1.0
	March	83	15	492	-	692	22	24	-	52	-	0.9
	April	160	3	656	-	873	19	18	-	41	-	0.7

2. Monthly Mass Loadings of Measured Parameters at Each of the Monitoring Sites

Monthly Mass Loadings of Bulk Precipitation to Pond 1 at the Tropical Farms Site from May 2011- April 2012

Year	Month	Monthly Mass Loading (kg)										
		Ammonia	NOX	Diss Org. N	Part. N	Total N	SRP	Diss Org. P	Part. P	Total P	TSS	BOD
2011	May	0.06	0.11	0.14	0.19	0.51	0.00	0.01	0.02	0.03	3.13	0.37
	June	0.09	0.13	0.20	0.20	0.65	0.00	0.00	0.01	0.02	1.30	0.43
	July	0.06	0.09	0.17	0.04	0.40	0.00	0.00	0.00	0.01	0.85	0.32
	August	0.19	0.22	0.27	0.06	0.84	0.00	0.01	0.01	0.03	1.77	0.49
	September	0.08	0.07	0.14	0.05	0.43	0.02	0.01	0.00	0.04	1.24	0.56
	October	0.04	0.03	0.09	0.03	0.24	0.02	0.01	0.00	0.03	1.31	0.48
	November	0.02	0.01	0.03	0.02	0.10	0.00	0.00	0.00	0.01	0.52	0.27
	December	0.21	0.02	0.17	0.08	0.51	0.01	0.03	0.01	0.05	1.41	0.89
2012	January	0.02	0.00	0.02	0.01	0.06	0.00	0.00	0.00	0.01	0.17	0.08
	February	0.07	0.03	0.09	0.03	0.26	0.01	0.01	0.00	0.03	0.78	0.29
	March	0.13	0.13	0.12	0.01	0.45	0.06	0.01	0.00	0.07	2.16	0.58
	April	0.07	0.18	0.06	0.00	0.32	0.03	0.01	0.01	0.05	1.75	0.58
	Totals:	1.05	1.00	1.49	0.72	4.77	0.16	0.11	0.07	0.38	16.39	5.36

Monthly Mass Loadings from Site 1 Inflow at the Tropical Farms Site from May 2011- April 2012

Year	Month	Monthly Mass Loading (kg)										
		Ammonia	NOX	Diss Org. N	Part. N	Total N	SRP	Diss Org. P	Part. P	Total P	TSS	BOD
2011	May	-	-	-	-	-	-	-	-	-	-	-
	June	-	-	-	-	-	-	-	-	-	-	-
	July	-	-	-	-	-	-	-	-	-	-	-
	August	-	-	-	-	-	-	-	-	-	-	-
	September	-	-	-	-	-	-	-	-	-	-	-
	October	5.97	5.73	34.9	36.2	96.1	7.3	1.03	4.75	13.7	242.0	93.4
	November	1.15	11.1	26.6	5.67	46.1	4.6	0.43	2.63	8.01	133.4	52.7
	December	1.35	20.5	47.7	14.7	93.4	7.8	1.42	6.38	15.9	222.9	142.6
2012	January	0.33	0.21	1.67	0.98	3.57	0.56	0.09	0.53	1.28	50.3	17.9
	February	0.08	0.08	3.12	0.77	4.49	0.41	0.05	0.74	1.26	38.1	18.9
	March	0.09	0.03	0.56	0.49	1.16	0.20	0.01	0.65	0.86	16.2	6.07
	April	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.00
	Totals:	8.96	37.6	114.6	58.9	244.8	20.8	3.03	15.7	41.0	702.9	331.6

Monthly Mass Loadings from Site 2 Inflow at the Tropical Farms Site from May 2011- April 2012

Year	Month	Monthly Mass Loading (kg)										
		Ammonia	NOX	Diss Org. N	Part. N	Total N	SRP	Diss Org. P	Part. P	Total P	TSS	BOD
2011	May	3.90	5.04	5.34	3.46	20.9	0.14	0.05	2.93	3.17	1,726	36
	June	6.25	8.08	8.56	5.55	33.5	0.22	0.08	4.69	5.08	2,765	58
	July	6.97	9.00	9.54	6.19	37.3	0.24	0.08	5.23	5.66	3,082	64
	August	14.7	6.63	11.2	14.6	55.3	0.29	0.18	20.6	21.2	6,440	62
	September	2.81	11.8	12.3	4.3	39.6	0.31	0.12	11.5	11.9	1,643	38
	October	4.16	42.7	80.5	38.9	170.2	6.09	1.30	84.0	93.2	9,313	267
	November	0.87	11.85	19.8	13.2	48.4	1.20	0.52	10.4	12.4	4,657	60
	December	1.71	42.0	57.6	16.0	117.9	1.63	0.38	8.9	11.0	2,491	146
2012	January	0.16	5.1	1.72	1.60	9.98	0.12	0.03	1.02	1.19	221	13
	February	0.15	5.68	0.47	1.48	7.78	0.08	0.03	1.07	1.18	181	10
	March	0.53	8.36	2.24	1.55	12.7	0.13	0.13	2.15	2.47	365	13
	April	0.43	8.27	10.8	1.65	22.2	0.16	0.06	0.38	0.65	105	10
	Totals:	42.6	164.4	220.0	108.4	575.8	10.6	2.95	152.9	169.1	32,990	777

Monthly Mass Loadings from Site 3 Outflow at the Tropical Farms Site from May 2011- April 2012

Year	Month	Monthly Mass Loading (kg)										
		Ammonia	NOX	Diss Org. N	Part. N	Total N	SRP	Diss Org. P	Part. P	Total P	TSS	BOD
2011	May	1.67	1.38	9.60	6.02	21.0	0.10	0.07	1.15	1.39	509	16
	June	2.62	0.40	10.3	5.64	20.9	0.15	0.10	1.25	1.60	799	27
	July	1.39	4.63	10.6	10.8	30.6	0.31	0.12	1.89	2.45	484	32
	August	2.98	4.38	8.88	10.8	32.4	0.32	0.13	3.02	3.77	859	33
	September	2.01	2.77	9.93	7.26	26.5	0.13	0.03	1.97	2.20	499	41
	October	7.53	30.1	127.8	39.2	242.5	6.21	4.02	13.0	27.9	2,393	278
	November	2.75	22.8	52.7	8.37	92.1	5.64	1.60	5.43	12.9	696	73
	December	3.16	67.7	79.1	35.3	202.1	8.40	3.66	12.4	25.8	2,566	214
2012	January	0.18	9.64	3.74	5.87	20.7	0.78	0.35	2.28	3.57	807	33
	February	0.28	2.27	6.73	3.28	14.4	0.18	0.21	1.07	1.55	305	37
	March	1.05	0.46	2.25	1.63	5.88	0.14	0.11	0.52	0.82	132	23
	April	0.77	0.14	1.32	1.22	3.86	0.12	0.05	0.33	0.51	77	19
	Totals:	26.4	146.7	322.9	135.3	712.9	22.5	10.4	44.3	84.5	10,125	828

Monthly Mass Loadings from Site 6 Outflow at the Tropical Farms Site from May 2011- April 2012

Year	Month	Monthly Mass Loading (kg)										
		Ammonia	NOX	Diss Org. N	Part. N	Total N	SRP	Diss Org. P	Part. P	Total P	TSS	BOD
2011	May	-	-	-	-	-	-	-	-	-	-	-
	June	-	-	-	-	-	-	-	-	-	-	-
	July	0.40	0.26	3.86	1.01	5.86	0.07	0.04	0.06	0.22	4.70	4.66
	August	2.83	4.58	14.9	6.64	31.1	0.62	0.23	0.29	1.19	55.9	17.8
	September	1.23	2.81	12.6	2.54	20.7	0.31	0.10	0.13	0.56	33.6	13.8
	October	1.50	7.07	91.5	12.8	117.0	0.77	1.08	1.67	3.98	198.4	75.4
	November	1.91	8.39	71.5	9.47	95.0	0.70	0.92	0.70	2.93	170.3	77.0
	December	1.58	7.37	92.4	18.9	126.7	1.36	1.29	2.27	5.27	304.8	143.0
2012	January	0.21	0.57	6.16	0.91	9.20	0.10	0.12	0.29	0.53	40.8	14.9
	February	0.11	0.32	5.70	0.50	6.94	0.09	0.13	0.08	0.33	18.6	12.2
	March	0.08	0.23	1.94	0.38	2.78	0.04	0.12	0.06	0.25	8.83	7.94
	April	0.01	0.03	0.22	0.07	0.33	0.00	0.01	0.01	0.02	0.67	0.67
	Totals:	9.85	31.6	300.8	53.2	415.6	4.07	4.04	5.56	15.3	836.6	367.3

Monthly Mass Loadings from Groundwater Inflow to Pond 1 at the Tropical Farms Site from May 2011- April 2012

Year	Month	Monthly Mass Loading (kg)										
		Ammonia	NOX	Diss Org. N	Part. N	Total N	SRP	Diss Org. P	Part. P	Total P	TSS	BOD
2011	May	0.00	0.00	0.00	-	0.00	0.00	0.00	-	0.00	-	0.00
	June	0.00	0.00	0.00	-	0.00	0.00	0.00	-	0.00	-	0.00
	July	0.00	0.00	0.00	-	0.00	0.00	0.00	-	0.00	-	0.00
	August	0.10	0.00	0.14	-	0.26	0.01	0.02	-	0.03	-	1.80
	September	0.14	0.00	0.22	-	0.38	0.01	0.01	-	0.02	-	1.34
	October	0.04	0.00	0.48	-	0.58	0.01	0.01	-	0.02	-	1.19
	November	0.15	0.05	1.10	-	1.36	0.01	0.03	-	0.05	-	2.72
	December	0.08	0.02	0.89	-	1.05	0.01	0.02	-	0.03	-	1.37
2012	January	0.07	0.10	0.69	-	0.95	0.01	0.02	-	0.03	-	1.20
	February	0.04	0.04	0.29	-	0.37	0.01	0.01	-	0.02	-	0.89
	March	0.02	0.00	0.06	-	0.09	0.00	0.00	-	0.01	-	0.29
	April	0.00	0.00	0.00	-	0.00	0.00	0.00	-	0.00	-	0.00
	Totals:	0.63	0.22	3.88	-	5.05	0.07	0.13	-	0.22	-	10.79

Monthly Mass Loadings from Groundwater Inflow to Ponds 2-5 at the Tropical Farms Site from May 2011- April 2012

Year	Month	Monthly Mass Loading (kg)										
		Ammonia	NOX	Diss Org. N	Part. N	Total N	SRP	Diss Org. P	Part. P	Total P	TSS	BOD
2011	May	0.00	0.00	0.00	-	0.00	0.00	0.00	-	0.00	-	0.00
	June	0.00	0.00	0.00	-	0.00	0.00	0.00	-	0.00	-	0.00
	July	0.00	0.00	0.00	-	0.00	0.00	0.00	-	0.00	-	0.00
	August	1.09	0.03	3.20	-	4.43	0.09	0.07	-	0.23	-	19.50
	September	1.94	0.05	6.44	-	9.34	0.12	0.08	-	0.21	-	8.93
	October	0.51	0.04	4.84	-	5.58	0.06	0.06	-	0.16	-	10.5
	November	2.05	0.43	11.5	-	15.5	0.20	0.19	-	0.46	-	16.3
	December	1.19	0.09	6.27	-	8.18	0.13	0.06	-	0.22	-	5.84
2012	January	0.91	0.21	5.02	-	6.58	0.06	0.06	-	0.12	-	4.00
	February	0.00	0.00	0.00	-	0.00	0.00	0.00	-	0.00	-	0.00
	March	0.00	0.00	0.00	-	0.00	0.00	0.00	-	0.00	-	0.00
	April	0.00	0.00	0.00	-	0.00	0.00	0.00	-	0.00	-	0.00
	Totals:	7.70	0.85	37.3	-	49.6	0.66	0.52	-	1.39	-	65.0

Monthly Mass Loadings of Bulk Precipitation to Ponds 2-5 at the Tropical Farms Site from May 2011- April 2012

Year	Month	Monthly Mass Loading (kg)										
		Ammonia	NOX	Diss Org.	Part. N	Total N	SRP	Diss Org. P	Part. P	Total P	TSS	BOD
2011	May	0.40	0.72	0.94	1.26	3.45	0.01	0.05	0.13	0.20	21.10	2.50
	June	0.63	0.85	1.34	1.33	4.37	0.03	0.02	0.05	0.12	8.78	2.92
	July	0.38	0.61	1.13	0.24	2.72	0.01	0.02	0.02	0.07	5.69	2.16
	August	1.29	1.45	1.82	0.40	5.69	0.02	0.09	0.05	0.17	11.89	3.33
	September	0.54	0.45	0.94	0.36	2.91	0.11	0.05	0.03	0.30	8.32	3.81
	October	0.29	0.17	0.60	0.23	1.60	0.10	0.06	0.02	0.20	8.83	3.25
	November	0.16	0.08	0.19	0.14	0.65	0.03	0.02	0.02	0.08	3.53	1.81
	December	1.39	0.15	1.12	0.55	3.44	0.09	0.22	0.04	0.35	9.50	6.01
2012	January	0.13	0.03	0.13	0.05	0.39	0.01	0.02	0.00	0.04	1.14	0.55
	February	0.45	0.17	0.60	0.19	1.74	0.07	0.05	0.03	0.18	5.28	1.94
	March	0.89	0.85	0.81	0.08	3.00	0.38	0.07	0.03	0.50	14.55	3.90
	April	0.50	1.21	0.42	0.01	2.14	0.22	0.09	0.05	0.37	11.79	3.93
	Totals:	7.05	6.73	10.04	4.84	32.10	1.09	0.75	0.46	2.58	110.41	36.11

Monthly Mass Loadings from Groundwater Losses from Pond 1 at the Tropical Farms Site from May 2011- April 2012

Year	Month	Monthly Mass Loading (kg)										
		Ammonia	NOX	Diss Org.	Part. N	Total N	SRP	Diss Org. P	Part. P	Total P	TSS	BOD
2011	May	0.18	0.15	1.05	0.66	2.30	0.01	0.01	0.13	0.15	55.9	1.79
	June	0.36	0.05	1.40	0.77	2.85	0.02	0.01	0.17	0.22	108.9	3.71
	July	0.06	0.19	0.44	0.45	1.28	0.01	0.01	0.08	0.10	20.3	1.33
	August	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	September	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	October	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	November	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	December	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2012	January	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	February	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	March	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	April	0.04	0.01	0.06	0.06	0.18	0.01	0.00	0.02	0.02	3.54	0.87
	Totals:	0.63	0.41	2.96	1.94	6.61	0.05	0.03	0.39	0.50	188.7	7.70

Monthly Mass Loadings from Groundwater Losses from Ponds 2-5 at the Tropical Farms Site from May 2011- April 2012

Year	Month	Monthly Mass Loading (kg)										
		Ammonia	NOX	Diss Org.	Part. N	Total N	SRP	Diss Org. P	Part. P	Total P	TSS	BOD
2011	May	-	-	-	-	-	-	-	-	-	-	-
	June	-	-	-	-	-	-	-	-	-	-	-
	July	0.30	0.20	2.94	0.77	4.47	0.06	0.03	0.04	0.17	3.59	3.56
	August	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	September	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	October	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	November	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	December	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2012	January	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	February	0.03	0.09	1.60	0.14	1.95	0.03	0.04	0.02	0.09	5.24	3.44
	March	0.11	0.32	2.75	0.53	3.95	0.06	0.17	0.09	0.36	12.5	11.3
	April	0.22	0.70	4.97	1.63	7.52	0.10	0.19	0.14	0.43	15.3	15.3
	Totals:	0.66	1.31	12.3	3.08	17.9	0.24	0.43	0.29	1.04	36.7	33.6

3. Monthly Mass Balances for Evaluated Parameters in Pond 1

Mass Balance for Ammonia in Pond 1 from May 2011 - April 2012

Year	Month	Mass Inputs (kg)					Losses (kg)	Mass Rem. (%)
		Precip.	Site 1	Site 2	GW	Total		
2011	May	0.06	-	3.9	0.0	4.0	1.7	58
	June	0.09	-	6.2	0.0	6.3	2.6	59
	July	0.06	-	7.0	0.0	7.0	1.4	80
	August	0.19	-	14.7	0.1	15.0	3.0	80
	September	0.08	-	2.8	0.1	3.0	2.0	34
	October	0.04	6.0	4.2	0.0	10.2	7.5	26
	November	0.02	1.1	0.9	0.2	2.2	2.7	-25
	December	0.21	1.3	1.7	0.1	3.3	3.2	5
2012	January	0.02	0.3	0.2	0.1	0.6	0.2	70
	February	0.07	0.1	0.1	0.0	0.3	0.3	13
	March	0.13	0.1	0.5	0.0	0.8	1.1	-36
	April	0.07	0.0	0.4	0.0	0.5	0.8	-52
	Totals:	1.05	8.96	42.6	0.63	53.3	26.4	50

Mass Balance for NOx in Pond 1 from May 2011 - April 2012

Year	Month	Mass Inputs (kg)					Losses (kg)	Mass Rem. (%)
		Precip.	Site 1	Site 2	GW	Total		
2011	May	0.11	-	5.0	0.0	5.2	1.4	73
	June	0.13	-	8.1	0.0	8.2	0.4	95
	July	0.09	-	9.0	0.0	9.1	4.6	49
	August	0.22	-	6.6	0.0	6.8	4.4	36
	September	0.07	-	11.8	0.0	11.8	2.8	77
	October	0.03	5.7	42.7	0.0	48.4	30.1	38
	November	0.01	11.1	11.9	0.0	23.0	22.8	1
	December	0.02	20.5	42.0	0.0	62.5	67.7	-8
2012	January	0.00	0.2	5.1	0.1	5.4	9.6	-78
	February	0.03	0.1	5.7	0.0	5.8	2.3	61
	March	0.13	0.0	8.4	0.0	8.5	0.5	95
	April	0.18	0.0	8.3	0.0	8.4	0.1	98
	Totals:	1.00	37.58	164.4	0.22	203.2	146.7	28

Mass Balance for Diss. Organic N in Pond 1 from May 2011 - April 2012

Year	Month	Mass Inputs (kg)					Losses (kg)	Mass Rem. (%)
		Precip.	Site 1	Site 2	GW	Total		
2011	May	0.14	-	5.3	0.0	5.5	9.6	-75
	June	0.20	-	8.6	0.0	8.8	10.3	-17
	July	0.17	-	9.5	0.0	9.7	10.6	-9
	August	0.27	-	11.2	0.1	11.6	8.9	24
	September	0.14	-	12.3	0.2	12.6	9.9	21
	October	0.09	34.9	80.5	0.5	116.0	127.8	-10
	November	0.03	26.6	19.8	1.1	47.5	52.7	-11
	December	0.17	47.7	57.6	0.9	106.3	79.1	26
2012	January	0.02	1.7	1.7	0.7	4.1	3.7	9
	February	0.09	3.1	0.5	0.3	4.0	6.7	-69
	March	0.12	0.6	2.2	0.1	3.0	2.3	25
	April	0.06	0.0	10.8	0.0	10.9	1.3	88
	Totals:	1.49	114.6	220.0	3.88	339.9	322.9	5

Mass Balance for Particulate N in Pond 1 from May 2011 - April 2012

Year	Month	Mass Inputs (kg)					Losses (kg)	Mass Rem. (%)
		Precip.	Site 1	Site 2	GW	Total		
2011	May	0.19	-	3.5	-	3.7	6.0	-65
	June	0.20	-	5.6	-	5.7	5.6	2
	July	0.04	-	6.2	-	6.2	10.8	-74
	August	0.06	-	14.6	-	14.6	10.8	26
	September	0.05	-	4.3	-	4.3	7.3	-68
	October	0.03	36.2	38.9	-	75.2	39.2	48
	November	0.02	5.7	13.2	-	18.8	8.4	56
	December	0.08	14.7	16.0	-	30.8	35.3	-14
2012	January	0.01	1.0	1.6	-	2.6	5.9	-126
	February	0.03	0.8	1.5	-	2.3	3.3	-44
	March	0.01	0.5	1.6	-	2.1	1.6	21
	April	0.00	0.0	1.6	-	1.6	1.2	26
	Totals:	0.72	58.9	108.4	0.00	168.0	135.3	19

Mass Balance for Total N in Pond 1 from May 2011 - April 2012

Year	Month	Mass Inputs (kg)					Losses (kg)	Mass Rem. (%)
		Precip.	Site 1	Site 2	GW	Total		
2011	May	0.51	-	20.9	0.0	21.4	21.0	2
	June	0.65	-	33.5	0.0	34.1	20.9	39
	July	0.40	-	37.3	0.0	37.7	30.6	19
	August	0.84	-	55.3	0.3	56.4	32.4	42
	September	0.43	-	39.6	0.4	40.5	26.5	35
	October	0.24	96.1	170.2	0.6	267.1	242.5	9
	November	0.10	46.1	48.4	1.4	95.9	92.1	4
	December	0.51	93.4	117.9	1.1	212.9	202.1	5
2012	January	0.06	3.6	10.0	1.0	14.6	20.7	-42
	February	0.26	4.5	7.8	0.4	12.9	14.4	-12
	March	0.45	1.2	12.7	0.1	14.4	5.9	59
	April	0.32	0.0	22.2	0.0	22.5	3.9	83
	Totals:	4.77	244.8	575.8	5.05	830.5	712.9	14

Mass Balance for SRP in Pond 1 from May 2011 - April 2012

Year	Month	Mass Inputs (kg)					Losses (kg)	Mass Rem. (%)
		Precip.	Site 1	Site 2	GW	Total		
2011	May	0.00	-	0.1	0.0	0.1	0.1	27
	June	0.00	-	0.2	0.0	0.2	0.1	33
	July	0.00	-	0.2	0.0	0.2	0.3	-27
	August	0.00	-	0.3	0.0	0.3	0.3	-7
	September	0.02	-	0.3	0.0	0.3	0.1	62
	October	0.02	7.3	6.1	0.0	13.4	6.2	54
	November	0.00	4.6	1.2	0.0	5.8	5.6	2
	December	0.01	7.8	1.6	0.0	9.5	8.4	11
2012	January	0.00	0.6	0.1	0.0	0.7	0.8	-14
	February	0.01	0.4	0.1	0.0	0.5	0.2	65
	March	0.06	0.2	0.1	0.0	0.4	0.1	65
	April	0.03	0.0	0.2	0.0	0.2	0.1	41
	Totals:	0.16	20.8	10.6	0.07	31.6	22.5	29

Mass Balance for Diss. Organic P in Pond 1 from May 2011 - April 2012

Year	Month	Mass Inputs (kg)					Losses (kg)	Mass Rem. (%)
		Precip.	Site 1	Site 2	GW	Total		
2011	May	0.01	-	0.0	0.00	0.1	0.07	-29
	June	0.00	-	0.1	0.00	0.1	0.10	-23
	July	0.00	-	0.1	0.00	0.1	0.12	-38
	August	0.01	-	0.2	0.02	0.2	0.13	36
	September	0.01	-	0.1	0.01	0.1	0.03	77
	October	0.01	1.0	1.3	0.01	2.3	4.02	-71
	November	0.00	0.4	0.5	0.03	1.0	1.60	-62
	December	0.03	1.4	0.4	0.02	1.8	3.66	-98
2012	January	0.00	0.1	0.0	0.02	0.1	0.35	-146
	February	0.01	0.1	0.0	0.01	0.1	0.21	-110
	March	0.01	0.0	0.1	0.00	0.2	0.11	26
	April	0.01	0.0	0.1	0.00	0.1	0.05	41
	Totals:	0.11	3.0	3.0	0.13	6.2	10.4	-68

Mass Balance for Particulate P in Pond 1 from May 2011 - April 2012

Year	Month	Mass Inputs (kg)					Losses (kg)	Mass Rem. (%)
		Precip.	Site 1	Site 2	GW	Total		
2011	May	0.02	-	2.9	-	2.9	1.1	61
	June	0.01	-	4.7	-	4.7	1.3	73
	July	0.00	-	5.2	-	5.2	1.9	64
	August	0.01	-	20.6	-	20.6	3.0	85
	September	0.00	-	11.5	-	11.5	2.0	83
	October	0.00	4.7	84.0	-	88.7	13.0	85
	November	0.00	2.6	10.4	-	13.0	5.4	58
	December	0.01	6.4	8.9	-	15.3	12.4	19
2012	January	0.00	0.5	1.0	-	1.6	2.3	-47
	February	0.00	0.7	1.1	-	1.8	1.1	41
	March	0.00	0.7	2.1	-	2.8	0.5	81
	April	0.01	0.0	0.4	-	0.4	0.3	14
	Totals:	0.07	15.7	152.9	0.00	168.6	44.3	74

Mass Balance for Total P in Pond 1 from May 2011 - April 2012

Year	Month	Mass Inputs (kg)					Losses (kg)	Mass Rem. (%)
		Precip.	Site 1	Site 2	GW	Total		
2011	May	0.03	-	3.2	0.0	3.2	1.4	56
	June	0.02	-	5.1	0.0	5.1	1.6	69
	July	0.01	-	5.7	0.0	5.7	2.4	57
	August	0.03	-	21.2	0.0	21.2	3.8	82
	September	0.04	-	11.9	0.0	12.0	2.2	82
	October	0.03	13.7	93.2	0.0	106.9	27.9	74
	November	0.01	8.0	12.4	0.1	20.5	12.9	37
	December	0.05	15.9	11.0	0.0	27.0	25.8	4
2012	January	0.01	1.3	1.2	0.0	2.5	3.6	-43
	February	0.03	1.3	1.2	0.0	2.5	1.5	38
	March	0.07	0.9	2.5	0.0	3.4	0.8	76
	April	0.05	0.0	0.7	0.0	0.7	0.5	28
	Totals:	0.38	41.0	169.1	0.2	210.7	84.5	60

Mass Balance for TSS in Pond 1 from May 2011 - April 2012

Year	Month	Mass Inputs (kg)					Losses (kg)	Mass Rem. (%)
		Precip.	Site 1	Site 2	GW	Total		
2011	May	3.13	-	1,726	-	1,729	509	71
	June	1.30	-	2,765	-	2,767	799	71
	July	0.85	-	3,082	-	3,083	484	84
	August	1.77	-	6,440	-	6,442	859	87
	September	1.24	-	1,643	-	1,644	499	70
	October	1.31	242.0	9,313	-	9,556	2,393	75
	November	0.52	133.4	4,657	-	4,791	696	85
	December	1.41	222.9	2,491	-	2,716	2,566	5
2012	January	0.17	50.3	221	-	272	807	-197
	February	0.78	38.1	181	-	220	305	-39
	March	2.16	16.2	365	-	383	132	66
	April	1.75	0.0	105	-	107	77	28
	Totals:	16.39	702.9	32,990	0.0	33,710	10,125	70

Mass Balance for BOD in Pond 1 from May 2011 - April 2012

Year	Month	Mass Inputs (kg)					Losses (kg)	Mass Rem. (%)
		Precip.	Site 1	Site 2	GW	Total		
2011	May	0.37	-	36.0	0.0	36	16	55
	June	0.43	-	57.6	0.0	58	27	53
	July	0.32	-	64.2	0.0	65	32	51
	August	0.49	-	61.7	1.8	64	33	49
	September	0.56	-	38.2	1.3	40	41	-3
	October	0.48	93.4	266.9	1.2	362	278	23
	November	0.27	52.7	60.0	2.7	116	73	37
	December	0.89	142.6	146.2	1.4	291	214	26
2012	January	0.08	17.9	12.6	1.2	32	33	-4
	February	0.29	18.9	10.0	0.9	30	37	-24
	March	0.58	6.1	13.2	0.3	20	23	-15
	April	0.58	0.0	10.1	0.0	11	19	-77
	Totals:	5.36	331.6	777	10.8	1,125	828	26

4. Monthly Mass Balances for Evaluated Parameters in Ponds 2-5

Mass Balance for Ammonia in Ponds 2-5 from May 2011 - April 2012

Year	Month	Mass Inputs (kg)					Losses (kg)	Mass Rem. (%)
		Precip.	Site 3	Direct	GW	Total		
2011	May	0.40	1.7	0	0.0	2.1	-	100
	June	0.63	2.6	0	0.0	3.2	-	100
	July	0.38	1.4	0	0.0	1.8	0.4	77
	August	1.29	3.0	0	1.1	5.4	2.8	47
	September	0.54	2.0	0	1.9	4.5	1.2	73
	October	0.29	7.5	0	0.5	8.3	1.5	82
	November	0.16	2.7	0	2.0	5.0	1.9	61
	December	1.39	3.2	0	1.2	5.8	1.6	72
2012	January	0.13	0.2	0	0.9	1.2	0.2	83
	February	0.45	0.3	0	0.0	0.7	0.1	85
	March	0.89	1.1	0	0.0	1.9	0.1	96
	April	0.50	0.8	0	0.0	1.3	0.0	99
	Totals:	7.05	26.4	0	7.70	41.1	9.9	76

Mass Balance for NOx in Ponds 2-5 from May 2011 - April 2012

Year	Month	Mass Inputs (kg)					Losses (kg)	Mass Rem. (%)
		Precip.	Site 3	Direct	GW	Total		
2011	May	0.72	1.4	0	0.00	2.1	-	100
	June	0.85	0.4	0	0.00	1.3	-	100
	July	0.61	4.6	0	0.00	5.2	0.3	95
	August	1.45	4.4	0	0.03	5.9	4.6	22
	September	0.45	2.8	0	0.05	3.3	2.8	14
	October	0.17	30.1	0	0.04	30.3	7.1	77
	November	0.08	22.8	0	0.43	23.3	8.4	64
	December	0.15	67.7	0	0.09	68.0	7.4	89
2012	January	0.03	9.6	0	0.21	9.9	0.6	94
	February	0.17	2.3	0	0.00	2.4	0.3	87
	March	0.85	0.5	0	0.00	1.3	0.2	83
	April	1.21	0.1	0	0.00	1.4	0.0	98
	Totals:	6.73	146.7	0	0.85	154.3	31.6	80

Mass Balance for Diss. Organic N in Ponds 2-5 from May 2011 - April 2012

Year	Month	Mass Inputs (kg)					Losses (kg)	Mass Rem. (%)
		Precip.	Site 3	Direct	GW	Total		
2011	May	0.94	9.6	0	0.0	10.5	-	100
	June	1.34	10.3	0	0.0	11.6	-	100
	July	1.13	10.6	0	0.0	11.7	3.9	67
	August	1.82	8.9	0	3.2	13.9	14.9	-7
	September	0.94	9.9	0	6.4	17.3	12.6	27
	October	0.60	127.8	0	4.8	133.3	91.5	31
	November	0.19	52.7	0	11.5	64.4	71.5	-11
	December	1.12	79.1	0	6.3	86.5	92.4	-7
2012	January	0.13	3.7	0	5.0	8.9	6.2	31
	February	0.60	6.7	0	0.0	7.3	5.7	22
	March	0.81	2.3	0	0.0	3.1	1.9	37
	April	0.42	1.3	0	0.0	1.7	0.2	88
	Totals:	10.04	322.9	0	37.26	370.2	300.8	19

Mass Balance for Particulate N in Ponds 2-5 from May 2011 - April 2012

Year	Month	Mass Inputs (kg)					Losses (kg)	Mass Rem. (%)
		Precip.	Site 3	Direct	GW	Total		
2011	May	1.26	6.0	0	-	7.3	-	100
	June	1.33	5.6	0	-	7.0	-	100
	July	0.24	10.8	0	-	11.1	1.0	91
	August	0.40	10.8	0	-	11.2	6.6	41
	September	0.36	7.3	0	-	7.6	2.5	67
	October	0.23	39.2	0	-	39.4	12.8	67
	November	0.14	8.4	0	-	8.5	9.5	-11
	December	0.55	35.3	0	-	35.8	18.9	47
2012	January	0.05	5.9	0	-	5.9	0.9	85
	February	0.19	3.3	0	-	3.5	0.5	86
	March	0.08	1.6	0	-	1.7	0.4	78
	April	0.01	1.2	0	-	1.2	0.1	94
	Totals:	4.84	135.3	0	0.00	140.1	53.2	62

Mass Balance for Total N in Ponds 2-5 from May 2011 - April 2012

Year	Month	Mass Inputs (kg)					Losses (kg)	Mass Rem. (%)
		Precip.	Site 3	Direct	GW	Total		
2011	May	3.45	21.0	0	0.0	24.4	-	100
	June	4.37	20.9	0	0.0	25.2	-	100
	July	2.72	30.6	0	0.0	33.3	5.9	82
	August	5.69	32.4	0	4.4	42.6	31.1	27
	September	2.91	26.5	0	9.3	38.7	20.7	47
	October	1.60	242.5	0	5.6	249.7	117.0	53
	November	0.65	92.1	0	15.5	108.2	95.0	12
	December	3.44	202.1	0	8.2	213.7	126.7	41
2012	January	0.39	20.7	0	6.6	27.7	9.2	67
	February	1.74	14.4	0	0.0	16.1	6.9	57
	March	3.00	5.9	0	0.0	8.9	2.8	69
	April	2.14	3.9	0	0.0	6.0	0.3	95
	Totals:	32.10	712.9	0	49.55	794.5	415.6	48

Mass Balance for SRP in Ponds 2-5 from May 2011 - April 2012

Year	Month	Mass Inputs (kg)					Losses (kg)	Mass Rem. (%)
		Precip.	Site 3	Direct	GW	Total		
2011	May	0.01	0.1	0	0.00	0.1	-	100
	June	0.03	0.1	0	0.00	0.2	-	100
	July	0.01	0.3	0	0.00	0.3	0.1	78
	August	0.02	0.3	0	0.09	0.4	0.6	-44
	September	0.11	0.1	0	0.12	0.4	0.3	15
	October	0.10	6.2	0	0.06	6.4	0.8	88
	November	0.03	5.6	0	0.20	5.9	0.7	88
	December	0.09	8.4	0	0.13	8.6	1.4	84
2012	January	0.01	0.8	0	0.06	0.8	0.1	88
	February	0.07	0.2	0	0.00	0.2	0.1	62
	March	0.38	0.1	0	0.00	0.5	0.0	92
	April	0.22	0.1	0	0.00	0.3	0.0	99
	Totals:	1.09	22.5	0	0.66	24.2	4.1	83

Mass Balance for Diss. Organic P in Ponds 2-5 from May 2011 - April 2012

Year	Month	Mass Inputs (kg)					Losses (kg)	Mass Rem. (%)
		Precip.	Site 3	Direct	GW	Total		
2011	May	0.05	0.1	0	0.00	0.1	-	100
	June	0.02	0.1	0	0.00	0.1	-	100
	July	0.02	0.1	0	0.00	0.1	0.0	70
	August	0.09	0.1	0	0.07	0.3	0.2	23
	September	0.05	0.0	0	0.08	0.2	0.1	40
	October	0.06	4.0	0	0.06	4.1	1.1	74
	November	0.02	1.6	0	0.19	1.8	0.9	49
	December	0.22	3.7	0	0.06	3.9	1.3	67
2012	January	0.02	0.4	0	0.06	0.4	0.1	72
	February	0.05	0.2	0	0.00	0.3	0.1	50
	March	0.07	0.1	0	0.00	0.2	0.1	34
	April	0.09	0.0	0	0.00	0.1	0.0	94
	Totals:	0.75	10.4	0	0.52	11.7	4.0	66

Mass Balance for Particulate P in Ponds 2-5 from May 2011 - April 2012

Year	Month	Mass Inputs (kg)					Losses (kg)	Mass Rem. (%)
		Precip.	Site 3	Direct	GW	Total		
2011	May	0.13	1.1	0	-	1.3	-	100
	June	0.05	1.3	0	-	1.3	-	100
	July	0.02	1.9	0	-	1.9	0.1	97
	August	0.05	3.0	0	-	3.1	0.3	90
	September	0.03	2.0	0	-	2.0	0.1	93
	October	0.02	13.0	0	-	13.0	1.7	87
	November	0.02	5.4	0	-	5.4	0.7	87
	December	0.04	12.4	0	-	12.4	2.3	82
2012	January	0.00	2.3	0	-	2.3	0.3	87
	February	0.03	1.1	0	-	1.1	0.1	93
	March	0.03	0.5	0	-	0.5	0.1	89
	April	0.05	0.3	0	-	0.4	0.0	98
	Totals:	0.46	44.3	0	0.00	44.7	5.6	88

Mass Balance for Total P in Ponds 2-5 from May 2011 - April 2012

Year	Month	Mass Inputs (kg)					Losses (kg)	Mass Rem. (%)
		Precip.	Site 3	Direct	GW	Total		
2011	May	0.20	1.4	0	0.0	1.6	-	100
	June	0.12	1.6	0	0.0	1.7	-	100
	July	0.07	2.4	0	0.0	2.5	0.2	91
	August	0.17	3.8	0	0.2	4.2	1.2	71
	September	0.30	2.2	0	0.2	2.7	0.6	79
	October	0.20	27.9	0	0.2	28.3	4.0	86
	November	0.08	12.9	0	0.5	13.4	2.9	78
	December	0.35	25.8	0	0.2	26.3	5.3	80
2012	January	0.04	3.6	0	0.1	3.7	0.5	86
	February	0.18	1.5	0	0.0	1.7	0.3	81
	March	0.50	0.8	0	0.0	1.3	0.3	81
	April	0.37	0.5	0	0.0	0.9	0.0	98
	Totals:	2.58	84.5	0	1.4	88.5	15.3	83

Mass Balance for TSS in Ponds 2-5 from May 2011 - April 2012

Year	Month	Mass Inputs (kg)					Losses (kg)	Mass Rem. (%)
		Precip.	Site 3	Direct	GW	Total		
2011	May	21.10	509	0	-	530	-	100
	June	8.78	799	0	-	808	-	100
	July	5.69	484	0	-	489	5	99
	August	11.89	859	0	-	871	56	94
	September	8.32	499	0	-	507	34	93
	October	8.83	2,393	0	-	2,402	198	92
	November	3.53	696	0	-	699	170	76
	December	9.50	2,566	0	-	2,576	305	88
2012	January	1.14	807	0	-	808	41	95
	February	5.28	305	0	-	311	19	94
	March	14.55	132	0	-	146	9	94
	April	11.79	77	0	-	89	1	99
	Totals:	110.4	10,125	0	0.0	10,236	837	92

Mass Balance for BOD in Ponds 2-5 from May 2011 - April 2012

Year	Month	Mass Inputs (kg)					Losses (kg)	Mass Rem. (%)
		Precip.	Site 3	Direct	GW	Total		
2011	May	2.50	16.3	0	0.0	19	-	100
	June	2.92	27.2	0	0.0	30	-	100
	July	2.16	31.7	0	0.0	34	5	86
	August	3.33	32.6	0	19.5	55	18	68
	September	3.81	41.5	0	8.9	54	14	75
	October	3.25	278	0	10.5	292	75	74
	November	1.81	73.3	0	16.3	91	77	16
	December	6.01	214	0	5.8	226	143	37
2012	January	0.55	33.2	0	4.0	38	15	60
	February	1.94	37.1	0	0.0	39	12	69
	March	3.90	23.2	0	0.0	27	8	71
	April	3.93	18.9	0	0.0	23	1	97
	Totals:	36.11	828	0	65.0	929	367	60

APPENDIX F

LABORATORY QUALITY ASSURANCE DATA

- **F.1 Precision**
- **F.2 Accuracy**
- **F.3 Control Standard Recovery**
- **F.4 Continuing Calibration Verification**
- **F.5 Method Blanks**

F.1 Precision

Sample Duplicate Recovery
for Tropical Farms collected from May 2010 to May 2011

PARAMETERS	UNITS	SAMPLE ID	SAMPLE DESCRIPTION	DATE COLLECTED	DATE RECEIVED	DATE ANALYZED	REPEAT 1	REPEAT 2	MEAN	s	% RELATIVE STD. DEVIATION (RSD)	ACCEPTANCE RANGE (% RSD)
pH	s.u.	11-2056	Rain Blank	05/18/11	05/18/11	05/20/11	5.66	5.67	5.67	0.01	0.28	0 - 0.7
pH	s.u.	11-2183	MW2	05/26/11	05/26/11	05/31/11	5.48	5.51	5.50	0.02	0.12	0 - 0.7
pH	s.u.	11-2191	MW8	05/26/11	05/26/11	05/31/11	6.19	6.2	6.20	0.01	0.39	0 - 0.7
pH	s.u.	11-2277	Site #5 Blank	06/02/11	06/02/11	06/06/11	5.58	5.57	5.58	0.01	0.11	0 - 0.7
pH	s.u.	11-2352	Site #5	6/2 6/8/11	6/2 6/8/11	06/11/11	7.65	7.63	7.64	0.01	0.13	0 - 0.7
pH	s.u.	11-2439	Rain	6/8 - 6/15/11	06/15/11	06/16/11	7.16	7.2	7.18	0.03	0.19	0 - 0.7
pH	s.u.	11-2594	MW1	06/23/11	06/23/11	06/29/11	5.71	5.68	5.70	0.02	0.39	0 - 0.7
pH	s.u.	11-2603	MW8	06/23/11	06/23/11	06/29/11	6.26	6.26	6.26	0.00	0.37	0 - 0.7
pH	s.u.	11-2759	Rain	6/15-7/1/11	07/01/11	07/11/11	5.86	5.9	5.88	0.03	0.00	0 - 0.7
pH	s.u.	11-2874	Site #3	7/1-7/13/11	07/13/11	07/15/11	7.86	7.89	7.88	0.02	0.48	0 - 0.7
pH	s.u.	11-2970	Rain	7/13-7/20/11	07/20/11	07/25/11	5.78	5.82	5.80	0.03	0.27	0 - 0.7
pH	s.u.	11-2981	MW8	07/20/11	07/20/11	07/26/11	6.81	6.78	6.80	0.02	0.49	0 - 0.7
pH	s.u.	11-3064	Site #6	7/20-7/26/11	07/26/11	08/01/11	7.84	7.82	7.83	0.01	0.31	0 - 0.7
pH	s.u.	11-3232	Site #5	7/26 - 8/3/11	08/03/11	08/12/11	7.56	7.59	7.58	0.02	0.18	0 - 0.7
pH	s.u.	11-3242	Rain Blank	08/03/11	08/03/11	08/12/11	5.65	5.64	5.65	0.01	0.28	0 - 0.7
pH	s.u.	11-3416	MW3	08/18/11	08/18/11	08/22/11	6.79	6.8	6.80	0.01	0.13	0 - 0.7
pH	s.u.	11-3423	MW8	08/18/11	08/18/11	08/22/11	7.22	7.22	7.22	0.00	0.10	0 - 0.7
pH	s.u.	11-3506	Site #6	8/18 - 8/25/11	08/25/11	08/30/11	7.65	7.61	7.63	0.03	0.00	0 - 0.7
pH	s.u.	11-3715	Site #3 Blank	09/07/11	09/07/11	9/9/011	5.61	5.62	5.62	0.01	0.37	0 - 0.7
pH	s.u.	11-3813	Rain	9/7 - 9/15/11	09/15/11	09/16/11	5.89	5.9	5.90	0.01	0.13	0 - 0.7
pH	s.u.	11-3858	MW4	09/20/11	09/20/11	09/22/11	6.65	6.67	6.66	0.01	0.12	0 - 0.7
pH	s.u.	11-3980	Site #3	9/20 - 9/29/11	09/29/11	10/03/11	7.45	7.48	7.47	0.02	0.21	0 - 0.7
pH	s.u.	11-4073	Site #6	9/29 - 10/5/11	10/05/11	10/07/11	7.48	7.47	7.48	0.01	0.09	0 - 0.7
pH	s.u.	11-4154	Site #3	10/5 - 10/12/11	10/12/11	10/17/11	7.10	7.07	7.09	0.02	0.30	0 - 0.7
pH	s.u.	11-4160	Rain F.D.	9/29 - 10/12/11	10/12/11	10/17/11	5.97	5.95	5.96	0.01	0.24	0 - 0.7
pH	s.u.	11-4233	Rain	10/12 - 10/20/11	10/20/11	10/24/11	5.95	5.96	5.96	0.01	0.12	0 - 0.7
pH	s.u.	11-4243	MW7	10/20/11	10/20/11	10/27/11	7.39	7.36	7.38	0.02	0.29	0 - 0.7
pH	s.u.	11-4313	Site #3	10/20 - 10/27/11	10/27/11	10/31/11	6.85	6.89	6.87	0.03	0.41	0 - 0.7
pH	s.u.	11-4384	Site #2	10/20 - 11/3/11	11/03/11	11/07/11	7.30	7.31	7.31	0.01	0.10	0 - 0.7
pH	s.u.	11-4395	Site #6 Blank	11/03/11	11/03/11	11/07/11	5.61	5.62	5.62	0.01	0.13	0 - 0.7
pH	s.u.	11-4450	Site #6	11/3 - 11/9/11	11/09/11	11/10/11	7.51	7.48	7.50	0.02	0.28	0 - 0.7
pH	s.u.	11-4553	Rain	11/16 - 11/23/11	11/23/11	11/22/11	7.90	7.93	7.92	0.02	0.27	0 - 0.7

Sample Duplicate Recovery

for Tropical Farms collected from

May 2010 to May 2011

PARAMETERS	UNITS	SAMPLE ID	SAMPLE DESCRIPTION	DATE COLLECTED	DATE RECEIVED	DATE ANALYZED	REPEAT 1	REPEAT 2	MEAN	s	% RELATIVE STD. DEVIATION (RSD)	ACCEPTANCE RANGE (% RSD)
pH	s.u.	11-4556	Rain	11/16 - 11/23/11	11/23/11	11/22/11	6.05	6.07	6.06	0.01	0.23	0 - 0.7
pH	s.u.	11-4566	MW7	11/21/11	11/21/11	11/28/11	7.50	7.52	7.51	0.01	0.19	0 - 0.7
pH	s.u.	11-4656	Site #6 F.D.	11/21 - 12/1/11	12/01/11	12/05/11	7.72	7.7	7.71	0.01	0.18	0 - 0.7
pH	s.u.	11-4663	Rain Blank	12/01/11	12/01/11	12/05/11	5.63	5.68	5.66	0.04	0.63	0 - 0.7
pH	s.u.	11-4707	Site #6	12/1 - 12/8/11	12/08/11	12/12/11	7.82	7.8	7.81	0.01	0.18	0 - 0.7
pH	s.u.	11-4796	Site #5	12/8 - 12/15/11	12/15/11	12/19/11	7.20	7.22	7.21	0.01	0.20	0 - 0.7
pH	s.u.	11-4810	MW7	12/15/11	12/15/11	12/21/11	7.17	7.14	7.16	0.02	0.30	0 - 0.7
pH	s.u.	11-4811	MW8	12/15/11	12/15/11	12/21/11	7.89	7.93	7.91	0.03	0.36	0 - 0.7
pH	s.u.	12-0024	Site #4	12/30 - 1/4/12	01/04/12	01/10/12	7.70	7.73	7.72	0.02	0.30	0 - 0.7
pH	s.u.	12-0137	MW7	01/16/12	01/16/12	01/17/12	7.04	7.01	7.03	0.02	0.13	0 - 0.7
pH	s.u.	12-0146	Site #2 Blank	01/16/12	01/16/12	01/17/12	5.57	5.58	5.58	0.01	0.25	0 - 0.7
pH	s.u.	12-0151	Rain Blanks	01/16/12	01/16/12	01/17/12	5.64	5.66	5.65	0.01	0.27	0 - 0.7
pH	s.u.	12-0286	Site #6	1/16 - 1/27/12	01/27/12	01/30/12	7.91	7.94	7.93	0.02	0.27	0 - 0.7
pH	s.u.	12-0337	Site #4 Blank	02/03/12	02/03/12	02/07/12	5.57	5.55	5.56	0.01	0.25	0 - 0.7
pH	s.u.	12-0411	Site #6	2/3 - 2/9/12	02/09/12	02/13/12	7.69	7.65	7.67	0.03	0.37	0 - 0.7
pH	s.u.	12-0413	Rain	2/3 - 2/9/12	02/09/12	02/12/12	6.12	6.09	6.11	0.02	0.35	0 - 0.7
pH	s.u.	12-0502	Site #8	02/15/12	02/15/12	02/17/12	6.99	6.97	6.98	0.01	0.20	0 - 0.7
pH	s.u.	12-0507	Site #6	2/9 - 2/15/12	02/15/12	02/17/12	7.80	7.84	7.82	0.03	0.36	0 - 0.7
pH	s.u.	12-0679	Site #4 Blank	03/01/12	03/01/12	03/05/12	5.57	5.58	5.58	0.01	0.13	0 - 0.7
pH	s.u.	12-0717	Site #6	3/1 - 3/6/12	03/06/12	03/07/12	7.73	7.8	7.77	0.05	0.64	0 - 0.7
pH	s.u.	12-0720	Site #6	3/1 - 3/6/12	03/06/12	03/07/12	7.56	7.53	7.55	0.02	0.24	0 - 0.7
pH	s.u.	12-0827	Rain	2/9 - 3/15/12	03/15/12	03/19/12	5.96	5.98	5.97	0.01	0.37	0 - 0.7
pH	s.u.	12-0836	MW6 F.D.	03/15/12	03/15/12	03/20/12	7.61	7.57	7.59	0.03	0.37	0 - 0.7
pH	s.u.	12-0838	MW8	03/15/12	03/15/12	03/20/12	7.59	7.63	7.61	0.03	0.34	0 - 0.7
pH	s.u.	12-0992	Rain	3/15 - 3/29/12	03/29/12	04/02/12	6.29	6.26	6.28	0.02	0.13	0 - 0.7
pH	s.u.	12-1057	Rain Blank	04/05/12	04/05/12	04/06/12	5.66	5.65	5.66	0.01	0.28	0 - 0.7
pH	s.u.	12-1092	Site #5	4/5 - 4/12/12	04/12/12	04/13/12	7.58	7.61	7.60	0.02	0.28	0 - 0.7
pH	s.u.	12-1160	MW 6 F.D.	04/19/12	04/19/12	04/20/12	7.03	7.06	7.05	0.02	0.30	0 - 0.7
pH	s.u.	12-1162	MW8	04/19/12	04/19/12	04/20/12	7.32	7.37	7.35	0.04	0.48	0 - 0.7
pH	s.u.	12-1183	Rain	3/29 - 4/24/12	04/24/12	04/25/12	6.32	6.35	6.34	0.02	0.33	0 - 0.7
pH	s.u.	12-1211	Site 5 F.D.	4/24 - 5/1/12	05/01/12	05/03/12	7.46	7.5	7.48	0.03	0.38	0 - 0.7
pH	s.u.	12-1240	Site #4 Blank	05/09/12	05/09/12	05/10/12	5.65	5.68	5.67	0.02	0.37	0 - 0.7
pH	s.u.	12-1243	Rain	05/09/12	05/09/12	05/10/12	5.67	5.65	5.66	0.01	0.25	0 - 0.7
pH	s.u.	12-1261	Rain	5/9 - 5/16/12	05/16/12	05/17/12	6.37	6.32	6.35	0.04	0.56	0 - 0.7

Sample Duplicate Recovery
for Tropical Farms collected from
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PARAMETERS	UNITS	SAMPLE ID	SAMPLE DESCRIPTION	DATE COLLECTED	DATE RECEIVED	DATE ANALYZED	REPEAT 1	REPEAT 2	MEAN	s	% RELATIVE STD. DEVIATION (RSD)	ACCEPTANCE RANGE (% RSD)
Alkalinity	mg/l	11-2056	Rain Blank	05/18/11	05/18/11	05/20/11	0.4	0.4	0	0.0	0.0	0 - 2.8
Alkalinity	mg/l	11-2183	MW2	05/26/11	05/26/11	05/31/11	5.6	5	6	0.1	2.6	0 - 2.8
Alkalinity	mg/l	11-2191	MW8	05/26/11	05/26/11	05/31/11	75.6	76.2	76	0.4	0.6	0 - 2.8
Alkalinity	mg/l	11-2277	Site #5 Blank	06/02/11	06/02/11	06/06/11	0.4	0.4	0	0.0	0.0	0 - 2.8
Alkalinity	mg/l	11-2352	Site #5	6/2 - 6/8/11	06/08/11	06/11/11	148	148.0	148	0.0	0.0	0 - 2.8
Alkalinity	mg/l	11-2439	Rain	6/8 - 6/15/11	06/15/11	06/16/11	56.2	55.6	56	0.4	0.8	0 - 2.8
Alkalinity	mg/l	11-2594	MW1	06/23/11	06/23/11	06/29/11	16	16	16	0.3	1.8	0 - 2.8
Alkalinity	mg/l	11-2603	MW8	06/23/11	06/23/11	06/29/11	67.0	66.2	67	0.6	0.8	0 - 2.8
Alkalinity	mg/l	11-2759	Rain	6/15 - 7/1/11	07/01/11	07/11/11	4.2	4.2	4	0.0	0.0	0 - 2.8
Alkalinity	mg/l	11-2874	Site #3	7/1 - 7/13/11	07/13/11	07/15/11	234.0	234.0	234	0.0	0.0	0 - 2.8
Alkalinity	mg/l	11-2970	Rain	7/13 - 7/20/11	07/20/11	07/25/11	4.8	4.8	5	0.0	0.0	0 - 2.8
Alkalinity	mg/l	11-2981	MW8	07/20/11	07/20/11	07/26/11	117	116	117	0.7	0.6	0 - 2.8
Alkalinity	mg/l	11-3064	Site #6	7/20 - 7/26/11	07/26/11	08/01/11	190.0	191.0	191	0.7	0.4	0 - 2.8
Alkalinity	mg/l	11-3232	Site #5	7/26 - 8/3/11	08/03/11	08/12/11	143	143.0	143	0.0	0.0	0 - 2.8
Alkalinity	mg/l	11-3242	Rain Blank	08/03/11	08/03/11	08/12/11	0.6	0.6	1	0.0	0.0	0 - 2.8
Alkalinity	mg/l	11-3416	MW3	08/18/11	08/18/11	08/22/11	73.2	72.2	73	0.7	1.0	0 - 2.8
Alkalinity	mg/l	11-3422	MW8	08/18/11	08/18/11	08/22/11	215	216	216	0.7	0.3	0 - 2.8
Alkalinity	mg/l	11-3506	Site #6	8/18 - 8/25/11	08/25/11	08/30/11	150	150	150	0.0	0.0	0 - 2.8
Alkalinity	mg/l	11-3715	Site #3 Blank	09/07/11	09/07/11	09/09/11	0.6	0.6	1	0.0	0.0	0 - 2.8
Alkalinity	mg/l	11-3813	Rain	9/7 - 9/15/11	09/15/11	09/16/11	7.4	7.2	7	0.1	1.9	0 - 2.8
Alkalinity	mg/l	11-3858	MW4	09/20/11	09/20/11	09/22/11	129	128.0	129	0.7	0.6	0 - 2.8
Alkalinity	mg/l	11-3980	Site #3	9/20 - 9/29/11	09/29/11	10/03/11	260	259.0	260	0.7	0.3	0 - 2.8
Alkalinity	mg/l	11-4073	Site #6	9/29 - 10/5/11	10/05/11	10/07/11	179.0	180.0	180	0.7	0.4	0 - 2.8
Alkalinity	mg/l	11-4154	Site #3	10/5 - 10/12/11	10/12/11	10/17/11	109	108	109	0.7	0.7	0 - 2.8
Alkalinity	mg/l	11-4160	Rain F.D.	9/29 - 10/12/11	10/12/11	10/17/11	5	5	5	0.1	2.7	0 - 2.8
Alkalinity	mg/l	11-4233	Rain	10/12 - 10/20/11	10/20/11	10/24/11	3.2	3.2	3	0.0	0.0	0 - 2.8
Alkalinity	mg/l	11-4243	MW7	10/20/11	10/20/11	10/27/11	169	170.0	170	0.7	0.4	0 - 2.8
Alkalinity	mg/l	11-4313	Site #3	10/20 - 10/27/11	10/27/11	10/31/11	92.2	93.0	93	0.6	0.6	0 - 2.8
Alkalinity	mg/l	11-4384	Site #2	10/20 - 11/3/11	11/03/11	11/07/11	118.0	119.0	119	0.7	0.6	0 - 2.8
Alkalinity	mg/l	11-4395	Site #6 Blank	11/03/11	11/03/11	11/07/11	0.6	0.6	1	0.0	0.0	0 - 2.8
Alkalinity	mg/l	11-4450	Site #6	11/3 - 11/9/11	11/09/11	11/10/11	160.0	158.0	159	1.4	0.9	0 - 2.8
Alkalinity	mg/l	11-4553	Site #5	11/16 - 11/22/11	11/22/11	11/22/11	134	135	135	0.7	0.5	0 - 2.8
Alkalinity	mg/l	11-4556	Rain	11/16 - 11/22/11	11/22/11	11/22/11	5.8	5.6	6	0.1	2.5	0 - 2.8

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Alkalinity	mg/l	11-4566	MW7	11/21/11	11/21/11	11/28/11	150	149	150	0.7	0.5	0 - 2.8
Alkalinity	mg/l	11-4656	Site #6 F.D.	11/21 - 12/1/11	12/01/11	12/05/11	141	141	141	0.0	0.0	0 - 2.8
Alkalinity	mg/l	11-4663	Rain Blank	12/01/11	12/01/11	12/05/11	0.6	0.6	1	0.0	0.0	0 - 2.8
Alkalinity	mg/l	11-4707	Site #6	12/1 - 12/8/11	12/08/11	12/12/11	154.0	155.0	155	0.7	0.5	0 - 2.8
Alkalinity	mg/l	11-4796	Site #5	12/8 - 12/15/11	12/15/11	12/19/11	124.0	123.0	124	0.7	0.6	0 - 2.8
Alkalinity	mg/l	11-4810	MW7	12/15/11	12/15/11	12/21/11	135	133.0	134	1.4	1.1	0 - 2.8
Alkalinity	mg/l	11-4811	MW8	12/15/11	12/15/11	12/21/11	296	298.0	297	1.4	0.5	0 - 2.8
Alkalinity	mg/l	12-0024	Site #4	12/30 - 1/4/12	01/04/12	01/10/12	125	126.0	126	0.7	0.6	0 - 2.8
Alkalinity	mg/l	12-0137	MW7	01/16/12	01/16/12	01/17/12	199	200.0	200	0.7	0.4	0 - 2.8
Alkalinity	mg/l	12-0146	Site #2 Blank	01/16/12	01/16/12	01/17/12	0	0	0	0.0	0.0	0 - 2.8
Alkalinity	mg/l	12-0151	Rain Blank	01/16/12	01/16/12	01/17/12	0.6	0.6	1	0.0	0.0	0 - 2.8
Alkalinity	mg/l	12-0286	Site #6	1/16 - 1/27/12	01/27/12	01/30/12	143	144.0	144	0.7	0.5	0 - 2.8
Alkalinity	mg/l	12-0337	Site #4 Blank	02/03/12	02/03/12	02/07/12	0.4	0.4	0	0.0	0.0	0 - 2.8
Alkalinity	mg/l	12-0411	Site #6	2/3 - 2/9/12	02/09/12	02/13/12	135.0	137.0	136	1.4	1.0	0 - 2.8
Alkalinity	mg/l	12-0413	Rain	2/3 - 2/9/12	02/09/12	02/13/12	3	3	3	0.0	0.0	0 - 2.8
Alkalinity	mg/l	12-0502	Site #8	02/15/12	02/15/12	02/17/12	282	283	283	0.7	0.3	0 - 2.8
Alkalinity	mg/l	12-0507	Site #6	2/9 - 2/15/12	02/15/12	02/17/12	139	140.0	140	0.7	0.5	0 - 2.8
Alkalinity	mg/l	12-0679	Site #4 Blank	03/01/12	03/01/12	03/05/12	0.4	0.4	0	0.0	0.0	0 - 2.8
Alkalinity	mg/l	12-0717	Site #6	3/1 - 3/6/12	03/06/12	03/07/12	269	271.0	270	1.4	0.5	0 - 2.8
Alkalinity	mg/l	12-0720	Site #6	3/1 - 3/6/12	03/06/12	03/07/12	138.0	139.0	139	0.7	0.5	0 - 2.8
Alkalinity	mg/l	12-0827	Rain	2/9 - 3/15/12	03/15/12	03/19/12	3.6	3.6	4	0.0	0.0	0 - 2.8
Alkalinity	mg/l	12-0836	MW6 F.D.	03/15/12	03/15/12	03/20/12	200.0	199.0	200	0.7	0.4	0 - 2.8
Alkalinity	mg/l	12-0838	MW8	03/15/12	03/15/12	03/20/12	248	249.0	249	0.7	0.3	0 - 2.8
Alkalinity	mg/l	12-0992	Rain	3/15 - 3/29/12	03/29/12	04/02/12	6.2	6.0	6	0.1	2.3	0 - 2.8
Alkalinity	mg/l	12-1057	Rain Blank	04/05/12	04/05/12	04/06/12	0.6	0.6	1	0.0	0.0	0 - 2.8
Alkalinity	mg/l	12-1092	Site #5	4/5 - 4/12/12	04/12/12	04/13/12	106	107.0	107	0.7	0.7	0 - 2.8
Alkalinity	mg/l	12-1160	MW 6 F.D.	04/19/12	04/19/12	04/20/12	280	282.0	281	1.4	0.5	0 - 2.8
Alkalinity	mg/l	12-1162	MW8	04/19/12	04/19/12	04/20/12	203.0	204.0	204	0.7	0.3	0 - 2.8
Alkalinity	mg/l	12-1183	Rain	3/29 - 4/24/12	04/24/12	04/25/12	6.8	7	7	0.1	2.1	0 - 2.8
Alkalinity	mg/l	12-1211	Site 5 F.D.	4/24 - 5/1/12	05/01/12	05/03/12	118	120	119	1.4	1.2	0 - 2.8
Alkalinity	mg/l	12-1240	Site #4 Blank	05/09/12	05/09/12	05/10/12	0.6	0.6	1	0.0	0.0	0 - 2.8
Alkalinity	mg/l	12-1243	Rain	05/09/12	05/09/12	05/10/12	0.6	0.6	1	0.0	0.0	0 - 2.8
Alkalinity	mg/l	12-1261	Rain	5/9 - 5/16/12	05/16/12	05/17/12	6	6.2	6	0.1	2.3	0 - 2.8

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Spec. Cond.	µmho/cm	11-2049	Rain	5/12-5/18/11	05/18/11	06/03/11	53.6	53.4	54	0.1	0.3	0 - 2.8
Spec. Cond.	µmho/cm	11-2056	Rain Blank	05/15/11	05/15/11	06/03/11	2.3	2.3	2	0.0	0.0	0 - 2.8
Spec. Cond.	µmho/cm	11-2178	Site #3	5/18-5/26/11	05/26/11	06/03/11	648	644	646	2.8	0.4	0 - 2.8
Spec. Cond.	µmho/cm	11-2188	MW6	05/26/11	05/26/11	06/03/11	909	906.0	908	2.1	0.2	0 - 2.8
Spec. Cond.	µmho/cm	11-2191	MW8	05/26/11	05/26/11	06/03/11	318	317	318	0.7	0.2	0 - 2.8
Spec. Cond.	µmho/cm	11-2271	Site #5	5/26 - 6/2/11	06/02/11	06/29/11	648	653	651	3.5	0.5	0 - 2.8
Spec. Cond.	µmho/cm	11-2275	Site #3 Blank	06/02/11	06/02/11	06/29/11	2.3	2.3	2	0.0	0.0	0 - 2.8
Spec. Cond.	µmho/cm	11-2352	Site #5	6/2 - 6/8/11	06/08/11	06/29/11	635	628	632	4.9	0.8	0 - 2.8
Spec. Cond.	µmho/cm	11-2439	Rain	6/8 - 6/15/11	06/15/11	06/29/11	164	168	166	2.8	1.7	0 - 2.8
Spec. Cond.	µmho/cm	11-2595	MW2	06/23/11	06/23/11	07/18/11	384	378	381	4.2	1.1	0 - 2.8
Spec. Cond.	µmho/cm	11-2600	MW6	06/23/11	06/23/11	07/18/11	723	721	722	1.4	0.2	0 - 2.8
Spec. Cond.	µmho/cm	11-2759	Rain	6/15-7/1/11	07/01/11	07/25/11	33.3	34	33	0.2	0.6	0 - 2.8
Spec. Cond.	µmho/cm	11-2766	Rain Blank	07/01/11	07/01/11	07/25/11	2.1	2.1	2	0.0	0.0	0 - 2.8
Spec. Cond.	µmho/cm	11-2875	Site #4	7/7-7/3/11	07/03/11	07/25/11	506	505.0	506	0.7	0.1	0 - 2.8
Spec. Cond.	µmho/cm	11-2970	Rain	7/13 - 7/20/11	07/20/11	08/15/11	31.3	30.1	31	0.8	2.8	0 - 2.8
Spec. Cond.	µmho/cm	11-2981	MW8	07/20/11	07/20/11	08/15/11	328	324	326	2.8	0.9	0 - 2.8
Spec. Cond.	µmho/cm	11-3235	Rain	7/26 - 8/3/11	08/03/11	08/26/11	23.3	23	23	0.1	0.3	0 - 2.8
Spec. Cond.	µmho/cm	11-3412	Rain	8/11 - 8/18/11	08/18/11	08/30/11	19	18.7	19	0.2	1.1	0 - 2.8
Spec. Cond.	µmho/cm	11-3423	MW8	08/18/11	08/18/11	09/15/11	516	519	518	2.1	0.4	0 - 2.8
Spec. Cond.	µmho/cm	11-3712	Rain	8/18 - 9/7/11	09/07/11	09/28/11	47.6	47.3	47	0.2	0.4	0 - 2.8
Spec. Cond.	µmho/cm	11-3810	Site #4	9/7 - 9/15/11	09/15/11	09/28/11	507	506.0	507	0.7	0.1	0 - 2.8
Spec. Cond.	µmho/cm	11-3851	Site #5	9/15 - 9/20/11	09/20/11	09/28/11	455	455	455	0.0	0.0	0 - 2.8
Spec. Cond.	µmho/cm	11-3864	MW8 F.D.	09/20/11	09/20/11	09/28/11	835.0	839.0	837	2.8	0.3	0 - 2.8
Spec. Cond.	µmho/cm	11-4073	Site #6	9/29 - 10/5/11	10/05/11	10/26/11	520	518.0	519	1.4	0.3	0 - 2.8
Spec. Cond.	µmho/cm	11-4160	Rain F.D.	9/29 - 10/12/11	10/12/11	10/26/11	61.1	61.5	61	0.3	0.5	0 - 2.8
Spec. Cond.	µmho/cm	11-4231	Site #5	10/12 - 10/20/11	10/20/11	11/09/11	466	463	465	2.1	0.5	0 - 2.8
Spec. Cond.	µmho/cm	11-4313	Site #3	10/20 - 10/27/11	10/27/11	11/15/11	350	354.0	352	2.8	0.8	0 - 2.8
Spec. Cond.	µmho/cm	11-4392	Site #3 Rain Blank	11/03/11	11/03/11	11/15/11	2.2	2	2	0.0	0.0	0 - 2.8
Spec. Cond.	µmho/cm	11-4448	Site #4	11/3 - 11/9/11	11/09/11	11/15/11	372	374	373	1.4	0.4	0 - 2.8
Spec. Cond.	µmho/cm	11-4556	Rain	11/16 - 11/21/11	11/21/11	12/06/11	81.1	81.3	81	0.1	0.2	0 - 2.8
Spec. Cond.	µmho/cm	11-4567	MW8	11/21/11	11/21/11	12/06/11	752	747.0	750	3.5	0.5	0 - 2.8

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Spec. Cond.	µmho/cm	11-4802	MW1	12/15/11	12/15/11	01/13/12	239	236	238	2.1	0.9	0 - 2.8
Spec. Cond.	µmho/cm	12-0024	Site #4	12/30 - 1/4/12	01/04/12	01/25/12	407	404	406	2.1	0.5	0 - 2.8
Spec. Cond.	µmho/cm	12-0132	MW4	01/16/12	01/16/12	01/25/12	669	664	667	3.5	0.5	0 - 2.8
Spec. Cond.	µmho/cm	12-0138	MW8	01/16/12	01/16/12	01/25/12	708	702	705	4.2	0.6	0 - 2.8
Spec. Cond.	µmho/cm	12-0142	Site #5	1/4 - 1/16/12	01/16/12	01/25/12	409	405	407	2.8	0.7	0 - 2.8
Spec. Cond.	µmho/cm	12-0284	Site #4	1/16 - 1/27/12	01/27/12	02/08/12	422	425	424	2.1	0.5	0 - 2.8
Spec. Cond.	µmho/cm	12-0331	Site #5	1/27 - 2/3/12	02/03/12	02/08/12	394	392	393	1.4	0.4	0 - 2.8
Spec. Cond.	µmho/cm	12-0413	Rain	2/3 - 2/9/12	02/09/12	02/20/12	52.6	52	52	0.4	0.8	0 - 2.8
Spec. Cond.	µmho/cm	12-0495	MW3	02/15/12	02/15/12	02/20/12	281	276	279	3.5	1.3	0 - 2.8
Spec. Cond.	µmho/cm	12-0679	Site #4 Blank	03/01/12	03/01/12	03/06/12	2.0	2.0	2	0.0	0.0	0 - 2.8
Spec. Cond.	µmho/cm	12-0682	Rain Blank	03/01/12	03/01/12	03/06/12	2.0	2.0	2	0.0	0.0	0 - 2.8
Spec. Cond.	µmho/cm	12-0827	Rain	2/9 - 3/15/12	03/15/12	04/02/12	56.4	55.8	56	0.4	0.8	0 - 2.8
Spec. Cond.	µmho/cm	12-0837	MW7	03/15/12	03/15/12	04/02/12	608	599	604	6.4	1.1	0 - 2.8
Spec. Cond.	µmho/cm	12-0992	Rain	3/15 - 3/29/12	03/29/12	04/16/12	44.6	45.4	45	0.6	1.3	0 - 2.8
Spec. Cond.	µmho/cm	12-1053	Site #3 Blank	04/05/12	04/05/12	04/16/12	2.0	2.0	2	0.0	0.0	0 - 2.8
Spec. Cond.	µmho/cm	12-1160	MW6 F.D.	04/19/12	04/19/12	04/26/12	606	612	609	4.2	0.7	0 - 2.8
Spec. Cond.	µmho/cm	12-1183	Rain	3/29 - 4/24/12	04/24/12	04/26/12	48.5	48	48	0.5	1.0	0 - 2.8
Spec. Cond.	µmho/cm	12-1209	Site #4	04/30/12	04/30/12	05/03/12	591	596	594	3.5	0.6	0 - 2.8
Spec. Cond.	µmho/cm	12-1211	Site 5 F.D.	4/24 - 5/1/12	05/01/12	05/03/12	461	465	463	2.8	0.6	0 - 2.8
Spec. Cond.	µmho/cm	12-1241	Site #5 Blank	05/09/12	05/09/12	05/21/12	2.0	2.0	2	0.0	0.0	0 - 2.8

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Turbidity	NTU	11-2056	Rain Blank	05/18/11	05/18/11	05/19/11	0.1	0.1	0	0.0	0.0	0 - 3.7
Turbidity	NTU	11-2180	Site #5	5/18-5/26/11	05/26/11	05/27/11	0.9	0.9	1	0.0	0.0	0 - 3.7
Turbidity	NTU	11-2279	Rain Blank	06/02/11	06/02/11	06/03/11	0.1	0.1	0	0.0	0.0	0 - 3.7
Turbidity	NTU	11-2352	Site #5	6/2-6/8/11	6/2-6/8/11	06/09/11	1.0	1.0	1	0.0	0.0	0 - 3.7
Turbidity	NTU	11-2592	Site #5	6/15-6/23/11	06/23/11	06/24/11	1.5	1.4	1	0.0	2.5	0 - 3.7
Turbidity	NTU	11-2766	Rain Blank	07/01/11	07/01/11	07/03/11	0.1	0.1	0	0.0	0.0	0 - 3.7
Turbidity	NTU	11-2808	Rain	7/1-7/7/11	07/07/11	07/08/11	0.9	0.9	1	0.0	0.0	0 - 3.7
Turbidity	NTU	11-2970	Rain	7/13-7/20/11	07/20/11	07/21/11	0.4	0.4	0	0.0	0.0	0 - 3.7
Turbidity	NTU	11-3064	Site #6	7/20-7/26/11	07/26/11	07/27/11	0.8	0.8	1	0.0	0.0	0 - 3.7
Turbidity	NTU	11-3234	Site #6 F.D.	7/26 - 8/3/11	08/03/11	08/04/11	1.0	1.0	1	0.0	0.0	0 - 3.7
Turbidity	NTU	11-3242	Rain Blank	08/03/11	08/03/11	08/04/11	0.1	0.1	0	0.0	0.0	0 - 3.7
Turbidity	NTU	11-3412	Rain	8/11 - 8/18/11	08/18/11	08/19/11	1.1	1.1	1	0.0	0.0	0 - 3.7
Turbidity	NTU	11-3506	Site #6	8/18 - 8/25/11	08/25/11	08/26/11	2.8	2.8	3	0.0	0.0	0 - 3.7
Turbidity	NTU	11-3711	Site #6	09/06/11	09/06/11	09/08/11	5.8	5.7	6	0.1	1.2	0 - 3.7
Turbidity	NTU	11-3719	Rain	09/07/11	09/07/11	09/08/11	0.2	0.2	0	0.0	0.0	0 - 3.7
Turbidity	NTU	11-3809	Site #3	9/7 - 9/15/11	09/15/11	09/16/11	20.3	20.0	20	0.2	1.1	0 - 3.7
Turbidity	NTU	11-3814	Rain F.D.	9/7 - 9/15/11	09/15/11	09/16/11	0.9	0.9	1	0.0	0.0	0 - 3.7
Turbidity	NTU	11-3853	Site #6 F.D.	9/15 - 9/20/11	09/20/11	09/22/11	0.4	0.4	0	0.0	0.0	0 - 3.7
Turbidity	NTU	11-3984	Rain	9/15 - 9/29/11	09/29/11	09/30/11	0.5	0.5	1	0.0	0.0	0 - 3.7
Turbidity	NTU	11-4080	Rain Blank	10/05/11	10/05/11	10/06/11	0.2	0.2	0	0.0	0.0	0 - 3.7
Turbidity	NTU	11-4228	Site #2	10/12 - 10/20/11	10/20/11	10/21/11	86.4	87.8	87	1.0	1.1	0 - 3.7
Turbidity	NTU	11-4317	Site #6 F.D.	10/20 - 10/27/11	10/27/11	10/28/11	0.6	0.6	1	0.0	0.0	0 - 3.7
Turbidity	NTU	11-4384	Site #2	10/20 - 11/3/11	11/03/11	11/04/11	67.0	65.9	66	0.8	1.2	0 - 3.7
Turbidity	NTU	11-4396	Rain Blank	11/03/11	11/03/11	11/04/11	0.3	0.3	0	0.0	0.0	0 - 3.7
Turbidity	NTU	11-4450	Site #6	11/3 - 11/9/11	11/09/11	11/10/11	1.6	1.6	2	0.0	0.0	0 - 3.7
Turbidity	NTU	11-4504	Site #2	11/3 - 11/16/11	11/16/11	11/18/11	158	161	160	2.1	1.3	0 - 3.7
Turbidity	NTU	11-4660	Site #4 Blank	12/01/11	12/01/11	12/01/11	0.2	0.2	0	0.0	0.0	0 - 3.7
Turbidity	NTU	11-4660	Site #4 Blank	12/01/11	12/01/11	12/28/11	1.9	1.9	2	0.0	0.0	0 - 3.7
Turbidity	NTU	11-4663	Rain Blank	12/01/11	12/01/11	12/01/11	0.2	0.2	0	0.0	0.0	0 - 3.7
Turbidity	NTU	11-4707	Site #6	12/1 - 12/8/11	12/08/11	12/09/11	0.6	0.6	1	0.0	0.0	0 - 3.7
Turbidity	NTU	11-4907	Site #6	12/15 -12/21/11	12/21/11	12/22/11	0.9	0.9	1	0.0	0.0	0 - 3.7

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PARAMETERS	UNITS	SAMPLE ID	SAMPLE DESCRIPTION	DATE COLLECTED	DATE RECEIVED	DATE ANALYZED	REPEAT 1	REPEAT 2	MEAN	s	% RELATIVE STD. DEVIATION (RSD)	ACCEPTANCE RANGE (% RSD)
Turbidity	NTU	**12-0024**	Site #4	12/30 - 1/4/12	01/04/12	01/05/12	2.7	2.5	3	0.1	5.4	0 - 3.7
Turbidity	NTU	12-0026	Site #6	12/30 - 1/4/12	01/04/12	01/05/12	1.2	1.2	1	0.0	0.0	0 - 3.7
Turbidity	NTU	12-0148	Site #4 Blank	01/16/12	01/16/12	01/18/12	0.3	0.3	0	0.0	0.0	0 - 3.7
Turbidity	NTU	12-0286	Site #6	1/16 - 1/27/12	01/27/12	01/28/12	0.5	0.6	1	0.0	1.9	0 - 3.7
Turbidity	NTU	12-0338	Site #5 Blank	02/03/12	02/03/12	02/05/12	0.3	0.3	0	0.0	0.0	0 - 3.7
Turbidity	NTU	12-0340	Rain Blank	02/03/12	02/03/12	02/05/12	0.2	0.2	0	0.0	0.0	0 - 3.7
Turbidity	NTU	12-0413	Rain	2/3 - 2/9/12	02/09/12	02/10/12	1.6	1.5	2	0.1	4.6	0 - 3.7
Turbidity	NTU	12-0507	Site #6	2/9 - 2/15/12	02/15/12	02/17/12	0.7	0.7	1	0.0	0.0	0 - 3.7
Turbidity	NTU	12-0679	Site #4 Blank	03/01/12	03/01/12	03/02/12	0.2	0.2	0	0.0	0.0	0 - 3.7
Turbidity	NTU	12-0717	Site #3	3/1 - 3/6/12	03/06/12	03/08/12	6.5	6.3	6	0.1	2.2	0 - 3.7
Turbidity	NTU	12-0827	Rain	2/9 - 3/15/12	03/15/12	03/16/12	0.9	0.8	1	0.0	4.3	0 - 3.7
Turbidity	NTU	12-0915	Site #6	3/15 - 3/22/12	03/22/12	03/23/12	1.1	1.1	1	0.0	0.0	0 - 3.7
Turbidity	NTU	12-0992	Rain	3/15 - 3/29/12	03/29/12	03/30/12	2.0	1.8	2	0.1	5.9	0 - 3.7
Turbidity	NTU	12-1057	Rain Blank	04/05/12	04/05/12	04/06/12	0.2	0.2	0	0.0	0.0	0 - 3.7
Turbidity	NTU	12-1092	Site #5	4/5 - 4/12/12	04/12/12	04/13/12	1.7	1.8	2	0.1	4.0	0 - 3.7
Turbidity	NTU	12-1164	Site #5	4/12 - 4/19/12	04/19/12	04/20/12	1.9	2.0	2	0.1	3.6	0 - 3.7
Turbidity	NTU	12-1179	Site #3	4/12 - 4/24/12	04/24/12	04/24/12	4.1	4.0	4	0.1	1.7	0 - 3.7
Turbidity	NTU	12-1183	Rain	3/29 - 4/24/12	04/24/12	04/24/12	2.5	2.5	3	0.0	0.0	0 - 3.7
Turbidity	NTU	12-1211	Site #5 F.D.	4/24 - 5/1/12	05/01/12	05/02/12	1.5	1.5	2	0.0	0.0	0 - 3.7
Turbidity	NTU	12-1241	Site #5 Blank	05/09/12	05/09/12	05/10/12	0.3	0.3	0	0.0	0.0	0 - 3.7
Turbidity	NTU	12-1243	Rain Blank	05/09/12	05/09/12	05/10/12	0.3	0.3	0	0.0	0.0	0 - 3.7

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PARAMETERS	UNITS	SAMPLE ID	SAMPLE DESCRIPTION	DATE COLLECTED	DATE RECEIVED	DATE ANALYZED	REPEAT 1	REPEAT 2	MEAN	s	% RELATIVE STD. DEVIATION (RSD)	ACCEPTANCE RANGE (% RSD)
TSS	mg/l	11-2052	Site #3 Blank	05/18/11	05/18/11	05/23/11	0.3	0.3	0	0.0	0.0	0 - 13
TSS	mg/l	11-2180	Site #5	5/18 - 5/26/11	05/26/11	06/01/11	3.7	4.3	4	0.4	10.6	0 - 13
TSS	mg/l	11-2279	Rain Blank	06/02/11	06/02/11	06/08/11	0.2	0.2	0	0.0	0.0	0 - 13
TSS	mg/l	11-2439	Rain Dup	6/8 - 6/15/11	06/15/11	06/15/11	2.0	2.3	2	0.2	9.9	0 - 13
TSS	mg/l	11-2592	Site #5	6/15 - 6/23/11	06/23/11	06/23/11	3.2	2.9	3	0.2	7.0	0 - 13
TSS	mg/l	11-2759	Rain	6/15 - 7/1/11	07/01/11	07/07/11	0.9	1	1	0.1	7.4	0 - 13
TSS	mg/l	11-2808	Rain	7/1 - 7/7/11	07/07/11	07/07/11	1.0	1.0	1	0.0	0.0	0 - 13
TSS	mg/l	11-2966	Site #4	7/13 - 7/20/11	07/20/11	07/25/11	3.9	4.3	4	0.3	6.9	0 - 13
TSS	mg/l	11-3235	Rain	7/20 - 8/3/11	08/03/11	08/09/11	1.4	1.6	2	0.1	9.4	0 - 13
TSS	mg/l	11-3242	Rain Blank	08/03/11	08/03/11	08/09/11	0.2	0.2	0	0.0	0.0	0 - 13
TSS	mg/l	11-3409	Site #4	8/11 - 8/18/11	08/18/11	08/22/11	1.7	1.9	2	0.1	7.9	0 - 13
TSS	mg/l	11-3506	Site #6	8/18 - 8/25/11	08/25/11	08/26/11	1.4	1.6	2	0.1	9.4	0 - 13
TSS	mg/l	11-3708	Site #4	8/25 - 9/7/11	09/07/11	09/08/11	1.6	1.7	2	0.1	4.3	0 - 13
TSS	mg/l	11-3719	Rain Blank	09/07/11	09/07/11	09/08/11	0.3	0.3	0	0.0	0.0	0 - 13
TSS	mg/l	11-3980	Site #3	9/20 - 9/29/11	09/29/11	09/30/11	134	118	126	11.3	9.0	0 - 13
TSS	mg/l	11-4071	Site #4	9/29 - 10/5/11	10/05/11	10/09/11	0.8	0.9	1	0.1	8.3	0 - 13
TSS	mg/l	11-4080	Rain Blank	10/05/11	10/05/11	10/09/11	0.3	0.3	0	0.0	0.0	0 - 13
TSS	mg/l	11-4233	Rain	10/12 - 10/20/11	10/20/11	10/25/11	1.8	1.7	2	0.1	4.0	0 - 13
TSS	mg/l	11-4384	Site #2	10/20 - 11/3/11	11/03/11	11/10/11	119	118	119	0.7	0.6	0 - 13
TSS	mg/l	11-4394	Site #5 Blank	11/03/11	11/03/11	11/10/11	0.4	0.4	0	0.0	0.0	0 - 13
TSS	mg/l	11-4504	Site #2	11/3 - 11/16/11	11/16/11	11/22/11	544	453	499	64.3	12.9	0 - 13
TSS	mg/l	11-4556	Rain	11/16 - 11/21/11	11/21/11	11/22/11	5.5	6.0	6	0.4	6.1	0 - 13
TSS	mg/l	11-4656	Site #6 F.D.	11/21 - 12/1/11	12/01/11	12/04/11	1.0	1.2	1	0.1	12.9	0 - 13
TSS	mg/l	11-4663	Rain Blank	12/01/11	12/01/11	12/04/11	0.4	0.4	0	0.0	0.0	0 - 13
TSS	mg/l	11-4707	Site #6	12/1 - 12/8/11	12/08/11	12/09/11	1.7	1.9	2	0.1	7.9	0 - 13
TSS	mg/l	11-4796	Site #5	12/8 - 12/15/11	12/15/11	12/21/11	3.0	2.7	3	0.2	7.4	0 - 13
TSS	mg/l	11-4907	Site #6	12/15 - 12/21/11	12/21/11	12/23/11	1.9	2.0	2	0.1	3.6	0 - 13
TSS	mg/l	12-0144	Site #6 F.D.	1/4 - 1/16/12	01/16/12	01/18/12	0.8	0.7	1	0.1	9.4	0 - 13
TSS	mg/l	12-0338	Site #5 Blank	02/03/12	02/03/12	02/09/12	0.4	0.4	0	0.0	0.0	0 - 13
TSS	mg/l	12-0670	Site #1	2/21 - 3/1/12	03/01/12	03/02/12	4.4	3.9	4	0.4	8.5	0 - 13
TSS	mg/l	12-0680	Site #5 Blank	03/01/12	03/01/12	03/02/12	0.3	0.3	0	0.0	0.0	0 - 13
TSS	mg/l	12-0682	Rain Blank	03/01/12	03/01/12	03/02/12	0.3	0.3	0	0.0	0.0	0 - 13
TSS	mg/l	12-1056	Site #6 Blank	04/05/12	04/05/12	04/12/12	0.4	0.4	0	0.0	0.0	0 - 13
TSS	mg/l	12-1183	Rain	3/29 - 4/24/12	04/24/12	04/26/12	3.0	2.4	3	0.4	15.7	0 - 13
TSS	mg/l	12-1211	Site #5 F.D.	04/30/12	04/30/12	05/04/12	2.5	2.0	2	0.4	15.7	0 - 13
TSS	mg/l	12-1241	Site #5 Blank	05/09/12	05/09/12	05/14/12	0.3	0.3	0	0.0	0.0	0 - 13
TSS	mg/l	12-1243	Rain Blank	05/09/12	05/09/12	05/14/12	0.2	0.2	0	0.0	0.0	0 - 13

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PARAMETERS	UNITS	SAMPLE ID	SAMPLE DESCRIPTION	DATE COLLECTED	DATE RECEIVED	DATE ANALYZED	REPEAT 1	REPEAT 2	MEAN	s	% RELATIVE STD. DEVIATION (RSD)	ACCEPTANCE RANGE (% RSD)
BOD	mg/l	11-2055	Site #6 SB	05/18/11	05/18/11	05/30/11	0.0	0.0	0	0.0	0.0	0 - 9
BOD	mg/l	11-2186	FCEB	05/26/11	05/26/11	05/30/11	0.0	0.0	0	0.0	0.0	0 - 9
BOD	mg/l	11-2191	MW8	05/26/11	05/26/11	05/30/11	23.0	23.1	23	0.1	0.3	0 - 9
BOD	mg/l	11-2278	Site #6 SB	06/02/11	06/02/11	06/07/11	0.0	0.0	0	0.0	0.0	0 - 9
BOD	mg/l	11-2279	Rain Eq. Blnk	06/02/11	06/02/11	06/07/11	0.0	0.0	0	0.0	0.0	0 - 9
BOD	mg/l	11-2439	Rain	06/08-06/15/11	06/15/11	06/15/11	0.8	0.81	1	0.0	1.7	0 - 9
BOD	mg/l	11-2599	MW5	06/23/11	06/23/11	06/25/11	3.9	3.9	4	0.0	0.0	0 - 9
BOD	mg/l	11-2603	MW8	06/23/11	06/23/11	06/25/11	17.6	16.9	17	0.5	2.9	0 - 9
BOD	mg/l	11-2766	Rain Eq. Blnk	07/01/11	07/01/11	07/03/11	0.0	0.0	0	0.0	0.0	0 - 9
BOD	mg/l	11-2808	Rain	07/01-07/07/11	07/07/11	07/08/11	0.5	0.5	1	0.0	0.0	0 - 9
BOD	mg/l	11-2877	Rain	07/07-07/13/11	07/13/11	07/14/11	0.7	0.8	1	0.0	3.7	0 - 9
BOD	mg/l	11-2970	Rain	07/13-7/20/11	07/20/11	07/22/11	0.4	0.44	0	0.0	6.7	0 - 9
BOD	mg/l	11-2981	MW8	07/20/11	07/20/11	07/22/11	2.8	2.8	3	0.0	0.0	0 - 9
BOD	mg/l	11-3064	Site #6	07/20-07/26/11	07/26/11	07/28/11	1.1	1.1	1	0.0	0.0	0 - 9
BOD	mg/l	11-3242	Rain Eq. Blnk	08/03/11	08/03/11	08/04/11	0	0	0	0.0	0.0	0 - 9
BOD	mg/l	11-3329	Rain	08/03-08/11/11	08/11/11	08/12/11	0.4	0.3	0	0.0	4.2	0 - 9
BOD	mg/l	11-3423	MW8	08/18/11	08/18/11	08/20/11	3.0	3.1	3	0.0	1.4	0 - 9
BOD	mg/l	11-3506	Site #6	08/18-08/25/11	08/25/11	08/26/11	0.6	0.6	1	0.0	0.0	0 - 9
BOD	mg/l	11-3719	Rain Eq. Blnk	09/07/11	09/07/11	09/09/11	0	0	0	0.0	0.0	0 - 9
BOD	mg/l	11-3814	Rain F.D.	09/07-09/15/11	09/15/11	09/16/11	1.1	1.1	1	0.0	1.9	0 - 9
BOD	mg/l	11-3864	MW8 F.D.	09/20/11	09/20/11	09/22/11	1	1	1	0.0	0.0	0 - 9
BOD	mg/l	11-3984	Rain	09/15-09/29/11	09/29/11	09/30/11	0.4	0.3	0	0.0	6.3	0 - 9
BOD	mg/l	11-4080	Rain Eq. Blnk	10/05/11	10/05/11	10/07/11	0.0	0.0	0	0.0	0.0	0 - 9
BOD	mg/l	11-4160	Rain F.D.	09/29-10/12/11	10/12/11	10/14/11	0.6	0.6	1	0.0	0.0	0 - 9
BOD	mg/l	11-4244	MW8	10/20/11	10/20/11	10/21/11	1.9	1.9	2	0.0	0.0	0 - 9
BOD	mg/l	11-4317	Site #6 F.D.	10/20-10/27/11	10/27/11	10/29/11	0.7	0.7	1	0.0	0.0	0 - 9
BOD	mg/l	11-4396	Rain Eq. Blnk	11/03/11	11/03/11	11/04/11	0.0	0.0	0	0.0	0.0	0 - 9
BOD	mg/l	11-4450	Site #6	11/03-11/09/11	11/09/11	11/11/11	0.8	0.8	1	0.0	0.0	0 - 9
BOD	mg/l	11-4567	MW8	11/21/11	11/21/11	11/22/11	0.6	0.6	1	0.0	0.0	0 - 9
BOD	mg/l	11-4663	Rain Eq. Blnk	12/01/11	12/01/11	12/02/11	0.0	0.0	0	0.0	0.0	0 - 9

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PARAMETERS	UNITS	SAMPLE ID	SAMPLE DESCRIPTION	DATE COLLECTED	DATE RECEIVED	DATE ANALYZED	REPEAT 1	REPEAT 2	MEAN	s	% RELATIVE STD. DEVIATION (RSD)	ACCEPTANCE RANGE (% RSD)
BOD	mg/l	11-4707	Site #6	12/01-12/08/11	12/08/11	12/10/11	0.5	0.5	1	0.0	0.0	0 - 9
BOD	mg/l	11-4811	MW8	12/15/11	12/15/11	12/17/11	0.4	0.4	0	0.0	0.0	0 - 9
BOD	mg/l	11-4907	Site #6	12/15-12/21/11	12/21/11	12/23/11	0.6	0.5	1	0.1	12.9	0 - 9
BOD	mg/l	11-4975	Site #6	12/21-12/30/11	12/30/11	12/30/11	1.1	1.1	1	0.0	0.0	0 - 9
BOD	mg/l	12-0026	Site 6	12/30-01/04/12	01/04/12	01/06/12	0.7	0.7	1	0.0	0.0	0 - 9
BOD	mg/l	12-0151	Rain Equipment Blank	01/16/12	01/16/12	01/18/12	0.0	0.0	0	0.0	0.0	0 - 9
BOD	mg/l	12-0286	Site 6	01/16-01/27/12	01/27/12	01/29/12	1.0	1.1	1	0.1	5.0	0 - 9
BOD	mg/l	12-0340	Rain Equipment Blank	02/03/12	02/03/12	02/03/12	0.0	0.0	0	0.0	0.0	0 - 9
BOD	mg/l	12-0413	Rain	02/03-02/09/12	02/09/12	02/10/12	2.1	2.1	2	0.0	0.5	0 - 9
BOD	mg/l	12-0507	Site 6	02/09-02/15/12	02/15/12	02/17/12	0.9	0.885	1	0.0	4.6	0 - 9
BOD	mg/l	12-0576	Site 6	02/15-02/21/12	02/21/12	02/23/12	0.7	0.7	1	0.0	0.0	0 - 9
BOD	mg/l	12-0682	Rain Equipment Blank	03/01/12	03/01/12	03/03/12	0.0	0.0	0	0.0	0.0	0 - 9
BOD	mg/l	12-0838	MW8	03/15/12	03/15/12	03/17/12	0.8	0.7	1	0.0	0.1	0 - 9
BOD	mg/l	12-0915	Site 6	03/15-03/22/12	03/22/12	03/24/12	0.7	0.7	1	0.0	0.0	0 - 9
BOD	mg/l	12-0992	Rain	03/15-03/29/12	03/29/12	03/31/12	0.8	0.7	1	0.0	4.7	0 - 9
BOD	mg/l	12-1057	Rain Equipment Blank	04/05/12	04/05/12	04/06/12	0.0	0.0	0	0.0	0.0	0 - 9
BOD	mg/l	12-1092	Site 5	04/05-04/12/12	04/12/12	04/12/12	2.9	3.2	3	0.2	7.0	0 - 9
BOD	mg/l	12-1164	Site 5	04/12-04/19/12	04/19/12	04/21/12	4.0	3.9	4	0.0	0.5	0 - 9
BOD	mg/l	12-1183	Rain	03/29-04/24/12	04/24/12	04/26/12	1.0	1.05	1	0.0	0.1	0 - 9
BOD	mg/l	12-1211	Site 5 F.D.	04/24-05/01/12	05/01/12	05/02/12	2.9	3.0	3	0.0	1.1	0 - 9
BOD	mg/l	12-1243	Rain Equipment Blank	05/09/12	05/09/12	05/11/12	0.0	0.0	0	0.0	0.0	0 - 9
BOD	mg/l	12-1260	Site 3	05/09-05/16/12	05/16/12	05/18/12	1.1	1.0	1	0.1	6.7	0 - 9

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PARAMETERS	UNITS	SAMPLE ID	SAMPLE DESCRIPTION	DATE COLLECTED	DATE RECEIVED	DATE ANALYZED	REPEAT 1	REPEAT 2	MEAN	s	% RELATIVE STD. DEVIATION (RSD)	ACCEPTANCE RANGE (% RSD)
SRP	µg/l	11-2049F	Rain	5/12/11 - 5/18/11	05/18/11	06/01/11	0	0	0	0.0	0.0	0 - 5.6
SRP	µg/l	11-2187F	MW5	05/26/11	05/26/11	06/02/11	0	0	0	0.0	0.0	0 - 5.6
SRP	µg/l	11-2277F	Site # 5 Sampler Blank	06/02/11	06/02/11	06/07/11	0	0	0	0.0	0.0	0 - 5.6
SRP	µg/l	11-2600F	Mw6	06/23/11	06/23/11	06/29/11	4	4	4	0.0	0.0	0 - 5.6
SRP	µg/l	11-2765F	Site # 6 Sampler Blank	07/01/11	07/01/11	07/05/11	0	0	0	0.0	0.0	0 - 5.6
SRP	µg/l	11-2765F	Site # 6 Sampler Blank	07/01/11	07/01/11	07/05/11	0	0	0	0.0	0.0	0 - 5.6
SRP	µg/l	11-2808F	Rain	7/1/11 - 7/7/11	07/07/11	07/11/11	29	29	29	0.0	0.0	0 - 5.6
SRP	µg/l	11-2877F	Rain	7/7/11 - 7/13/11	07/13/11	07/15/11	0	0	0	0.0	0.0	0 - 5.6
SRP	µg/l	11-2969F	Site # 6 F.D.	7/13/11 - 7/20/11	07/20/11	07/25/11	2.5	2	2	0.0	0.3	0 - 5.6
SRP	µg/l	11-2979F	MW 6 F.D.	07/20/11	07/20/11	07/25/11	5	4	4	0.0	0.2	0 - 5.6
SRP	µg/l	11-3062F	Site # 4	07/26/11	07/26/11	08/01/11	8	8	8	0.0	0.0	0 - 5.6
SRP	µg/l	11-3238F	Site # 3 Sampler Blank	08/03/11	08/03/11	08/18/11	0	0	0	0.0	0.0	0 - 5.6
SRP	µg/l	11-3409F	Site # 4	8/11/11 - 8/18/11	08/18/11	08/23/11	1	2	1	0.0	0.5	0 - 5.6
SRP	µg/l	11-3419F	MW 5	08/18/11	08/18/11	08/23/11	8	8	8	0.0	0.0	0 - 5.6
SRP	µg/l	11-3709F	Site # 5	8/25/11 - 9/7/11	09/07/11	09/09/11	11	10	11	0.4	3.4	0 - 5.6
SRP	µg/l	11-3719F	Rain Equipment Blank	09/07/11	09/07/11	09/09/11	0	0	0	0.0	0.0	0 - 5.6
SRP	µg/l	11-3812F	Site # 6	9/7/11 - 9/15/11	09/15/11	09/19/11	17	16	17	0.7	4.3	0 - 5.6
SRP	µg/l	11-3858F	MW 4	09/20/11	09/20/11	09/22/11	83	83	83	0.0	0.0	0 - 5.6
SRP	µg/l	11-4079F	Site # 6 Sampler Blank	10/05/11	10/06/11	10/10/11	0	0	0	0.0	0.0	0 - 5.6
SRP	µg/l	11-4241F	MW 6	10/20/11	10/20/11	10/25/11	12	11	12	0.4	3.1	0 - 5.6
SRP	µg/l	11-4313F	Site #3	10/20 - 10/27/11	10/27/11	10/31/11	123	126	125	2.1	1.7	0 - 5.6
SRP	µg/l	11-4384F	Site #2	10/20/11 - 11/3/11	11/03/11	11/04/11	70	72	71	1.4	2.0	0 - 5.6
SRP	µg/l	11-4394F	Site # 5 Sampler Blank	40850	11/03/11	11/04/11	0	0	0	0.0	0.0	0 - 5.6
SRP	µg/l	11-4396F	Rain Equipment Blank	11/03/11	11/03/11	11/04/11	0	0	0	0.0	0.0	0 - 5.6
SRP	µg/l	11-4450F	Site #6	11/3/11 - 11/9/11	11/09/11	11/14/11	9	8	9	0.4	4.1	0 - 5.6
SRP	µg/l	11-4552F	Site # 4	11/16/11 - 11/21/11	11/21/11	11/23/11	28.49	30.5	29	1.4	4.8	0 - 5.6
SRP	µg/l	11-4562F	FCEB	11/21/11	11/21/11	11/23/11	0.01	0.01	0	0.0	0.0	0 - 5.6
SRP	µg/l	11-4652F	Site # 3	11/21 - 12/1/11	12/01/11	12/02/11	51	50	51	0.7	1.4	0 - 5.6
SRP	µg/l	11-4663F	Rain Equipment Blank	12/01/11	12/01/11	12/02/11	5	6	6	0.2	3.9	0 - 5.6
SRP	µg/l	11-4707F	Site # 6	12/1/11 - 12/8/11	12/08/11	12/09/11	9	8	9	0.4	4.1	0 - 5.6
SRP	µg/l	11-4796F	Site # 5	12/8/11 - 12/15/11	12/15/11	12/16/11	17	19	18	0.7	4.0	0 - 5.6
SRP	µg/l	11-4806F	FCEB	12/15/11	12/15/11	12/16/11	0	0	0	0.0	0.0	0 - 5.6
SRP	µg/l	**12-0024F**	Site # 4	12/30/11 - 1/4/12	01/04/12	01/06/12	16	17	16	0.0	0.0	0 - 5.6
SRP	µg/l	12-0131F	MW 3	01/16/12	01/16/12	01/18/12	0	0	0	0.0	0.0	0 - 5.6

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PARAMETERS	UNITS	SAMPLE ID	SAMPLE DESCRIPTION	DATE COLLECTED	DATE RECEIVED	DATE ANALYZED	REPEAT 1	REPEAT 2	MEAN	s	% RELATIVE STD. DEVIATION (RSD)	ACCEPTANCE RANGE (% RSD)
SRP	µg/l	12-0141F	Site # 4	1/4/12 - 1/16/12	01/16/12	01/18/12	2	2	2	0.0	0.0	0 - 5.6
SRP	µg/l	12-0151F	Rain Equipment Blank	01/16/12	01/16/12	01/18/12	0	0	0	0.0	0.0	0 - 5.6
SRP	µg/l	12-0286F	Site # 6	01/27/12	01/27/12	01/27/12	4	4	4	0.0	0.0	0 - 5.6
SRP	µg/l	12-0338F	Site # 5 Sampler Blank	02/03/12	02/03/12	02/08/12	0	0	0	0.0	0.0	0 - 5.6
SRP	µg/l	12-0413F	Rain	2/3/12 - 2/9/12	02/09/12	02/10/12	159	158	159	0.7	0.4	0 - 5.6
SRP	µg/l	12-0501F	MW 7	02/15/12	02/15/12	02/18/12	0	0	0	0.0	0.0	0 - 5.6
SRP	µg/l	12-0573F	Site # 3	2/15/12 -2/21/12	02/21/12	02/22/12	4	4	4	0.0	0.0	0 - 5.6
SRP	µg/l	12-0679F	Site # 4 Sampler Blank	03/01/12	03/01/12	03/02/12	0	0	0	0.0	0.0	0 - 5.6
SRP	µg/l	12-0825F	Site # 6	3/6/12 - 3/15/12	03/15/12	03/16/12	7	7	7	0.0	0.0	0 - 5.6
SRP	µg/l	12-0835F	MW 6	03/15/12	03/15/12	03/16/12	11	12	11	0.0	0.1	0 - 5.6
SRP	µg/l	12-0990F	Site # 5	3/22/12 - 3/29/12	03/29/12	04/02/12	6	7	6	0.0	0.1	0 - 5.6
SRP	µg/l	12-1053F	Site # 3 Sampler Blank	04/05/12	04/05/12	04/06/12	0	0	0	0.0	0.0	0 - 5.6
SRP	µg/l	12-1091F	Site # 4	4/5/12 - 4/12/12	04/12/12	04/17/12	1	1	1	0.0	0.0	0 - 5.6
SRP	µg/l	12-1164F	Site # 5	4/12/12 - 4/19/12	04/19/12	04/20/12	0	1	0	0.0	1.4	0 - 5.6
SRP	µg/l	12-1159F	MW 6	04/19/12	04/19/12	04/20/12	13	12	12	0.4	2.9	0 - 5.6
SRP	µg/l	12-1179F	Site # 3	4/12/12 - 4/24/12	04/24/12	04/25/12	6	7	6	0.0	0.1	0 - 5.6
SRP	µg/l	12-1183F	Rain	3/29/12 - 4/24/12	04/24/12	04/25/12	57	60	59	2.1	3.6	0 - 5.6
SRP	µg/l	12-1210F	Site # 5	4/24/12 - 5/1/12	05/02/12	05/02/12	4	5	0	0.0	0.0	0 - 5.6
SRP	µg/l	12-1243F	Rain Equipment Blank	05/09/12	05/09/12	05/11/12	0	0	0	0.0	0.0	0 - 5.6

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NOX-N	µg/l	11-2049F	Rain	5/12/11 - 5/18/11	05/18/11	06/01/11	256	266	261	7.1	2.7	0 - 4.7
NOX-N	µg/l	11-2187F	MW5	05/26/11	05/26/11	06/02/11	22	22	22	0.0	0.0	0 - 4.7
NOX-N	µg/l	11-2277F	Site # 5 Sampler Blank	06/02/11	06/02/11	06/07/11	0	0	0	0.0	0.0	0 - 4.7
NOX-N	µg/l	11-2600F	Mw6	06/23/11	06/23/11	06/29/11	9	8	8	0.4	4.3	0 - 4.7
NOX-N	µg/l	11-2765F	Site # 6 Sampler Blank	07/01/11	07/01/11	07/05/11	0	0	0	0.0	0.0	0 - 4.7
NOX-N	µg/l	11-2765F	Site # 6 Sampler Blank	07/01/11	07/01/11	07/05/11	0	0	0	0.0	0.0	0 - 4.7
NOX-N	µg/l	11-2808F	Rain	7/1/11 - 7/7/11	07/07/11	07/11/11	86	86	86	0.0	0.0	0 - 4.7
NOX-N	µg/l	11-2877F	Rain	7/7/11 - 7/13/11	07/13/11	07/15/11	150	146	148	2.8	1.9	0 - 4.7
NOX-N	µg/l	11-2969F	Site # 6 F.D.	7/13/11 - 7/20/11	07/20/11	07/25/11	14	14	14	0.0	0.0	0 - 4.7
NOX-N	µg/l	11-2979F	MW 6 F.D.	07/20/11	07/20/11	07/25/11	19	18	18	0.0	0.0	0 - 4.7
NOX-N	µg/l	11-3062F	Site # 4	07/26/11	07/26/11	08/01/11	3	2	2	0.1	2.9	0 - 4.7
NOX-N	µg/l	11-3238F	Site # 3 Sampler Blank	08/03/11	08/03/11	08/18/11	0	0	0	0.0	0.0	0 - 4.7
NOX-N	µg/l	11-3409F	Site # 4	8/11/11 - 8/18/11	08/18/11	08/23/11	1	1	1	0.0	0.0	0 - 4.7
NOX-N	µg/l	11-3419F	MW 5	08/18/11	08/18/11	08/23/11	17	18	18	0.7	4.0	0 - 4.7
NOX-N	µg/l	11-3709F	Site # 5	8/25/11 - 9/7/11	09/07/11	09/09/11	98	93	96	3.5	3.7	0 - 4.7
NOX-N	µg/l	11-3719F	Rain Equipment Blank	40793	09/07/11	09/09/11	0.01	0.01	0	0.0	0.0	0 - 4.7
NOX-N	µg/l	11-3812F	Site # 6	9/7/11 - 9/15/11	09/15/11	09/19/11	134	134	134	0.0	0.0	0 - 4.7
NOX-N	µg/l	11-3858F	MW 4	09/20/11	09/20/11	09/22/11	4	3	3	0.1	2.0	0 - 4.7
NOX-N	µg/l	11-4079F	Site # 6 Sampler Blank	10/05/11	10/06/11	10/10/11	0	0	0	0.0	0.0	0 - 4.7
NOX-N	µg/l	11-4241F	MW 6	10/20/11	10/20/11	10/25/11	0	0	0	0.0	0.0	0 - 4.7
NOX-N	µg/l	11-4313F	Site #3	10/20 - 10/27/11	10/27/11	10/31/11	412	417	415	3.5	0.9	0 - 4.7
NOX-N	µg/l	11-4384F	Site #2	10/20/11 - 11/3/11	11/03/11	11/04/11	297	296	297	0.7	0.2	0 - 4.7
NOX-N	µg/l	11-4394F	Site # 5 Sampler Blank	11/03/11	11/03/11	11/04/11	0	0	0	0.0	0.0	0 - 4.7
NOX-N	µg/l	11-4396F	Rain Equipment Blank	11/03/11	11/03/11	11/04/11	0	0	0	0.0	0.0	0 - 4.7
NOX-N	µg/l	11-4450F	Site #6	11/3/11 - 11/9/11	11/09/11	11/11/11	47	44	45	1.8	3.9	0 - 4.7
NOX-N	µg/l	11-4552F	Site # 4	11/16/11 - 11/21/11	11/21/11	11/23/11	5	4	4	0.1	1.6	0 - 4.7
NOX-N	µg/l	11-4562F	FCEB	11/21/11	11/21/11	11/23/11	0	0	0	0.0	0.0	0 - 4.7
NOX-N	µg/l	11-4652F	Site # 3	11/21 - 12/1/11	12/01/11	12/02/11	389	380	385	6.4	1.7	0 - 4.7
NOX-N	µg/l	11-4663F	Rain Equipment Blank	12/01/11	12/01/11	12/02/11	0	0	0	0.0	0.0	0 - 4.7
NOX-N	µg/l	11-4707F	Site # 6	12/1/11 - 12/8/11	12/08/11	12/09/11	33	35	34	1.4	4.2	0 - 4.7
NOX-N	µg/l	11-4796F	Site # 5	12/8/11 - 12/15/11	12/15/11	12/16/11	4	3	3	0.1	2.0	0 - 4.7
NOX-N	µg/l	11-4806F	FCEB	12/15/11	12/15/11	12/16/11	0	0	0	0.0	0.0	0 - 4.7
NOX-N	µg/l	12-0024F	Site # 4	12/30/11 - 1/4/12	01/04/12	01/06/12	2	3	2	0.0	0.3	0 - 4.7
NOX-N	µg/l	12-0131F	MW 3	01/16/12	01/16/12	01/18/12	133	136	134	1.4	1.1	0 - 4.7

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NOX-N	µg/l	12-0141F	Site # 4	1/4/12 - 1/16/12	01/16/12	01/18/12	4	5	4	0.0	0.2	0 - 4.7
NOX-N	µg/l	12-0151F	Rain Equipment Blank	01/16/12	01/16/12	01/18/12	0	0	0	0.0	0.0	0 - 4.7
NOX-N	µg/l	12-0286F	Site # 6	01/27/12	01/27/12	01/27/12	35	37	36	0.7	2.0	0 - 4.7
NOX-N	µg/l	12-0338F	Site # 5 Sampler Blank	02/03/12	02/03/12	02/08/12	0	0	0	0.0	0.0	0 - 4.7
NOX-N	µg/l	12-0413F	Rain	2/3/12 - 2/9/12	02/09/12	02/10/12	115	117	116	1.4	1.2	0 - 4.7
NOX-N	µg/l	12-0501F	MW 7	02/15/12	02/15/12	02/18/12	72	72	72	0.0	0.0	0 - 4.7
NOX-N	µg/l	12-0573F	Site # 3	2/15/12 -2/21/12	02/21/12	02/22/12	46	45	46	0.7	1.6	0 - 4.7
NOX-N	µg/l	12-0825F	Site # 6	3/6/12 - 3/15/12	03/15/12	03/16/12	28	26	27	1.1	4.0	0 - 4.7
NOX-N	µg/l	12-0835F	MW 6	03/15/12	03/15/12	03/16/12	7	6	6	0.1	2.2	0 - 4.7
NOX-N	µg/l	12-0990F	Site # 5	3/22/12 - 3/29/12	03/29/12	04/02/12	7	6	6	0.0	0.1	0 - 4.7
NOX-N	µg/l	12-1053F	Site # 3 Sampler Blank	04/05/12	04/05/12	04/06/12	2	1	1	0.0	0.5	0 - 4.7
NOX-N	µg/l	12-1091F	Site # 4	4/5/12 - 4/12/12	04/12/12	04/17/12	3	3	3	0.0	0.0	0 - 4.7
NOX-N	µg/l	12-1164F	Site # 5	4/12/12 - 4/19/12	04/19/12	04/20/12	2	2	2	0.0	0.0	0 - 4.7
NOX-N	µg/l	12-1159F	MW 6	04/19/12	04/19/12	04/20/12	1	2	1	0.0	0.5	0 - 4.7
NOX-N	µg/l	12-1179F	Site # 3	4/12/12 - 4/24/12	04/24/12	04/25/12	11	10	10	0.4	3.4	0 - 4.7
NOX-N	µg/l	12-1183F	Rain	3/29/12 - 4/24/12	04/24/12	04/25/12	307	308	308	0.7	0.2	0 - 4.7
NOX-N	µg/l	12-1210F	Site # 5	4/24/12 - 5/1/12	05/02/12	05/02/12	3	2	2	0.0	0.3	0 - 4.7
NOX-N	µg/l	12-1243F	Rain Equipment Blank	05/09/12	05/09/12	05/11/12	0	1	0	0.0	1.4	0 - 4.7

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Ammonia	µg/l	11-2051P	Site # 2 Sampler Blank	05/18/11	05/18/11	06/24/11	0	0	0	0.0	0.0	0 - 10
Ammonia	µg/l	11-2184P	MW3	05/26/11	05/26/11	06/27/11	1238	1386	1312	104.7	8.0	0 - 10
Ammonia	µg/l	11-2275P	Site # 3 Sampler Blank	06/02/11	06/02/11	06/27/11	0	0	0	0.0	0.0	0 - 10
Ammonia	µg/l	11-2593P	PCEB	06/23/11	06/23/11	06/28/11	0	0	0	0.0	0.0	0 - 10
Ammonia	µg/l	11-2603P	MW8	06/23/11	06/23/11	06/28/11	652	650	651	1.4	0.2	0 - 10
Ammonia	µg/l	11-2765P	Site # 6 Sampler Blank	07/01/11	07/01/11	07/13/11	0	0	0	0.0	0.0	0 - 10
Ammonia	µg/l	11-2877P	Rain	7/7/11 - 7/13/11	07/13/11	07/29/11	301	299	300	1.4	0.5	0 - 10
Ammonia	µg/l	11-2969P	Site # 6 F.D.	7/13/11 - 7/20/11	07/20/11	08/08/11	98	95	97	2.1	2.2	0 - 10
Ammonia	µg/l	11-2979P	MW 6 F.D.	07/20/11	07/20/11	08/08/11	178	181	180	2.1	1.2	0 - 10
Ammonia	µg/l	11-3238P	Site # 3 Sampler Blank	08/03/11	08/03/11	08/31/11	21	24	22	1.5	6.6	0 - 10
Ammonia	µg/l	11-3413P	PCEB	08/18/11	08/18/11	09/01/11	0	0	0	0.0	0.0	0 - 10
Ammonia	µg/l	11-3423P	MW 8	08/18/11	08/18/11	09/01/11	211	187	199	17.0	8.5	0 - 10
Ammonia	µg/l	11-3710P	Site # 6	8/25/11 - 9/7/11	09/07/11	09/20/11	480	464	472	11.3	2.4	0 - 10
Ammonia	µg/l	11-3808P	Site # 2	9/7/11 - 9/15/11	09/15/11	09/20/11	61	59	60	1.4	2.4	0 - 10
Ammonia	µg/l	11-3852P	Site # 6	9/15/11 - 9/20/11	09/20/11	09/29/11	158	141	150	12.0	8.0	0 - 10
Ammonia	µg/l	11-3862P	MW 7	09/20/11	09/20/11	09/29/11	557	493	525	45.3	8.6	0 - 10
Ammonia	µg/l	11-4079P	Site # 6 Sampler Blank	10/05/11	10/06/11	10/14/11	0	0	0	0.0	0.0	0 - 10
Ammonia	µg/l	11-4160P	Rain F.D.	9/29/11 - 10/12/11	10/12/11	11/02/11	76	80	78	2.8	3.6	0 - 10
Ammonia	µg/l	11-4233P	Rain	10/12/11 - 10/20/11	10/20/11	11/03/11	90	84	87	4.2	4.9	0 - 10
Ammonia	µg/l	11-4243P	MW 7	10/20/11	10/20/11	11/03/11	246	258	252	8.5	3.4	0 - 10
Ammonia	µg/l	11-4314P	Site #4	10/20 - 10/27/11	10/27/11	11/03/11	0	0	0	0.0	0.0	0 - 10
Ammonia	µg/l	11-4384P	Site #2	10/20/11 - 11/3/11	11/03/11	11/16/11	33	35	34	1.4	4.2	0 - 10
Ammonia	µg/l	11-4447P	Site #3	11/3/11 - 11/9/11	11/09/11	11/16/11	169	159	164	7.1	4.3	0 - 10
Ammonia	µg/l	11-4394P	Site # 5 Sampler Blank	11/03/11	11/03/11	11/16/11	0	0	0	0.0	0.0	0 - 10
Ammonia	µg/l	11-4553P	Site # 5	11/16/11 - 11/21/11	11/21/11	11/29/11	14	12	13	0.9	7.0	0 - 10
Ammonia	µg/l	11-4556P	Rain	11/16/11 - 11/21/11	11/21/11	11/29/11	80	79	80	0.7	0.9	0 - 10
Ammonia	µg/l	11-4566P	MW 7	11/21/11	11/21/11	12/08/11	519	501	510	12.7	2.5	0 - 10
Ammonia	µg/l	11-4660P	Site # 4 Sampler Blank	12/01/11	12/01/11	12/08/11	0	0	0	0.0	0.0	0 - 10
Ammonia	µg/l	11-4796P	Site # 5	12/8/11 - 12/15/11	12/15/11	12/20/11	0	0	0	0.0	0.0	0 - 10
Ammonia	µg/l	11-4806P	FCEB	12/15/11	12/15/11	12/20/11	0	0	0	0.0	0.0	0 - 10
Ammonia	µg/l	12-0024P	Site # 4	12/30/11 - 1/4/12	01/04/12	01/17/12	18	19	18	0.0	0.0	0 - 10
Ammonia	µg/l	12-0129P	MW 1	01/16/12	01/16/12	01/18/12	18	16	17	0.7	4.2	0 - 10
Ammonia	µg/l	12-0139P	Site # 1	1/4/12 - 1/16/12	01/16/12	01/18/12	11	9	10	0.7	7.1	0 - 10

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Ammonia	µg/l	12-0149P	Site # 5 Sampler Blank	01/16/12	01/16/12	01/18/12	0	0	0	0.0	0.0	0 - 10
Ammonia	µg/l	12-0338P	Site # 5 Sampler Blank	02/03/12	02/03/12	02/06/12	0	0	0	0.0	0.0	0 - 10
Ammonia	µg/l	12-0286P	Site # 6	01/27/12	01/27/12	02/06/12	3	3	3	0.0	0.0	0 - 10
Ammonia	µg/l	12-0411P	Site # 6	2/3/12 - 2/9/12	02/09/12	02/21/12	1	0	0	0.0	1.4	0 - 10
Ammonia	µg/l	12-0495P	MW 3	02/15/12	02/15/12	02/21/12	0	0	0	0.0	0.0	0 - 10
Ammonia	µg/l	12-0505P	Site # 4	2/9/12 - 2/15/12	02/15/12	02/21/12	0	0	0	0.0	0.0	0 - 10
Ammonia	µg/l	12-0574P	Site # 4	2/15/12 -2/21/12	02/21/12	02/28/12	0	0	0	0.0	0.0	0 - 10
Ammonia	µg/l	12-0679P	Site # 4 Sampler Blank	03/01/12	03/01/12	03/05/12	0	0	0	0.0	0.0	0 - 10
Ammonia	µg/l	12-0825P	Site # 6	3/6/12 - 3/15/12	03/15/12	03/27/12	21	19	20	1.4	7.1	0 - 10
Ammonia	µg/l	12-0835P	MW 6	03/15/12	03/15/12	03/27/12	86	86	86	0.0	0.0	0 - 10
Ammonia	µg/l	12-1054P	Site # 4 Sampler Blank	04/05/12	04/05/12	04/06/12	0	0	0	0.0	0.0	0 - 10
Ammonia	µg/l	12-0988P	Site # 3	3/22/12 - 3/29/12	03/29/12	04/06/12	52	54	53	1.4	2.7	0 - 10
Ammonia	µg/l	12-1156P	MW 4	04/19/12	04/19/12	04/23/12	329	331	330	1.4	0.4	0 - 10
Ammonia	µg/l	12-1179P	Site # 3	4/12/12 - 4/24/12	04/24/12	04/26/12	25	27	26	0.7	2.7	0 - 10
Ammonia	µg/l	12-1209P	Site # 4	4/24/12 - 5/1/12	05/02/12	05/02/12	27	25	26	1.4	5.4	0 - 10
Ammonia	µg/l	12-1211P	Site # 5 F.D.	4/24/12 - 5/1/12	05/02/12	05/02/12	22	25	23	1.4	6.0	0 - 10
Ammonia	µg/l	12-1241P	Site # 5 Sampler Blank	05/09/12	05/09/12	05/30/12	0	0	0	0.0	0.0	0 - 10

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Total N	µg/l	11-2049p	Rain	5/12/11 - 5/18/11	05/18/11	10/25/11	1015	1065	1040	35.4	3.4	0 - 10
Total N	µg/l	11-2048fp	Site # 5	5/12/11 - 5/18/11	05/18/11	10/25/11	863	827	845	25.5	3.0	0 - 10
Total N	µg/l	11-2180fp	Site #5	5/18 - 5/26/11	05/26/11	10/31/11	595	574	585	14.8	2.5	0 - 10
Total N	µg/l	11-2190p	MW7	5/26/2011	5/26/2011	10/31/11	175	197	186	15.6	8.4	0 - 10
Total N	µg/l	11-2191p	MW8	5/26/2011	5/26/2011	10/31/11	174	184	179	7.1	4.0	0 - 10
Total N	µg/l	11-2275p	Site # 3 Sampler Blank	6/2/2011	6/2/2011	11/01/11	0	0	0	0.0	0.0	0 - 10
Total N	µg/l	11-2274fp	Site # 2 Sampler Blank	06/02/11	06/02/11	11/01/11	0	0	0	0.0	0.0	0 - 10
Total N	µg/l	11-2437fp	Site #4	6/8 - 6/15/11	06/15/11	11/01/11	1077	1067	1072	7.1	0.7	0 - 10
Total N	µg/l	11-2439fp	Rain	6/8 - 6/15/11	06/15/11	11/01/11	574	612	593	26.9	4.5	0 - 10
Total N	µg/l	11-2590p	Site #3	06/23/11	06/23/11	11/04/11	943	961	952	12.7	1.3	0 - 10
Total N	µg/l	11-2597p	MW4	06/23/11	06/23/11	11/04/11	264	269	267	3.5	1.3	0 - 10
Total N	µg/l	11-2763p	Site # 4 Sampler Blank	07/01/11	07/01/11	11/15/11	0	0	0	0.0	0.0	0 - 10
Total N	µg/l	11-2762fp	Site # 3 Sampler Blank	07/01/11	07/01/11	11/15/11	0	0	0	0.0	0.0	0 - 10
Total N	µg/l	11-2808fp	Rain	7/1/11 - 7/7/11	07/07/11	11/15/11	350	358	354	5.7	1.6	0 - 10
Total N	µg/l	11-2876p	Site # 5	7/7/11 - 7/13/11	7/13/2011	12/07/11	1449	1318	1384	92.6	6.7	0 - 10
Total N	µg/l	11-2969p	Site # 6 F.D.	7/13/11 - 7/20/11	7/20/2011	12/13/11	1129	1127	1128	1.4	0.1	0 - 10
Total N	µg/l	11-2972p	MW 1	7/20/2011	7/20/2011	12/13/11	572	582	577	7.1	1.2	0 - 10
Total N	µg/l	11-3061fp	Site # 3	7/26/2011	7/26/2011	12/13/11	1085	1019	1052	46.7	4.4	0 - 10
Total N	µg/l	11-3233p	Site # 6	7/26/11 - 8/3/11	8/3/2011	12/20/11	1311	1337	1324	18.4	1.4	0 - 10
Total N	µg/l	11-3229fp	Site # 2	7/20/11 - 7/26/11	8/3/2011	12/20/11	1096	1146	1121	35.4	3.2	0 - 10
Total N	µg/l	11-3239p	Site # 4 Sampler Blank	08/03/11	08/03/11	12/20/11	0.001	0.001	0	0.0	0.0	0 - 10
Total N	µg/l	11-3325p	Site # 3	8/3/11 - 8/11/11	08/11/11	12/28/11	1220	1259	1240	27.6	2.2	0 - 10
Total N	µg/l	11-3329fp	Rain	8/3/11 - 8/11/11	08/11/11	12/28/11	215	200	207	9.9	4.8	0 - 10
Total N	µg/l	11-3412p	Rain	8/11/11 - 8/18/11	08/18/11	01/04/12	49	47	48	1.4	2.9	0 - 10
Total N	µg/l	11-3416p	MW 3	08/18/11	08/18/11	01/04/12	1309	1327	1318	12.7	1.0	0 - 10
Total N	µg/l	11-3506fp	Site # 6	8/18/11 - 8/25/11	08/25/11	01/05/12	666	665	665	0.0	0.0	0 - 10
Total N	µg/l	11-3715p	Site # 3 Sampler Blank	09/07/11	09/07/11	01/10/12	0	0	0	0.0	0.0	0 - 10
Total N	µg/l	11-3711fp	Site # 6 F.D.	8/25/11 - 9/7/11	09/07/11	01/10/12	633	672	653	27.6	4.2	0 - 10
Total N	µg/l	11-3810fp	Site # 4	9/7/11 - 9/15/11	09/15/11	01/13/12	573	559	566	9.9	1.7	0 - 10
Total N	µg/l	11-3852p	Site # 6	9/15/11 - 9/20/11	09/20/11	01/13/12	726	692	709	24.0	3.4	0 - 10
Total N	µg/l	11-3857p	MW 3	09/20/11	09/20/11	01/13/12	1457	1470	1464	9.2	0.6	0 - 10
Total N	µg/l	11-3984p	Rain	9/15-9/29/11	09/29/11	01/19/12	147	162	155	10.6	6.9	0 - 10
Total N	µg/l	11-4079p	Site # 6 Sampler Blank	10/05/11	10/05/11	01/23/12	0	0	0	0.0	0.0	0 - 10
Total N	µg/l	11-4078fp	Site # 5 Sampler Blank	10/05/11	10/05/11	01/23/12	0	0	0	0.0	0.0	0 - 10

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Total N	µg/l	11-4160p	Rain F.D.	9/29/11 - 10/12/11	10/12/11	01/24/12	187	192	189	2.8	1.5	0 - 10
Total N	µg/l	11-4242p	MW 6 F.D.	10/20/11	10/20/11	01/27/12	1503	1533	1518	21.2	1.4	0 - 10
Total N	µg/l	11-4244p	MW 8	10/20/11	10/20/11	01/27/12	922	956	939	24.0	2.6	0 - 10
Total N	µg/l	11-4229fp	Site # 3	10/12/11 - 10/20/11	10/20/11	02/01/12	1044	1003	1024	29.0	2.8	0 - 10
Total N	µg/l	11-4315p	Site #5	10/20 - 10/27/11	10/27/11	02/03/12	660	700	680	28.3	4.2	0 - 10
Total N	µg/l	11-4386p	Site #4	10/27/11 - 11/3/11	11/03/11	02/07/12	595	598	596	1.4	0.2	0 - 10
Total N	µg/l	11-4396p	Rain Equipment Blank	11/03/11	11/03/11	02/07/12	0	0	0	0.0	0.0	0 - 10
Total N	µg/l	11-4392fp	Site # 3 Sampler Blank	11/03/11	11/03/11	02/07/12	0	0	0	0.0	0.0	0 - 10
Total N	µg/l	11-4449p	Site #5	11/3/11 - 11/9/11	11/09/12	02/08/12	625	638	632	9.2	1.5	0 - 10
Total N	µg/l	11-4505p	Site #3	11/9/11 - 11/16/11	11/16/11	02/12/12	1400	1439	1420	27.6	1.9	0 - 10
Total N	µg/l	11-4508fp	Site #6	11/9/11 - 11/16/11	11/16/11	02/12/12	845	827	836	12.7	1.5	0 - 10
Total N	µg/l	11-4509fp	Rain	11/3/11 - 11/16/11	11/16/11	02/12/12	534	518	526	11.3	2.2	0 - 10
Total N	µg/l	11-4552p	Site # 4	11/16/11 - 11/21/11	11/21/11	02/16/12	958	974	966	11.3	1.2	0 - 10
Total N	µg/l	11-4555fp	Site # 6 F.D.	11/16/11 - 11/21/11	11/21/11	02/16/12	871	854	863	12.0	1.4	0 - 10
Total N	µg/l	11-4565p	MW 6 F.D.	11/21/11	11/21/11	02/16/12	430	407	419	16.3	3.9	0 - 10
Total N	µg/l	11-4660p	Site # 4 Sampler Blank	12/01/11	12/01/11	02/23/12	0	0	0	0.0	0.0	0 - 10
Total N	µg/l	11-4657fp	Site # 1 Sampler Blank	12/01/11	12/01/11	02/23/12	0	0	0	0.0	0.0	0 - 10
Total N	µg/l	11-4706p	Site # 5	12/1/11 - 12/8/11	12/08/11	02/23/12	541	552	547	7.8	1.4	0 - 10
Total N	µg/l	11-4792fp	Site # 1	12/8/11 - 12/15/11	12/15/11	02/29/12	497	494	495	1.4	0.3	0 - 10
Total N	µg/l	11-4802p	MW 1	12/15/11	12/15/11	02/29/12	536	523	529	8.5	1.6	0 - 10
Total N	µg/l	11-4905p	Site # 4	12/21/11	12/21/11	03/01/12	647	629	638	12.7	2.0	0 - 10
Total N	µg/l	11-4975p	Site # 6	12/30/11	12/30/11	03/13/12	701	702	702	0.7	0.1	0 - 10
Total N	µg/l	12-0022fp	Site # 1	12/30/11 - 1/4/12	01/04/12	03/14/12	455	420	438	24.7	5.7	0 - 10
Total N	µg/l	12-0133p	FCEB	01/16/12	01/16/12	03/14/12	0	0	0	0.0	0.0	0 - 10
Total N	µg/l	12-0138p	MW 8	01/16/12	01/16/12	03/14/12	81	80	81	0.7	0.9	0 - 10
Total N	µg/l	12-0148p	Site # 4 Sampler Blank	01/16/12	01/16/12	03/15/12	0	0	0	0.0	0.0	0 - 10
Total N	µg/l	12-0145fp	Site # 1 Sampler Blank	01/16/12	01/16/12	03/15/12	0	0	0	0.0	0.0	0 - 10
Total N	µg/l	12-0284fp	Site # 1	01/27/12	01/27/12	04/03/12	124	113	118	7.1	6.0	0 - 10
Total N	µg/l	12-0286fp	Site # 6	01/27/12	01/27/12	04/03/12	140	139	140	0.7	0.5	0 - 10
Total N	µg/l	12-0338p	Site # 5 Sampler Blank	02/03/12	02/03/12	04/09/12	0	0	0	0.0	0.0	0 - 10
Total N	µg/l	12-0336fp	Site # 3 Sampler Blank	02/03/12	02/03/12	04/09/12	0	0	0	0.0	0.0	0 - 10
Total N	µg/l	12-0340fp	Rain Equipment Blank	02/03/12	02/03/12	04/09/12	0	0	0	0.0	0.0	0 - 10
Total N	µg/l	12-0407fp	Site # 2	12/30/11 - 2/9/12	02/09/12	04/10/12	690	687	689	1.8	0.3	0 - 10

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Total N	µg/l	12-0493p	MW 1	02/15/12	02/15/12	04/10/12	0	0	0	0.0	0.0	0 - 10
Total N	µg/l	12-0503fp	Site # 1	2/9/12 - 2/15/12	02/15/12	04/17/12	856	864	860	5.7	0.7	0 - 10
Total N	µg/l	12-0507fp	Site # 6	2/9/12 - 2/15/12	02/15/12	04/17/12	1145	1073	1109	50.9	4.6	0 - 10
Total N	µg/l	12-0574p	Site # 4	2/15/12 -2/21/12	02/21/12	04/20/12	599	587	593	8.5	1.4	0 - 10
Total N	µg/l	12-0679p	Site # 4 Sampler Blank	03/01/12	03/01/12	04/22/12	0	0	0	0.0	0.0	0 - 10
Total N	µg/l	12-0676fp	Site # 1 Sampler Blank	03/01/12	03/01/12	04/22/12	0	0	0	0.0	0.0	0 - 10
Total N	µg/l	12-0718fp	Site # 4	3/1/12 - 3/6/12	03/06/12	04/22/12	136	138	137	1.4	1.0	0 - 10
Total N	µg/l	12-0720fp	Site # 6	3/1/12 - 3/6/12	03/06/12	04/22/12	131	141	136	7.1	5.2	0 - 10
Total N	µg/l	12-0821fp	Site # 2	2/9/12 - 3/15/12	03/15/12	04/25/12	482	482	482	0.0	0.0	0 - 10
Total N	µg/l	12-0831p	MW 3	03/15/12	03/15/12	04/25/12	113	113	113	0.0	0.0	0 - 10
Total N	µg/l	12-0987fp	Site # 2	3/15/12 - 3/29/12	03/29/12	04/26/12	422	425	423	1.4	0.3	0 - 10
Total N	µg/l	12-0991fp	Site # 6	3/22/12 - 3/29/12	03/29/12	04/26/12	32	33	32	0.0	0.0	0 - 10
Total N	µg/l	12-1056p	Site # 6 Sampler Blank	04/05/12	04/05/12	04/27/12	0	0	0	0.0	0.0	0 - 10
Total N	µg/l	12-1055fp	Site # 5 Sampler Blank	04/05/12	04/05/12	04/27/12	0	0	0	0.0	0.0	0 - 10
Total N	µg/l	12-1161p	MW 7	04/19/12	04/19/12	04/30/12	314	315	315	0.7	0.2	0 - 10
Total N	µg/l	12-1164p	Site # 5	4/12/12 - 4/19/12	04/19/12	04/30/12	0	0	0	0.0	0.0	0 - 10
Total N	µg/l	12-1179fp	Site # 3	4/12/12 - 4/24/12	04/24/12	05/02/12	0	0	0	0.0	0.0	0 - 10
Total N	µg/l	12-1211fp	Site # 5 F.D.	4/24/12 - 5/1/12	05/02/12	05/15/12	695	724	710	20.5	2.9	0 - 10
Total N	µg/l	12-1241p	Site # 5 Sampler Blank	05/09/12	05/09/12	05/15/12	0	0	0	0.0	0.0	0 - 10
Total N	µg/l	12-1239fp	Site # 3 Sampler Blank	05/09/12	05/09/12	05/15/12	0	0	0	0.0	0.0	0 - 10
Total N	µg/l	12-1243fp	Rain Equipment Blank	05/09/12	05/09/12	05/15/12	0	0	0	0.0	0.0	0 - 10

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Total P	µg/l	11-2049p	Rain	5/12/11 - 5/18/11	05/18/11	10/25/11	76	75	76	0.7	0.9	0 - 6.6
Total P	µg/l	11-2048fp	Site # 5	5/12/11 - 5/18/11	05/18/11	10/25/11	9	10	10	0.4	4.4	0 - 6.6
Total P	µg/l	11-2180fp	Site #5	5/18 - 5/26/11	05/26/11	10/31/11	5	5	5	0.0	0.0	0 - 6.6
Total P	µg/l	11-2190p	MW7	05/26/11	05/26/11	10/31/11	18	18	18	0.0	0.0	0 - 6.6
Total P	µg/l	11-2191p	MW8	05/26/11	05/26/11	10/31/11	30	33	31	1.5	4.7	0 - 6.6
Total P	µg/l	11-2275p	Site # 3 Sampler Blank	06/02/11	06/02/11	11/01/11	0	0	0	0.0	0.0	0 - 6.6
Total P	µg/l	11-2274fp	Site # 2 Sampler Blank	06/02/11	06/02/11	11/01/11	0	0	0	0.0	0.0	0 - 6.6
Total P	µg/l	11-2437p	Site #4	6/8 - 6/15/11	06/15/11	11/01/11	13	13	13	0.0	0.0	0 - 6.6
Total P	µg/l	11-2439fp	Rain	6/8 - 6/15/11	06/15/11	11/01/11	29	29	29	0.0	0.0	0 - 6.6
Total P	µg/l	11-2590p	Site #3	06/23/11	06/23/11	11/04/11	94	101	97	4.3	4.4	0 - 6.6
Total P	µg/l	11-2597p	MW4	06/23/11	06/23/11	11/04/11	146	146	146	0.0	0.0	0 - 6.6
Total P	µg/l	11-2763p	Site # 4 Sampler Blank	07/01/11	07/01/11	11/15/11	0	0	0	0.0	0.0	0 - 6.6
Total P	µg/l	11-2762fp	Site # 3 Sampler Blank	07/01/11	07/01/11	11/15/11	0	0	0	0.0	0.0	0 - 6.6
Total P	µg/l	11-2808fp	Rain	7/1/11 - 7/7/11	07/07/11	11/15/11	30	33	31	1.5	4.7	0 - 6.6
Total P	µg/l	11-2876p	Site # 5	7/7/11 - 7/13/11	07/13/11	12/07/11	15	17	16	0.8	4.9	0 - 6.6
Total P	µg/l	11-2969p	Site # 6 F.D.	7/13/11 - 7/20/11	07/20/11	12/13/11	38	37	37	0.1	0.2	0 - 6.6
Total P	µg/l	11-2972p	MW 1	07/20/11	07/20/11	12/13/11	15	16	15	0.1	0.5	0 - 6.6
Total P	µg/l	11-3061fp	Site # 3	07/26/11	07/26/11	12/13/11	30	30	30	0.0	0.0	0 - 6.6
Total P	µg/l	11-3233p	Site # 6	7/26/11 - 8/3/11	08/03/11	12/20/11	58	59	58	0.1	0.1	0 - 6.6
Total P	µg/l	11-3229fp	Site # 2	7/20/11 - 7/26/11	08/03/11	12/20/11	23	24	23	0.1	0.3	0 - 6.6
Total P	µg/l	11-3239p	Site # 4 Sampler Blank	08/03/11	08/03/11	12/20/11	0	0	0	0.0	0.0	0 - 6.6
Total P	µg/l	11-3325p	Site # 3	8/3/11 - 8/11/11	08/11/11	12/28/11	105	100	102	2.9	2.8	0 - 6.6
Total P	µg/l	11-3329fp	Rain	8/3/11 - 8/11/11	08/11/11	12/28/11	11	10	10	0.1	0.7	0 - 6.6
Total P	µg/l	11-3412p	Rain	8/11/11 - 8/18/11	08/18/11	01/04/12	4	4	4	0.0	0.0	0 - 6.6
Total P	µg/l	11-3416p	MW 3	08/18/11	08/18/11	01/04/12	81	83	82	0.8	0.9	0 - 6.6
Total P	µg/l	11-3506fp	Site # 6	8/18/11 - 8/25/11	08/25/11	01/05/12	0	0	0	0.0	0.0	0 - 6.6
Total P	µg/l	11-3715p	Site # 3 Sampler Blank	09/07/11	09/07/11	01/10/12	0	0	0	0.0	0.0	0 - 6.6
Total P	µg/l	11-3711fp	Site # 6 F.D.	8/25/11 - 9/7/11	09/07/11	01/10/12	21	23	22	0.7	3.2	0 - 6.6
Total P	µg/l	11-3810fp	Site # 4	9/7/11 - 9/15/11	09/15/11	01/13/12	0	0	0	0.0	0.0	0 - 6.6
Total P	µg/l	11-3852p	Site # 6	9/15/11 - 9/20/11	09/20/11	01/13/12	11	10	10	0.4	3.4	0 - 6.6
Total P	µg/l	11-3857p	MW 3	09/20/11	09/20/11	01/13/12	77	77	77	0.0	0.0	0 - 6.6
Total P	µg/l	11-3984p	Rain	9/15-9/29/11	09/29/11	01/19/12	54	54	54	0.0	0.0	0 - 6.6
Total P	µg/l	11-4079p	Site # 6 Sampler Blank	10/05/11	10/05/11	01/23/12	0	0	0	0.0	0.0	0 - 6.6
Total P	µg/l	11-4078fp	Site # 5 Sampler Blank	10/05/11	10/05/11	01/23/12	0	0	0	0.0	0.0	0 - 6.6

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Total P	µg/l	11-4160p	Rain F.D.	9/29/11 - 10/12/11	10/12/11	01/24/12	31	31	31	0.0	0.0	0 - 6.6
Total P	µg/l	11-4242p	MW 6 F.D.	10/20/11	10/20/11	01/27/12	17	16	16	0.0	0.0	0 - 6.6
Total P	µg/l	11-4244p	MW 8	10/20/11	10/20/11	01/27/12	11	10	10	0.4	3.4	0 - 6.6
Total P	µg/l	11-4229fp	Site # 3	10/12/11 - 10/20/11	10/20/11	02/01/12	148	145	146	1.4	1.0	0 - 6.6
Total P	µg/l	11-4315p	Site #5	10/20 - 10/27/11	10/27/11	02/03/12	0	0	0	0.0	0.0	0 - 6.6
Total P	µg/l	11-4386p	Site #4	10/27/11 - 11/3/11	11/03/11	02/07/12	18	20	19	0.7	3.8	0 - 6.6
Total P	µg/l	11-4396p	Rain Equipment Blank	11/03/11	11/03/11	02/07/12	0	0	0	0.0	0.0	0 - 6.6
Total P	µg/l	11-4392fp	Site # 3 Sampler Blank	11/03/11	11/03/11	02/07/12	0	0	0	0.0	0.0	0 - 6.6
Total P	µg/l	11-4449p	Site #5	11/3/11 - 11/9/11	11/09/12	02/08/12	23	21	22	1.1	4.9	0 - 6.6
Total P	µg/l	11-4505p	Site #3	11/9/11 - 11/16/11	11/16/11	02/12/12	153	153	153	0.0	0.0	0 - 6.6
Total P	µg/l	11-4508fp	Site #6	11/9/11 - 11/16/11	11/16/11	02/12/12	30	27	28	1.8	6.3	0 - 6.6
Total P	µg/l	11-4509fp	Rain	11/3/11 - 11/16/11	11/16/11	02/12/12	144	148	146	2.1	1.5	0 - 6.6
Total P	µg/l	11-4552p	Site # 4	11/16/11 - 11/21/11	11/21/11	02/16/12	23	21	22	1.1	4.9	0 - 6.6
Total P	µg/l	11-4555fp	Site # 6 F.D.	11/16/11 - 11/21/11	11/21/11	02/16/12	5	6	5	0.0	0.1	0 - 6.6
Total P	µg/l	11-4565p	MW 6 F.D.	11/21/11	11/21/11	02/16/12	11	11	11	0.0	0.0	0 - 6.6
Total P	µg/l	11-4660p	Site # 4 Sampler Blank	12/01/11	12/01/11	02/23/12	0	0	0	0.0	0.0	0 - 6.6
Total P	µg/l	11-4657fp	Site # 1 Sampler Blank	12/01/11	12/01/11	02/23/12	0	0	0	0.0	0.0	0 - 6.6
Total P	µg/l	11-4706p	Site # 5	12/1/11 - 12/8/11	12/08/11	02/23/12	6	5	5	0.0	0.1	0 - 6.6
Total P	µg/l	11-4792fp	Site # 1	12/8/11 - 12/15/11	12/15/11	02/29/12	50	54	52	2.5	4.8	0 - 6.6
Total P	µg/l	11-4802p	MW 1	12/15/11	12/15/11	02/29/12	0	0	0	0.0	0.0	0 - 6.6
Total P	µg/l	11-4905p	Site # 4	12/21/11	12/21/11	03/01/12	35	34	34	0.0	0.0	0 - 6.6
Total P	µg/l	11-4975p	Site # 6	12/30/11	12/30/11	03/13/12	9	9	9	0.0	0.0	0 - 6.6
Total P	µg/l	12-0022fp	Site # 1	12/30/11 - 1/4/12	01/04/12	03/14/12	31	35	35	2.1	6.2	0 - 6.6
Total P	µg/l	12-0133p	FCEB	01/16/12	01/16/12	03/14/12	0	0	0	0.0	0.0	0 - 6.6
Total P	µg/l	12-0138p	MW 8	01/16/12	01/16/12	03/14/12	0	0	0	0.0	0.0	0 - 6.6
Total P	µg/l	12-0148p	Site # 4 Sampler Blank	01/16/12	01/16/12	03/15/12	0	0	0	0.0	0.0	0 - 6.6
Total P	µg/l	12-0145fp	Site # 1 Sampler Blank	01/16/12	01/16/12	03/15/12	0	0	0	0.0	0.0	0 - 6.6
Total P	µg/l	12-0284fp	Site # 1	01/27/12	01/27/12	04/03/12	4	5	4	0.0	0.2	0 - 6.6
Total P	µg/l	12-0286fp	Site # 6	01/27/12	01/27/12	04/03/12	10	9	9	0.0	0.1	0 - 6.6
Total P	µg/l	12-0338p	Site # 5 Sampler Blank	02/03/12	02/03/12	04/09/12	0	0	0	0.0	0.0	0 - 6.6
Total P	µg/l	12-0336fp	Site # 3 Sampler Blank	02/03/12	02/03/12	04/09/12	0	0	0	0.0	0.0	0 - 6.6

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Total P	µg/l	12-0340fp	Rain Equipment Blank	02/03/12	02/03/12	04/09/12	0	0	0	0.0	0.0	0 - 6.6
Total P	µg/l	12-0407fp	Site # 2	12/30/11 - 2/9/12	02/09/12	04/10/12	12	14	13	0.7	5.5	0 - 6.6
Total P	µg/l	12-0493p	MW 1	02/15/12	02/15/12	04/10/12	1	0	0	0.0	1.4	0 - 6.6
Total P	µg/l	12-0503fp	Site # 1	2/9/12 - 2/15/12	02/15/12	04/17/12	92	92	92	0.0	0.0	0 - 6.6
Total P	µg/l	12-0507fp	Site # 6	2/9/12 - 2/15/12	02/15/12	04/17/12	4	5	4	0.0	0.2	0 - 6.6
Total P	µg/l	12-0574p	Site # 4	2/15/12 -2/21/12	02/21/12	04/20/12	34	38	36	2.1	5.9	0 - 6.6
Total P	µg/l	12-0679p	Site # 4 Sampler Blank	03/01/12	03/01/12	04/22/12	0	0	0	0.0	0.0	0 - 6.6
Total P	µg/l	12-0676fp	Site # 1 Sampler Blank	03/01/12	03/01/12	04/22/12	0	0	0	0.0	0.0	0 - 6.6
Total P	µg/l	12-0718fp	Site # 4	3/1/12 - 3/6/12	03/06/12	04/22/12	17	16	16	0.0	0.0	0 - 6.6
Total P	µg/l	12-0720fp	Site # 6	3/1/12 - 3/6/12	03/06/12	04/22/12	17	17	17	0.0	0.0	0 - 6.6
Total P	µg/l	12-0821fp	Site # 2	2/9/12 - 3/15/12	03/15/12	04/25/12	14	16	15	0.7	4.8	0 - 6.6
Total P	µg/l	12-0831p	MW 3	03/15/12	03/15/12	04/25/12	15	17	16	0.7	4.5	0 - 6.6
Total P	µg/l	12-0987p	Site # 2	3/15/12 - 3/29/12	03/29/12	04/26/12	360	348	354	8.5	2.4	0 - 6.6
Total P	µg/l	12-0991fp	Site # 6	3/22/12 - 3/29/12	03/29/12	04/26/12	21	22	21	0.0	0.0	0 - 6.6
Total P	µg/l	12-1056p	Site # 6 Sampler Blank	04/05/12	04/05/12	04/27/12	0	0	0	0.0	0.0	0 - 6.6
Total P	µg/l	12-1055fp	Site # 5 Sampler Blank	04/05/12	04/05/12	04/27/12	0	0	0	0.0	0.0	0 - 6.6
Total P	µg/l	12-1161p	MW 7	04/19/12	04/19/12	04/30/12	171	171	171	0.0	0.0	0 - 6.6
Total P	µg/l	12-1164p	Site # 5	4/12/12 - 4/19/12	04/19/12	04/30/12	0	0	0	0.0	0.0	0 - 6.6
Total P	µg/l	12-1179fp	Site # 3	4/12/12 - 4/24/12	04/24/12	05/02/12	12	12	12	0.0	0.0	0 - 6.6
Total P	µg/l	12-1211fp	Site # 5 F.D.	4/24/12 - 5/1/12	05/02/12	05/15/12	12	11	11	0.0	0.1	0 - 6.6
Total P	µg/l	12-1241p	Site # 5 Sampler Blank	05/09/12	05/09/12	05/15/12	0	0	0	0.0	0.0	0 - 6.6
Total P	µg/l	12-1239fp	Site # 3 Sampler Blank	05/09/12	05/09/12	05/15/12	0	0	0	0.0	0.0	0 - 6.6
Total P	µg/l	12-1243fp	Rain Equipment Blank	05/09/12	05/09/12	05/15/12	0	0	0	0.0	0.0	0 - 6.6
Total P	µg/l	12-1211FP	Site # 5 F.D.	4/24/12 - 5/1/12	05/02/12	06/12/12	0	0	0	0.0	0.0	0 - 6.6
Total P	µg/l	12-1241P	Site # 5 Sampler Blank	05/09/12	05/09/12	06/12/12	0	0	0	0.0	0.0	0 - 6.6
Total P	µg/l	12-1239FP	Site # 3 Sampler Blank	05/09/12	05/09/12	06/12/12	0	0	0	0.0	0.0	0 - 6.6

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Color	PCU	11-2054F	Site #5 SB	05/18/11	05/18/11	05/27/11	0	0	0	0.0	0.0	0-7
Color	PCU	11-2180F	Site #5	05/18-05/26/11	05/26/11	05/27/11	35	35	35	0.0	0.0	0-7
Color	PCU	11-2191F	MW 8	05/26/11	05/26/11	05/27/11	140	140	140	0.0	0.0	0-7
Color	PCU	11-2278F	Site #6 SB	06/02/11	06/02/11	06/04/11	0	0	0	0.0	0.0	0-7
Color	PCU	11-2352F	Site #5	06/02-06/08/11	06/08/11	06/10/11	34	34	34	0.0	0.0	0-7
Color	PCU	11-2599F	MW 5	06/23/11	06/23/11	06/25/11	255	255	255	0.0	0.0	0-7
Color	PCU	11-2761F	Site #2 SB	07/01/11	07/01/11	07/02/11	0	0	0	0.0	0.0	0-7
Color	PCU	11-2766F	Rain Equip. Blank	07/01/11	07/01/11	07/02/11	0	0	0	0.0	0.0	0-7
Color	PCU	11-2973F	MW 2	07/20/11	07/20/11	07/22/11	281	281	281	0.0	0.0	0-7
Color	PCU	11-3234F	Site #6 F.D.	07/26-08/03/11	08/03/11	08/04/11	59	59	59	0.0	0.0	0-7
Color	PCU	11-3242F	Rain Equip. Blank	08/03/11	08/03/11	08/04/11	0	0	0	0.0	0.0	0-7
Color	PCU	11-3329F	Rain	08/03-08/11/11	08/11/11	08/11/11	11	11	11	0.0	0.0	0-7
Color	PCU	11-3416F	MW 3	08/18/11	08/18/11	08/18/11	743	743	743	0.0	0.0	0-7
Color	PCU	11-3423F	MW 8	08/18/11	08/18/11	08/18/11	132	132	132	0.0	0.0	0-7
Color	PCU	11-3710F	Site #6	08/25-09/07/11	09/07/11	09/08/11	46	45	46	0.7	1.6	0-7
Color	PCU	11-3814F	Rain F.D.	09/07-09/15/11	09/15/11	09/16/11	7	7	7	0.0	0.0	0-7
Color	PCU	11-3854F	PCEB	09/20/11	09/20/11	09/21/11	0	0	0	0.0	0.0	0-7
Color	PCU	11-3864F	MW 8 F.D.	09/20/11	09/20/11	09/21/11	139	139	139	0.0	0.0	0-7
Color	PCU	11-4079F	Site #6 SB	10/05/11	10/05/11	10/07/11	0	0	0	0.0	0.0	0-7
Color	PCU	11-4156F	Site #5	10/05-10/12/11	10/12/11	10/12/11	41	41	41	0.0	0.0	0-7
Color	PCU	11-4160F	Rain F.D.	09/29-10/12/11	10/12/11	10/12/11	15	15	15	0.0	0.0	0-7
Color	PCU	11-4243F	MW 7	10/20/11	10/20/11	10/21/11	481	481	481	0.0	0.0	0-7
Color	PCU	11-4314F	Site #4	10/20-10/27/11	10/27/11	10/28/11	121	121	121	0.0	0.0	0-7
Color	PCU	11-4384F	Site #2	10/20-11/03/11	11/03/11	11/04/11	192	192	192	0.0	0.0	0-7
Color	PCU	11-4394F	Site #5 SB	11/03/11	11/03/11	11/04/11	0	0	0	0.0	0.0	0-7
Color	PCU	11-4450F	Site #6	11/03-11/09/11	11/09/11	11/09/11	133	133	133	0.0	0.0	0-7
Color	PCU	11-4509F	Rain	11/03-11/16/11	11/16/11	11/16/11	6	6	6	0.0	0.0	0-7
Color	PCU	11-4559F	MW2	11/21/11	11/21/11	11/22/11	221	221	221	0.0	0.0	0-7
Color	PCU	11-4567F	MW8	11/21/11	11/21/11	11/22/11	102	102	102	0.0	0.0	0-7
Color	PCU	11-4660F	Site #4 SB	12/01/11	12/01/11	12/02/11	0	0	0	0.0	0.0	0-7
Color	PCU	11-4663F	Rain Equip. Blank	12/01/11	12/01/11	12/02/11	0	0	0	0.0	0.0	0-7
Color	PCU	11-4706F	Site #5	12/01-12/08/11	12/08/11	12/08/11	126	126	126	0.0	0.0	0-7
Color	PCU	11-4707F	Site #6	12/01-12/08/11	12/08/11	12/08/11	123	123	123	0.0	0.0	0-7
Color	PCU	11-4793F	Site #2	11/16-12/15/11	12/15/11	12/15/11	129	125	127	2.8	2.2	0-7
Color	PCU	11-4803F	MW2	12/15/11	12/15/11	12/15/11	243	240	242	2.1	0.9	0-7

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Color	PCU	11-4811F	MW8	12/15/11	12/15/11	12/15/11	87	87	87	0.0	0.0	0-7
Color	PCU	11-4907F	Site #6	12/15-12/21/11	12/21/11	12/21/11	92	92	92	0.0	0.0	0-7
Color	PCU	12-0024F	Site #4	12/30-01/04/12	01/04/12	01/05/12	95	95	95	0.0	0.0	0-7
Color	PCU	12-0026F	Site #6	12/30-01/04/12	01/04/12	01/05/12	82	82	82	0.0	0.0	0-7
Color	PCU	12-0137F	MW7	01/16/12	01/16/12	01/18/12	109	109	109	0.0	0.0	0-7
Color	PCU	12-0147F	Site #3 SB	01/16/12	01/16/12	01/18/12	0	0	0	0.0	0.0	0-7
Color	PCU	12-0286F	Site #6	01/16-01/27/12	01/27/12	01/29/12	69	69	69	0.0	0.0	0-7
Color	PCU	12-0338F	Site #5 SB	02/03/12	02/03/12	02/03/12	0	0	0	0.0	0.0	0-7
Color	PCU	12-0340F	Rain Equip. Blank	02/03/12	02/03/12	02/03/12	0	0	0	0.0	0.0	0-7
Color	PCU	12-0413F	Rain	02/03-02/09/12	02/09/12	02/10/12	11	11	11	0.0	0.0	0-7
Color	PCU	12-0501F	MW7	02/15/12	02/15/12	02/17/12	109	109	109	0.0	0.0	0-7
Color	PCU	12-0507F	Site #6	02/09-02/15/12	02/15/12	02/17/12	62	62	62	0.0	0.0	0-7
Color	PCU	12-0574F	Site #4	02/15-02/21/12	02/21/12	02/23/12	66	66	66	0.0	0.0	0-7
Color	PCU	12-0675F	Site #6 F.D.	02/21-03/01/12	03/01/12	03/01/12	58	58	58	0.0	0.0	0-7
Color	PCU	12-0682F	Rain Equip. Blank	03/01/12	03/01/12	03/01/12	0	0	0	0.0	0.0	0-7
Color	PCU	12-0717F	Site #3	03/01-03/06/12	03/06/12	03/08/12	47	47	47	0.0	0.0	0-7
Color	PCU	12-0829F	MW1	03/15/12	03/15/12	03/16/12	186	186	186	0.0	0.0	0-7
Color	PCU	12-0838F	MW8	03/15/12	03/15/12	03/16/12	122	119	121	2.1	1.8	0-7
Color	PCU	12-0915F	Site #6	03/15-03/22/12	03/22/12	03/23/12	54	54	54	0.0	0.0	0-7
Color	PCU	12-0992F	Rain	03/15-03/29/12	03/29/12	03/30/12	10	9	10	0.7	7.4	0-7
Color	PCU	12-1056F	Site #6 SB	04/05/12	04/05/12	04/06/12	0	0	0	0.0	0.0	0-7
Color	PCU	12-1057F	Rain Equip. Blank	04/05/12	04/05/12	04/06/12	0	0	0	0.0	0.0	0-7
Color	PCU	12-1092F	Site #5	04/05-04/12/12	04/12/12	04/12/12	51	51	51	0.0	0.0	0-7
Color	PCU	12-1160F	MW6 F.D.	04/19/12	04/19/12	04/20/12	113	109	111	2.8	2.5	0-7
Color	PCU	12-1164F	Site #5	04/12-04/19/12	04/19/12	04/20/12	48	48	48	0.0	0.0	0-7
Color	PCU	12-1179F	Site #3	04/12-04/24/12	04/24/12	04/25/12	51	50	51	0.7	1.4	0-7
Color	PCU	12-1183F	Rain	03/29-04/24/12	04/24/12	04/25/12	11	11	11	0.0	0.0	0-7
Color	PCU	12-1209F	Site #4	04/24-05/01/12	05/01/12	05/02/12	42	42	42	0.0	0.0	0-7
Color	PCU	12-1211F	Site #5 F.D.	04/24-05/01/12	05/01/12	05/02/12	47	47	47	0.0	0.0	0-7
Color	PCU	12-1241F	Site #5 SB	05/09/12	05/09/12	05/11/12	0	0	0	0.0	0.0	0-7
Color	PCU	12-1243F	Rain Equip. Blank	05/09/12	05/09/12	05/11/12	0	0	0	0.0	0.0	0-7

F.2 Accuracy

Matrix Spike Recovery Study
for Tropical Farms collected from
May 2011 to May 2012

PARAMETERS	UNITS	SAMPLE ID	SAMPLE DESCRIPTION	DATE COLLECTED	DATE RECEIVED	DATE ANALYZED	INITIAL CONC.	INITIAL VOLUME (ml)	SPIKE CONC.	SPIKE VOLUME ADDED (ml)	Dilution Factor	THEOR. CONC.	ACTUAL CONC.	PERCENT RECOVERY	ACCEPTANCE RANGE
Alkalinity	mg/l	11-2191	MW8	05/26/11	05/26/11	05/31/11	75.6	50	1000	0.5	1	86	85	99%	91-105
Alkalinity	mg/l	11-2352	Site #5	6/2 - 6/8/11	06/08/11	06/11/11	148	50	1000	0.5	1	158	156	99%	91-105
Alkalinity	mg/l	11-2439	Rain	6/8 - 6/15/11	06/15/11	06/16/11	56.2	50	1000	0.5	1	66	65	99%	91-105
Alkalinity	mg/l	11-2603	MW8	06/23/11	06/23/11	06/29/11	67	50	1000	0.5	1	77	76	98%	91-105
Alkalinity	mg/l	11-2970	Rain	7/13 - 7/20/11	07/20/11	07/25/11	4.8	50	1000	0.4	1	13	12	96%	91-105
Alkalinity	mg/l	11-3064	Site #6	7/20 - 7/26/11	07/26/11	08/01/11	190	50	1000	0.4	1	198	198	100%	91-105
Alkalinity	mg/l	11-3242	Rain Blank	08/03/11	08/03/11	08/12/11	0.6	50	1000	0.4	1	9	8	98%	91-105
Alkalinity	mg/l	11-3423	MW8	08/18/11	08/18/11	08/22/11	215	50	1000	0.4	1	223	222	100%	91-105
Alkalinity	mg/l	11-3506	Site #6	8/18 - 8/25/11	08/25/11	08/30/11	150	50	1000	0.4	1	158	158	100%	91-105
Alkalinity	mg/l	11-3813	Rain	9/7 - 9/15/11	09/15/11	09/16/11	7.4	50	1000	0.4	1	15	16	103%	91-105
Alkalinity	mg/l	11-4073	Site #6	9/29 - 10/5/11	10/05/11	10/07/11	179	50	1000	0.6	1	191	190	99%	91-105
Alkalinity	mg/l	11-4154	Site #3	10/5 - 10/12/11	10/12/11	10/17/11	109	50	1000	0.6	1	121	121	100%	91-105
Alkalinity	mg/l	11-4233	Rain	10/12 - 10/20/11	10/20/11	10/24/11	3.2	50	1000	0.6	1	15	16	103%	91-105
Alkalinity	mg/l	11-4313	Site #3	10/20 - 10/27/11	10/27/11	10/31/11	92.2	50	1000	0.6	1	104	104	100%	91-105
Alkalinity	mg/l	11-4395	Site #6 Blank	11/03/11	11/03/11	11/07/11	0.6	50	1000	0.6	1	13	13	103%	91-105
Alkalinity	mg/l	11-4450	Site #6	11/3 - 11/9/11	11/09/11	11/10/11	160	50	1000	0.6	1	172	172	100%	91-105
Alkalinity	mg/l	11-4553	Site #5	11/16 - 11/23/11	11/23/11	11/23/11	134	50	1000	0.6	1	146	147	101%	91-105
Alkalinity	mg/l	11-4663	Rain Blank	12/01/11	12/01/11	12/05/11	0.6	50	1000	0.6	1	13	13	103%	91-105
Alkalinity	mg/l	11-4811	MW8	12/15/11	12/15/11	12/21/11	296	50	1000	0.6	1	308	309	100%	91-105
Alkalinity	mg/l	11-4080	Rain Blank	10/05/11	10/05/11	10/07/11	0.4	50	1000	0.6	1	12	13	105%	91-105
Alkalinity	mg/l	12-0146	Site #2 Blank	01/16/12	01/16/12	01/17/12	0.4	50	1000	0.5	1	10	11	104%	91-105
Alkalinity	mg/l	12-0137	MW7	01/16/12	01/16/12	01/17/12	199	50	1000	0.5	1	209	209	100%	91-105
Alkalinity	mg/l	12-0286	Site #6	1/16 - 1/27/12	01/27/12	01/30/12	143	50	1000	0.5	1	153	154	101%	91-105
Alkalinity	mg/l	12-0413	Rain	2/3 - 2/9/12	02/09/12	02/13/12	3.2	50	1000	0.5	1	13	13	97%	91-105
Alkalinity	mg/l	12-0507	Site #6	2/9 - 2/15/12	02/15/12	02/17/12	139	50	1000	0.5	1	149	148	99%	91-105
Alkalinity	mg/l	12-0720	Site #6	3/1 - 3/6/12	03/06/12	03/07/12	138	50	1000	0.5	1	148	149	101%	91-105
Alkalinity	mg/l	12-0827	Rain	2/9 - 3/15/12	03/15/12	03/19/12	3.6	50	1000	0.5	1	14	13	97%	91-105
Alkalinity	mg/l	12-0838	MW8	03/15/12	03/15/12	03/20/12	248	50	1000	0.5	1	258	259	100%	91-105
Alkalinity	mg/l	12-0992	Rain	3/15 - 3/29/12	03/29/12	04/02/12	6.2	50	1000	0.4	1	14	15	103%	91-105
Alkalinity	mg/l	12-1057	Rain Blank	04/05/12	04/05/12	04/09/12	0.6	50	1000	0.4	1	9	9	102%	91-105
Alkalinity	mg/l	12-1092	Site #5	4/5 - 4/12/12	04/12/12	04/13/12	106	50	1000	0.4	1	114	114	100%	91-105
Alkalinity	mg/l	12-1162	MW8	04/19/12	04/19/12	04/20/12	203	50	1000	0.4	1	211	211	100%	91-105
Alkalinity	mg/l	12-1183	Rain	3/29 - 4/24/12	04/24/12	04/25/12	6.8	50	1000	0.4	1	15	15	104%	91-105
Alkalinity	mg/l	12-1211	Site #5 F.D.	4/24 - 5/1/12	05/01/12	05/03/12	118	50	1000	0.4	1	126	127	101%	91-105
Alkalinity	mg/l	12-1243	Rain	05/09/12	05/09/12	05/10/12	0.6	50	1000	0.4	1	9	9	104%	91-105
Alkalinity	mg/l	12-1261	Rain	5/9 - 5/16/12	05/16/12	05/17/12	6	50	1000	0.4	1	14	15	104%	91-105

Matrix Spike Recovery Study
for Tropical Farms collected from
May 2011 to May 2012

PARAMETERS	UNITS	SAMPLE ID	SAMPLE DESCRIPTION	DATE COLLECTED	DATE RECEIVED	DATE ANALYZED	INITIAL CONC.	INITIAL VOLUME (ml)	SPIKE CONC.	SPIKE VOLUME ADDED (ml)	Dilution Factor	THEOR. CONC.	ACTUAL CONC.	PERCENT RECOVERY	ACCEPTANCE RANGE
Turbidity	NTU	11-2056	Rain Blank	05/18/11	05/18/11	05/19/11	0.1	50	4000	0.5	1	40.1	39.2	98%	87.4 - 110
Turbidity	NTU	11-2279	Rain Blank	06/02/11	06/02/11	06/03/11	0.1	50	4000	0.5	1	40.1	39.4	98%	87.4 - 110
Turbidity	NTU	11-2352	Site #5	6/2 - 6/8/11	06/08/11	06/09/11	1	50	4000	0.5	1	41	40.2	98%	87.4 - 110
Turbidity	NTU	11-2592	Site #3	6/15 - 6/23/11	06/23/11	06/24/11	1.5	50	4000	0.5	1	41.5	39.9	96%	87.4 - 110
Turbidity	NTU	11-2766	Rain Blank	07/01/11	07/01/11	07/03/11	0	50	4000	0.25	1	20	19.3	97%	87.4 - 110
Turbidity	NTU	11-2970	Rain	7/13 - 7/20/11	07/20/11	07/21/11	0.4	50	4000	0.25	1	20.4	19.4	95%	87.4 - 110
Turbidity	NTU	11-3064	Site #6	7/20 - 7/26/11	07/26/11	07/27/11	0.8	50	4000	0.25	1	20.8	19.3	93%	87.4 - 110
Turbidity	NTU	11-3242	Rain Blank	08/03/11	08/03/11	08/04/11	0.1	50	4000	0.25	1	20.1	19.1	95%	87.4 - 110
Turbidity	NTU	11-3412	Rain	8/11 - 8/18/11	08/18/11	08/19/11	1.1	50	4000	0.25	1	21.1	21.3	101%	87.4 - 110
Turbidity	NTU	11-3506	Site #6	8/18 - 8/25/11	08/25/11	08/26/11	2.8	50	4000	0.25	1	22.8	21.9	96%	87.4 - 110
Turbidity	NTU	11-3719	Rain Blank	09/07/11	09/07/11	09/08/11	0.2	50	4000	0.25	1	20.2	19.4	96%	87.4 - 110
Turbidity	NTU	11-3814	Rain F.D.	9/7 - 9/15/11	09/15/11	09/16/11	0.9	50	4000	0.25	1	20.9	19.9	95%	87.4 - 110
Turbidity	NTU	11-3853	Site #6 F.D.	9/15 - 9/20/11	09/20/11	09/22/11	0.4	50	4000	0.25	1	20.4	19.1	94%	87.4 - 110
Turbidity	NTU	11-3984	Rain	9/15 - 9/29/11	09/29/11	09/30/11	0.5	50	4000	0.25	1	20.5	18.9	92%	87.4 - 110
Turbidity	NTU	11-4396	Rain Blank	11/03/11	11/03/11	11/04/11	0.3	50	4000	0.5	1	40.3	40.6	101%	87.4 - 110
Turbidity	NTU	11-4450	Site #6	11/3 - 11/9/11	11/09/11	11/10/11	1.6	50	4000	0.5	1	41.6	43.1	104%	87.4 - 110
Turbidity	NTU	11-4663	Rain Blank	12/01/11	12/01/11	12/01/11	0.2	50	4000	0.5	1	40.2	40.6	101%	87.4 - 110
Turbidity	NTU	11-4707	Site #6	12/1 - 12/8/11	12/08/11	12/09/11	0.6	50	4000	0.5	1	40.6	41.4	102%	87.4 - 110
Turbidity	NTU	11-4907	Site #6	12/15 - 12/21/11	12/21/11	12/22/11	0.9	50	4000	0.5	1	40.9	39.8	97%	87.4 - 110
Turbidity	NTU	12-0026	Site #6	12/30 - 1/4/12	01/04/12	01/05/12	1.2	50	4000	0.125	1	11.2	10.8	96%	87.4 - 110
Turbidity	NTU	12-0286	Site #6	1/16 - 1/27/12	01/27/12	01/28/12	0.5	50	4000	0.125	1	10.5	10.1	96%	87.4 - 110
Turbidity	NTU	12-0340	Rain Blank	02/03/12	02/03/12	02/05/12	0.2	50	4000	0.125	1	10.2	9.7	95%	87.4 - 110
Turbidity	NTU	12-0413	Rain	2/3 - 2/9/12	02/09/12	02/10/12	1.6	50	4000	0.125	1	11.6	11.2	97%	87.4 - 110
Turbidity	NTU	12-0507	Site #6	2/9 - 2/15/12	02/15/12	02/17/12	0.7	50	4000	0.125	1	10.7	10.3	96%	87.4 - 110
Turbidity	NTU	12-0827	Rain	2/9 - 3/15/12	03/15/12	03/16/12	0.9	50	4000	0.125	1	10.9	11.6	106%	87.4 - 110
Turbidity	NTU	12-0915	Site #6	3/15 - 3/22/12	03/22/12	03/23/12	1.1	50	4000	0.125	1	11.1	11.2	101%	87.4 - 110
Turbidity	NTU	12-0992	Rain	3/15 - 3/29/12	03/29/12	03/30/12	2	50	4000	0.125	1	12	10.9	91%	87.4 - 110
Turbidity	NTU	12-1057	Rain Blank	04/05/12	04/05/12	04/06/12	0.2	50	4000	0.25	1	20.2	19.8	98%	87.4 - 110
Turbidity	NTU	12-1092	Site #5	4/5 - 4/12/12	04/12/12	04/13/12	1.7	50	4000	0.25	1	21.7	21.0	97%	87.4 - 110
Turbidity	NTU	12-1164	Site #5	4/12 - 4/19/12	04/19/12	04/20/12	1.9	50	4000	0.25	1	21.9	21.3	97%	87.4 - 110
Turbidity	NTU	12-1183	Rain	3/29 - 4/24/12	04/24/12	04/24/12	2.5	50	4000	0.25	1	22.5	20.0	89%	87.4 - 110
Turbidity	NTU	12-1211	Site 5F.D.	4/24 - 5/1/12	05/01/12	05/02/12	1.5	50	4000	0.25	1	21.5	20.2	94%	87.4 - 110

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PARAMETERS	UNITS	SAMPLE ID	SAMPLE DESCRIPTION	DATE COLLECTED	DATE RECEIVED	DATE ANALYZED	INITIAL CONC.	INITIAL VOLUME (ml)	SPIKE CONC.	SPIKE VOLUME ADDED (ml)	Dilution Factor	THEOR. CONC.	ACTUAL CONC.	PERCENT RECOVERY	ACCEPTANCE RANGE
BOD	mg/l	11-2055	ropical Farms Site #6 SE	05/18/11	05/18/11	05/30/11	6	300	9900	6.0	1	204	175	86%	85-115
BOD	mg/l	11-2186	FCEB	05/26/11	05/26/11	05/30/11	7	300	9900	6.0	1	204.5	180	88%	85-115
BOD	mg/l	11-2278	ropical Farms Site #6 SE	06/02/11	06/02/11	06/07/11	4	300	9900	6.0	1	201.5	169	84%	85-115
BOD	mg/l	11-2279	Rain Equip. Blank	06/02/11	06/02/11	06/07/11	4	300	9900	6.0	1	201.5	173	86%	85-115
BOD	mg/l	11-2603	MW8	06/23/11	06/23/11	06/25/11	71	300	9900	6.0	1	268.5	240	89%	85-115
BOD	mg/l	11-2766	Rain Equip. Blank	07/01/11	07/01/11	07/03/11	6	300	9900	6.0	1	203.5	174	85%	85-115
BOD	mg/l	11-2808	Rain	07/01-07/07/11	07/07/11	07/08/11	16	300	9900	6.0	1	213.5	191	89%	85-115
BOD	mg/l	11-2877	Rain	07/01-07/13/11	07/13/11	07/14/11	26	300	9900	6.0	1	224	194	87%	85-115
BOD	mg/l	11-2970	Rain	07/13-07/20/11	07/20/11	07/22/11	15	300	9900	6.0	1	212.5	195	92%	85-115
BOD	mg/l	11-2981	MW8	07/20/11	07/20/11	07/22/11	12	300	9900	6.0	1	209.5	201	96%	85-115
BOD	mg/l	11-3064	Site #6	07/20-07/26/11	07/26/11	07/28/11	37	300	9900	6.0	1	234.5	205	87%	85-115
BOD	mg/l	11-3242	Rain Equip. Blank	08/03/11	08/03/11	08/04/11	2	300	9900	6.0	1	200	174	87%	85-115
BOD	mg/l	11-3329	Rain	08/03-08/11/11	08/11/11	08/12/11	11	300	9900	6.0	1	209	179	86%	85-115
BOD	mg/l	11-3423	MW8	08/18/11	08/18/11	08/20/11	52	300	9900	6.0	1	249.5	225	90%	85-115
BOD	mg/l	11-3506	Site #6	08/18-08/25/11	08/25/11	08/26/11	19	300	9900	6.0	1	217	208	96%	85-115
BOD	mg/l	11-3719	Rain Equip. Blank	09/07/11	09/07/11	09/09/11	7	300	9900	6.0	1	205	180	88%	85-115
BOD	mg/l	11-3814	Rain F.D.	09/07-09/15/11	09/15/11	09/16/11	38	300	9900	6.0	1	235.5	209	89%	85-115
BOD	mg/l	11-3864	MW8 F.D.	09/20/11	09/20/11	09/22/11	21	300	9900	6.0	1	218.5	209	95%	85-115
BOD	mg/l	11-3984	Rain	09/15-09/29/11	09/29/11	09/30/11	11	300	9900	6.0	1	208.5	181	87%	85-115
BOD	mg/l	11-4080	Rain Equip. Blank	10/05/11	10/05/11	10/07/11	7	300	9900	6.0	1	205	189	92%	85-115
BOD	mg/l	11-4160	Rain F.D.	09/29-10/12/11	10/12/11	10/14/11	21	300	9900	6.0	1	218.5	221	101%	85-115
BOD	mg/l	11-4244	MW8	10/20/11	10/20/11	10/21/11	47	300	9900	6.0	1	245	241	98%	85-115
BOD	mg/l	11-4317	ropical Farms Site #6 F.D	10/20-10/27/11	10/27/11	10/29/11	22	300	9900	6.0	1	220	190	86%	85-115
BOD	mg/l	11-4396	Rain Equip. Blank	11/03/11	11/03/11	11/04/11	3	300	9900	6.0	1	201	187	93%	85-115
BOD	mg/l	11-4450	Site #6	11/03-11/09/11	11/09/11	11/11/11	27	300	9900	6.0	1	225	206	92%	85-115
BOD	mg/l	11-4567	MW8	11/21/11	11/21/11	11/22/11	16	300	9900	6.0	1	214	192	90%	85-115
BOD	mg/l	11-4663	Rain Equip. Blank	12/01/11	12/01/11	12/02/11	4	300	9900	6.0	1	202	176	87%	85-115
BOD	mg/l	11-4707	Site #6	12/01-12/08/11	12/08/11	12/10/11	17	300	9900	6.0	1	214.5	186	87%	85-115
BOD	mg/l	11-4811	MW8	12/15/11	12/15/11	12/17/11	10	300	9900	6.0	1	208	181	87%	85-115

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PARAMETERS	UNITS	SAMPLE ID	SAMPLE DESCRIPTION	DATE COLLECTED	DATE RECEIVED	DATE ANALYZED	INITIAL CONC.	INITIAL VOLUME (ml)	SPIKE CONC.	SPIKE VOLUME ADDED (ml)	Dilution Factor	THEOR. CONC.	ACTUAL CONC.	PERCENT RECOVERY	ACCEPTANCE RANGE
BOD	mg/l	11-4907	Site #6	12/15-12/21/11	12/21/11	12/23/11	18	300	9900	6.0	1	216	227	105%	85-115
BOD	mg/l	11-4975	Site #6	12/21-12/30/11	12/30/11	12/30/11	35	300	9900	6.0	1	233	204	88%	85-115
BOD	mg/l	12-026	Site #6	12/30-01/04/12	01/04/12	01/06/12	22	300	9900	6.0	1	220	244	111%	85-115
BOD	mg/l	12-151	Rain Equip. Blank	01/16/12	01/16/12	01/18/12	6	300	9900	6.0	1	204	189	92%	85-115
BOD	mg/l	12-286	Site #6	01/16-01/27/12	01/27/12	01/29/12	37	300	9900	6.0	1	234.5	209	89%	85-115
BOD	mg/l	12-340	Rain Equip. Blank	2/3/12	2/3/12	2/3/12	7	300	9900	6.0	1	204.5	176	86%	85-115
BOD	mg/l	12-413	Rain	02/03-02/09/12	02/09/12	02/10/12	70	300	9900	6.0	1	267.5	263	98%	85-115
BOD	mg/l	12-507	Site #6	02/09-02/15/12	02/15/12	02/17/12	29.5	300	9900	6.0	1	227.5	239	105%	85-115
BOD	mg/l	12-576	Site #6	02/15-02/21/12	02/21/12	02/23/12	23	300	9900	6.0	1	221	211	95%	85-115
BOD	mg/l	12-682	Rain Equip. Blank	03/01/12	03/01/12	03/03/12	8	300	9900	6.0	1	205.5	177	86%	85-115
BOD	mg/l	12-838	MW8	03/15/12	03/15/12	03/17/12	12	300	9900	6.0	1	210	185	88%	85-115
BOD	mg/l	12-915	Site #6	03/15-03/22/12	03/22/12	03/24/12	22	300	9900	6.0	1	220	217	98%	85-115
BOD	mg/l	12-992	Rain	03/15-03/29/12	03/29/12	03/31/12	15	300	9900	6.0	1	212.5	197	93%	85-115
BOD	mg/l	12-1057	Rain Equip. Blank	04/05/12	04/05/12	04/06/12	6	300	9900	6.0	1	204	177	87%	85-115
BOD	mg/l	12-1092	Site #5	04/05-04/12/12	04/12/12	04/12/12	106	300	9900	6.0	1	303.5	320	105%	85-115
BOD	mg/l	12-1164	Site #5	04/12-04/19/12	04/19/12	04/21/12	132	300	9900	6.0	1	329.5	336	102%	85-115
BOD	mg/l	12-1183	Rain	03/29-04/24/12	04/24/12	04/26/12	35	300	9900	6.0	1	233	214	92%	85-115
BOD	mg/l	12-1211	Site #5 F.D.	04/24-05/01/12	05/01/12	05/02/12	98.5	300	9900	6.0	1	296.5	314	106%	85-115
BOD	mg/l	12-1243	Rain Equip. Blank	05/09/12	05/09/12	05/11/12	3	300	9900	6.0	1	201	191	95%	85-115
BOD	mg/l	12-1260	Site #3	05/09-05/16/12	05/16/12	05/18/12	37	300	9900	6.0	1	235	253	107%	85-115

Matrix Spike Recovery Study
for Tropical Farms collected from
May 2011 to May 2012

PARAMETERS	UNITS	SAMPLE ID	SAMPLE DESCRIPTION	DATE COLLECTED	DATE RECEIVED	DATE ANALYZED	INITIAL CONC.	INITIAL VOLUME (ml)	SPIKE CONC.	SPIKE VOLUME ADDED (ml)	Dilution Factor	THEOR. CONC.	ACTUAL CONC.	PERCENT RECOVERY	ACCEPTANCE RANGE
SRP	µg/l	11-2277F	Site # 5 Sampler Blank	06/02/11	06/02/11	06/07/11	1	10	20000	0.050	1	101	103	102%	90-110
SRP	µg/l	11-2765F	Site # 6 Sampler Blank	07/01/11	07/01/11	07/05/11	2	10	20000	0.060	1	122	127	104%	90-110
SRP	µg/l	11-2765F	Site # 6 Sampler Blank	07/01/11	07/01/11	07/05/11	5	10	20000	0.050	1	105	114	109%	90-110
SRP	µg/l	11-2808F	Rain	7/1/11 - 7/7/11	07/07/11	07/11/11	29	10	10000	0.250	1	279	285	102%	90-110
SRP	µg/l	11-2877F	Rain	7/7/11 - 7/13/11	07/13/11	07/15/11	0	10	10000	0.250	1	250	268	107%	90-110
SRP	µg/l	11-2979F	MW 6 F.D.	07/20/11	07/20/11	07/25/11	5	10	10000	0.250	1	255	252	99%	90-110
SRP	µg/l	11-3238F	Site # 3 Sampler Blank	08/03/11	08/03/11	08/18/11	-3	10	10000	0.250	1	247	262	106%	90-110
SRP	µg/l	11-3409F	Site # 4	8/11/11 - 8/18/11	08/18/11	08/23/11	1	10	10000	0.250	1	251	262	104%	90-110
SRP	µg/l	11-3719F	Rain Equipment Blank	09/07/11	09/07/11	09/09/11	0	10	10000	0.250	1	250	248	99%	90-110
SRP	µg/l	11-3812F	Site # 6	9/7/11 - 9/15/11	09/15/11	09/19/11	17	10	10000	0.250	1	267	261	98%	90-110
SRP	µg/l	11-3858F	MW 4	09/20/11	09/20/11	09/22/11	83	10	10000	0.250	1	333	311	93%	90-110
SRP	µg/l	11-4241F	MW 6	10/20/11	10/20/11	10/25/11	12	10	10000	0.150	1	162	102	63%	90-110
SRP	µg/l	11-4313F	Site #3	10/20 - 10/27/11	10/27/11	10/31/11	123	10	10000	0.150	1	273	283	104%	90-110
SRP	µg/l	11-4394F	Site # 4 Sampler Blank	11/03/11	11/03/11	11/04/11	3	10	10000	0.150	1	153	162	106%	90-110
SRP	µg/l	11-4396F	Rain Equipment Blank	11/03/11	11/03/11	11/04/11	-4	10	10000	0.150	1	146	156	107%	90-110
SRP	µg/l	11-4450F	Site #6	11/3/11 - 11/9/11	11/09/11	11/14/11	9	10	10000	0.150	1	159	174	109%	90-110
SRP	µg/l	11-4562F	FCEB	11/21/11	11/21/11	11/23/11	1	10	10000	0.150	1	151	150	99%	90-110
SRP	µg/l	11-4663F	Rain Equipment Blank	12/01/11	12/01/11	12/02/11	5	10	10000	0.150	1	155	154	99%	90-110
SRP	µg/l	11-4707F	Site # 6	12/1/11 - 12/8/11	12/08/11	12/09/11	9	10	10000	0.150	1	159	162	102%	90-110
SRP	µg/l	11-4806F	FCEB	12/15/11	12/15/11	12/16/11	0	10	10000	0.150	1	150	164	109%	90-110
SRP	µg/l	12-0024F	Site # 4	12/30/11 - 1/4/12	01/04/12	01/06/12	16	10	10000	0.100	1	116	114	98%	90-110
SRP	µg/l	12-0141F	Site # 4	1/4/12 - 1/16/12	01/16/12	01/18/12	2	10	3260	0.200	1	67	64	95%	90-110
SRP	µg/l	12-0286F	Site # 6	01/27/12	01/27/12	01/27/12	4	10	3260	0.200	1	69	66	95%	90-110
SRP	µg/l	12-0338F	Site # 5 Sampler Blank	02/03/12	02/03/12	02/08/12	0	10	10000	0.200	1	200	198	99%	90-110
SRP	µg/l	12-0413F	Rain	2/3/12 - 2/9/12	02/09/12	02/10/12	159	10	10000	0.200	1	359	361	101%	90-110
SRP	µg/l	12-0501F	MW 7	02/15/12	02/15/12	02/18/12	0	10	10000	0.200	1	200	190	95%	90-110
SRP	µg/l	12-0573F	Site # 3	2/15/12 -2/21/12	02/21/12	02/22/12	4	10	10000	0.100	1	104	101	97%	90-110
SRP	µg/l	12-0835F	MW 6	03/15/12	03/15/12	03/16/12	11	10	10000	0.200	1	211	201	95%	90-110
SRP	µg/l	12-1164F	Site # 5	4/12/12 - 4/19/12	04/19/12	04/20/12	0	10	10000	0.100	1	100	98	98%	90-110
SRP	µg/l	12-1159F	MW 6	04/19/12	04/19/12	04/20/12	13	10	10000	0.100	1	113	107	95%	90-110
SRP	µg/l	12-1183F	Rain	3/29/12 - 4/24/12	04/24/12	04/25/12	57	10	10000	0.100	1	157	173	110%	90-110
SRP	µg/l	12-1210F	Site # 5	4/24/12 - 5/1/12	05/02/12	05/02/12	4	10	10000	0.100	1	104	94	90%	90-110
SRP	µg/l	12-1243F	Rain Equipment Blank	05/09/12	05/09/12	05/11/12	0	10	10000	0.100	1	100	99	99%	90-110

Matrix Spike Recovery Study
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PARAMETERS	UNITS	SAMPLE ID	SAMPLE DESCRIPTION	DATE COLLECTED	DATE RECEIVED	DATE ANALYZED	INITIAL CONC.	INITIAL VOLUME (ml)	SPIKE CONC.	SPIKE VOLUME ADDED (ml)	Dilution Factor	THEOR. CONC.	ACTUAL CONC.	PERCENT RECOVERY	ACCEPTANCE RANGE
NOX-N	µg/l	11-2277F	Site # 5 Sampler Blank	06/02/11	06/02/11	06/07/11	0	10	100000	0.100	1	1000	1058	106%	90-110
NOX-N	µg/l	11-2765F	Site # 6 Sampler Blank	07/01/11	07/01/11	07/05/11	2	10	100000	0.100	1	1002	1072	107%	90-110
NOX-N	µg/l	11-2808F	Rain	7/1/11 - 7/7/11	07/07/11	07/11/11	86	10	100000	0.250	1	2586	2601	101%	90-110
NOX-N	µg/l	11-2877F	Rain	7/7/11 - 7/13/11	07/13/11	07/15/11	150	10	100000	0.250	1	2650	2562	97%	90-110
NOX-N	µg/l	11-2979F	MW 6 F.D.	07/20/11	07/20/11	07/25/11	19	10	100000	0.250	1	2519	2551	101%	90-110
NOX-N	µg/l	11-3238F	Site # 3 Sampler Blank	08/03/11	08/03/11	08/18/11	0	10	100000	0.250	1	2500	2571	103%	90-110
NOX-N	µg/l	11-3409F	Site # 4	8/11/11 - 8/18/11	08/18/11	08/23/11	1	10	100000	0.250	1	2501	2645	106%	90-110
NOX-N	µg/l	11-3719F	Rain Equipment Blank	09/07/11	09/07/11	09/09/11	0	10	10000	0.250	1	250	264	106%	90-110
NOX-N	µg/l	11-3812F	Site # 6	9/7/11 - 9/15/11	09/15/11	09/19/11	134	10	10000	0.250	1	384	387	101%	90-110
NOX-N	µg/l	11-3858F	MW 4	09/20/11	09/20/11	09/22/11	4	10	10000	0.250	1	254	260	102%	90-110
NOX-N	µg/l	11-4241F	MW 6	10/20/11	10/20/11	10/25/11	0	10	10000	1.000	1	1000	1043	104%	90-110
NOX-N	µg/l	11-4313F	Site #3	10/20 - 10/27/11	10/27/11	10/31/11	412	10	10000	0.150	1	562	560	100%	90-110
NOX-N	µg/l	11-4394F	Site # 4 Sampler Blank	11/03/11	11/03/11	11/04/11	22	10	10000	0.150	1	172	162	94%	90-110
NOX-N	µg/l	11-4396F	Rain Equipment Blank	11/03/11	11/03/11	11/04/11	0	10	10000	0.150	1	150	158	105%	90-110
NOX-N	µg/l	11-4450F	Site #6	11/3/11 - 11/9/11	11/09/11	11/11/11	47	10	10000	0.150	1	197	189	96%	90-110
NOX-N	µg/l	11-4562F	FCEB	11/21/11	11/21/11	11/23/11	0	10	10000	0.150	1	150	161	107%	90-110
NOX-N	µg/l	11-4707F	Site # 6	12/1/11 - 12/8/11	12/08/11	12/09/11	33	10	10000	0.150	1	183	199	109%	90-110
NOX-N	µg/l	11-4806F	FCEB	12/15/11	12/15/11	12/16/11	0	10	10000	0.150	1	150	143	95%	90-110
NOX-N	µg/l	12-0024F	Site # 4	12/30/11 - 1/4/12	01/04/12	01/06/12	2	10	10000	0.150	1	152	150	99%	90-110
NOX-N	µg/l	12-0141F	Site # 4	1/4/12 - 1/16/12	01/16/12	01/18/12	4	10	10000	0.200	1	204	208	102%	90-110
NOX-N	µg/l	12-0286F	Site # 6	01/27/12	01/27/12	01/27/12	35	10	10000	0.200	1	235	234	100%	90-110
NOX-N	µg/l	12-0338F	Site # 5 Sampler Blank	02/03/12	02/03/12	02/08/12	0	10	10000	0.200	1	200	192	96%	90-110
NOX-N	µg/l	12-0413F	Rain	2/3/12 - 2/9/12	02/09/12	02/10/12	115	10	10000	0.200	1	315	314	100%	90-110
NOX-N	µg/l	12-0501F	MW 7	02/15/12	02/15/12	02/18/12	24	10	10000	0.200	1	224	237	106%	90-110
NOX-N	µg/l	12-0573F	Site # 3	2/15/12 -2/21/12	02/21/12	02/22/12	46	10	10000	0.200	1	246	251	102%	90-110
NOX-N	µg/l	12-0835F	MW 6	03/15/12	03/15/12	03/16/12	7	10	10000	0.200	1	207	208	100%	90-110
NOX-N	µg/l	12-1164F	Site # 5	4/12/12 - 4/19/12	04/19/12	04/20/12	2	10	10000	0.100	1	102	96	94%	90-110
NOX-N	µg/l	12-1159F	MW 6	04/19/12	04/19/12	04/20/12	1	10	10000	0.100	1	101	97	96%	90-110
NOX-N	µg/l	12-1183F	Rain	3/29/12 - 4/24/12	04/24/12	04/25/12	307	10	10000	0.100	1	407	397	98%	90-110
NOX-N	µg/l	12-1210F	Site # 5	4/24/12 - 5/1/12	05/02/12	05/02/12	3	10	10000	0.100	1	103	100	97%	90-110

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Total N	µg/l	11-2048fp	Site # 5	5/12/11 - 5/18/11	05/18/11	10/25/11	863	5	10000	0.150	1	1163	1091	107%	90-110
Total N	µg/l	11-2190p	MW7	05/26/11	05/26/11	10/31/11	175	5	10000	0.150	1	475	442	107%	90-110
Total N	µg/l	11-2191p	MW8	05/26/11	05/26/11	10/31/11	174	5	10000	0.150	1	474	444	107%	90-110
Total N	µg/l	11-2275p	Site # 3 Sampler Blank	06/02/11	06/02/11	11/01/11	0	5	10000	0.150	1	300	313	96%	90-110
Total N	µg/l	11-2437fp	Site #4	6/8 - 6/15/11	06/15/11	11/01/11	1077	5	10000	0.150	1	1377	1274	108%	90-110
Total N	µg/l	11-2439fp	Rain	6/8 - 6/15/11	06/15/11	11/01/11	574	5	10000	0.150	1	874	895	98%	90-110
Total N	µg/l	11-2590p	Site #3	06/23/11	06/23/11	11/04/11	943	5	10000	0.150	1	1243	1272	98%	90-110
Total N	µg/l	11-2762fp	Site # 3 Sampler Blank	07/01/11	07/01/11	11/15/11	0	5	10000	0.150	1	300	320.5	94%	90-110
Total N	µg/l	11-2808fp	Rain	7/1/11 - 7/7/11	07/07/11	11/15/11	350	5	10000	0.150	1	650	618	105%	90-110
Total N	µg/l	11-2969p	Site # 6 F.D.	7/13/11 - 7/20/11	07/20/11	12/13/11	1129	5	10000	0.150	1	1429	1482	96%	90-110
Total N	µg/l	11-3061fp	Site # 3	07/26/11	07/26/11	12/13/11	1085	5	10000	0.150	1	1385	1382	100%	90-110
Total N	µg/l	11-3229fp	Site # 2	7/20/11 - 7/26/11	08/03/11	12/20/11	1096	5	10000	0.150	1	1396	1422	98%	90-110
Total N	µg/l	11-3412p	Rain	8/11/11 - 8/18/11	08/18/11	01/04/12	49	5	10000	0.150	1	349	379	92%	90-110
Total N	µg/l	11-3506fp	Site # 6	8/18/11 - 8/25/11	08/25/11	01/05/12	666	5	10000	0.150	1	966	958	101%	90-110
Total N	µg/l	11-3715p	Site # 3 Sampler Blank	09/07/11	09/07/11	01/10/12	0	5	10000	0.150	1	300	308	97%	90-110
Total N	µg/l	11-3857p	MW 3	09/20/11	09/20/11	01/13/12	1457	5	10000	0.200	1	1857	1824	98%	90-110
Total N	µg/l	11-3984p	Rain	9/15-9/29/11	09/29/11	01/19/12	147	5	10000	0.200	1	547	526	96%	90-110
Total N	µg/l	11-4078fp	Site # 5 Sampler Blank	10/05/11	10/05/11	01/23/12	0	5	10000	0.200	1	400	401	100%	90-110
Total N	µg/l	11-4242p	MW 6 F.D.	10/20/11	10/20/11	01/27/12	1503	5	10000	0.200	1	1903	1938	102%	90-110
Total N	µg/l	11-4244p	MW 8	10/20/11	10/20/11	01/27/12	922	5	10000	0.200	1	1322	1324	100%	90-110
Total N	µg/l	11-4396p	Rain Equipment Blank	11/03/11	11/03/11	02/07/12	0	5	10000	0.200	1	400	415	104%	90-110
Total N	µg/l	11-4449p	Site #5	11/3/11 - 11/9/11	11/09/12	02/08/12	625	5	10000	0.200	1	1025	1035	101%	90-110
Total N	µg/l	11-4508fp	Site #6	11/9/11 - 11/16/11	11/16/11	02/12/12	845	5	10000	0.200	1	1245	1293	104%	90-110
Total N	µg/l	11-4509fp	Rain	11/3/11 - 11/16/11	11/16/11	02/12/12	534	5	10000	0.200	1	934	914	98%	90-110
Total N	µg/l	11-4552p	Site # 4	1/16/11 - 11/21/1	11/21/11	02/16/12	958	5	10000	0.200	1	1358	1361	100%	90-110
Total N	µg/l	11-4565p	MW 6 F.D.	11/21/11	11/21/11	02/16/12	430	5	10000	0.200	1	830	802	97%	90-110
Total N	µg/l	11-4657fp	Site # 1 Sampler Blank	12/01/11	12/01/11	02/23/12	0	5	10000	0.200	1	400	406	101%	90-110
Total N	µg/l	11-4802p	MW 1	12/15/11	12/15/11	02/29/12	536	5	10000	0.200	1	936	947	101%	90-110
Total N	µg/l	11-4975p	Site # 6	12/30/11	12/30/11	03/13/12	701	5	10000	0.200	1	1101	1145	104%	90-110

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Total N	µg/l	12-0022fp	Site # 1	12/30/11 - 1/4/12	01/04/12	03/14/12	455	5	10000	0.200	1	855	899	105%	90-110
Total N	µg/l	12-0133p	FCEB	01/16/12	01/16/12	03/14/12	0	5	10000	0.200	1	400	400	100%	90-110
Total N	µg/l	12-0138p	MW 8	01/16/12	01/16/12	03/14/12	81	5	10000	0.200	1	481	473	98%	90-110
Total N	µg/l	12-0145fp	Site # 1 Sampler Blank	01/16/12	01/16/12	03/15/12	0	5	10000	0.200	1	400	403	101%	90-110
Total N	µg/l	12-0284fp	Site # 1	01/27/12	01/27/12	04/03/12	123.5	5	10000	0.200	1	524	531	101%	90-110
Total N	µg/l	12-0286fp	Site # 6	01/27/12	01/27/12	04/03/12	140	5	10000	0.200	1	540	535	99%	90-110
Total N	µg/l	12-0336fp	Site # 3 Sampler Blank	02/03/12	02/03/12	04/09/12	0	5	10000	0.100	1	200	199	99%	90-110
Total N	µg/l	12-0340fp	Rain Equipment Blank	02/03/12	02/03/12	04/09/12	0	5	10000	0.100	1	200	187	94%	90-110
Total N	µg/l	12-0407fp	Site # 2	12/30/11 - 2/9/12	02/09/12	04/10/12	690	5	10000	0.100	1	890	875	98%	90-110
Total N	µg/l	12-0503fp	Site # 1	2/9/12 - 2/15/12	02/15/12	04/17/12	856	5	10000	0.100	1	1056	1073	102%	90-110
Total N	µg/l	12-0507fp	Site # 6	2/9/12 - 2/15/12	02/15/12	04/17/12	1145	5	10000	0.100	1	1345	1413	105%	90-110
Total N	µg/l	12-0676fp	Site # 1 Sampler Blank	03/01/12	03/01/12	04/22/12	0	5	10000	0.125	1	250	247	99%	90-110
Total N	µg/l	12-0718fp	Site # 4	3/1/12 - 3/6/12	03/06/12	04/22/12	136	5	10000	0.100	1	336	346	103%	90-110
Total N	µg/l	12-0720fp	Site # 6	3/1/12 - 3/6/12	03/06/12	04/22/12	131	5	10000	0.10	1	331	351	106%	90-110
Total N	µg/l	12-0831p	MW 3	03/15/12	03/15/12	04/25/12	113	5	10000	0.10	1	313	299	96%	90-110
Total N	µg/l	12-0991fp	Site # 6	3/22/12 - 3/29/12	03/29/12	04/26/12	32	5	10000	0.10	1	232	229	99%	90-110

Matrix Spike Recovery Study
for Tropical Farms collected from
May 2011 to May 2012

PARAMETERS	UNITS	SAMPLE ID	SAMPLE DESCRIPTION	DATE COLLECTED	DATE RECEIVED	DATE ANALYZED	INITIAL CONC.	INITIAL VOLUME (ml)	SPIKE CONC.	SPIKE VOLUME ADDED (ml)	Dilution Factor	THEOR. CONC.	ACTUAL CONC.	PERCENT RECOVERY	ACCEPTANCE RANGE
Total P	µg/l	11-2048fp	Site # 5	5/12/11 - 5/18/11	05/18/11	10/25/11	9	5	10000	0.150	1	309	328	106%	90-110
Total P	µg/l	11-2190p	MW7	05/26/11	05/26/11	10/31/11	18	5	10000	0.150	1	318	301	95%	90-110
Total P	µg/l	11-2191p	MW8	05/26/11	05/26/11	10/31/11	30	5	10000	0.150	1	330	311	94%	90-110
Total P	µg/l	11-2275p	Site # 3 Sampler Blank	06/02/11	06/02/11	11/01/11	0	5	10000	0.150	1	300	294	98%	90-110
Total P	µg/l	11-2437p	Site #4	6/8 - 6/15/11	06/15/11	11/01/11	13	5	10000	0.150	1	313	321	103%	90-110
Total P	µg/l	11-2439fp	Rain	6/8 - 6/15/11	06/15/11	11/01/11	29	5	10000	0.150	1	329	330	100%	90-110
Total P	µg/l	11-2590p	Site #3	06/23/11	06/23/11	11/04/11	94	5	10000	0.150	1	394	418	106%	90-110
Total P	µg/l	11-2762fp	Site # 3 Sampler Blank	07/01/11	07/01/11	11/15/11	0	5	10000	0.150	1	300	308	103%	90-110
Total P	µg/l	11-2808fp	Rain	7/1/11 - 7/7/11	07/07/11	11/15/11	30	5	10000	0.150	1	330	343	104%	90-110
Total P	µg/l	11-2969p	Site # 6 F.D.	7/13/11 - 7/20/11	07/20/11	12/13/11	38	5	10000	0.150	1	338	342	101%	90-110
Total P	µg/l	11-3061fp	Site # 3	07/26/11	07/26/11	12/13/11	30	5	10000	0.150	1	330	323	98%	90-110
Total P	µg/l	11-3229fp	Site # 2	7/20/11 - 7/26/11	08/03/11	12/20/11	23	5	10000	0.150	1	323	331	102%	90-110
Total P	µg/l	11-3329fp	Rain	8/3/11 - 8/11/11	08/11/11	12/28/11	11	5	10000	0.150	1	311	307	99%	90-110
Total P	µg/l	11-3412p	Rain	8/11/11 - 8/18/11	08/18/11	01/04/12	4	5	10000	0.150	1	304	293	96%	90-110
Total P	µg/l	11-3506fp	Site # 6	8/18/11 - 8/25/11	08/25/11	01/05/12	0	5	10000	0.150	1	300	291	97%	90-110
Total P	µg/l	11-3715p	Site # 3 Sampler Blank	09/07/11	09/07/11	01/10/12	0	5	10000	0.150	1	300	288	96%	90-110
Total P	µg/l	11-3857p	MW 3	09/20/11	09/20/11	01/13/12	77	5	10000	0.200	1	477	478	100%	90-110
Total P	µg/l	11-3984p	Rain	9/15-9/29/11	09/29/11	01/19/12	54	5	10000	0.200	1	454	466	103%	90-110
Total P	µg/l	11-4078fp	Site # 5 Sampler Blank	10/05/11	10/05/11	01/23/12	0	5	10000	0.200	1	400	394	98%	90-110
Total P	µg/l	11-4242p	MW 6 F.D.	10/20/11	10/20/11	01/27/12	17	5	10000	0.200	1	417	436	105%	90-110
Total P	µg/l	11-4244p	MW 8	10/20/11	10/20/11	01/27/12	11	5	10000	0.200	1	411	419	102%	90-110
Total P	µg/l	11-4396p	Rain Equipment Blank	11/03/11	11/03/11	02/07/12	0	5	10000	0.200	1	400	412	103%	90-110
Total P	µg/l	11-4449p	Site #5	11/3/11 - 11/9/11	11/09/12	02/08/12	23	5	10000	0.200	1	423	452	107%	90-110
Total P	µg/l	11-4508fp	Site #6	11/9/11 - 11/16/11	11/16/11	02/12/12	30	5	10000	0.200	1	430	419	98%	90-110
Total P	µg/l	11-4509fp	Rain	11/3/11 - 11/16/11	11/16/11	02/12/12	144	5	10000	0.200	1	544	556	102%	90-110
Total P	µg/l	11-4552p	Site # 4	11/16/11 - 11/21/11	11/21/11	02/16/12	23	5	10000	0.20	1	423	452	107%	90-110
Total P	µg/l	11-4565p	MW 6 F.D.	11/21/11	11/21/11	02/16/12	11	5	10000	0.20	1	411	423	103%	90-110
Total P	µg/l	11-4657fp	Site # 1 Sampler Blank	12/01/11	12/01/11	02/23/12	0	5	10000	0.20	1	400	405	101%	90-110
Total P	µg/l	11-4802p	MW 1	12/15/11	12/15/11	02/29/12	0	5	10000	0.20	1	400	413	103%	90-110
Total P	µg/l	11-4975p	Site # 6	12/30/11	12/30/11	03/13/12	9	5	10000	0.200	1	409	392	96%	90-110

Matrix Spike Recovery Study
for Tropical Farms collected from
May 2011 to May 2012

PARAMETERS	UNITS	SAMPLE ID	SAMPLE DESCRIPTION	DATE COLLECTED	DATE RECEIVED	DATE ANALYZED	INITIAL CONC.	INITIAL VOLUME (ml)	SPIKE CONC.	SPIKE VOLUME ADDED (ml)	Dilution Factor	THEOR. CONC.	ACTUAL CONC.	PERCENT RECOVERY	ACCEPTANCE RANGE
Total P	µg/l	12-0022fp	Site # 1	12/30/11 - 1/4/12	01/04/12	03/14/12	31	5	10000	0.200	1	431	425	98%	90-110
Total P	µg/l	12-0133p	FCEB	01/16/12	01/16/12	03/14/12	0	5	10000	0.200	1	400	382	95%	90-110
Total P	µg/l	12-0138p	MW 8	01/16/12	01/16/12	03/14/12	0	5	10000	0.200	1	400	381	95%	90-110
Total P	µg/l	12-0145fp	Site # 1 Sampler Blank	01/16/12	01/16/12	03/15/12	0	5	10000	0.200	1	400	384	96%	90-110
Total P	µg/l	12-0284fp	Site # 1	01/27/12	01/27/12	04/03/12	4	5	10000	0.200	1	404	386	95%	90-110
Total P	µg/l	12-0286fp	Site # 6	01/27/12	01/27/12	04/03/12	10	5	10000	0.200	1	410	397	97%	90-110
Total P	µg/l	12-0336fp	Site # 3 Sampler Blank	02/03/12	02/03/12	04/09/12	0	5	10000	0.075	1	150	153	102%	90-110
Total P	µg/l	12-0340fp	Rain Equipment Blank	02/03/12	02/03/12	04/09/12	0	5	10000	0.075	1	150	151	101%	90-110
Total P	µg/l	12-0407fp	Site # 2	12/30/11 - 2/9/12	02/09/12	04/10/12	12	5	10000	0.100	1	212	220	103%	90-110
Total P	µg/l	12-0503fp	Site # 1	2/9/12 - 2/15/12	02/15/12	04/17/12	92	5	10000	0.100	1	292	316	108%	90-110
Total P	µg/l	12-0507fp	Site # 6	2/9/12 - 2/15/12	02/15/12	04/17/12	4	5	10000	0.10	1	204	213	104%	90-110
Total P	µg/l	12-0676fp	Site # 1 Sampler Blank	03/01/12	03/01/12	04/22/12	0	5	10000	0.10	1	200	190	95%	90-110
Total P	µg/l	12-0718fp	Site # 4	3/1/12 - 3/6/12	03/06/12	04/22/12	17	5	10000	0.10	1	217	205	95%	90-110
Total P	µg/l	12-0720fp	Site # 6	3/1/12 - 3/6/12	03/06/12	04/22/12	17	5	10000	0.10	1	217	203	94%	90-110
Total P	µg/l	12-0831p	MW 3	03/15/12	03/15/12	04/25/12	15	5	10000	0.10	1	215	202	94%	90-110
Total P	µg/l	12-0991fp	Site # 6	3/22/12 - 3/29/12	03/29/12	04/26/12	21	5	10000	0.10	1	221	209	95%	90-110

Matrix Spike Recovery Study
for Tropical Farms collected from
May 2011 to May 2012

PARAMETERS	UNITS	SAMPLE ID	SAMPLE DESCRIPTION	DATE COLLECTED	DATE RECEIVED	DATE ANALYZED	INITIAL CONC.	INITIAL VOLUME (ml)	SPIKE CONC.	SPIKE VOLUME ADDED (ml)	Dilution Factor	THEOR. CONC.	ACTUAL CONC.	PERCENT RECOVERY	ACCEPTANCE RANGE
Ammonia	µg/l	11-2275P	Site # 3 Sampler Blank	06/02/11	06/02/11	06/27/11	0	10	82200	0.100	1	822	896	109%	90-110
Ammonia	µg/l	11-2603P	MW8	06/23/11	06/23/11	06/28/11	652	10	82200	0.100	1	1474	1401	95%	90-110
Ammonia	µg/l	11-2979P	MW 6 F.D.	07/20/11	07/20/11	08/08/11	178	10	82200	0.250	1	2233	2196	98%	90-110
Ammonia	µg/l	11-3413P	PCEB	08/18/11	08/18/11	09/01/11	0	10	82200	0.250	1	2055	2040	99%	90-110
Ammonia	µg/l	11-3862P	MW 7	09/20/11	09/20/11	09/29/11	557	10	82200	0.200	1	2201	2001	91%	90-110
Ammonia	µg/l	11-4079P	Site # 6 Sampler Blank	10/05/11	10/06/11	10/14/11	0	10	82200	0.150	1	1233	1261	102%	90-110
Ammonia	µg/l	11-4233P	Rain	0/12/11 - 10/20/1	10/20/11	11/03/11	90	10	82200	0.125	1	1118	1156	103%	90-110
Ammonia	µg/l	11-4447P	Site #3	11/3/11 - 11/9/11	11/09/11	11/16/11	169	10	82200	0.100	1	991	951	96%	90-110
Ammonia	µg/l	11-4394P	Site # 5 Sampler Blank	11/03/11	11/03/11	11/16/11	0	10	82200	0.150	1	1233	1212	98%	90-110
Ammonia	µg/l	11-4556P	Rain	1/16/11 - 11/21/1	11/21/11	11/29/11	80	10	82200	0.150	1	1313	1359	104%	90-110
Ammonia	µg/l	11-4806P	FCEB	12/15/11	12/15/11	12/20/11	2	10	82200	0.175	1	1441	1392	97%	90-110
Ammonia	µg/l	12-0129P	MW 1	01/16/12	01/16/12	01/18/12	18	10	10000	0.200	1	218	236	108%	90-110
Ammonia	µg/l	12-0149P	Site # 5 Sampler Blank	01/16/12	01/16/12	01/18/12	0	10	10000	0.175	1	175	170	97%	90-110
Ammonia	µg/l	12-0338P	Site # 5 Sampler Blank	02/03/12	02/03/12	02/06/12	0	10	10000	0.250	1	250	237	95%	90-110
Ammonia	µg/l	12-0286P	Site # 6	01/27/12	01/27/12	02/06/12	3	10	10000	0.200	1	203	195	96%	90-110
Ammonia	µg/l	12-0495P	MW 3	02/15/12	02/15/12	02/21/12	0	10	10000	0.175	1	175	172	98%	90-110
Ammonia	µg/l	12-0574P	Site # 4	2/15/12 -2/21/12	02/21/12	02/28/12	0	10	10000	0.175	1	175	159	91%	90-110
Ammonia	µg/l	12-0679P	Site # 4 Sampler Blank	03/01/12	03/01/12	03/05/12	0	10	10000	0.250	1	250	244	98%	90-110
Ammonia	µg/l	12-0835P	MW 6	03/15/12	03/15/12	03/27/12	86	10	10000	0.200	1	286	266	93%	90-110
Ammonia	µg/l	12-1211P	Site # 5 F.D.	4/24/12 - 5/1/12	05/02/12	05/02/12	22	10	10000	0.125	1	147	152	103%	90-110

F.3 Control Standard Recovery

Laboratory Control Standard Recovery
for Tropical Farms collected from
May 2011 to May 2012

Alkalinity	mg/l	LCS	05/20/11	05/20/11	10.4	10.6	102%	91 - 109
Alkalinity	mg/l	LCS	05/31/11	05/31/11	10.4	10.8	104%	91 - 109
Alkalinity	mg/l	LCS	05/31/11	05/31/11	10.4	10.8	104%	91 - 109
Alkalinity	mg/l	LCS	06/06/11	06/06/11	10.6	10.4	98%	91 - 109
Alkalinity	mg/l	LCS	06/11/11	06/11/11	10.4	10.6	102%	91 - 109
Alkalinity	mg/l	LCS	06/16/11	06/16/11	10.4	10.6	102%	91 - 109
Alkalinity	mg/l	LCS	06/29/11	06/29/11	10.6	11.0	104%	91 - 109
Alkalinity	mg/l	LCS	06/29/11	06/29/11	10.6	11.0	104%	91 - 109
Alkalinity	mg/l	LCS	07/11/11	07/11/11	8.6	8.6	100%	91 - 109
Alkalinity	mg/l	LCS	07/15/11	07/15/11	8.4	8.2	98%	91 - 109
Alkalinity	mg/l	LCS	07/25/11	07/25/11	8.4	8.6	102%	91 - 109
Alkalinity	mg/l	LCS	07/26/11	07/26/11	8.6	8.2	96%	91 - 109
Alkalinity	mg/l	LCS	08/01/11	08/01/11	8.4	8.6	102%	91 - 109
Alkalinity	mg/l	LCS	08/12/11	08/12/11	8.6	8.4	98%	91 - 109
Alkalinity	mg/l	LCS	08/12/11	08/12/11	8.4	8.6	102%	91 - 109
Alkalinity	mg/l	LCS	08/22/11	08/22/11	8.6	8.4	98%	91 - 109
Alkalinity	mg/l	LCS	08/30/11	08/30/11	8.6	8.8	102%	91 - 109
Alkalinity	mg/l	LCS	09/09/11	09/09/11	8.6	8.8	102%	91 - 109
Alkalinity	mg/l	LCS	09/16/11	09/16/11	8.6	8.4	98%	91 - 109
Alkalinity	mg/l	LCS	09/22/11	09/22/11	8.6	8.8	102%	91 - 109
Alkalinity	mg/l	LCS	10/03/11	10/03/11	12.6	12.8	102%	91 - 109
Alkalinity	mg/l	LCS	10/07/11	10/07/11	12.6	12.4	98%	91 - 109
Alkalinity	mg/l	LCS	10/17/11	10/17/11	12.6	12.6	100%	91 - 109
Alkalinity	mg/l	LCS	10/24/11	10/24/11	12.6	12.4	98%	91 - 109
Alkalinity	mg/l	LCS	10/27/11	10/27/11	12.6	12.4	98%	91 - 109
Alkalinity	mg/l	LCS	10/31/11	10/31/11	12.6	12.6	100%	91 - 109
Alkalinity	mg/l	LCS	11/07/11	11/07/11	12.6	12.6	100%	91 - 109
Alkalinity	mg/l	LCS	11/07/11	11/07/11	12.4	12.6	102%	91 - 109
Alkalinity	mg/l	LCS	11/10/11	11/10/11	12.6	12.4	98%	91 - 109
Alkalinity	mg/l	LCS	11/22/11	11/22/11	12.4	11.8	96%	91 - 109
Alkalinity	mg/l	LCS	11/22/11	11/22/11	12.6	12.4	98%	91 - 109
Alkalinity	mg/l	LCS	11/28/11	11/28/11	12.6	12.2	97%	91 - 109
Alkalinity	mg/l	LCS	12/05/11	12/05/11	12.4	12.8	103%	91 - 109
Alkalinity	mg/l	LCS	12/05/11	12/05/11	12.6	12.6	100%	91 - 109
Alkalinity	mg/l	LCS	12/12/11	12/12/11	12.6	12.6	100%	91 - 109
Alkalinity	mg/l	LCS	12/19/11	12/19/11	12.6	12.4	98%	91 - 109
Alkalinity	mg/l	LCS	12/21/11	12/21/11	12.6	12.2	97%	91 - 109
Alkalinity	mg/l	LCS	12/21/11	12/21/11	12.6	12.6	100%	91 - 109
Alkalinity	mg/l	LCS	01/10/12	01/10/12	10.4	10.6	102%	91 - 109
Alkalinity	mg/l	LCS	01/17/12	01/17/12	10.6	10.8	102%	91 - 109
Alkalinity	mg/l	LCS	01/30/12	01/30/12	10.4	10.0	96%	91 - 109
Alkalinity	mg/l	LCS	02/07/12	02/07/12	10.4	10.8	104%	91 - 109
Alkalinity	mg/l	LCS	02/13/12	02/13/12	10.6	10.4	98%	91 - 109
Alkalinity	mg/l	LCS	02/17/12	02/17/12	10.6	10.2	96%	91 - 109
Alkalinity	mg/l	LCS	03/05/12	03/05/12	10.6	10.8	102%	91 - 109
Alkalinity	mg/l	LCS	03/07/12	03/07/12	10.4	10.6	102%	91 - 109
Alkalinity	mg/l	LCS	03/19/12	03/19/12	10.6	10.2	96%	91 - 109
Alkalinity	mg/l	LCS	03/20/12	03/20/12	10.4	10.8	104%	91 - 109
Alkalinity	mg/l	LCS	04/02/12	04/02/12	8.4	8.4	100%	91 - 109
Alkalinity	mg/l	LCS	04/06/12	04/06/12	8.6	8.8	102%	91 - 109
Alkalinity	mg/l	LCS	04/13/12	04/13/12	8.6	8.6	100%	91 - 109
Alkalinity	mg/l	LCS	04/20/12	04/20/12	8.6	8.2	95%	91 - 109
Alkalinity	mg/l	LCS	04/25/12	04/25/12	8.4	8.6	102%	91 - 109
Alkalinity	mg/l	LCS	05/03/12	05/03/12	8.6	8.8	102%	91 - 109
Alkalinity	mg/l	LCS	05/10/12	05/10/12	8.4	8.2	98%	91 - 109
Alkalinity	mg/l	LCS	05/17/12	05/17/12	8.4	8.6	102%	91 - 109

Laboratory Control Standard Recovery
for Tropical Farms collected from
May 2011 to May 2012

Turbidity	NTU	LCS	05/19/11	05/19/11	40	39	97%	90-110
Turbidity	NTU	LCS	05/27/11	05/27/11	40	39	98%	90-110
Turbidity	NTU	LCS	06/03/11	06/03/11	40	40	101%	90-110
Turbidity	NTU	LCS	06/09/11	06/09/11	40	39	98%	90-110
Turbidity	NTU	LCS	06/24/11	06/24/11	40	39	97%	90-110
Turbidity	NTU	LCS	07/03/11	07/03/11	20	20	100%	90-110
Turbidity	NTU	LCS	07/08/11	07/08/11	20	19	95%	90-110
Turbidity	NTU	LCS	07/21/11	07/21/11	20	19	93%	90-110
Turbidity	NTU	LCS	07/27/11	07/27/11	20	19	95%	90-110
Turbidity	NTU	LCS	08/04/11	08/04/11	20	20	97%	90-110
Turbidity	NTU	LCS	08/19/11	08/19/11	20	19	95%	90-110
Turbidity	NTU	LCS	08/26/11	08/26/11	20	19	95%	90-110
Turbidity	NTU	LCS	09/08/11	09/08/11	20	19	95%	90-110
Turbidity	NTU	LCS	09/16/11	09/16/11	20	19	96%	90-110
Turbidity	NTU	LCS	09/22/11	09/22/11	20	19	96%	90-110
Turbidity	NTU	LCS	09/30/11	09/30/11	20	20	97%	90-110
Turbidity	NTU	LCS	10/06/11	10/06/11	40	40	99%	90-110
Turbidity	NTU	LCS	10/21/11	10/21/11	40	40	99%	90-110
Turbidity	NTU	LCS	10/28/11	10/28/11	40	40	99%	90-110
Turbidity	NTU	LCS	11/04/11	11/04/11	40	39	97%	90-110
Turbidity	NTU	LCS	11/10/11	11/10/11	40	42	105%	90-110
Turbidity	NTU	LCS	11/18/11	11/18/11	40	38	96%	90-110
Turbidity	NTU	LCS	12/01/11	12/01/11	40	39	96%	90-110
Turbidity	NTU	LCS	12/28/11	12/28/11	40	40	100%	90-110
Turbidity	NTU	LCS	12/09/11	12/09/11	40	39	97%	90-110
Turbidity	NTU	LCS	12/22/11	12/22/11	40	38.8	97%	90-110
Turbidity	NTU	LCS	01/05/12	01/05/12	10	9.5	95%	90-110
Turbidity	NTU	LCS	01/05/12	01/05/12	10.2	9.9	97%	90-110
Turbidity	NTU	LCS	01/18/12	01/18/12	10.3	9.4	91%	90-110
Turbidity	NTU	LCS	01/28/12	01/28/12	10.2	9.6	94%	90-110
Turbidity	NTU	LCS	02/05/12	02/05/12	10.2	9.5	93%	90-110
Turbidity	NTU	LCS	02/10/12	02/10/12	10.3	9.6	93%	90-110
Turbidity	NTU	LCS	02/17/12	02/17/12	10.3	9.7	94%	90-110
Turbidity	NTU	LCS	03/02/12	03/02/12	10.2	10.2	100%	90-110
Turbidity	NTU	LCS	03/08/12	03/08/12	10.2	9.4	92%	90-110
Turbidity	NTU	LCS	03/16/12	03/16/12	10.3	9.5	92%	90-110
Turbidity	NTU	LCS	03/23/12	03/23/12	10.2	9.4	92%	90-110
Turbidity	NTU	LCS	03/30/12	03/30/12	10.2	9.5	93%	90-110
Turbidity	NTU	LCS	04/06/12	04/06/12	20.1	19.1	95%	90-110
Turbidity	NTU	LCS	04/13/12	04/13/12	20.1	19.5	97%	90-110
Turbidity	NTU	LCS	04/20/12	04/20/12	20.1	19.3	96%	90-110
Turbidity	NTU	LCS	04/24/12	04/24/12	20.2	19.4	96%	90-110
Turbidity	NTU	LCS	05/02/12	05/02/12	20.3	19.4	96%	90-110
Turbidity	NTU	LCS	05/10/12	05/10/12	20.3	19.9	98%	90-110

Laboratory Control Standard Recovery
for Tropical Farms collected from
May 2011 to May 2012

TSS	mg/l	LCS	05/23/11	05/23/11	58.5	62.2	106%	90-110
TSS	mg/l	LCS	06/01/11	06/01/11	58.5	52.5	90%	90-110
TSS	mg/l	LCS	06/08/11	06/08/11	68.5	62.7	92%	90-110
TSS	mg/l	LCS	06/15/11	06/15/11	68.5	65.1	95%	90-110
TSS	mg/l	LCS	06/23/11	06/23/11	61.1	62.4	102%	90-110
TSS	mg/l	LCS	07/07/11	07/07/11	68.3	63.0	92%	90-110
TSS	mg/l	LCS	07/07/11	07/07/11	70.0	66.0	94%	90-110
TSS	mg/l	LCS	07/25/11	07/25/11	61.6	59.5	97%	90-110
TSS	mg/l	LCS	08/09/11	08/09/11	58.7	62.9	107%	90-110
TSS	mg/l	LCS	08/09/11	08/09/11	65.3	62.3	95%	90-110
TSS	mg/l	LCS	08/22/11	08/22/11	68.7	63.7	93%	90-110
TSS	mg/l	LCS	08/26/11	08/26/11	61.0	64.0	105%	90-110
TSS	mg/l	LCS	09/08/11	09/08/11	57.6	63.3	110%	90-110
TSS	mg/l	LCS	09/08/11	09/08/11	54.4	53.4	98%	90-110
TSS	mg/l	LCS	09/30/11	09/30/11	68.9	69.3	101%	90-110
TSS	mg/l	LCS	10/09/11	10/09/11	55.5	60.4	109%	90-110
TSS	mg/l	LCS	10/09/11	10/09/11	60.3	58.9	98%	90-110
TSS	mg/l	LCS	10/25/11	10/25/11	65.7	60.4	92%	90-110
TSS	mg/l	LCS	11/10/11	11/10/11	60.3	59.1	98%	90-110
TSS	mg/l	LCS	11/10/11	11/10/11	54.5	59.6	109%	90-110
TSS	mg/l	LCS	11/22/11	11/22/11	58.7	61.2	104%	90-110
TSS	mg/l	LCS	11/22/11	11/22/11	53.9	49.3	91%	90-110
TSS	mg/l	LCS	12/04/11	12/04/11	68.7	63.2	92%	90-110
TSS	mg/l	LCS	12/04/11	12/04/11	58.7	64.4	110%	90-110
TSS	mg/l	LCS	12/09/11	12/09/11	68.6	64.8	94%	90-110
TSS	mg/l	LCS	12/21/11	12/21/11	67.6	67.1	99%	90-110
TSS	mg/l	LCS	12/23/11	12/23/11	56.2	61.5	109%	90-110
TSS	mg/l	LCS	01/18/12	01/18/12	59.7	61.8	104%	90-110
TSS	mg/l	LCS	02/01/12	02/01/12	66.0	65.9	100%	90-110
TSS	mg/l	LCS	02/09/12	02/09/12	63.9	56.9	89%	90-110
TSS	mg/l	LCS	02/15/12	02/15/12	59.6	61.5	103%	90-110
TSS	mg/l	LCS	03/02/12	03/02/12	64.0	69.6	109%	90-110
TSS	mg/l	LCS	03/02/12	03/02/12	67.7	66.6	98%	90-110
TSS	mg/l	LCS	03/02/12	03/02/12	59.0	61.9	105%	90-110
TSS	mg/l	LCS	03/20/12	03/20/12	62.5	66.8	107%	90-110
TSS	mg/l	LCS	04/12/12	04/12/12	62.3	61.6	99%	90-110
TSS	mg/l	LCS	04/12/12	04/12/12	62.0	59.7	96%	90-110
TSS	mg/l	LCS	04/26/12	04/26/12	66.8	62.9	94%	90-110
TSS	mg/l	LCS	05/04/12	05/04/12	65.7	63.6	97%	90-110
TSS	mg/l	LCS	05/14/12	05/14/12	54.7	58.5	107%	90-110
TSS	mg/l	LCS	05/14/12	05/14/12	73.5	70.2	96%	90-110

Laboratory Control Standard Recovery
for Tropical Farms collected from
May 2011 to May 2012

BOD	mg/l	LCS	05/30/11	05/30/11	198	181	91%	85-115%
BOD	mg/l	LCS	06/07/11	06/07/11	198	192	97%	85-115%
BOD	mg/l	LCS	06/15/11	06/15/11	198	195	98%	85-115%
BOD	mg/l	LCS	06/25/11	06/25/11	198	194	98%	85-115%
BOD	mg/l	LCS	07/03/11	07/03/11	198	196	99%	85-115%
BOD	mg/l	LCS	07/08/11	07/08/11	198	223	113%	85-115%
BOD	mg/l	LCS	07/14/11	07/14/11	198	216	109%	85-115%
BOD	mg/l	LCS	07/22/11	07/22/11	198	192	97%	85-115%
BOD	mg/l	LCS	07/28/11	07/28/11	198	195	98%	85-115%
BOD	mg/l	LCS	08/04/11	08/04/11	198	200	101%	85-115%
BOD	mg/l	LCS	08/12/11	08/12/11	198	207	105%	85-115%
BOD	mg/l	LCS	08/20/11	08/20/11	198	183	92%	85-115%
BOD	mg/l	LCS	08/26/11	08/26/11	198	189	95%	85-115%
BOD	mg/l	LCS	09/09/11	09/09/11	198	197	99%	85-115%
BOD	mg/l	LCS	09/16/11	09/16/11	198	201	102%	85-115%
BOD	mg/l	LCS	09/22/11	09/22/11	198	191	96%	85-115%
BOD	mg/l	LCS	09/30/11	09/30/11	198	197	99%	85-115%
BOD	mg/l	LCS	10/07/11	10/07/11	198	220	111%	85-115%
BOD	mg/l	LCS	10/14/11	10/14/11	198	200	101%	85-115%
BOD	mg/l	LCS	10/21/11	10/21/11	198	210	106%	85-115%
BOD	mg/l	LCS	10/29/11	10/29/11	198	209	106%	85-115%
BOD	mg/l	LCS	11/04/11	11/04/11	198	216	109%	85-115%
BOD	mg/l	LCS	11/11/11	11/11/11	198	210	106%	85-115%
BOD	mg/l	LCS	11/22/11	11/22/11	198	192	97%	85-115%
BOD	mg/l	LCS	12/02/11	12/02/11	198	219	111%	85-115%
BOD	mg/l	LCS	12/10/11	12/10/11	198	202	102%	85-115%
BOD	mg/l	LCS	12/17/11	12/17/11	198	200	101%	85-115%
BOD	mg/l	LCS	12/23/11	12/23/11	198	197	99%	85-115%
BOD	mg/l	LCS	12/30/11	12/30/11	198	178	90%	85-115%
BOD	mg/l	LCS	01/06/12	01/06/12	198	194	98%	85-115%
BOD	mg/l	LCS	01/18/12	01/18/12	198	210	106%	85-115%
BOD	mg/l	LCS	01/29/12	01/29/12	198	201	102%	85-115%
BOD	mg/l	LCS	02/03/12	02/03/12	198	180	91%	85-115%
BOD	mg/l	LCS	02/10/12	02/10/12	198	186	94%	85-115%
BOD	mg/l	LCS	02/17/12	02/17/12	198	183	92%	85-115%
BOD	mg/l	LCS	02/23/12	02/23/12	198	173	87%	85-115%
BOD	mg/l	LCS	03/03/12	03/03/12	198	173	87%	85-115%
BOD	mg/l	LCS	03/17/12	03/17/12	198	180	91%	85-115%
BOD	mg/l	LCS	03/24/12	03/24/12	198	180	91%	85-115%
BOD	mg/l	LCS	03/31/12	03/31/12	198	198	100%	85-115%
BOD	mg/l	LCS	04/06/12	04/06/12	198	203	103%	85-115%
BOD	mg/l	LCS	04/12/12	04/12/12	198	174	88%	85-115%
BOD	mg/l	LCS	04/21/12	04/21/12	198	179	90%	85-115%
BOD	mg/l	LCS	04/26/12	04/26/12	198	183	92%	85-115%
BOD	mg/l	LCS	05/02/12	05/02/12	198	179	90%	85-115%
BOD	mg/l	LCS	05/11/12	05/11/12	198	217	110%	85-115%
BOD	mg/l	LCS	05/18/12	05/18/12	198	174	88%	85-115%

Laboratory Control Standard Recovery
for Tropical Farms collected from
May 2011 to May 2012

SRP	µg/l	LCS	06/01/11	06/01/11	100	98	98%	90-110
SRP	µg/l	LCS	06/02/11	06/02/11	100	105	105%	90-110
SRP	µg/l	LCS	06/07/11	06/07/11	100	101	101%	90-110
SRP	µg/l	LCS	06/29/11	06/29/11	100	103	103%	90-110
SRP	µg/l	LCS	07/05/11	07/05/11	260	278	107%	90-110
SRP	µg/l	LCS	07/05/11	07/05/11	260	274	105%	90-110
SRP	µg/l	LCS	07/11/11	07/11/11	260	270	104%	90-110
SRP	µg/l	LCS	07/15/11	07/15/11	250	238	95%	90-110
SRP	µg/l	LCS	07/25/11	07/25/11	250	238	95%	90-110
SRP	µg/l	LCS	08/01/11	08/01/11	250	243	97%	90-110
SRP	µg/l	LCS	08/18/11	08/18/11	250	242	97%	90-110
SRP	µg/l	LCS	08/23/11	08/23/11	250	263	105%	90-110
SRP	µg/l	LCS	09/09/11	09/09/11	250	266	106%	90-110
SRP	µg/l	LCS	09/19/11	09/19/11	250	263	105%	90-110
SRP	µg/l	LCS	09/22/11	09/22/11	250	269	108%	90-110
SRP	µg/l	LCS	10/10/11	10/10/11	150	144	96%	90-110
SRP	µg/l	LCS	10/25/11	10/25/11	150	151	101%	90-110
SRP	µg/l	LCS	10/31/11	10/31/11	150	157	105%	90-110
SRP	µg/l	LCS	11/04/11	11/04/11	150	160	107%	90-110
SRP	µg/l	LCS	11/14/11	11/14/11	150	156	104%	90-110
SRP	µg/l	LCS	11/23/11	11/23/11	150	163	109%	90-110
SRP	µg/l	LCS	12/02/11	12/02/11	150	153	102%	90-110
SRP	µg/l	LCS	12/09/11	12/09/11	150	154	103%	90-110
SRP	µg/l	LCS	12/16/11	12/16/11	150	161	107%	90-110
SRP	µg/l	LCS	01/06/12	01/06/12	200	199	100%	90-110
SRP	µg/l	LCS	01/18/12	01/18/12	200	205	103%	90-110
SRP	µg/l	LCS	01/18/12	01/18/12	200	208	104%	90-110
SRP	µg/l	LCS	01/27/12	01/27/12	200	207	104%	90-110
SRP	µg/l	LCS	02/08/12	02/08/12	200	210	105%	90-110
SRP	µg/l	LCS	02/10/12	02/10/12	200	211	106%	90-110
SRP	µg/l	LCS	02/18/12	02/18/12	200	212	106%	90-110
SRP	µg/l	LCS	02/22/12	02/22/12	200	210	105%	90-110
SRP	µg/l	LCS	03/02/12	03/02/12	200	211	106%	90-110
SRP	µg/l	LCS	03/16/12	03/16/12	200	215	108%	90-110
SRP	µg/l	LCS	04/02/12	04/02/12	100	101	101%	90-110
SRP	µg/l	LCS	04/06/12	04/06/12	100	101	101%	90-110
SRP	µg/l	LCS	04/17/12	04/17/12	100	100	100%	90-110
SRP	µg/l	LCS	04/20/12	04/20/12	100	100	100%	90-110
SRP	µg/l	LCS	04/20/12	04/20/12	100	100	100%	90-110
SRP	µg/l	LCS	04/25/12	04/25/12	100	101	101%	90-110
SRP	µg/l	LCS	05/02/12	05/02/12	100	105	105%	90-110
SRP	µg/l	LCS	05/11/12	05/11/12	100	100	100%	90-110

Laboratory Control Standard Recovery

for Tropical Farms collected from

May 2011 to May 2012

NOX-N	µg/l	LCS	06/01/11	06/01/11	1000	978	98%	90-110
NOX-N	µg/l	LCS	06/02/11	06/02/11	1000	995	100%	90-110
NOX-N	µg/l	LCS	06/07/11	06/07/11	1000	1053	105%	90-110
NOX-N	µg/l	LCS	06/29/11	06/29/11	1000	1088	109%	90-110
NOX-N	µg/l	LCS	07/05/11	07/05/11	2500	2547	102%	90-110
NOX-N	µg/l	LCS	07/11/11	07/11/11	2500	2542	102%	90-110
NOX-N	µg/l	LCS	07/15/11	07/15/11	2500	2518	101%	90-110
NOX-N	µg/l	LCS	07/25/11	07/25/11	2500	2577	103%	90-110
NOX-N	µg/l	LCS	08/01/11	08/01/11	2500	2451	98%	90-110
NOX-N	µg/l	LCS	08/18/11	08/18/11	2500	2481	99%	90-110
NOX-N	µg/l	LCS	08/23/11	08/23/11	2500	2430	97%	90-110
NOX-N	µg/l	LCS	09/09/11	09/09/11	2500	2492	100%	90-110
NOX-N	µg/l	LCS	09/19/11	09/19/11	2500	2541	102%	90-110
NOX-N	µg/l	LCS	09/22/11	09/22/11	2500	2479	99%	90-110
NOX-N	µg/l	LCS	10/10/11	10/10/11	150	154	103%	90-110
NOX-N	µg/l	LCS	10/25/11	10/25/11	150	160	107%	90-110
NOX-N	µg/l	LCS	10/31/11	10/31/11	150	149	99%	90-110
NOX-N	µg/l	LCS	11/04/11	11/04/11	150	150	100%	90-110
NOX-N	µg/l	LCS	11/11/11	11/11/11	150	151	101%	90-110
NOX-N	µg/l	LCS	11/23/11	11/23/11	150	157	105%	90-110
NOX-N	µg/l	LCS	12/02/11	12/02/11	150	162	108%	90-110
NOX-N	µg/l	LCS	12/09/11	12/09/11	150	159	106%	90-110
NOX-N	µg/l	LCS	12/16/11	12/16/11	150	157	105%	90-110
NOX-N	µg/l	LCS	01/06/12	01/06/12	200	196	98%	90-110
NOX-N	µg/l	LCS	01/18/12	01/18/12	200	200	100%	90-110
NOX-N	µg/l	LCS	01/27/12	01/27/12	200	200	100%	90-110
NOX-N	µg/l	LCS	02/08/12	02/08/12	200	197	99%	90-110
NOX-N	µg/l	LCS	02/10/12	02/10/12	200	201	101%	90-110
NOX-N	µg/l	LCS	02/18/12	02/18/12	200	200	100%	90-110
NOX-N	µg/l	LCS	02/22/12	02/22/12	200	196	98%	90-110
NOX-N	µg/l	LCS	03/16/12	03/16/12	200	211	106%	90-110
NOX-N	µg/l	LCS	03/16/12	03/16/12	200	194	97%	90-110
NOX-N	µg/l	LCS	04/02/12	04/02/12	100	100	100%	90-110
NOX-N	µg/l	LCS	04/06/12	04/06/12	100	99	99%	90-110
NOX-N	µg/l	LCS	04/17/12	04/17/12	100	100	100%	90-110
NOX-N	µg/l	LCS	04/20/12	04/20/12	100	95	95%	90-110
NOX-N	µg/l	LCS	04/25/12	04/25/12	100	97	97%	90-110
NOX-N	µg/l	LCS	05/02/12	05/02/12	100	95	95%	90-110
NOX-N	µg/l	LCS	05/11/12	05/11/12	100	95	95%	90-110

Laboratory Control Standard Recovery

for Tropical Farms collected from

May 2011 to May 2012

Ammonia	µg/l	LCS	06/24/11	06/24/11	100	103	103%	90-110
Ammonia	µg/l	LCS	06/27/11	06/27/11	100	102	102%	90-110
Ammonia	µg/l	LCS	06/28/11	06/28/11	100	98	98%	90-110
Ammonia	µg/l	LCS	07/13/11	07/13/11	1000	975	98%	90-110
Ammonia	µg/l	LCS	07/29/11	07/29/11	1000	964	96%	90-110
Ammonia	µg/l	LCS	08/08/11	08/08/11	1000	955	96%	90-110
Ammonia	µg/l	LCS	08/31/11	08/31/11	1000	991	99%	90-110
Ammonia	µg/l	LCS	09/01/11	09/01/11	1000	984	98%	90-110
Ammonia	µg/l	LCS	09/01/11	09/01/11	1000	978	98%	90-110
Ammonia	µg/l	LCS	09/20/11	09/20/11	1000	978	98%	90-110
Ammonia	µg/l	LCS	09/29/11	09/29/11	1000	958	96%	90-110
Ammonia	µg/l	LCS	10/14/11	10/14/11	2055	2196	107%	90-110
Ammonia	µg/l	LCS	11/02/11	11/02/11	2055	2146	104%	90-110
Ammonia	µg/l	LCS	11/03/11	11/03/11	2055	2171	106%	90-110
Ammonia	µg/l	LCS	11/16/11	11/16/11	2055	2165	105%	90-110
Ammonia	µg/l	LCS	11/29/11	11/29/11	2055	2124	103%	90-110
Ammonia	µg/l	LCS	11/29/11	11/29/11	2055	2079	101%	90-110
Ammonia	µg/l	LCS	12/08/11	12/08/11	2055	2076	101%	90-110
Ammonia	µg/l	LCS	12/20/11	12/20/11	2055	2076	101%	90-110
Ammonia	µg/l	LCS	01/17/12	01/17/12	200	216	108%	90-110
Ammonia	µg/l	LCS	01/18/12	01/18/12	200	220	110%	90-110
Ammonia	µg/l	LCS	02/06/12	02/06/12	200	216	108%	90-110
Ammonia	µg/l	LCS	02/21/12	02/21/12	200	220	110%	90-110
Ammonia	µg/l	LCS	02/28/12	02/28/12	200	213	107%	90-110
Ammonia	µg/l	LCS	03/05/12	03/05/12	200	212	106%	90-110
Ammonia	µg/l	LCS	03/27/12	03/27/12	200	219	110%	90-110
Ammonia	µg/l	LCS	04/06/12	04/06/12	350	343	98%	90-110
Ammonia	µg/l	LCS	04/23/12	04/23/12	350	341	97%	90-110
Ammonia	µg/l	LCS	04/26/12	04/26/12	350	340	97%	90-110
Ammonia	µg/l	LCS	05/02/12	05/02/12	350	345	99%	90-110
Ammonia	µg/l	LCS	05/30/12	05/30/12	350	342	98%	90-110

Laboratory Control Standard Recovery
for Tropical Farms collected from
May 2011 to May 2012

Total N	µg/l	LCS	10/25/11	10/25/11	2260	2227	99%	90-110
Total N	µg/l	LCS	10/31/11	10/31/11	2260	2231	99%	90-110
Total N	µg/l	LCS	11/01/11	11/01/11	2260	2317	103%	90-110
Total N	µg/l	LCS	11/04/11	11/04/11	2260	2320	103%	90-110
Total N	µg/l	LCS	11/15/11	11/15/11	2260	2483	110%	90-110
Total N	µg/l	LCS	12/07/11	12/07/11	2260	2391	106%	90-110
Total N	µg/l	LCS	12/13/11	12/13/11	2260	2401	106%	90-110
Total N	µg/l	LCS	12/20/11	12/20/11	2260	2337	103%	90-110
Total N	µg/l	LCS	12/28/11	12/28/11	2260	2294	102%	90-110
Total N	µg/l	LCS	01/04/12	01/04/12	2500	2489	100%	90-110
Total N	µg/l	LCS	01/05/12	01/05/12	2500	2378	95%	90-110
Total N	µg/l	LCS	01/10/12	01/10/12	2500	2495	100%	90-110
Total N	µg/l	LCS	01/13/12	01/13/12	2500	2490	100%	90-110
Total N	µg/l	LCS	01/19/12	01/19/12	2500	2320	93%	90-110
Total N	µg/l	LCS	01/23/12	01/23/12	2500	2589	104%	90-110
Total N	µg/l	LCS	01/24/12	01/24/12	2500	2552	102%	90-110
Total N	µg/l	LCS	01/27/12	01/27/12	2500	2604	104%	90-110
Total N	µg/l	LCS	02/01/12	02/01/12	3000	2711	90%	90-110
Total N	µg/l	LCS	02/03/12	02/03/12	3000	2872	96%	90-110
Total N	µg/l	LCS	02/07/12	02/07/12	3000	2959	99%	90-110
Total N	µg/l	LCS	02/08/12	02/08/12	3000	3035	101%	90-110
Total N	µg/l	LCS	02/12/12	02/12/12	3000	3116	104%	90-110
Total N	µg/l	LCS	02/16/12	02/16/12	3000	3055	102%	90-110
Total N	µg/l	LCS	02/23/12	02/23/12	3000	3076	103%	90-110
Total N	µg/l	LCS	02/29/12	02/29/12	3000	3068	102%	90-110
Total N	µg/l	LCS	03/01/12	03/01/12	3000	3133	104%	90-110
Total N	µg/l	LCS	03/13/12	03/13/12	3000	3132	104%	90-110
Total N	µg/l	LCS	03/14/12	03/14/12	3000	3101	103%	90-110
Total N	µg/l	LCS	03/15/12	03/15/12	3000	3139	105%	90-110
Total N	µg/l	LCS	04/03/12	04/03/12	4000	3871	97%	90-110
Total N	µg/l	LCS	04/09/12	04/09/12	4000	4127	103%	90-110
Total N	µg/l	LCS	04/10/12	04/10/12	4000	4150	104%	90-110
Total N	µg/l	LCS	04/17/12	04/17/12	4000	4227	106%	90-110
Total N	µg/l	LCS	04/20/12	04/20/12	4000	4066	102%	90-110
Total N	µg/l	LCS	04/22/12	04/22/12	4000	3958	99%	90-110
Total N	µg/l	LCS	04/25/12	04/25/12	4000	4088	102%	90-110
Total N	µg/l	LCS	04/26/12	04/26/12	4000	4157	104%	90-110
Total N	µg/l	LCS	04/27/12	04/27/12	4000	4018	100%	90-110
Total N	µg/l	LCS	04/30/12	04/30/12	4000	3998	100%	90-110
Total N	µg/l	LCS	05/02/12	05/02/12	4000	3984	100%	90-110
Total N	µg/l	LCS	05/15/12	05/15/12	4000	4363	109%	90-110

Laboratory Control Standard Recovery
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Total P	µg/l	LCS	10/25/11	10/25/11	300	303	101%	90-110
Total P	µg/l	LCS	10/31/11	10/31/11	300	302	101%	90-110
Total P	µg/l	LCS	11/01/11	11/01/11	300	307	102%	90-110
Total P	µg/l	LCS	11/04/11	11/04/11	300	317	106%	90-110
Total P	µg/l	LCS	11/15/11	11/15/11	300	308	103%	90-110
Total P	µg/l	LCS	12/07/11	12/07/11	300	307	102%	90-110
Total P	µg/l	LCS	12/13/11	12/13/11	300	312	104%	90-110
Total P	µg/l	LCS	12/20/11	12/20/11	300	308	103%	90-110
Total P	µg/l	LCS	12/28/11	12/28/11	300	317	106%	90-110
Total P	µg/l	LCS	01/04/12	01/04/12	100	91	91%	90-110
Total P	µg/l	LCS	01/05/12	01/05/12	100	93	93%	90-110
Total P	µg/l	LCS	01/10/12	01/10/12	100	91	91%	90-110
Total P	µg/l	LCS	01/13/12	01/13/12	100	94	94%	90-110
Total P	µg/l	LCS	01/19/12	01/19/12	100	93	93%	90-110
Total P	µg/l	LCS	01/23/12	01/23/12	100	90	90%	90-110
Total P	µg/l	LCS	01/24/12	01/24/12	100	96	96%	90-110
Total P	µg/l	LCS	01/27/12	01/27/12	100	91	91%	90-110
Total P	µg/l	LCS	02/01/12	02/01/12	100	94	94%	90-110
Total P	µg/l	LCS	02/03/12	02/03/12	100	94	94%	90-110
Total P	µg/l	LCS	02/07/12	02/07/12	100	95	95%	90-110
Total P	µg/l	LCS	02/08/12	02/08/12	100	95	95%	90-110
Total P	µg/l	LCS	02/12/12	02/12/12	100	92	92%	90-110
Total P	µg/l	LCS	02/16/12	02/16/12	100	96	96%	90-110
Total P	µg/l	LCS	02/23/12	02/23/12	100	90	90%	90-110
Total P	µg/l	LCS	02/29/12	02/29/12	100	96	96%	90-110
Total P	µg/l	LCS	03/01/12	03/01/12	100	96	96%	90-110
Total P	µg/l	LCS	03/13/12	03/13/12	100	102	102%	90-110
Total P	µg/l	LCS	03/14/12	03/14/12	100	90	90%	90-110
Total P	µg/l	LCS	03/15/12	03/15/12	100	91	91%	90-110
Total P	µg/l	LCS	04/03/12	04/03/12	400	396	99%	90-110
Total P	µg/l	LCS	04/09/12	04/09/12	400	423	106%	90-110
Total P	µg/l	LCS	04/10/12	04/10/12	400	417	104%	90-110
Total P	µg/l	LCS	04/17/12	04/17/12	400	421	105%	90-110
Total P	µg/l	LCS	04/20/12	04/20/12	400	423	106%	90-110
Total P	µg/l	LCS	04/22/12	04/22/12	400	408	102%	90-110
Total P	µg/l	LCS	04/25/12	04/25/12	400	424	106%	90-110
Total P	µg/l	LCS	04/26/12	04/26/12	400	422	106%	90-110
Total P	µg/l	LCS	04/26/12	04/26/12	400	417	104%	90-110
Total P	µg/l	LCS	04/27/12	04/27/12	400	408	102%	90-110
Total P	µg/l	LCS	04/30/12	04/30/12	400	431	108%	90-110
Total P	µg/l	LCS	05/02/12	05/02/12	400	401	100%	90-110
Total P	µg/l	LCS	05/15/12	05/15/12	400	425	106%	90-110
Total P	µg/l	LCS	06/12/12	06/12/12	400	411	103%	90-110

Laboratory Control Standard Recovery
for Tropical Farms collected from
May 2011 to May 2012

Color	PCU	LCS	05/27/11	05/27/11	40	42	105%	90-110
Color	PCU	LCS	06/04/11	06/04/11	40	41	103%	90-110
Color	PCU	LCS	06/10/11	06/10/11	40	41	103%	90-110
Color	PCU	LCS	06/25/11	06/25/11	40	41	103%	90-110
Color	PCU	LCS	07/02/11	07/02/11	30	32	107%	90-110
Color	PCU	LCS	07/22/11	07/22/11	30	32	107%	90-110
Color	PCU	LCS	08/04/11	08/04/11	30	32	107%	90-110
Color	PCU	LCS	08/11/11	08/11/11	30	32	107%	90-110
Color	PCU	LCS	08/18/11	08/18/11	30	32	107%	90-110
Color	PCU	LCS	09/08/11	09/08/11	30	32	107%	90-110
Color	PCU	LCS	09/16/11	09/16/11	30	32	107%	90-110
Color	PCU	LCS	09/21/11	09/21/11	30	32	107%	90-110
Color	PCU	LCS	10/07/11	10/07/11	15	16	107%	90-110
Color	PCU	LCS	10/12/11	10/12/11	15	16	107%	90-110
Color	PCU	LCS	10/12/11	10/12/11	15	16	107%	90-110
Color	PCU	LCS	10/21/11	10/21/11	15	16	107%	90-110
Color	PCU	LCS	10/28/11	10/28/11	15	16	107%	90-110
Color	PCU	LCS	11/04/11	11/04/11	15	15	100%	90-110
Color	PCU	LCS	11/04/11	11/04/11	15	15	100%	90-110
Color	PCU	LCS	11/09/11	11/09/11	15	15	100%	90-110
Color	PCU	LCS	11/16/11	11/16/11	15	16	107%	90-110
Color	PCU	LCS	11/22/11	11/22/11	15	16	107%	90-110
Color	PCU	LCS	12/02/11	12/02/11	15	16	107%	90-110
Color	PCU	LCS	12/08/11	12/08/11	15	16	107%	90-110
Color	PCU	LCS	12/15/11	12/15/11	15	16	107%	90-110
Color	PCU	LCS	12/21/11	12/21/11	15	16	107%	90-110
Color	PCU	LCS	01/05/12	01/05/12	20	21	105%	90-110
Color	PCU	LCS	01/18/12	01/18/12	20	21	105%	90-110
Color	PCU	LCS	01/29/12	01/29/12	20	21	105%	90-110
Color	PCU	LCS	02/03/12	02/03/12	20	20	100%	90-110
Color	PCU	LCS	02/10/12	02/10/12	20	20	100%	90-110
Color	PCU	LCS	02/17/12	02/17/12	20	20	100%	90-110
Color	PCU	LCS	02/23/12	02/23/12	20	21	105%	90-110
Color	PCU	LCS	03/01/12	03/01/12	20	21	105%	90-110
Color	PCU	LCS	03/08/12	03/08/12	20	21	105%	90-110
Color	PCU	LCS	03/16/12	03/16/12	20	21	105%	90-110
Color	PCU	LCS	03/23/12	03/23/12	20	21	105%	90-110
Color	PCU	LCS	03/30/12	03/30/12	20	21	105%	90-110
Color	PCU	LCS	04/06/12	04/06/12	40	42	105%	90-110
Color	PCU	LCS	04/12/12	04/12/12	40	42	105%	90-110
Color	PCU	LCS	04/20/12	04/20/12	40	42	105%	90-110
Color	PCU	LCS	04/25/12	04/25/12	40	42	105%	90-110
Color	PCU	LCS	05/02/12	05/02/12	40	41	103%	90-110
Color	PCU	LCS	05/11/12	05/11/12	40	41	103%	90-110

F.4 Continuing Calibration Verification

Continuing Calbration Verification Recovery
for Tropical Farms collected from
May 2011 to May 2012

PARAMETERS	UNITS	SAMPLE DESCRIPTION	DATE PREPPED	DATE ANALYZED	THEOR. CONC.	ACTUAL CONC.	% RECOVERY	ACCEPTANCE RANGE (%)
Alkalinity	mg/l	CCV	05/20/11	05/20/11	10.4	10.6	102%	91 - 109
Alkalinity	mg/l	CCV	05/31/11	05/31/11	10.2	10.0	98%	91 - 109
Alkalinity	mg/l	CCV	05/31/11	05/31/11	10.4	10.8	104%	91 - 109
Alkalinity	mg/l	CCV	06/06/11	06/06/11	10.4	10.0	96%	91 - 109
Alkalinity	mg/l	CCV	06/11/11	06/11/11	10.6	11.0	104%	91 - 109
Alkalinity	mg/l	CCV	06/16/11	06/16/11	10.4	10.2	98%	91 - 109
Alkalinity	mg/l	CCV	06/29/11	06/29/11	10.6	10.6	100%	91 - 109
Alkalinity	mg/l	CCV	06/29/11	06/29/11	10.4	10.8	104%	91 - 109
Alkalinity	mg/l	CCV	07/11/11	07/11/11	8.6	8.6	100%	91 - 109
Alkalinity	mg/l	CCV	07/15/11	07/15/11	8.4	8.2	98%	91 - 109
Alkalinity	mg/l	CCV	07/25/11	07/25/11	8.4	8.6	102%	91 - 109
Alkalinity	mg/l	CCV	07/26/11	07/26/11	8.6	8.2	96%	91 - 109
Alkalinity	mg/l	CCV	08/01/11	08/01/11	8.4	8.6	102%	91 - 109
Alkalinity	mg/l	CCV	08/12/11	08/12/11	8.6	8.4	98%	91 - 109
Alkalinity	mg/l	CCV	08/12/11	08/12/11	8.4	8.6	102%	91 - 109
Alkalinity	mg/l	CCV	08/22/11	08/22/11	8.6	8.4	98%	91 - 109
Alkalinity	mg/l	CCV	08/30/11	08/30/11	8.6	8.8	102%	91 - 109
Alkalinity	mg/l	CCV	09/09/11	09/09/11	8.6	8.8	102%	91 - 109
Alkalinity	mg/l	CCV	09/16/11	09/16/11	8.6	8.4	98%	91 - 109
Alkalinity	mg/l	CCV	09/22/11	09/22/11	8.6	8.8	102%	91 - 109
Alkalinity	mg/l	CCV	10/03/11	10/03/11	12.6	12.8	102%	91 - 109
Alkalinity	mg/l	CCV	10/07/11	10/07/11	12.6	12.4	98%	91 - 109
Alkalinity	mg/l	CCV	10/17/11	10/17/11	12.6	12.6	100%	91 - 109
Alkalinity	mg/l	CCV	10/24/11	10/24/11	12.6	12.4	98%	91 - 109
Alkalinity	mg/l	CCV	10/27/11	10/27/11	12.6	12.4	98%	91 - 109
Alkalinity	mg/l	CCV	10/31/11	10/31/11	12.6	12.6	100%	91 - 109
Alkalinity	mg/l	CCV	11/07/11	11/07/11	12.6	12.6	100%	91 - 109
Alkalinity	mg/l	CCV	11/07/11	11/07/11	12.4	12.6	102%	91 - 109
Alkalinity	mg/l	CCV	11/10/11	11/10/11	12.6	12.4	98%	91 - 109
Alkalinity	mg/l	CCV	11/22/11	11/22/11	12.4	11.8	96%	91 - 109
Alkalinity	mg/l	CCV	11/22/11	11/22/11	12.6	12.4	98%	91 - 109
Alkalinity	mg/l	CCV	11/28/11	11/28/11	12.6	12.2	97%	91 - 109
Alkalinity	mg/l	CCV	12/05/11	12/05/11	12.4	12.8	103%	91 - 109
Alkalinity	mg/l	CCV	12/05/11	12/05/11	12.6	12.6	100%	91 - 109
Alkalinity	mg/l	CCV	12/12/11	12/12/11	12.6	12.6	100%	91 - 109
Alkalinity	mg/l	CCV	12/19/11	12/19/11	12.6	12.4	98%	91 - 109
Alkalinity	mg/l	CCV	12/21/11	12/21/11	12.6	12.2	97%	91 - 109
Alkalinity	mg/l	CCV	12/21/11	12/21/11	12.6	12.6	100%	91 - 109
Alkalinity	mg/l	CCV	01/10/12	01/10/12	10.4	10.6	102%	91 - 109
Alkalinity	mg/l	CCV	01/17/12	01/17/12	10.6	10.8	102%	91 - 109
Alkalinity	mg/l	CCV	01/30/12	01/30/12	10.4	10.0	96%	91 - 109
Alkalinity	mg/l	CCV	02/07/12	02/07/12	10.4	10.8	104%	91 - 109
Alkalinity	mg/l	CCV	02/13/12	02/13/12	10.6	10.4	98%	91 - 109
Alkalinity	mg/l	CCV	02/17/12	02/17/12	10.6	10.2	96%	91 - 109
Alkalinity	mg/l	CCV	03/05/12	03/05/12	10.6	10.8	102%	91 - 109
Alkalinity	mg/l	CCV	03/07/12	03/07/12	10.4	10.6	102%	91 - 109
Alkalinity	mg/l	CCV	03/19/12	03/19/12	10.6	10.2	96%	91 - 109
Alkalinity	mg/l	CCV	03/20/12	03/20/12	10.4	10.8	104%	91 - 109
Alkalinity	mg/l	CCV	04/02/12	04/02/12	8.4	8.4	100%	91 - 109
Alkalinity	mg/l	CCV	04/06/12	04/06/12	8.6	8.8	102%	91 - 109
Alkalinity	mg/l	CCV	04/13/12	04/13/12	8.6	8.6	100%	91 - 109
Alkalinity	mg/l	CCV	04/20/12	04/20/12	8.6	8.2	95%	91 - 109
Alkalinity	mg/l	CCV	04/25/12	04/25/12	8.4	8.6	102%	91 - 109
Alkalinity	mg/l	CCV	05/03/12	05/03/12	8.6	8.8	102%	91 - 109
Alkalinity	mg/l	CCV	05/10/12	05/10/12	8.4	8.2	98%	91 - 109
Alkalinity	mg/l	CCV	05/17/12	05/17/12	8.4	8.6	102%	91 - 109

Continuing Calbration Verification Recovery
for Tropical Farms collected from
May 2011 to May 2012

PARAMETERS	UNITS	SAMPLE DESCRIPTION	DATE PREPPED	DATE ANALYZED	THEOR. CONC.	ACTUAL CONC.	% RECOVERY	ACCEPTANCE RANGE (%)
Turbidity	NTU	CCV	05/19/11	05/19/11	40.1	39.3	98%	90-110
Turbidity	NTU	CCV	05/27/11	05/27/11	40.0	39.0	98%	90-110
Turbidity	NTU	CCV	06/03/11	06/03/11	40.1	39.0	97%	90-110
Turbidity	NTU	CCV	06/09/11	06/09/11	40.2	40.1	100%	90-110
Turbidity	NTU	CCV	06/24/11	06/24/11	40.1	39.0	97%	90-110
Turbidity	NTU	CCV	07/03/11	07/03/11	40.2	39.4	98%	90-110
Turbidity	NTU	CCV	07/08/11	07/08/11	40.1	41.9	104%	90-110
Turbidity	NTU	CCV	07/21/11	07/21/11	40.0	38.8	97%	90-110
Turbidity	NTU	CCV	07/27/11	07/27/11	40.1	39.2	98%	90-110
Turbidity	NTU	CCV	08/04/11	08/04/11	40.2	39.0	97%	90-110
Turbidity	NTU	CCV	08/19/11	08/19/11	40.2	40.2	100%	90-110
Turbidity	NTU	CCV	08/26/11	08/26/11	40.0	38.5	96%	90-110
Turbidity	NTU	CCV	09/08/11	09/08/11	40.1	38.7	97%	90-110
Turbidity	NTU	CCV	09/16/11	09/16/11	40.2	40.1	100%	90-110
Turbidity	NTU	CCV	09/22/11	09/22/11	40.2	39.8	99%	90-110
Turbidity	NTU	CCV	09/30/11	09/30/11	40.3	39.8	99%	90-110
Turbidity	NTU	CCV	10/06/11	10/06/11	40.1	39.9	100%	90-110
Turbidity	NTU	CCV	10/21/11	10/21/11	40.0	39.6	99%	90-110
Turbidity	NTU	CCV	10/28/11	10/28/11	40.1	39.9	100%	90-110
Turbidity	NTU	CCV	11/04/11	11/04/11	40.1	38.3	96%	90-110
Turbidity	NTU	CCV	11/10/11	11/10/11	40.1	39.2	98%	90-110
Turbidity	NTU	CCV	11/18/11	11/18/11	40.1	40.1	100%	90-110
Turbidity	NTU	CCV	12/01/11	12/01/11	40.2	39.8	99%	90-110
Turbidity	NTU	CCV	12/28/11	12/28/11	40.2	40.1	100%	90-110
Turbidity	NTU	CCV	12/09/11	12/09/11	40.4	40.1	99%	90-110
Turbidity	NTU	CCV	12/22/11	12/22/11	40.3	40.4	100%	90-110
Turbidity	NTU	CCV	01/05/12	01/05/12	10.3	9.4	91%	90-110
Turbidity	NTU	CCV	01/05/12	01/05/12	10.0	9.7	97%	90-110
Turbidity	NTU	CCV	01/18/12	01/18/12	10.2	9.7	95%	90-110
Turbidity	NTU	CCV	01/28/12	01/28/12	10.3	9.8	95%	90-110
Turbidity	NTU	CCV	02/05/12	02/05/12	10.2	9.8	96%	90-110
Turbidity	NTU	CCV	02/10/12	02/10/12	10.2	9.8	96%	90-110
Turbidity	NTU	CCV	02/17/12	02/17/12	10.3	9.8	95%	90-110
Turbidity	NTU	CCV	03/02/12	03/02/12	10.3	10.3	100%	90-110
Turbidity	NTU	CCV	03/08/12	03/08/12	10.3	9.2	89%	90-110
Turbidity	NTU	CCV	03/16/12	03/16/12	10.3	9.2	89%	90-110
Turbidity	NTU	CCV	03/23/12	03/23/12	10.1	9.5	94%	90-110
Turbidity	NTU	CCV	03/30/12	03/30/12	10.1	9.6	95%	90-110
Turbidity	NTU	CCV	04/06/12	04/06/12	10.4	9.4	90%	90-110
Turbidity	NTU	CCV	04/13/12	04/13/12	10.2	9.9	97%	90-110
Turbidity	NTU	CCV	04/20/12	04/20/12	10.2	9.5	93%	90-110
Turbidity	NTU	CCV	04/24/12	04/24/12	10.1	9.2	91%	90-110
Turbidity	NTU	CCV	05/02/12	05/02/12	10.2	9.5	93%	90-110
Turbidity	NTU	CCV	05/10/12	05/10/12	10.2	9.7	95%	90-110

Continuing Calbration Verification Recovery
for Tropical Farms collected from
May 2011 to May 2012

PARAMETERS	UNITS	SAMPLE DESCRIPTION	DATE PREPPED	DATE ANALYZED	THEOR. CONC.	ACTUAL CONC.	% RECOVERY	ACCEPTANCE RANGE (%)
SRP	µg/l	CCV	06/01/11	06/01/11	100	102	102%	90-110
SRP	µg/l	CCV	06/02/11	06/02/11	100	105	105%	90-110
SRP	µg/l	CCV	06/07/11	06/07/11	100	103	103%	90-110
SRP	µg/l	CCV	06/29/11	06/29/11	100	101	101%	90-110
SRP	µg/l	CCV	07/05/11	07/05/11	100	103	103%	90-110
SRP	µg/l	CCV	07/05/11	07/05/11	100	102	102%	90-110
SRP	µg/l	CCV	07/11/11	07/11/11	100	102	102%	90-110
SRP	µg/l	CCV	07/15/11	07/15/11	100	106	106%	90-110
SRP	µg/l	CCV	07/25/11	07/25/11	100	96	96%	90-110
SRP	µg/l	CCV	08/01/11	08/01/11	100	101	101%	90-110
SRP	µg/l	CCV	08/18/11	08/18/11	100	106	106%	90-110
SRP	µg/l	CCV	08/23/11	08/23/11	100	101	101%	90-110
SRP	µg/l	CCV	09/09/11	09/09/11	100	97	97%	90-110
SRP	µg/l	CCV	09/19/11	09/19/11	100	99	99%	90-110
SRP	µg/l	CCV	09/22/11	09/22/11	100	99	99%	90-110
SRP	µg/l	CCV	10/10/11	10/10/11	100	107	107%	90-110
SRP	µg/l	CCV	10/25/11	10/25/11	100	106	106%	90-110
SRP	µg/l	CCV	10/31/11	10/31/11	100	108	108%	90-110
SRP	µg/l	CCV	11/04/11	11/04/11	100	102	102%	90-110
SRP	µg/l	CCV	11/14/11	11/14/11	100	102	102%	90-110
SRP	µg/l	CCV	11/23/11	11/23/11	100	91	91%	90-110
SRP	µg/l	CCV	12/02/11	12/02/11	100	100	100%	90-110
SRP	µg/l	CCV	12/09/11	12/09/11	100	100	100%	90-110
SRP	µg/l	CCV	12/16/11	12/16/11	100	99	99%	90-110
SRP	µg/l	CCV	01/06/12	01/06/12	100	94	94%	90-110
SRP	µg/l	CCV	01/18/12	01/18/12	100	95	95%	90-110
SRP	µg/l	CCV	01/18/12	01/18/12	100	96	96%	90-110
SRP	µg/l	CCV	01/27/12	01/27/12	100	97	97%	90-110
SRP	µg/l	CCV	02/08/12	02/08/12	100	101	101%	90-110
SRP	µg/l	CCV	02/10/12	02/10/12	100	101	101%	90-110
SRP	µg/l	CCV	02/18/12	02/18/12	100	97	97%	90-110
SRP	µg/l	CCV	02/22/12	02/22/12	100	101	101%	90-110
SRP	µg/l	CCV	03/02/12	03/02/12	100	97	97%	90-110
SRP	µg/l	CCV	03/16/12	03/16/12	100	98	98%	90-110
SRP	µg/l	CCV	04/02/12	04/02/12	100	99	99%	90-110
SRP	µg/l	CCV	04/06/12	04/06/12	100	100	100%	90-110
SRP	µg/l	CCV	04/17/12	04/17/12	100	104	104%	90-110
SRP	µg/l	CCV	04/20/12	04/20/12	100	100	100%	90-110
SRP	µg/l	CCV	04/20/12	04/20/12	100	98	98%	90-110
SRP	µg/l	CCV	04/25/12	04/25/12	100	98	98%	90-110
SRP	µg/l	CCV	05/02/12	05/02/12	100	104	104%	90-110
SRP	µg/l	CCV	05/11/12	05/11/12	100	100	100%	90-110

Continuing Calbration Verification Recovery
for Tropical Farms collected from
May 2011 to May 2012

PARAMETERS	UNITS	SAMPLE DESCRIPTION	DATE PREPPED	DATE ANALYZED	THEOR. CONC.	ACTUAL CONC.	% RECOVERY	ACCEPTANCE RANGE (%)
NOX-N	µg/l	CCV	06/01/11	06/01/11	1000	1004	100%	90-110
NOX-N	µg/l	CCV	06/02/11	06/02/11	1000	974	97%	90-110
NOX-N	µg/l	CCV	06/07/11	06/07/11	1000	999	100%	90-110
NOX-N	µg/l	CCV	06/29/11	06/29/11	1000	991	99%	90-110
NOX-N	µg/l	CCV	07/05/11	07/05/11	1000	989	99%	90-110
NOX-N	µg/l	CCV	07/11/11	07/11/11	1000	999	100%	90-110
NOX-N	µg/l	CCV	07/15/11	07/15/11	1000	996	100%	90-110
NOX-N	µg/l	CCV	07/25/11	07/25/11	1000	982	98%	90-110
NOX-N	µg/l	CCV	08/01/11	08/01/11	1000	1002	100%	90-110
NOX-N	µg/l	CCV	08/18/11	08/18/11	1000	995	100%	90-110
NOX-N	µg/l	CCV	08/23/11	08/23/11	1000	1002	100%	90-110
NOX-N	µg/l	CCV	09/09/11	09/09/11	1000	998	100%	90-110
NOX-N	µg/l	CCV	09/19/11	09/19/11	1000	999	100%	90-110
NOX-N	µg/l	CCV	09/22/11	09/22/11	1000	1049	105%	90-110
NOX-N	µg/l	CCV	10/10/11	10/10/11	1000	1011	101%	90-110
NOX-N	µg/l	CCV	10/25/11	10/25/11	1000	1024	102%	90-110
NOX-N	µg/l	CCV	10/31/11	10/31/11	1000	1039	104%	90-110
NOX-N	µg/l	CCV	11/04/11	11/04/11	1000	1037	104%	90-110
NOX-N	µg/l	CCV	11/11/11	11/11/11	1000	1004	100%	90-110
NOX-N	µg/l	CCV	11/23/11	11/23/11	1000	1014	101%	90-110
NOX-N	µg/l	CCV	12/02/11	12/02/11	1000	1012	101%	90-110
NOX-N	µg/l	CCV	12/09/11	12/09/11	1000	1008	101%	90-110
NOX-N	µg/l	CCV	12/16/11	12/16/11	1000	1087	109%	90-110
NOX-N	µg/l	CCV	01/06/12	01/06/12	100	105	105%	90-110
NOX-N	µg/l	CCV	01/18/12	01/18/12	100	103	103%	90-110
NOX-N	µg/l	CCV	01/27/12	01/27/12	100	103	103%	90-110
NOX-N	µg/l	CCV	02/08/12	02/08/12	100	103	103%	90-110
NOX-N	µg/l	CCV	02/10/12	02/10/12	100	103	103%	90-110
NOX-N	µg/l	CCV	02/18/12	02/18/12	100	104	104%	90-110
NOX-N	µg/l	CCV	02/22/12	02/22/12	100	99	99%	90-110
NOX-N	µg/l	CCV	03/16/12	03/16/12	100	101	101%	90-110
NOX-N	µg/l	CCV	03/16/12	03/16/12	100	100	100%	90-110
NOX-N	µg/l	CCV	04/02/12	04/02/12	1000	1023	102%	90-110
NOX-N	µg/l	CCV	04/06/12	04/06/12	1000	1014	101%	90-110
NOX-N	µg/l	CCV	04/17/12	04/17/12	100	103	103%	90-110
NOX-N	µg/l	CCV	04/20/12	04/20/12	100	100	100%	90-110
NOX-N	µg/l	CCV	04/25/12	04/25/12	100	101	101%	90-110
NOX-N	µg/l	CCV	05/02/12	05/02/12	100	101	101%	90-110
NOX-N	µg/l	CCV	05/11/12	05/11/12	100	100	100%	90-110

Continuing Calbration Verification Recovery
for Tropical Farms collected from
May 2011 to May 2012

PARAMETERS	UNITS	SAMPLE DESCRIPTION	DATE PREPPED	DATE ANALYZED	THEOR. CONC.	ACTUAL CONC.	% RECOVERY	ACCEPTANCE RANGE (%)
Ammonia	µg/l	CCV	06/24/11	06/24/11	400	413	103%	90-110
Ammonia	µg/l	CCV	06/27/11	06/27/11	400	402	101%	90-110
Ammonia	µg/l	CCV	06/28/11	06/28/11	400	419	105%	90-110
Ammonia	µg/l	CCV	07/13/11	07/13/11	400	415	104%	90-110
Ammonia	µg/l	CCV	07/29/11	07/29/11	400	381	95%	90-110
Ammonia	µg/l	CCV	08/08/11	08/08/11	400	417	104%	90-110
Ammonia	µg/l	CCV	08/31/11	08/31/11	400	395	99%	90-110
Ammonia	µg/l	CCV	09/01/11	09/01/11	400	385	96%	90-110
Ammonia	µg/l	CCV	09/01/11	09/01/11	400	407	102%	90-110
Ammonia	µg/l	CCV	09/20/11	09/20/11	400	397	99%	90-110
Ammonia	µg/l	CCV	09/29/11	09/29/11	400	417	104%	90-110
Ammonia	µg/l	CCV	10/14/11	10/14/11	400	398	100%	90-110
Ammonia	µg/l	CCV	11/02/11	11/02/11	400	426	107%	90-110
Ammonia	µg/l	CCV	11/03/11	11/03/11	400	409	102%	90-110
Ammonia	µg/l	CCV	11/16/11	11/16/11	400	426	107%	90-110
Ammonia	µg/l	CCV	11/29/11	11/29/11	400	402	101%	90-110
Ammonia	µg/l	CCV	11/29/11	11/29/11	400	401	100%	90-110
Ammonia	µg/l	CCV	12/08/11	12/08/11	400	402	101%	90-110
Ammonia	µg/l	CCV	12/20/11	12/20/11	400	408	102%	90-110
Ammonia	µg/l	CCV	01/17/12	01/17/12	100	105	105%	90-110
Ammonia	µg/l	CCV	01/18/12	01/18/12	100	107	107%	90-110
Ammonia	µg/l	CCV	02/06/12	02/06/12	100	100	100%	90-110
Ammonia	µg/l	CCV	02/21/12	02/21/12	100	99	99%	90-110
Ammonia	µg/l	CCV	02/28/12	02/28/12	100	91	91%	90-110
Ammonia	µg/l	CCV	03/05/12	03/05/12	100	100	100%	90-110
Ammonia	µg/l	CCV	03/27/12	03/27/12	100	91	91%	90-110
Ammonia	µg/l	CCV	04/06/12	04/06/12	100	95	95%	90-110
Ammonia	µg/l	CCV	04/23/12	04/23/12	100	103	103%	90-110
Ammonia	µg/l	CCV	04/26/12	04/26/12	100	106	106%	90-110
Ammonia	µg/l	CCV	05/02/12	05/02/12	100	103	103%	90-110
Ammonia	µg/l	CCV	05/30/12	05/30/12	100	106	106%	90-110

Continuing Calbration Verification Recovery
for Tropical Farms collected from
May 2011 to May 2012

PARAMETERS	UNITS	SAMPLE DESCRIPTION	DATE PREPPED	DATE ANALYZED	THEOR. CONC.	ACTUAL CONC.	% RECOVERY	ACCEPTANCE RANGE (%)
Total N	µg/l	CCV	10/25/11	10/25/11	2000	1973	99%	90-110
Total N	µg/l	CCV	10/31/11	10/31/11	2000	1908	95%	90-110
Total N	µg/l	CCV	11/01/11	11/01/11	2000	1919	96%	90-110
Total N	µg/l	CCV	11/04/11	11/04/11	2000	1926	96%	90-110
Total N	µg/l	CCV	11/15/11	11/15/11	2000	1907	95%	90-110
Total N	µg/l	CCV	12/07/11	12/07/11	2000	1927	96%	90-110
Total N	µg/l	CCV	12/13/11	12/13/11	2000	2013	101%	90-110
Total N	µg/l	CCV	12/20/11	12/20/11	2000	1934	97%	90-110
Total N	µg/l	CCV	12/28/11	12/28/11	2000	2074	104%	90-110
Total N	µg/l	CCV	01/04/12	01/04/12	2000	2097	105%	90-110
Total N	µg/l	CCV	01/05/12	01/05/12	2000	2073	104%	90-110
Total N	µg/l	CCV	01/10/12	01/10/12	2000	2048	102%	90-110
Total N	µg/l	CCV	01/13/12	01/13/12	2000	1903	95%	90-110
Total N	µg/l	CCV	01/19/12	01/19/12	2000	1905	95%	90-110
Total N	µg/l	CCV	01/23/12	01/23/12	2000	2052	103%	90-110
Total N	µg/l	CCV	01/24/12	01/24/12	2000	2311	116%	90-110
Total N	µg/l	CCV	01/27/12	01/27/12	2000	2133	107%	90-110
Total N	µg/l	CCV	02/01/12	02/01/12	2000	2258	113%	90-110
Total N	µg/l	CCV	02/03/12	02/03/12	2000	2032	102%	90-110
Total N	µg/l	CCV	02/07/12	02/07/12	2000	1911	96%	90-110
Total N	µg/l	CCV	02/08/12	02/08/12	2000	2029	101%	90-110
Total N	µg/l	CCV	02/12/12	02/12/12	2000	2046	102%	90-110
Total N	µg/l	CCV	02/16/12	02/16/12	2000	2056	103%	90-110
Total N	µg/l	CCV	02/23/12	02/23/12	2000	2042	102%	90-110
Total N	µg/l	CCV	02/29/12	02/29/12	2000	2039	102%	90-110
Total N	µg/l	CCV	03/01/12	03/01/12	2000	2116	106%	90-110
Total N	µg/l	CCV	03/13/12	03/13/12	2500	2321	93%	90-110
Total N	µg/l	CCV	03/14/12	03/14/12	2500	2537	101%	90-110
Total N	µg/l	CCV	03/15/12	03/15/12	2500	2534	101%	90-110
Total N	µg/l	CCV	04/03/12	04/03/12	2500	2537	101%	90-110
Total N	µg/l	CCV	04/09/12	04/09/12	2500	2560	102%	90-110
Total N	µg/l	CCV	04/10/12	04/10/12	2500	2499	100%	90-110
Total N	µg/l	CCV	04/17/12	04/17/12	2500	2516	101%	90-110
Total N	µg/l	CCV	04/20/12	04/20/12	2500	2571	103%	90-110
Total N	µg/l	CCV	04/22/12	04/22/12	2500	2567	103%	90-110
Total N	µg/l	CCV	04/25/12	04/25/12	2500	2579	103%	90-110
Total N	µg/l	CCV	04/26/12	04/26/12	2500	2622	105%	90-110
Total N	µg/l	CCV	04/27/12	04/27/12	2500	2599	104%	90-110
Total N	µg/l	CCV	04/30/12	04/30/12	2500	2570	103%	90-110
Total N	µg/l	CCV	05/02/12	05/02/12	2500	2622	105%	90-110
Total N	µg/l	CCV	05/15/12	05/15/12	2500	2620	105%	90-110

Continuing Calbration Verification Recovery
for Tropical Farms collected from
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PARAMETERS	UNITS	SAMPLE DESCRIPTION	DATE PREPPED	DATE ANALYZED	THEOR. CONC.	ACTUAL CONC.	% RECOVERY	ACCEPTANCE RANGE (%)
Total P	μg/l	CCV	10/25/11	10/25/11	200	201	101%	90-110
Total P	μg/l	CCV	10/31/11	10/31/11	200	205	103%	90-110
Total P	μg/l	CCV	11/01/11	11/01/11	200	211	106%	90-110
Total P	μg/l	CCV	11/04/11	11/04/11	200	207	104%	90-110
Total P	μg/l	CCV	11/15/11	11/15/11	200	206	103%	90-110
Total P	μg/l	CCV	12/07/11	12/07/11	200	208	104%	90-110
Total P	μg/l	CCV	12/13/11	12/13/11	200	208	104%	90-110
Total P	μg/l	CCV	12/20/11	12/20/11	200	204	102%	90-110
Total P	μg/l	CCV	12/28/11	12/28/11	200	215	108%	90-110
Total P	μg/l	CCV	01/04/12	01/04/12	250	246	98%	90-110
Total P	μg/l	CCV	01/05/12	01/05/12	250	233	93%	90-110
Total P	μg/l	CCV	01/10/12	01/10/12	250	246	98%	90-110
Total P	μg/l	CCV	01/13/12	01/13/12	250	247	99%	90-110
Total P	μg/l	CCV	01/19/12	01/19/12	250	231	92%	90-110
Total P	μg/l	CCV	01/23/12	01/23/12	250	228	91%	90-110
Total P	μg/l	CCV	01/24/12	01/24/12	250	236	94%	90-110
Total P	μg/l	CCV	01/27/12	01/27/12	250	236	94%	90-110
Total P	μg/l	CCV	02/01/12	02/01/12	250	245	98%	90-110
Total P	μg/l	CCV	02/03/12	02/03/12	250	249	100%	90-110
Total P	μg/l	CCV	02/07/12	02/07/12	250	241	96%	90-110
Total P	μg/l	CCV	02/08/12	02/08/12	250	234	94%	90-110
Total P	μg/l	CCV	02/12/12	02/12/12	250	251	100%	90-110
Total P	μg/l	CCV	02/16/12	02/16/12	250	248	99%	90-110
Total P	μg/l	CCV	02/23/12	02/23/12	250	243	97%	90-110
Total P	μg/l	CCV	02/29/12	02/29/12	250	239	96%	90-110
Total P	μg/l	CCV	03/01/12	03/01/12	250	248	99%	90-110
Total P	μg/l	CCV	03/13/12	03/13/12	250	253	101%	90-110
Total P	μg/l	CCV	03/14/12	03/14/12	250	247	99%	90-110
Total P	μg/l	CCV	03/15/12	03/15/12	250	252	101%	90-110
Total P	μg/l	CCV	04/03/12	04/03/12	250	256	102%	90-110
Total P	μg/l	CCV	04/09/12	04/09/12	250	247	99%	90-110
Total P	μg/l	CCV	04/10/12	04/10/12	250	250	100%	90-110
Total P	μg/l	CCV	04/17/12	04/17/12	250	243	97%	90-110
Total P	μg/l	CCV	04/20/12	04/20/12	250	233	93%	90-110
Total P	μg/l	CCV	04/22/12	04/22/12	250	247	99%	90-110
Total P	μg/l	CCV	04/25/12	04/25/12	250	236	94%	90-110
Total P	μg/l	CCV	04/26/12	04/26/12	250	236	94%	90-110
Total P	μg/l	CCV	04/26/12	04/26/12	250	245	98%	90-110
Total P	μg/l	CCV	04/27/12	04/27/12	250	249	100%	90-110
Total P	μg/l	CCV	04/30/12	04/30/12	250	241	96%	90-110
Total P	μg/l	CCV	05/02/12	05/02/12	250	234	94%	90-110
Total P	μg/l	CCV	05/15/12	05/15/12	250	251	100%	90-110
Total P	μg/l	CCV	06/12/12	06/12/12	250	248	99%	90-110

Continuing Calbration Verification Recovery
for Tropical Farms collected from
May 2011 to May 2012

PARAMETERS	UNITS	SAMPLE DESCRIPTION	DATE PREPPED	DATE ANALYZED	THEOR. CONC.	ACTUAL CONC.	% RECOVERY	ACCEPTANCE RANGE (%)
Color	PCU	CCV	05/27/11	05/27/11	30	30	100%	90-110
Color	PCU	CCV	06/04/11	06/04/11	30	30	100%	90-110
Color	PCU	CCV	06/10/11	06/10/11	30	31	103%	90-110
Color	PCU	CCV	06/25/11	06/25/11	30	31	103%	90-110
Color	PCU	CCV	07/02/11	07/02/11	30	30	100%	90-110
Color	PCU	CCV	07/22/11	07/22/11	30	30	100%	90-110
Color	PCU	CCV	08/04/11	08/04/11	30	30	100%	90-110
Color	PCU	CCV	08/11/11	08/11/11	30	30	100%	90-110
Color	PCU	CCV	08/18/11	08/18/11	30	30	100%	90-110
Color	PCU	CCV	09/08/11	09/08/11	30	30	100%	90-110
Color	PCU	CCV	09/16/11	09/16/11	30	30	100%	90-110
Color	PCU	CCV	09/21/11	09/21/11	30	30	100%	90-110
Color	PCU	CCV	10/07/11	10/07/11	30	31	103%	90-110
Color	PCU	CCV	10/12/11	10/12/11	30	31	103%	90-110
Color	PCU	CCV	10/12/11	10/12/11	30	30	100%	90-110
Color	PCU	CCV	10/21/11	10/21/11	30	30	100%	90-110
Color	PCU	CCV	10/28/11	10/28/11	30	30	100%	90-110
Color	PCU	CCV	11/04/11	11/04/11	30	30	100%	90-110
Color	PCU	CCV	11/04/11	11/04/11	30	30	100%	90-110
Color	PCU	CCV	11/09/11	11/09/11	30	30	100%	90-110
Color	PCU	CCV	11/16/11	11/16/11	30	30	100%	90-110
Color	PCU	CCV	11/22/11	11/22/11	30	30	100%	90-110
Color	PCU	CCV	12/02/11	12/02/11	30	30	100%	90-110
Color	PCU	CCV	12/08/11	12/08/11	30	30	100%	90-110
Color	PCU	CCV	12/15/11	12/15/11	30	30	100%	90-110
Color	PCU	CCV	12/21/11	12/21/11	30	30	100%	90-110
Color	PCU	CCV	01/05/12	01/05/12	20	20	100%	90-110
Color	PCU	CCV	01/18/12	01/18/12	20	20	100%	90-110
Color	PCU	CCV	01/29/12	01/29/12	20	20	100%	90-110
Color	PCU	CCV	02/03/12	02/03/12	20	20	100%	90-110
Color	PCU	CCV	02/10/12	02/10/12	20	20	100%	90-110
Color	PCU	CCV	02/17/12	02/17/12	20	20	100%	90-110
Color	PCU	CCV	02/23/12	02/23/12	20	20	100%	90-110
Color	PCU	CCV	03/01/12	03/01/12	20	20	100%	90-110
Color	PCU	CCV	03/08/12	03/08/12	20	20	100%	90-110
Color	PCU	CCV	03/16/12	03/16/12	20	20	100%	90-110
Color	PCU	CCV	03/23/12	03/23/12	20	20	100%	90-110
Color	PCU	CCV	03/30/12	03/30/12	20	20	100%	90-110
Color	PCU	CCV	04/06/12	04/06/12	20	20	100%	90-110
Color	PCU	CCV	04/12/12	04/12/12	20	20	100%	90-110
Color	PCU	CCV	04/20/12	04/20/12	20	20	100%	90-110
Color	PCU	CCV	04/25/12	04/25/12	20	20	100%	90-110
Color	PCU	CCV	05/02/12	05/02/12	20	20	100%	90-110
Color	PCU	CCV	05/11/12	05/11/12	20	20	100%	90-110

F.5 Method Blanks

Method Blank Recovery
for Tropical Farms collected from
May 2011 to May 2012

PARAMETERS	UNITS	SAMPLE DESCRIPTION	DATE PREPPED	DATE ANALYZED	ACTUAL CONC.	ACCEPTANCE RANGE
pH	s.u.	Method Blank	05/20/11	05/20/11	5.61	5.00-6.00
pH	s.u.	Method Blank	05/31/11	05/31/11	5.69	5.00-6.00
pH	s.u.	Method Blank	05/31/11	05/31/11	5.72	5.00-6.00
pH	s.u.	Method Blank	06/06/11	06/06/11	5.63	5.00-6.00
pH	s.u.	Method Blank	06/11/11	06/11/11	5.71	5.00-6.00
pH	s.u.	Method Blank	06/16/11	06/16/11	5.68	5.00-6.00
pH	s.u.	Method Blank	06/29/11	06/29/11	5.61	5.00-6.00
pH	s.u.	Method Blank	06/29/11	06/29/11	5.61	5.00-6.00
pH	s.u.	Method Blank	07/11/11	07/11/11	5.63	5.00-6.00
pH	s.u.	Method Blank	07/15/11	07/15/11	5.61	5.00-6.00
pH	s.u.	Method Blank	07/25/11	07/25/11	5.63	5.00-6.00
pH	s.u.	Method Blank	07/26/11	07/26/11	5.73	5.00-6.00
pH	s.u.	Method Blank	08/01/11	08/01/11	5.79	5.00-6.00
pH	s.u.	Method Blank	08/12/11	08/12/11	5.60	5.00-6.00
pH	s.u.	Method Blank	08/12/11	08/12/11	5.63	5.00-6.00
pH	s.u.	Method Blank	08/22/11	08/22/11	5.84	5.00-6.00
pH	s.u.	Method Blank	08/22/11	08/22/11	5.78	5.00-6.00
pH	s.u.	Method Blank	08/30/11	08/30/11	5.74	5.00-6.00
pH	s.u.	Method Blank	9/9/011	9/9/011	5.71	5.00-6.00
pH	s.u.	Method Blank	09/16/11	09/16/11	5.71	5.00-6.00
pH	s.u.	Method Blank	09/22/11	09/22/11	5.64	5.00-6.00
pH	s.u.	Method Blank	10/03/11	10/03/11	5.59	5.00-6.00
pH	s.u.	Method Blank	10/07/11	10/07/11	5.55	5.00-6.00
pH	s.u.	Method Blank	10/17/11	10/17/11	5.57	5.00-6.00
pH	s.u.	Method Blank	10/17/11	10/17/11	5.61	5.00-6.00
pH	s.u.	Method Blank	10/24/11	10/24/11	5.64	5.00-6.00
pH	s.u.	Method Blank	10/27/11	10/27/11	5.61	5.00-6.00
pH	s.u.	Method Blank	10/31/11	10/31/11	5.61	5.00-6.00
pH	s.u.	Method Blank	11/07/11	11/07/11	5.61	5.00-6.00
pH	s.u.	Method Blank	11/07/11	11/07/11	5.63	5.00-6.00
pH	s.u.	Method Blank	11/10/11	11/10/11	5.61	5.00-6.00
pH	s.u.	Method Blank	11/22/11	11/22/11	5.62	5.00-6.00
pH	s.u.	Method Blank	11/22/11	11/22/11	5.63	5.00-6.00
pH	s.u.	Method Blank	11/28/11	11/28/11	5.61	5.00-6.00
pH	s.u.	Method Blank	12/05/11	12/05/11	5.61	5.00-6.00
pH	s.u.	Method Blank	12/05/11	12/05/11	5.64	5.00-6.00
pH	s.u.	Method Blank	12/12/11	12/12/11	5.64	5.00-6.00
pH	s.u.	Method Blank	12/19/11	12/19/11	5.63	5.00-6.00
pH	s.u.	Method Blank	12/21/11	12/21/11	5.57	5.00-6.00
pH	s.u.	Method Blank	12/21/11	12/21/11	5.62	5.00-6.00
pH	s.u.	Method Blank	01/10/12	01/10/12	5.61	5.00-6.00
pH	s.u.	Method Blank	01/17/12	01/17/12	5.57	5.00-6.00
pH	s.u.	Method Blank	01/17/12	01/17/12	5.63	5.00-6.00
pH	s.u.	Method Blank	01/17/12	01/17/12	5.67	5.00-6.00
pH	s.u.	Method Blank	01/30/12	01/30/12	5.61	5.00-6.00
pH	s.u.	Method Blank	02/07/12	02/07/12	5.52	5.00-6.00

Method Blank Recovery
for Tropical Farms collected from
May 2011 to May 2012

PARAMETERS	UNITS	SAMPLE DESCRIPTION	DATE PREPPED	DATE ANALYZED	ACTUAL CONC.	ACCEPTANCE RANGE
pH	s.u.	Method Blank	02/13/12	02/13/12	5.63	5.00-6.00
pH	s.u.	Method Blank	02/12/12	02/12/12	5.64	5.00-6.00
pH	s.u.	Method Blank	02/17/12	02/17/12	5.66	5.00-6.00
pH	s.u.	Method Blank	02/17/12	02/17/12	5.64	5.00-6.00
pH	s.u.	Method Blank	03/05/12	03/05/12	5.67	5.00-6.00
pH	s.u.	Method Blank	03/07/12	03/07/12	5.58	5.00-6.00
pH	s.u.	Method Blank	03/07/12	03/07/12	5.64	5.00-6.00
pH	s.u.	Method Blank	03/19/12	03/19/12	5.61	5.00-6.00
pH	s.u.	Method Blank	03/20/12	03/20/12	5.63	5.00-6.00
pH	s.u.	Method Blank	03/20/12	03/20/12	5.63	5.00-6.00
pH	s.u.	Method Blank	04/02/12	04/02/12	5.67	5.00-6.00
pH	s.u.	Method Blank	04/06/12	04/06/12	5.67	5.00-6.00
pH	s.u.	Method Blank	04/13/12	04/13/12	5.7	5.00-6.00
pH	s.u.	Method Blank	04/20/12	04/20/12	5.6	5.00-6.00
pH	s.u.	Method Blank	04/20/12	04/20/12	5.6	5.00-6.00
pH	s.u.	Method Blank	04/25/12	04/25/12	5.7	5.00-6.00
pH	s.u.	Method Blank	05/03/12	05/03/12	5.6	5.00-6.00
pH	s.u.	Method Blank	05/10/12	05/10/12	5.57	5.00-6.00
pH	s.u.	Method Blank	05/10/12	05/10/12	5.57	5.00-6.00
pH	s.u.	Method Blank	05/17/12	05/17/12	5.55	5.00-6.00
Alkalinity	mg/l	Method Blank	05/20/11	05/20/11	<0.7	<0.7
Alkalinity	mg/l	Method Blank	05/31/11	05/31/11	<0.7	<0.7
Alkalinity	mg/l	Method Blank	05/31/11	05/31/11	<0.7	<0.7
Alkalinity	mg/l	Method Blank	06/06/11	06/06/11	<0.7	<0.7
Alkalinity	mg/l	Method Blank	06/11/11	06/11/11	<0.7	<0.7
Alkalinity	mg/l	Method Blank	06/16/11	06/16/11	<0.7	<0.7
Alkalinity	mg/l	Method Blank	06/29/11	06/29/11	<0.7	<0.7
Alkalinity	mg/l	Method Blank	06/29/11	06/29/11	<0.7	<0.7
Alkalinity	mg/l	Method Blank	07/11/11	07/11/11	<0.7	<0.7
Alkalinity	mg/l	Method Blank	07/15/11	07/15/11	<0.7	<0.7
Alkalinity	mg/l	Method Blank	07/25/11	07/25/11	<0.7	<0.7
Alkalinity	mg/l	Method Blank	07/26/11	07/26/11	<0.7	<0.7
Alkalinity	mg/l	Method Blank	08/01/11	08/01/11	<0.7	<0.7
Alkalinity	mg/l	Method Blank	08/12/11	08/12/11	<0.7	<0.7
Alkalinity	mg/l	Method Blank	08/12/11	08/12/11	<0.7	<0.7
Alkalinity	mg/l	Method Blank	08/22/11	08/22/11	<0.7	<0.7
Alkalinity	mg/l	Method Blank	08/22/11	08/22/11	<0.7	<0.7
Alkalinity	mg/l	Method Blank	08/30/11	08/30/11	<0.7	<0.7
Alkalinity	mg/l	Method Blank	09/09/11	09/09/11	<0.7	<0.7
Alkalinity	mg/l	Method Blank	09/16/11	09/16/11	<0.7	<0.7
Alkalinity	mg/l	Method Blank	09/22/11	09/22/11	<0.7	<0.7
Alkalinity	mg/l	Method Blank	10/03/11	10/03/11	<0.7	<0.7
Alkalinity	mg/l	Method Blank	10/07/11	10/07/11	<0.7	<0.7
Alkalinity	mg/l	Method Blank	10/17/11	10/17/11	<0.7	<0.7
Alkalinity	mg/l	Method Blank	10/17/11	10/17/11	<0.7	<0.7
Alkalinity	mg/l	Method Blank	10/24/11	10/24/11	<0.7	<0.7

Method Blank Recovery
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PARAMETERS	UNITS	SAMPLE DESCRIPTION	DATE PREPPED	DATE ANALYZED	ACTUAL CONC.	ACCEPTANCE RANGE
Alkalinity	mg/l	Method Blank	10/27/11	10/27/11	<0.7	<0.7
Alkalinity	mg/l	Method Blank	10/31/11	10/31/11	<0.7	<0.7
Alkalinity	mg/l	Method Blank	11/07/11	11/07/11	<0.7	<0.7
Alkalinity	mg/l	Method Blank	11/07/11	11/07/11	<0.7	<0.7
Alkalinity	mg/l	Method Blank	11/10/11	11/10/11	<0.7	<0.7
Alkalinity	mg/l	Method Blank	11/22/11	11/22/11	<0.7	<0.7
Alkalinity	mg/l	Method Blank	11/22/11	11/22/11	<0.7	<0.7
Alkalinity	mg/l	Method Blank	11/28/11	11/28/11	<0.7	<0.7
Alkalinity	mg/l	Method Blank	12/05/11	12/05/11	<0.7	<0.7
Alkalinity	mg/l	Method Blank	12/05/11	12/05/11	<0.7	<0.7
Alkalinity	mg/l	Method Blank	12/12/11	12/12/11	<0.7	<0.7
Alkalinity	mg/l	Method Blank	12/19/11	12/19/11	<0.7	<0.7
Alkalinity	mg/l	Method Blank	12/21/11	12/21/11	<0.7	<0.7
Alkalinity	mg/l	Method Blank	12/21/11	12/21/11	<0.7	<0.7
Alkalinity	mg/l	Method Blank	01/10/12	01/10/12	<0.7	<0.7
Alkalinity	mg/l	Method Blank	01/17/12	01/17/12	<0.7	<0.7
Alkalinity	mg/l	Method Blank	01/17/12	01/17/12	<0.7	<0.7
Alkalinity	mg/l	Method Blank	01/17/12	01/17/12	<0.7	<0.7
Alkalinity	mg/l	Method Blank	01/30/12	01/30/12	<0.7	<0.7
Alkalinity	mg/l	Method Blank	02/07/12	02/07/12	<0.7	<0.7
Alkalinity	mg/l	Method Blank	02/13/12	02/13/12	<0.7	<0.7
Alkalinity	mg/l	Method Blank	02/13/12	02/13/12	<0.7	<0.7
Alkalinity	mg/l	Method Blank	02/17/12	02/17/12	<0.7	<0.7
Alkalinity	mg/l	Method Blank	02/17/12	02/17/12	<0.7	<0.7
Alkalinity	mg/l	Method Blank	03/05/12	03/05/12	<0.7	<0.7
Alkalinity	mg/l	Method Blank	03/07/12	03/07/12	<0.7	<0.7
Alkalinity	mg/l	Method Blank	03/07/12	03/07/12	<0.7	<0.7
Alkalinity	mg/l	Method Blank	03/19/12	03/19/12	<0.7	<0.7
Alkalinity	mg/l	Method Blank	03/20/12	03/20/12	<0.7	<0.7
Alkalinity	mg/l	Method Blank	03/20/12	03/20/12	<0.7	<0.7
Alkalinity	mg/l	Method Blank	04/02/12	04/02/12	<0.7	<0.7
Alkalinity	mg/l	Method Blank	04/06/12	04/06/12	<0.7	<0.7
Alkalinity	mg/l	Method Blank	04/13/12	04/13/12	<0.7	<0.7
Alkalinity	mg/l	Method Blank	04/20/12	04/20/12	<0.7	<0.7
Alkalinity	mg/l	Method Blank	04/20/12	04/20/12	<0.7	<0.7
Alkalinity	mg/l	Method Blank	04/25/12	04/25/12	<0.7	<0.7
Alkalinity	mg/l	Method Blank	05/03/12	05/03/12	<0.7	<0.7
Alkalinity	mg/l	Method Blank	05/10/12	05/10/12	<0.7	<0.7
Alkalinity	mg/l	Method Blank	05/10/12	05/10/12	<0.7	<0.7
Alkalinity	mg/l	Method Blank	05/17/12	05/17/12	<0.7	<0.7
Spec. Cond.	µmho/cm	Method Blank	06/03/11	06/03/11	<2.1	<2.1
Spec. Cond.	µmho/cm	Method Blank	06/03/11	06/03/11	<2.1	<2.1
Spec. Cond.	µmho/cm	Method Blank	06/03/11	06/03/11	<2.1	<2.1
Spec. Cond.	µmho/cm	Method Blank	06/03/11	06/03/11	<2.1	<2.1
Spec. Cond.	µmho/cm	Method Blank	06/03/11	06/03/11	<2.1	<2.1
Spec. Cond.	µmho/cm	Method Blank	06/29/11	06/29/11	<2.1	<2.1

Method Blank Recovery

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PARAMETERS	UNITS	SAMPLE DESCRIPTION	DATE PREPPED	DATE ANALYZED	ACTUAL CONC.	ACCEPTANCE RANGE
Spec. Cond.	µmho/cm	Method Blank	06/29/11	06/29/11	<2.1	<2.1
Spec. Cond.	µmho/cm	Method Blank	06/29/11	06/29/11	<2.1	<2.1
Spec. Cond.	µmho/cm	Method Blank	06/29/11	06/29/11	<2.1	<2.1
Spec. Cond.	µmho/cm	Method Blank	07/18/11	07/18/11	<2.1	<2.1
Spec. Cond.	µmho/cm	Method Blank	07/18/11	07/18/11	<2.1	<2.1
Spec. Cond.	µmho/cm	Method Blank	07/25/11	07/25/11	<2.1	<2.1
Spec. Cond.	µmho/cm	Method Blank	07/25/11	07/25/11	<2.1	<2.1
Spec. Cond.	µmho/cm	Method Blank	07/25/11	07/25/11	<2.1	<2.1
Spec. Cond.	µmho/cm	Method Blank	08/15/11	08/15/11	<2.1	<2.1
Spec. Cond.	µmho/cm	Method Blank	08/15/11	08/15/11	<2.1	<2.1
Spec. Cond.	µmho/cm	Method Blank	08/26/11	08/26/11	<2.1	<2.1
Spec. Cond.	µmho/cm	Method Blank	08/30/11	08/30/11	<2.1	<2.1
Spec. Cond.	µmho/cm	Method Blank	09/15/11	09/15/11	<2.1	<2.1
Spec. Cond.	µmho/cm	Method Blank	09/28/11	09/28/11	<2.1	<2.1
Spec. Cond.	µmho/cm	Method Blank	09/28/11	09/28/11	<2.1	<2.1
Spec. Cond.	µmho/cm	Method Blank	09/28/11	09/28/11	<2.1	<2.1
Spec. Cond.	µmho/cm	Method Blank	09/28/11	09/28/11	<2.1	<2.1
Spec. Cond.	µmho/cm	Method Blank	10/26/11	10/26/11	<2.1	<2.1
Spec. Cond.	µmho/cm	Method Blank	10/26/11	10/26/11	<2.1	<2.1
Spec. Cond.	µmho/cm	Method Blank	11/09/11	11/09/11	<2.1	<2.1
Spec. Cond.	µmho/cm	Method Blank	11/15/11	11/15/11	<2.1	<2.1
Spec. Cond.	µmho/cm	Method Blank	11/15/11	11/15/11	<2.1	<2.1
Spec. Cond.	µmho/cm	Method Blank	11/15/11	11/15/11	<2.1	<2.1
Spec. Cond.	µmho/cm	Method Blank	12/06/11	12/06/11	<2.1	<2.1
Spec. Cond.	µmho/cm	Method Blank	12/06/11	12/06/11	<2.1	<2.1
Spec. Cond.	µmho/cm	Method Blank	01/13/12	01/13/12	<2.1	<2.1
Spec. Cond.	µmho/cm	Method Blank	01/25/12	01/25/12	<2.1	<2.1
Spec. Cond.	µmho/cm	Method Blank	01/25/12	01/25/12	<2.1	<2.1
Spec. Cond.	µmho/cm	Method Blank	01/25/12	01/25/12	<2.1	<2.1
Spec. Cond.	µmho/cm	Method Blank	01/25/12	01/25/12	<2.1	<2.1
Spec. Cond.	µmho/cm	Method Blank	02/08/12	02/08/12	<2.1	<2.1
Spec. Cond.	µmho/cm	Method Blank	02/08/12	02/08/12	<2.1	<2.1
Spec. Cond.	µmho/cm	Method Blank	02/20/12	02/20/12	<2.1	<2.1
Spec. Cond.	µmho/cm	Method Blank	02/20/12	02/20/12	<2.1	<2.1
Spec. Cond.	µmho/cm	Method Blank	03/06/12	03/06/12	<2.1	<2.1
Spec. Cond.	µmho/cm	Method Blank	03/06/12	03/06/12	<2.1	<2.1
Spec. Cond.	µmho/cm	Method Blank	04/02/12	04/02/12	<2.1	<2.1
Spec. Cond.	µmho/cm	Method Blank	04/02/12	04/02/12	<2.1	<2.1
Spec. Cond.	µmho/cm	Method Blank	04/16/12	04/16/12	<2.1	<2.1
Spec. Cond.	µmho/cm	Method Blank	04/16/12	04/16/12	<2.1	<2.1
Spec. Cond.	µmho/cm	Method Blank	04/26/12	04/26/12	<2.1	<2.1
Spec. Cond.	µmho/cm	Method Blank	04/26/12	04/26/12	<2.1	<2.1
Spec. Cond.	µmho/cm	Method Blank	05/03/12	05/03/12	<2.1	<2.1
Spec. Cond.	µmho/cm	Method Blank	05/03/12	05/03/12	<2.1	<2.1
Spec. Cond.	µmho/cm	Method Blank	05/21/12	05/21/12	<2.1	<2.1
Turbidity	NTU	Method Blank	05/19/11	05/19/11	<0.4	<0.4

Method Blank Recovery
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PARAMETERS	UNITS	SAMPLE DESCRIPTION	DATE PREPPED	DATE ANALYZED	ACTUAL CONC.	ACCEPTANCE RANGE
Turbidity	NTU	Method Blank	05/27/11	05/27/11	<0.4	<0.4
Turbidity	NTU	Method Blank	06/03/11	06/03/11	<0.4	<0.4
Turbidity	NTU	Method Blank	06/09/11	06/09/11	<0.4	<0.4
Turbidity	NTU	Method Blank	06/24/11	06/24/11	<0.4	<0.4
Turbidity	NTU	Method Blank	07/03/11	07/03/11	<0.4	<0.4
Turbidity	NTU	Method Blank	07/08/11	07/08/11	<0.4	<0.4
Turbidity	NTU	Method Blank	07/21/11	07/21/11	<0.4	<0.4
Turbidity	NTU	Method Blank	07/27/11	07/27/11	<0.4	<0.4
Turbidity	NTU	Method Blank	08/04/11	08/04/11	<0.4	<0.4
Turbidity	NTU	Method Blank	08/04/11	08/04/11	<0.4	<0.4
Turbidity	NTU	Method Blank	08/19/11	08/19/11	<0.4	<0.4
Turbidity	NTU	Method Blank	08/26/11	08/26/11	<0.4	<0.4
Turbidity	NTU	Method Blank	09/08/11	09/08/11	<0.4	<0.4
Turbidity	NTU	Method Blank	09/08/11	09/08/11	<0.4	<0.4
Turbidity	NTU	Method Blank	09/16/11	09/16/11	<0.4	<0.4
Turbidity	NTU	Method Blank	09/16/11	09/16/11	<0.4	<0.4
Turbidity	NTU	Method Blank	09/22/11	09/22/11	<0.4	<0.4
Turbidity	NTU	Method Blank	09/30/11	09/30/11	<0.4	<0.4
Turbidity	NTU	Method Blank	10/06/11	10/06/11	<0.4	<0.4
Turbidity	NTU	Method Blank	10/21/11	10/21/11	<0.4	<0.4
Turbidity	NTU	Method Blank	10/28/11	10/28/11	<0.4	<0.4
Turbidity	NTU	Method Blank	11/04/11	11/04/11	<0.4	<0.4
Turbidity	NTU	Method Blank	11/04/11	11/04/11	<0.4	<0.4
Turbidity	NTU	Method Blank	11/10/11	11/10/11	<0.4	<0.4
Turbidity	NTU	Method Blank	11/18/11	11/18/11	<0.4	<0.4
Turbidity	NTU	Method Blank	12/01/11	12/01/11	<0.4	<0.4
Turbidity	NTU	Method Blank	12/28/11	12/28/11	<0.4	<0.4
Turbidity	NTU	Method Blank	12/01/11	12/01/11	<0.4	<0.4
Turbidity	NTU	Method Blank	12/09/11	12/09/11	<0.4	<0.4
Turbidity	NTU	Method Blank	12/22/11	12/22/11	<0.4	<0.4
Turbidity	NTU	Method Blank	01/05/12	01/05/12	<0.4	<0.4
Turbidity	NTU	Method Blank	01/05/12	01/05/12	<0.4	<0.4
Turbidity	NTU	Method Blank	01/18/12	01/18/12	<0.4	<0.4
Turbidity	NTU	Method Blank	01/28/12	01/28/12	<0.4	<0.4
Turbidity	NTU	Method Blank	02/05/12	02/05/12	<0.4	<0.4
Turbidity	NTU	Method Blank	02/05/12	02/05/12	<0.4	<0.4
Turbidity	NTU	Method Blank	02/10/12	02/10/12	<0.4	<0.4
Turbidity	NTU	Method Blank	02/17/12	02/17/12	<0.4	<0.4
Turbidity	NTU	Method Blank	03/02/12	03/02/12	<0.4	<0.4
Turbidity	NTU	Method Blank	03/08/12	03/08/12	<0.4	<0.4
Turbidity	NTU	Method Blank	03/16/12	03/16/12	<0.4	<0.4
Turbidity	NTU	Method Blank	03/23/12	03/23/12	<0.4	<0.4
Turbidity	NTU	Method Blank	03/30/12	03/30/12	<0.4	<0.4
Turbidity	NTU	Method Blank	04/06/12	04/06/12	<0.4	<0.4
Turbidity	NTU	Method Blank	04/13/12	04/13/12	<0.4	<0.4
Turbidity	NTU	Method Blank	04/20/12	04/20/12	<0.4	<0.4

Method Blank Recovery
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PARAMETERS	UNITS	SAMPLE DESCRIPTION	DATE PREPPED	DATE ANALYZED	ACTUAL CONC.	ACCEPTANCE RANGE
Turbidity	NTU	Method Blank	04/24/12	04/24/12	<0.4	<0.4
Turbidity	NTU	Method Blank	04/24/12	04/24/12	<0.4	<0.4
Turbidity	NTU	Method Blank	05/02/12	05/02/12	<0.4	<0.4
Turbidity	NTU	Method Blank	05/10/12	05/10/12	<0.4	<0.4
Turbidity	NTU	Method Blank	05/10/12	05/10/12	<0.4	<0.4
TSS	mg/l	Method Blank	05/23/11	05/23/11	<0.7	<0.7
TSS	mg/l	Method Blank	06/01/11	06/01/11	<0.7	<0.7
TSS	mg/l	Method Blank	06/08/11	06/08/11	<0.7	<0.7
TSS	mg/l	Method Blank	06/15/11	06/15/11	<0.7	<0.7
TSS	mg/l	Method Blank	06/23/11	06/23/11	<0.7	<0.7
TSS	mg/l	Method Blank	07/07/11	07/07/11	<0.7	<0.7
TSS	mg/l	Method Blank	07/07/11	07/07/11	<0.7	<0.7
TSS	mg/l	Method Blank	07/25/11	07/25/11	<0.7	<0.7
TSS	mg/l	Method Blank	08/09/11	08/09/11	<0.7	<0.7
TSS	mg/l	Method Blank	08/09/11	08/09/11	<0.7	<0.7
TSS	mg/l	Method Blank	08/22/11	08/22/11	<0.7	<0.7
TSS	mg/l	Method Blank	08/26/11	08/26/11	<0.7	<0.7
TSS	mg/l	Method Blank	09/08/11	09/08/11	<0.7	<0.7
TSS	mg/l	Method Blank	09/08/11	09/08/11	<0.7	<0.7
TSS	mg/l	Method Blank	09/30/11	09/30/11	<0.7	<0.7
TSS	mg/l	Method Blank	10/09/11	10/09/11	<0.7	<0.7
TSS	mg/l	Method Blank	10/09/11	10/09/11	<0.7	<0.7
TSS	mg/l	Method Blank	10/25/11	10/25/11	<0.7	<0.7
TSS	mg/l	Method Blank	11/10/11	11/10/11	<0.7	<0.7
TSS	mg/l	Method Blank	11/10/11	11/10/11	<0.7	<0.7
TSS	mg/l	Method Blank	11/22/11	11/22/11	<0.7	<0.7
TSS	mg/l	Method Blank	11/22/11	11/22/11	<0.7	<0.7
TSS	mg/l	Method Blank	12/04/11	12/04/11	<0.7	<0.7
TSS	mg/l	Method Blank	12/04/11	12/04/11	<0.7	<0.7
TSS	mg/l	Method Blank	12/09/11	12/09/11	<0.7	<0.7
TSS	mg/l	Method Blank	12/21/11	12/21/11	<0.7	<0.7
TSS	mg/l	Method Blank	12/23/11	12/23/11	<0.7	<0.7
TSS	mg/l	Method Blank	01/18/12	01/18/12	<0.7	<0.7
TSS	mg/l	Method Blank	02/01/12	02/01/12	<0.7	<0.7
TSS	mg/l	Method Blank	02/09/12	02/09/12	<0.7	<0.7
TSS	mg/l	Method Blank	02/15/12	02/15/12	<0.7	<0.7
TSS	mg/l	Method Blank	03/02/12	03/02/12	<0.7	<0.7
TSS	mg/l	Method Blank	03/02/12	03/02/12	<0.7	<0.7
TSS	mg/l	Method Blank	03/02/12	03/02/12	<0.7	<0.7
TSS	mg/l	Method Blank	03/20/12	03/20/12	<0.7	<0.7
TSS	mg/l	Method Blank	04/12/12	04/12/12	<0.7	<0.7
TSS	mg/l	Method Blank	04/12/12	04/12/12	<0.7	<0.7
TSS	mg/l	Method Blank	04/26/12	04/26/12	<0.7	<0.7
TSS	mg/l	Method Blank	05/04/12	05/04/12	<0.7	<0.7
TSS	mg/l	Method Blank	05/14/12	05/14/12	<0.7	<0.7
TSS	mg/l	Method Blank	05/14/12	05/14/12	<0.7	<0.7

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PARAMETERS	UNITS	SAMPLE DESCRIPTION	DATE PREPPED	DATE ANALYZED	ACTUAL CONC.	ACCEPTANCE RANGE
BOD	mg/l	Method Blank	05/30/11	05/30/11	<2.0	<2.0
BOD	mg/l	Method Blank	05/30/11	05/30/11	<2.0	<2.0
BOD	mg/l	Method Blank	05/30/11	05/30/11	<2.0	<2.0
BOD	mg/l	Method Blank	06/07/11	06/07/11	<2.0	<2.0
BOD	mg/l	Method Blank	06/07/11	06/07/11	<2.0	<2.0
BOD	mg/l	Method Blank	06/15/11	06/15/11	<2.0	<2.0
BOD	mg/l	Method Blank	06/25/11	06/25/11	<2.0	<2.0
BOD	mg/l	Method Blank	06/25/11	06/25/11	<2.0	<2.0
BOD	mg/l	Method Blank	07/03/11	07/03/11	<2.0	<2.0
BOD	mg/l	Method Blank	07/08/11	07/08/11	<2.0	<2.0
BOD	mg/l	Method Blank	07/14/11	07/14/11	<2.0	<2.0
BOD	mg/l	Method Blank	07/22/11	07/22/11	<2.0	<2.0
BOD	mg/l	Method Blank	07/22/11	07/22/11	<2.0	<2.0
BOD	mg/l	Method Blank	07/28/11	07/28/11	<2.0	<2.0
BOD	mg/l	Method Blank	08/04/11	08/04/11	<2.0	<2.0
BOD	mg/l	Method Blank	08/12/11	08/12/11	<2.0	<2.0
BOD	mg/l	Method Blank	08/20/11	08/20/11	<2.0	<2.0
BOD	mg/l	Method Blank	08/26/11	08/26/11	<2.0	<2.0
BOD	mg/l	Method Blank	09/09/11	09/09/11	<2.0	<2.0
BOD	mg/l	Method Blank	09/16/11	09/16/11	<2.0	<2.0
BOD	mg/l	Method Blank	09/22/11	09/22/11	<2.0	<2.0
BOD	mg/l	Method Blank	09/30/11	09/30/11	<2.0	<2.0
BOD	mg/l	Method Blank	10/07/11	10/07/11	<2.0	<2.0
BOD	mg/l	Method Blank	10/14/11	10/14/11	<2.0	<2.0
BOD	mg/l	Method Blank	10/21/11	10/21/11	<2.0	<2.0
BOD	mg/l	Method Blank	10/29/11	10/29/11	<2.0	<2.0
BOD	mg/l	Method Blank	11/04/11	11/04/11	<2.0	<2.0
BOD	mg/l	Method Blank	11/11/11	11/11/11	<2.0	<2.0
BOD	mg/l	Method Blank	11/22/11	11/22/11	<2.0	<2.0
BOD	mg/l	Method Blank	12/02/11	12/02/11	<2.0	<2.0
BOD	mg/l	Method Blank	12/10/11	12/10/11	<2.0	<2.0
BOD	mg/l	Method Blank	12/17/11	12/17/11	<2.0	<2.0
BOD	mg/l	Method Blank	12/23/11	12/23/11	<2.0	<2.0
BOD	mg/l	Method Blank	12/30/11	12/30/11	<2.0	<2.0
BOD	mg/l	Method Blank	01/06/12	01/06/12	<2.0	<2.0
BOD	mg/l	Method Blank	01/18/12	01/18/12	<2.0	<2.0
BOD	mg/l	Method Blank	01/29/12	01/29/12	<2.0	<2.0
BOD	mg/l	Method Blank	02/03/12	02/03/12	<2.0	<2.0
BOD	mg/l	Method Blank	02/10/12	02/10/12	<2.0	<2.0
BOD	mg/l	Method Blank	02/17/12	02/17/12	<2.0	<2.0
BOD	mg/l	Method Blank	02/23/12	02/23/12	<2.0	<2.0
BOD	mg/l	Method Blank	03/03/12	03/03/12	<2.0	<2.0
BOD	mg/l	Method Blank	03/17/12	03/17/12	<2.0	<2.0
BOD	mg/l	Method Blank	03/24/12	03/24/12	<2.0	<2.0
BOD	mg/l	Method Blank	03/31/12	03/31/12	<2.0	<2.0
BOD	mg/l	Method Blank	04/06/12	04/06/12	<2.0	<2.0

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PARAMETERS	UNITS	SAMPLE DESCRIPTION	DATE PREPPED	DATE ANALYZED	ACTUAL CONC.	ACCEPTANCE RANGE
BOD	mg/l	Method Blank	04/12/12	04/12/12	<2.0	<2.0
BOD	mg/l	Method Blank	04/21/12	04/21/12	<2.0	<2.0
BOD	mg/l	Method Blank	04/26/12	04/26/12	<2.0	<2.0
BOD	mg/l	Method Blank	05/02/12	05/02/12	<2.0	<2.0
BOD	mg/l	Method Blank	05/11/12	05/11/12	<2.0	<2.0
BOD	mg/l	Method Blank	05/18/12	05/18/12	<2.0	<2.0
SRP	µg/l	Method Blank	06/01/11	06/01/11	<1	<1
SRP	µg/l	Method Blank	06/02/11	06/02/11	<1	<1
SRP	µg/l	Method Blank	06/07/11	06/07/11	<1	<1
SRP	µg/l	Method Blank	06/29/11	06/29/11	<1	<1
SRP	µg/l	Method Blank	07/05/11	07/05/11	<1	<1
SRP	µg/l	Method Blank	07/05/11	07/05/11	<1	<1
SRP	µg/l	Method Blank	07/11/11	07/11/11	<1	<1
SRP	µg/l	Method Blank	07/15/11	07/15/11	<1	<1
SRP	µg/l	Method Blank	07/25/11	07/25/11	<1	<1
SRP	µg/l	Method Blank	07/25/11	07/25/11	<1	<1
SRP	µg/l	Method Blank	08/01/11	08/01/11	<1	<1
SRP	µg/l	Method Blank	08/18/11	08/18/11	<1	<1
SRP	µg/l	Method Blank	08/23/11	08/23/11	<1	<1
SRP	µg/l	Method Blank	08/23/11	08/23/11	<1	<1
SRP	µg/l	Method Blank	09/09/11	09/09/11	<1	<1
SRP	µg/l	Method Blank	09/09/11	09/09/11	<1	<1
SRP	µg/l	Method Blank	09/19/11	09/19/11	<1	<1
SRP	µg/l	Method Blank	09/22/11	09/22/11	<1	<1
SRP	µg/l	Method Blank	10/10/11	10/10/11	<1	<1
SRP	µg/l	Method Blank	10/25/11	10/25/11	<1	<1
SRP	µg/l	Method Blank	10/31/11	10/31/11	<1	<1
SRP	µg/l	Method Blank	11/04/11	11/04/11	<1	<1
SRP	µg/l	Method Blank	11/04/11	11/04/11	<1	<1
SRP	µg/l	Method Blank	11/04/11	11/04/11	<1	<1
SRP	µg/l	Method Blank	11/14/11	11/14/11	<1	<1
SRP	µg/l	Method Blank	11/23/11	11/23/11	<1	<1
SRP	µg/l	Method Blank	11/23/11	11/23/11	<1	<1
SRP	µg/l	Method Blank	12/02/11	12/02/11	<1	<1
SRP	µg/l	Method Blank	12/02/11	12/02/11	<1	<1
SRP	µg/l	Method Blank	12/09/11	12/09/11	<1	<1
SRP	µg/l	Method Blank	12/16/11	12/16/11	<1	<1
SRP	µg/l	Method Blank	12/16/11	12/16/11	<1	<1
SRP	µg/l	Method Blank	01/06/12	01/06/12	<1	<1
SRP	µg/l	Method Blank	01/18/12	01/18/12	<1	<1
SRP	µg/l	Method Blank	01/18/12	01/18/12	<1	<1
SRP	µg/l	Method Blank	01/18/12	01/18/12	<1	<1
SRP	µg/l	Method Blank	01/27/12	01/27/12	<1	<1
SRP	µg/l	Method Blank	02/08/12	02/08/12	<1	<1
SRP	µg/l	Method Blank	02/10/12	02/10/12	<1	<1
SRP	µg/l	Method Blank	02/18/12	02/18/12	<1	<1

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PARAMETERS	UNITS	SAMPLE DESCRIPTION	DATE PREPPED	DATE ANALYZED	ACTUAL CONC.	ACCEPTANCE RANGE
SRP	µg/l	Method Blank	02/22/12	02/22/12	<1	<1
SRP	µg/l	Method Blank	03/02/12	03/02/12	<1	<1
SRP	µg/l	Method Blank	03/16/12	03/16/12	<1	<1
SRP	µg/l	Method Blank	03/16/12	03/16/12	<1	<1
SRP	µg/l	Method Blank	04/02/12	04/02/12	<1	<1
SRP	µg/l	Method Blank	04/06/12	04/06/12	<1	<1
SRP	µg/l	Method Blank	04/17/12	04/17/12	<1	<1
SRP	µg/l	Method Blank	04/20/12	04/20/12	<1	<1
SRP	µg/l	Method Blank	04/20/12	04/20/12	<1	<1
SRP	µg/l	Method Blank	04/25/12	04/25/12	<1	<1
SRP	µg/l	Method Blank	04/25/12	04/25/12	<1	<1
SRP	µg/l	Method Blank	05/02/12	05/02/12	<1	<1
SRP	µg/l	Method Blank	05/11/12	05/11/12	<1	<1
NOX-N	µg/l	Method Blank	06/01/11	06/01/11	<1	<1
NOX-N	µg/l	Method Blank	06/02/11	06/02/11	<1	<1
NOX-N	µg/l	Method Blank	06/07/11	06/07/11	<1	<1
NOX-N	µg/l	Method Blank	06/29/11	06/29/11	<1	<1
NOX-N	µg/l	Method Blank	07/05/11	07/05/11	<1	<1
NOX-N	µg/l	Method Blank	07/05/11	07/05/11	<1	<1
NOX-N	µg/l	Method Blank	07/11/11	07/11/11	<1	<1
NOX-N	µg/l	Method Blank	07/15/11	07/15/11	<1	<1
NOX-N	µg/l	Method Blank	07/25/11	07/25/11	<1	<1
NOX-N	µg/l	Method Blank	07/25/11	07/25/11	<1	<1
NOX-N	µg/l	Method Blank	08/01/11	08/01/11	<1	<1
NOX-N	µg/l	Method Blank	08/18/11	08/18/11	<1	<1
NOX-N	µg/l	Method Blank	08/23/11	08/23/11	<1	<1
NOX-N	µg/l	Method Blank	08/23/11	08/23/11	<1	<1
NOX-N	µg/l	Method Blank	09/09/11	09/09/11	<1	<1
NOX-N	µg/l	Method Blank	09/09/11	09/09/11	<1	<1
NOX-N	µg/l	Method Blank	09/19/11	09/19/11	<1	<1
NOX-N	µg/l	Method Blank	09/22/11	09/22/11	<1	<1
NOX-N	µg/l	Method Blank	10/10/11	10/10/11	<1	<1
NOX-N	µg/l	Method Blank	10/25/11	10/25/11	<1	<1
NOX-N	µg/l	Method Blank	10/31/11	10/31/11	<1	<1
NOX-N	µg/l	Method Blank	11/04/11	11/04/11	<1	<1
NOX-N	µg/l	Method Blank	11/04/11	11/04/11	<1	<1
NOX-N	µg/l	Method Blank	11/04/11	11/04/11	<1	<1
NOX-N	µg/l	Method Blank	11/11/11	11/11/11	<1	<1
NOX-N	µg/l	Method Blank	11/23/11	11/23/11	<1	<1
NOX-N	µg/l	Method Blank	11/23/11	11/23/11	<1	<1
NOX-N	µg/l	Method Blank	12/02/11	12/02/11	<1	<1
NOX-N	µg/l	Method Blank	12/02/11	12/02/11	<1	<1
NOX-N	µg/l	Method Blank	12/09/11	12/09/11	<1	<1
NOX-N	µg/l	Method Blank	12/16/11	12/16/11	<1	<1
NOX-N	µg/l	Method Blank	12/16/11	12/16/11	<1	<1
NOX-N	µg/l	Method Blank	01/06/12	01/06/12	<1	<1

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PARAMETERS	UNITS	SAMPLE DESCRIPTION	DATE PREPPED	DATE ANALYZED	ACTUAL CONC.	ACCEPTANCE RANGE
NOX-N	µg/l	Method Blank	01/18/12	01/18/12	<1	<1
NOX-N	µg/l	Method Blank	01/18/12	01/18/12	<1	<1
NOX-N	µg/l	Method Blank	01/18/12	01/18/12	<1	<1
NOX-N	µg/l	Method Blank	01/27/12	01/27/12	<1	<1
NOX-N	µg/l	Method Blank	02/08/12	02/08/12	<1	<1
NOX-N	µg/l	Method Blank	02/10/12	02/10/12	<1	<1
NOX-N	µg/l	Method Blank	02/18/12	02/18/12	<1	<1
NOX-N	µg/l	Method Blank	02/22/12	02/22/12	<1	<1
NOX-N	µg/l	Method Blank	03/16/12	03/16/12	<1	<1
NOX-N	µg/l	Method Blank	03/16/12	03/16/12	<1	<1
NOX-N	µg/l	Method Blank	04/02/12	04/02/12	<1	<1
NOX-N	µg/l	Method Blank	04/06/12	04/06/12	<1	<1
NOX-N	µg/l	Method Blank	04/17/12	04/17/12	<1	<1
NOX-N	µg/l	Method Blank	04/20/12	04/20/12	<1	<1
NOX-N	µg/l	Method Blank	04/20/12	04/20/12	<1	<1
NOX-N	µg/l	Method Blank	04/25/12	04/25/12	<1	<1
NOX-N	µg/l	Method Blank	04/25/12	04/25/12	<1	<1
NOX-N	µg/l	Method Blank	05/02/12	05/02/12	<1	<1
NOX-N	µg/l	Method Blank	05/11/12	05/11/12	<1	<1
Ammonia	µg/l	Method Blank	06/24/11	06/24/11	<1	<1
Ammonia	µg/l	Method Blank	06/27/11	06/27/11	<1	<1
Ammonia	µg/l	Method Blank	06/27/11	06/27/11	<1	<1
Ammonia	µg/l	Method Blank	06/28/11	06/28/11	<1	<1
Ammonia	µg/l	Method Blank	06/28/11	06/28/11	<1	<1
Ammonia	µg/l	Method Blank	07/13/11	07/13/11	<1	<1
Ammonia	µg/l	Method Blank	07/29/11	07/29/11	<1	<1
Ammonia	µg/l	Method Blank	08/08/11	08/08/11	<1	<1
Ammonia	µg/l	Method Blank	08/08/11	08/08/11	<1	<1
Ammonia	µg/l	Method Blank	08/31/11	08/31/11	<1	<1
Ammonia	µg/l	Method Blank	09/01/11	09/01/11	<1	<1
Ammonia	µg/l	Method Blank	09/01/11	09/01/11	<1	<1
Ammonia	µg/l	Method Blank	09/20/11	09/20/11	<1	<1
Ammonia	µg/l	Method Blank	09/20/11	09/20/11	<1	<1
Ammonia	µg/l	Method Blank	09/29/11	09/29/11	<1	<1
Ammonia	µg/l	Method Blank	09/29/11	09/29/11	<1	<1
Ammonia	µg/l	Method Blank	10/14/11	10/14/11	<1	<1
Ammonia	µg/l	Method Blank	11/02/11	11/02/11	<1	<1
Ammonia	µg/l	Method Blank	11/03/11	11/03/11	<1	<1
Ammonia	µg/l	Method Blank	11/03/11	11/03/11	<1	<1
Ammonia	µg/l	Method Blank	11/03/11	11/03/11	<1	<1
Ammonia	µg/l	Method Blank	11/16/11	11/16/11	<1	<1
Ammonia	µg/l	Method Blank	11/16/11	11/16/11	<1	<1
Ammonia	µg/l	Method Blank	11/16/11	11/16/11	<1	<1
Ammonia	µg/l	Method Blank	11/29/11	11/29/11	<1	<1
Ammonia	µg/l	Method Blank	11/29/11	11/29/11	<1	<1
Ammonia	µg/l	Method Blank	12/08/11	12/08/11	<1	<1

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for Tropical Farms collected from
May 2011 to May 2012

PARAMETERS	UNITS	SAMPLE DESCRIPTION	DATE PREPPED	DATE ANALYZED	ACTUAL CONC.	ACCEPTANCE RANGE
Ammonia	µg/l	Method Blank	12/08/11	12/08/11	<1	<1
Ammonia	µg/l	Method Blank	12/20/11	12/20/11	<1	<1
Ammonia	µg/l	Method Blank	12/20/11	12/20/11	<1	<1
Ammonia	µg/l	Method Blank	01/17/12	01/17/12	<1	<1
Ammonia	µg/l	Method Blank	01/18/12	01/18/12	<1	<1
Ammonia	µg/l	Method Blank	01/18/12	01/18/12	<1	<1
Ammonia	µg/l	Method Blank	01/18/12	01/18/12	<1	<1
Ammonia	µg/l	Method Blank	02/06/12	02/06/12	<1	<1
Ammonia	µg/l	Method Blank	02/06/12	02/06/12	<1	<1
Ammonia	µg/l	Method Blank	02/21/12	02/21/12	<1	<1
Ammonia	µg/l	Method Blank	02/21/12	02/21/12	<1	<1
Ammonia	µg/l	Method Blank	02/21/12	02/21/12	<1	<1
Ammonia	µg/l	Method Blank	02/28/12	02/28/12	<1	<1
Ammonia	µg/l	Method Blank	03/05/12	03/05/12	<1	<1
Ammonia	µg/l	Method Blank	03/27/12	03/27/12	<1	<1
Ammonia	µg/l	Method Blank	03/27/12	03/27/12	<1	<1
Ammonia	µg/l	Method Blank	04/06/12	04/06/12	<1	<1
Ammonia	µg/l	Method Blank	04/06/12	04/06/12	<1	<1
Ammonia	µg/l	Method Blank	04/23/12	04/23/12	<1	<1
Ammonia	µg/l	Method Blank	04/26/12	04/26/12	<1	<1
Ammonia	µg/l	Method Blank	05/02/12	05/02/12	<1	<1
Ammonia	µg/l	Method Blank	05/02/12	05/02/12	<1	<1
Ammonia	µg/l	Method Blank	05/30/12	05/30/12	<1	<1
Total N	µg/l	Method Blank	10/25/11	10/25/11	<1	<1
Total N	µg/l	Method Blank	10/25/11	10/25/11	<1	<1
Total N	µg/l	Method Blank	10/31/11	10/31/11	<1	<1
Total N	µg/l	Method Blank	10/31/11	10/31/11	<1	<1
Total N	µg/l	Method Blank	10/31/11	10/31/11	<1	<1
Total N	µg/l	Method Blank	11/01/11	11/01/11	<1	<1
Total N	µg/l	Method Blank	11/01/11	11/01/11	<1	<1
Total N	µg/l	Method Blank	11/01/11	11/01/11	<1	<1
Total N	µg/l	Method Blank	11/01/11	11/01/11	<1	<1
Total N	µg/l	Method Blank	11/04/11	11/04/11	<1	<1
Total N	µg/l	Method Blank	11/04/11	11/04/11	<1	<1
Total N	µg/l	Method Blank	11/15/11	11/15/11	<1	<1
Total N	µg/l	Method Blank	11/15/11	11/15/11	<1	<1
Total N	µg/l	Method Blank	11/15/11	11/15/11	<1	<1
Total N	µg/l	Method Blank	12/07/11	12/07/11	<1	<1
Total N	µg/l	Method Blank	12/13/11	12/13/11	<1	<1
Total N	µg/l	Method Blank	12/13/11	12/13/11	<1	<1
Total N	µg/l	Method Blank	12/13/11	12/13/11	<1	<1
Total N	µg/l	Method Blank	12/20/11	12/20/11	<1	<1
Total N	µg/l	Method Blank	12/20/11	12/20/11	<1	<1
Total N	µg/l	Method Blank	12/20/11	12/20/11	<1	<1
Total N	µg/l	Method Blank	12/28/11	12/28/11	<1	<1
Total N	µg/l	Method Blank	12/28/11	12/28/11	<1	<1

Method Blank Recovery
for Tropical Farms collected from
May 2011 to May 2012

PARAMETERS	UNITS	SAMPLE DESCRIPTION	DATE PREPPED	DATE ANALYZED	ACTUAL CONC.	ACCEPTANCE RANGE
Total N	µg/l	Method Blank	01/04/12	01/04/12	<1	<1
Total N	µg/l	Method Blank	01/04/12	01/04/12	<1	<1
Total N	µg/l	Method Blank	01/05/12	01/05/12	<1	<1
Total N	µg/l	Method Blank	01/10/12	01/10/12	<1	<1
Total N	µg/l	Method Blank	01/10/12	01/10/12	<1	<1
Total N	µg/l	Method Blank	01/13/12	01/13/12	<1	<1
Total N	µg/l	Method Blank	01/13/12	01/13/12	<1	<1
Total N	µg/l	Method Blank	01/13/12	01/13/12	<1	<1
Total N	µg/l	Method Blank	01/19/12	01/19/12	<1	<1
Total N	µg/l	Method Blank	01/23/12	01/23/12	<1	<1
Total N	µg/l	Method Blank	01/23/12	01/23/12	<1	<1
Total N	µg/l	Method Blank	01/24/12	01/24/12	<1	<1
Total N	µg/l	Method Blank	01/27/12	01/27/12	<1	<1
Total N	µg/l	Method Blank	01/27/12	01/27/12	<1	<1
Total N	µg/l	Method Blank	02/01/12	02/01/12	<1	<1
Total N	µg/l	Method Blank	02/03/12	02/03/12	<1	<1
Total N	µg/l	Method Blank	02/07/12	02/07/12	<1	<1
Total N	µg/l	Method Blank	02/07/12	02/07/12	<1	<1
Total N	µg/l	Method Blank	02/07/12	02/07/12	<1	<1
Total N	µg/l	Method Blank	02/08/12	02/08/12	<1	<1
Total N	µg/l	Method Blank	02/12/12	02/12/12	<1	<1
Total N	µg/l	Method Blank	02/12/12	02/12/12	<1	<1
Total N	µg/l	Method Blank	02/12/12	02/12/12	<1	<1
Total N	µg/l	Method Blank	02/16/12	02/16/12	<1	<1
Total N	µg/l	Method Blank	02/16/12	02/16/12	<1	<1
Total N	µg/l	Method Blank	02/16/12	02/16/12	<1	<1
Total N	µg/l	Method Blank	02/23/12	02/23/12	<1	<1
Total N	µg/l	Method Blank	02/23/12	02/23/12	<1	<1
Total N	µg/l	Method Blank	02/23/12	02/23/12	<1	<1
Total N	µg/l	Method Blank	02/29/12	02/29/12	<1	<1
Total N	µg/l	Method Blank	02/29/12	02/29/12	<1	<1
Total N	µg/l	Method Blank	03/01/12	03/01/12	<1	<1
Total N	µg/l	Method Blank	03/13/12	03/13/12	<1	<1
Total N	µg/l	Method Blank	03/14/12	03/14/12	<1	<1
Total N	µg/l	Method Blank	03/14/12	03/14/12	<1	<1
Total N	µg/l	Method Blank	03/14/12	03/14/12	<1	<1
Total N	µg/l	Method Blank	03/15/12	03/15/12	<1	<1
Total N	µg/l	Method Blank	03/15/12	03/15/12	<1	<1
Total N	µg/l	Method Blank	04/03/12	04/03/12	<1	<1
Total N	µg/l	Method Blank	04/03/12	04/03/12	<1	<1
Total N	µg/l	Method Blank	04/09/12	04/09/12	<1	<1
Total N	µg/l	Method Blank	04/09/12	04/09/12	<1	<1
Total N	µg/l	Method Blank	04/09/12	04/09/12	<1	<1
Total N	µg/l	Method Blank	04/10/12	04/10/12	<1	<1
Total N	µg/l	Method Blank	04/10/12	04/10/12	<1	<1
Total N	µg/l	Method Blank	04/17/12	04/17/12	<1	<1

Method Blank Recovery
for Tropical Farms collected from
May 2011 to May 2012

PARAMETERS	UNITS	SAMPLE DESCRIPTION	DATE PREPPED	DATE ANALYZED	ACTUAL CONC.	ACCEPTANCE RANGE
Total N	µg/l	Method Blank	04/17/12	04/17/12	<1	<1
Total N	µg/l	Method Blank	04/20/12	04/20/12	<1	<1
Total N	µg/l	Method Blank	04/22/12	04/22/12	<1	<1
Total N	µg/l	Method Blank	04/22/12	04/22/12	<1	<1
Total N	µg/l	Method Blank	04/22/12	04/22/12	<1	<1
Total N	µg/l	Method Blank	04/22/12	04/22/12	<1	<1
Total N	µg/l	Method Blank	04/25/12	04/25/12	<1	<1
Total N	µg/l	Method Blank	04/25/12	04/25/12	<1	<1
Total N	µg/l	Method Blank	04/26/12	04/26/12	<1	<1
Total N	µg/l	Method Blank	04/26/12	04/26/12	<1	<1
Total N	µg/l	Method Blank	04/27/12	04/27/12	<1	<1
Total N	µg/l	Method Blank	04/27/12	04/27/12	<1	<1
Total N	µg/l	Method Blank	04/30/12	04/30/12	<1	<1
Total N	µg/l	Method Blank	04/30/12	04/30/12	<1	<1
Total N	µg/l	Method Blank	05/02/12	05/02/12	<1	<1
Total N	µg/l	Method Blank	05/15/12	05/15/12	<1	<1
Total N	µg/l	Method Blank	05/15/12	05/15/12	<1	<1
Total N	µg/l	Method Blank	05/15/12	05/15/12	<1	<1
Total N	µg/l	Method Blank	05/15/12	05/15/12	<1	<1
Total P	µg/l	Method Blank	10/25/11	10/25/11	<1	<1
Total P	µg/l	Method Blank	10/25/11	10/25/11	<1	<1
Total P	µg/l	Method Blank	10/31/11	10/31/11	<1	<1
Total P	µg/l	Method Blank	10/31/11	10/31/11	<1	<1
Total P	µg/l	Method Blank	10/31/11	10/31/11	<1	<1
Total P	µg/l	Method Blank	11/01/11	11/01/11	<1	<1
Total P	µg/l	Method Blank	11/01/11	11/01/11	<1	<1
Total P	µg/l	Method Blank	11/01/11	11/01/11	<1	<1
Total P	µg/l	Method Blank	11/01/11	11/01/11	<1	<1
Total P	µg/l	Method Blank	11/04/11	11/04/11	<1	<1
Total P	µg/l	Method Blank	11/04/11	11/04/11	<1	<1
Total P	µg/l	Method Blank	11/15/11	11/15/11	<1	<1
Total P	µg/l	Method Blank	11/15/11	11/15/11	<1	<1
Total P	µg/l	Method Blank	11/15/11	11/15/11	<1	<1
Total P	µg/l	Method Blank	12/07/11	12/07/11	<1	<1
Total P	µg/l	Method Blank	12/13/11	12/13/11	<1	<1
Total P	µg/l	Method Blank	12/13/11	12/13/11	<1	<1
Total P	µg/l	Method Blank	12/13/11	12/13/11	<1	<1
Total P	µg/l	Method Blank	12/20/11	12/20/11	<1	<1
Total P	µg/l	Method Blank	12/20/11	12/20/11	<1	<1
Total P	µg/l	Method Blank	12/20/11	12/20/11	<1	<1
Total P	µg/l	Method Blank	12/28/11	12/28/11	<1	<1
Total P	µg/l	Method Blank	12/28/11	12/28/11	<1	<1
Total P	µg/l	Method Blank	01/04/12	01/04/12	<1	<1
Total P	µg/l	Method Blank	01/04/12	01/04/12	<1	<1
Total P	µg/l	Method Blank	01/05/12	01/05/12	<1	<1
Total P	µg/l	Method Blank	01/10/12	01/10/12	<1	<1

Method Blank Recovery

for Tropical Farms collected from

May 2011 to May 2012

PARAMETERS	UNITS	SAMPLE DESCRIPTION	DATE PREPPED	DATE ANALYZED	ACTUAL CONC.	ACCEPTANCE RANGE
Total P	µg/l	Method Blank	01/10/12	01/10/12	<1	<1
Total P	µg/l	Method Blank	01/13/12	01/13/12	<1	<1
Total P	µg/l	Method Blank	01/13/12	01/13/12	<1	<1
Total P	µg/l	Method Blank	01/13/12	01/13/12	<1	<1
Total P	µg/l	Method Blank	01/19/12	01/19/12	<1	<1
Total P	µg/l	Method Blank	01/23/12	01/23/12	<1	<1
Total P	µg/l	Method Blank	01/23/12	01/23/12	<1	<1
Total P	µg/l	Method Blank	01/24/12	01/24/12	<1	<1
Total P	µg/l	Method Blank	01/27/12	01/27/12	<1	<1
Total P	µg/l	Method Blank	01/27/12	01/27/12	<1	<1
Total P	µg/l	Method Blank	02/01/12	02/01/12	<1	<1
Total P	µg/l	Method Blank	02/03/12	02/03/12	<1	<1
Total P	µg/l	Method Blank	02/07/12	02/07/12	<1	<1
Total P	µg/l	Method Blank	02/07/12	02/07/12	<1	<1
Total P	µg/l	Method Blank	02/07/12	02/07/12	<1	<1
Total P	µg/l	Method Blank	02/08/12	02/08/12	<1	<1
Total P	µg/l	Method Blank	02/12/12	02/12/12	<1	<1
Total P	µg/l	Method Blank	02/12/12	02/12/12	<1	<1
Total P	µg/l	Method Blank	02/12/12	02/12/12	<1	<1
Total P	µg/l	Method Blank	02/16/12	02/16/12	<1	<1
Total P	µg/l	Method Blank	02/16/12	02/16/12	<1	<1
Total P	µg/l	Method Blank	02/16/12	02/16/12	<1	<1
Total P	µg/l	Method Blank	02/23/12	02/23/12	<1	<1
Total P	µg/l	Method Blank	02/23/12	02/23/12	<1	<1
Total P	µg/l	Method Blank	02/23/12	02/23/12	<1	<1
Total P	µg/l	Method Blank	02/29/12	02/29/12	<1	<1
Total P	µg/l	Method Blank	02/29/12	02/29/12	<1	<1
Total P	µg/l	Method Blank	03/01/12	03/01/12	<1	<1
Total P	µg/l	Method Blank	03/13/12	03/13/12	<1	<1
Total P	µg/l	Method Blank	03/14/12	03/14/12	<1	<1
Total P	µg/l	Method Blank	03/14/12	03/14/12	<1	<1
Total P	µg/l	Method Blank	03/14/12	03/14/12	<1	<1
Total P	µg/l	Method Blank	03/15/12	03/15/12	<1	<1
Total P	µg/l	Method Blank	03/15/12	03/15/12	<1	<1
Total P	µg/l	Method Blank	04/03/12	04/03/12	<1	<1
Total P	µg/l	Method Blank	04/03/12	04/03/12	<1	<1
Total P	µg/l	Method Blank	04/09/12	04/09/12	<1	<1
Total P	µg/l	Method Blank	04/09/12	04/09/12	<1	<1
Total P	µg/l	Method Blank	04/09/12	04/09/12	<1	<1
Total P	µg/l	Method Blank	04/10/12	04/10/12	<1	<1
Total P	µg/l	Method Blank	04/10/12	04/10/12	<1	<1
Total P	µg/l	Method Blank	04/17/12	04/17/12	<1	<1
Total P	µg/l	Method Blank	04/17/12	04/17/12	<1	<1
Total P	µg/l	Method Blank	04/20/12	04/20/12	<1	<1
Total P	µg/l	Method Blank	04/22/12	04/22/12	<1	<1
Total P	µg/l	Method Blank	04/22/12	04/22/12	<1	<1

Method Blank Recovery
for Tropical Farms collected from
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PARAMETERS	UNITS	SAMPLE DESCRIPTION	DATE PREPPED	DATE ANALYZED	ACTUAL CONC.	ACCEPTANCE RANGE
Total P	µg/l	Method Blank	04/22/12	04/22/12	<1	<1
Total P	µg/l	Method Blank	04/22/12	04/22/12	<1	<1
Total P	µg/l	Method Blank	04/25/12	04/25/12	<1	<1
Total P	µg/l	Method Blank	04/25/12	04/25/12	<1	<1
Total P	µg/l	Method Blank	04/26/12	04/26/12	<1	<1
Total P	µg/l	Method Blank	04/26/12	04/26/12	<1	<1
Total P	µg/l	Method Blank	04/27/12	04/27/12	<1	<1
Total P	µg/l	Method Blank	04/27/12	04/27/12	<1	<1
Total P	µg/l	Method Blank	04/30/12	04/30/12	<1	<1
Total P	µg/l	Method Blank	04/30/12	04/30/12	<1	<1
Total P	µg/l	Method Blank	05/02/12	05/02/12	<1	<1
Total P	µg/l	Method Blank	05/15/12	05/15/12	<1	<1
Total P	µg/l	Method Blank	05/15/12	05/15/12	<1	<1
Total P	µg/l	Method Blank	05/15/12	05/15/12	<1	<1
Total P	µg/l	Method Blank	05/15/12	05/15/12	<1	<1
Total P	µg/l	Method Blank	06/12/12	06/12/12	<1	<1
Total P	µg/l	Method Blank	06/12/12	06/12/12	<1	<1
Total P	µg/l	Method Blank	06/12/12	06/12/12	<1	<1
Color	PCU	Method Blank	05/27/11	05/27/11	<1	<1
Color	PCU	Method Blank	05/27/11	05/27/11	<1	<1
Color	PCU	Method Blank	05/27/11	05/27/11	<1	<1
Color	PCU	Method Blank	06/04/11	06/04/11	<1	<1
Color	PCU	Method Blank	06/10/11	06/10/11	<1	<1
Color	PCU	Method Blank	06/25/11	06/25/11	<1	<1
Color	PCU	Method Blank	07/02/11	07/02/11	<1	<1
Color	PCU	Method Blank	07/02/11	07/02/11	<1	<1
Color	PCU	Method Blank	07/22/11	07/22/11	<1	<1
Color	PCU	Method Blank	08/04/11	08/04/11	<1	<1
Color	PCU	Method Blank	08/04/11	08/04/11	<1	<1
Color	PCU	Method Blank	08/11/11	08/11/11	<1	<1
Color	PCU	Method Blank	08/18/11	08/18/11	<1	<1
Color	PCU	Method Blank	08/18/11	08/18/11	<1	<1
Color	PCU	Method Blank	09/08/11	09/08/11	<1	<1
Color	PCU	Method Blank	09/16/11	09/16/11	<1	<1
Color	PCU	Method Blank	09/21/11	09/21/11	<1	<1
Color	PCU	Method Blank	09/21/11	09/21/11	<1	<1
Color	PCU	Method Blank	10/07/11	10/07/11	<1	<1
Color	PCU	Method Blank	10/12/11	10/12/11	<1	<1
Color	PCU	Method Blank	10/12/11	10/12/11	<1	<1
Color	PCU	Method Blank	10/21/11	10/21/11	<1	<1
Color	PCU	Method Blank	10/21/11	10/21/11	<1	<1
Color	PCU	Method Blank	10/28/11	10/28/11	<1	<1
Color	PCU	Method Blank	11/04/11	11/04/11	<1	<1
Color	PCU	Method Blank	11/04/11	11/04/11	<1	<1
Color	PCU	Method Blank	11/09/11	11/09/11	<1	<1
Color	PCU	Method Blank	11/16/11	11/16/11	<1	<1

Method Blank Recovery
for Tropical Farms collected from
May 2011 to May 2012

PARAMETERS	UNITS	SAMPLE DESCRIPTION	DATE PREPPED	DATE ANALYZED	ACTUAL CONC.	ACCEPTANCE RANGE
Color	PCU	Method Blank	11/22/11	11/22/11	<1	<1
Color	PCU	Method Blank	11/22/11	11/22/11	<1	<1
Color	PCU	Method Blank	12/02/11	12/02/11	<1	<1
Color	PCU	Method Blank	12/02/11	12/02/11	<1	<1
Color	PCU	Method Blank	12/08/11	12/08/11	<1	<1
Color	PCU	Method Blank	12/08/11	12/08/11	<1	<1
Color	PCU	Method Blank	12/15/11	12/15/11	<1	<1
Color	PCU	Method Blank	12/15/11	12/15/11	<1	<1
Color	PCU	Method Blank	12/15/11	12/15/11	<1	<1
Color	PCU	Method Blank	12/21/11	12/21/11	<1	<1
Color	PCU	Method Blank	01/05/12	01/05/12	<1	<1
Color	PCU	Method Blank	01/05/12	01/05/12	<1	<1
Color	PCU	Method Blank	01/18/12	01/18/12	<1	<1
Color	PCU	Method Blank	01/18/12	01/18/12	<1	<1
Color	PCU	Method Blank	01/29/12	01/29/12	<1	<1
Color	PCU	Method Blank	02/03/12	02/03/12	<1	<1
Color	PCU	Method Blank	02/03/12	02/03/12	<1	<1
Color	PCU	Method Blank	02/10/12	02/10/12	<1	<1
Color	PCU	Method Blank	02/17/12	02/17/12	<1	<1
Color	PCU	Method Blank	02/17/12	02/17/12	<1	<1
Color	PCU	Method Blank	02/23/12	02/23/12	<1	<1
Color	PCU	Method Blank	03/01/12	03/01/12	<1	<1
Color	PCU	Method Blank	03/01/12	03/01/12	<1	<1
Color	PCU	Method Blank	03/08/12	03/08/12	<1	<1
Color	PCU	Method Blank	03/16/12	03/16/12	<1	<1
Color	PCU	Method Blank	03/16/12	03/16/12	<1	<1
Color	PCU	Method Blank	03/23/12	03/23/12	<1	<1
Color	PCU	Method Blank	03/30/12	03/30/12	<1	<1
Color	PCU	Method Blank	04/06/12	04/06/12	<1	<1
Color	PCU	Method Blank	04/06/12	04/06/12	<1	<1
Color	PCU	Method Blank	04/12/12	04/12/12	<1	<1
Color	PCU	Method Blank	04/20/12	04/20/12	<1	<1
Color	PCU	Method Blank	04/20/12	04/20/12	<1	<1
Color	PCU	Method Blank	04/25/12	04/25/12	<1	<1
Color	PCU	Method Blank	04/25/12	04/25/12	<1	<1
Color	PCU	Method Blank	05/02/12	05/02/12	<1	<1
Color	PCU	Method Blank	05/02/12	05/02/12	<1	<1
Color	PCU	Method Blank	05/11/12	05/11/12	<1	<1
Color	PCU	Method Blank	05/11/12	05/11/12	<1	<1