Operational Project Monitoring Plan

For

BIG CYPRESS SEMINOLE INDIAN RESERVATION WATER QUALITY AGREEMENT

(SEMI)

05/03/2022

5/5/2022

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1.0 Project Organization

The following documents define the procedures used by South Florida Water Management District (SFWMD or District) Water Quality Monitoring (WQM) Section personnel to meet the Florida Department of Environmental Protection's (FDEP or Department) Quality Assurance (QA) Rule, Florida Administrative Code (F.A.C.) 62-160, and should be referred to for details on key personnel and relevant responsibilities.

- Overall project organization and responsibilities -
  - SFWMD Water Quality Bureau (WQB) and Applied Sciences Bureau (ASB) Quality Management Plan (QMP).
- Field activity and data validation responsibilities -
  - SFWMD Water Quality Monitoring Section's (WQM) Quality Manual (QM), Field Sampling Manual (FSM), and applicable Standard Operating Procedures (SOP).
- Laboratory analysis and data validation responsibilities -
  - SFWMD Analytical Service's (AS) Chemistry Laboratory Quality Manual (CLQM) and applicable SOPs.

2.0 Project Description

2.1 Project Introduction and Background

This document serves as a reference for surface water quality monitoring for Big Cypress Seminole Indian Reservation Water Quality Agreement (SEMI). This operational monitoring plan contains descriptions of the mandate justifying monitoring including frequency of collection and parameters by station.

Surface water monitoring for SEMI began on 06/26/1996 in response to the Agreement Between the South Florida Water Management District and the Seminole Tribe of Florida Providing for Water Quality, Water Supply and Flood Control Plans for the Big Cypress Seminole Indian Reservation and the Brighton Seminole Indian Reservation, Implementing Sections V.C. and VI.D. of the Water Rights Compact (1996 Seminole Agreement).

The Big Cypress Seminole Indian Reservation (Reservation) encompasses over 20,000 hectares just north of Big Cypress National Preserve. Three basins are located within the Reservation are the West Feeder Canal Basin, the southern portion of the North Feeder Canal Basin, and the northern portion of the L28 Interceptor Canal Basin.

SEMI includes four (4) stations (Table 1) that inflow into the Reservation. The construction, operation and maintenance of this project are mandated by the 1996 Seminole Agreement. The District and the Seminole Indian Tribe (Tribe) work together to oversee the 1996 Seminole Agreement. The guidance contained herein is intended to assist in maintaining consistency of sampling locations, parameter lists, and frequencies. In addition, the plan documents the project's scope and provides an ongoing historical perspective.

The stations L3BRS, S8, S190, L28I and USSO are registered under project CAMB (SFWMD-FIELD-MP-064) and for logistical purposes are collected on the CAMB/SEMI water quality sampling trip. CAMB stations that are collected on the CAMB/SEMI water quality sampling trip are included in Figure 1. Refer to CAMB OMP (SFWMD-FIELD-MP-064) for CAMB project information.

2.2 Sampling Mandates

Station locations, sampling frequencies, and parameters are dictated by the mandates governing this project (Appendix 1).There is no Compliance Monitoring Plan (CMP) associated with this project.

A history of mandate modifications follows:

- **1996 Seminole Agreement:** Agreement between the District and the Tribe executed 01/17/1996. This agreement requires the monitoring of water quality entering, originating on, and leaving the Reservation.
- WFEED was relocated 150 feet downstream from WWEIR to capture bedload transport over the weir; last sampling at WFEED 08/27/1998
- G108 sampling terminated on 11/17/2009 with the construction of W-D1AB upstream of G108 in 2010 to divert flows to PC17A.
- The analytical method for TKN was changed to TN per the District's total Nitrogen Fact Sheet and concurrence of FDEP on 05/12/2020.

2.3 Project Objectives

The primary objectives of this monitoring project are to determine:

- The quality of water delivered to the Reservation though the L-28 Borrow Canal before diversion of all or a portion of the C-139 Basin and C-139 Annex.
- The quality of water delivered to the Reservation through the North and West Feeder Canals.

2.3.1 Modification or Termination Conditions

The monitoring described herein will continue as required by the mandate listed in Section 2.2 and Appendix 1. Conditions for modification or termination of the project are detailed in the mandates specifying the conditions of the project.

3.0 Geographic Location

3.1 Regional Area

SEMI is located within Hendry County (Figure 1).

3.2 Station Location and Access

Monitoring stations are depicted in Figure 1 with locations described in Table 1.

The gate on the roadway just before PC17A is secured with a District "C" lock. The lock requires a master key, which can be obtained through a request made through the Field Project Manager (FPM) and/or Science Technician Supervisor.

Table 1: SEMI Surface Water Monitoring Stations and GPS Coordinates

Station	Latitude (ddmmss.sss)	Longitude (ddmmss.sss)	Description
G409	261950.735	805254.522	G409 Flow, Seminole Irrigation Supply Pump Station; flow to west
PC17A	262043.166	805847.005	Seminole Reservation agricultural discharge from McDaniel's property to North Feeder Canal; sample off wooden platform (extends to end of floating intake for A/S); flow to east
WWEIR	261809.894	810427.240	In Seminole Reservation, at weir, formerly WFEED, 150 ft downstream from WFEED; sample off metal platform at weir; flow to east
W-D1AB	263682.028	809789.164	Fixed weir structure (located within the District Right of Way, but owned by McDaniel Ranch); emergency discharge to North Feeder Canal

The standard positional goal for station coordinates is detailed in the Establishing & Verifying Water Quality Monitoring Station Registration SOP (SFWMD-FIELD-SOP-031). The coordinates are relative to NAD83 HARN horizontal datum.

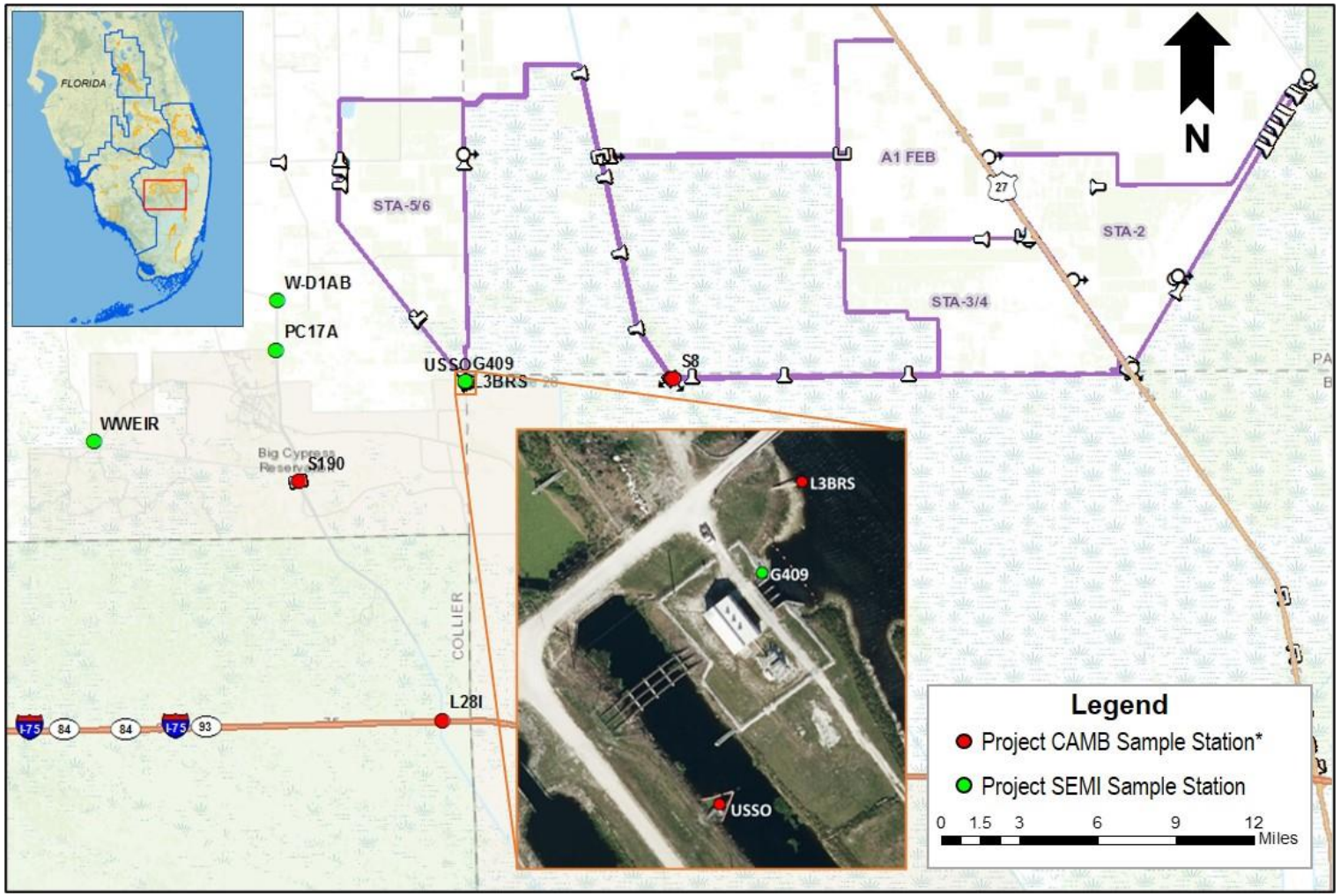

Figure 1: SEMI Station Locations

CAMB (SFWMD-FIELD-MP-064) stations included for reference.

4.0 Field Activities

4.1 Monitoring Frequencies and Parameters Collected

All monitoring parameters, frequencies of collection and locations are listed in Table 2. Some analytes may be reported by the lab that are not requested by the project.

Stations collected on a frequency determined by recorded flow are sampled following the SOP outlined in the Sampling Flow-Related Stations SOP (SFWMD-FIELD-SOP-027). If no flow (i.e., no operations) is recorded during the prescribed time period, the station is designated as a No Bottle (NOB) sample and the structure is not visited unless other parameters (i.e., TPO4) are required to be collected regardless of flow. Diversion Structures are only monitored if flowing, NOBs are not assigned during nonflow periods.

Table 2: SEMI Station Frequency and Parameter TESTS

Station	Collection Method	Frequency	Parameter TESTS
G409	Composite Flow Autosampler (ACF)	Weekly (W)	Total Phosphorus (TP)
WWEIR	In situ Grab	W	Dissolved Oxygen (DO), pH (PH) Specific conductance (SCOND), Temperature (TEMP)
	Grab	W	TP
	ACF	W	TP
PC17A	In situ Grab	W	DO, PH, SCOND, TEMP
	Grab	W	TP
	Composite Time Autosampler (ACT)	W	TP
W-D1AB	In situ Grab	Within two (2) working days of notification of discharge, then weekly thereafter while flowing	DO, PH, SCOND, TEMP
	Grab		TP

4.2 Project Specific Guidelines

All surface water grab samples are collected on the upstream side of any structure at a depth of 0.5 meters unless collection of a representative sample is inhibited by vegetation and/or other conditions. If an alternative sampling location is required, a consultation with a Science Technician Supervisor and/or the Field Project Manager (FPM) must take place prior to the sampling being collected; this action must be documented in the field notes.

4.3 Grab Sampling Procedures

Sample collection for this project follows the procedures and requirements found in the *Grab Sampling Protocol* section of the WQM FSM. Project-specific deviations are detailed in Section 4.2.

4.4 Field Parameters

The collection of field parameters follows the procedures and requirements outlined in the *Instrument Calibration and Field Measurements* section of the WQM FSM. Project-specific deviations are detailed in Section 4.2.

4.5 Field Quality Control Requirements

Field quality control requirements shall follow the procedures found in the *Field Quality Control Measurements and Requirements* section of the WQM FSM. Project-specific deviations are detailed in Section 4.2.

4.6 Autosampler Collection

Autosampler samples are collected in accordance with the *Autosamplers* section of the WQM FSM. Project-specific deviations are detailed in Section 4.2. The intakes for the autosamplers are either affixed to a float or to a structure at depth.

For this project, samples are collected as flow-proportional (ACF) or composite timed-proportional (ACT) at stations identified in Table 2. For ACF, station-specific "trigger volumes" are established through the protocols described by Abtew and Powell (2004). The frequency of ACT collection is set by the FPM following discussions with the data's end user(s). Discrete bottles within each autosampler are pre-acidified and composited on a weekly basis and analyzed for TP.

4.7 Sample Submission

If the District laboratory is to be used, samples are transported to the laboratory and submitted for analyses in accordance with the requirements specified in the WQM FSM. Samples are submitted to the laboratory on the same day as collection or via courier the following day. Sample acceptance criteria are detailed in Section 6 of the CLQM. If samples are submitted to another laboratory it must meet the contract laboratory requirements as specified in Section 5.2 below.

5.0 Data Quality Objectives (DQOs)

5.1 Data Usage and Reporting

The data from this project are compiled and are summarized in an annual report in accordance with the conditions outlined in the mandates named in Appendix 1.

5.2 Data Quality

All monitoring described herein meet the requirements conveyed in the FDEP's QA Rule, 62-160 F.A.C. The District has adopted a uniform set of DQOs following criteria detailed within the *Analytical Methods and Default QA/QC Targets* table of the CLQM.

Field parameter DQOs are described in the *Field Instrument Minimum Accuracy Requirements* table found in the *Instrument Calibration and Field Measurements* section of the FSM. The most recent version of the FSM details the specific field testing DQOs at the time of sample collection.

Samples are analyzed according to the provisions within the FDEP QA Rule, 62-160 F.A.C. and the CLQM. The most recent version of the CLQM details DQOs at the time of sample collection for each specific laboratory analysis. Data are qualified in accordance with the FSM, CLQM and applicable data validation SOPs.

No contract laboratory is being used.

5.3 Completeness Target

The completeness target (i.e., the number of samples successfully collected and analyzed, as a percentage of those that were planned) has been set at 95% annually for this project. Sampling attempts shall be included in the completeness target. At times samples will not be able to be collected due to no flow or low water conditions, unsafe station conditions, equipment malfunction, site maintenance, tropical storms/hurricanes or other unforeseen problems that might affect sample collection and/or quality. If samples cannot be collected on an attempt, collectors shall document the sample as a "NOB" to indicate an attempt was made and/or the sample could not be collected for the documented reasons.

6.0 Data and Records Management

The District evaluates data in accordance with the data quality objectives stated in the District's FSM and CLQM. All data submittals shall conform to existing District guidelines.

6.1 Contract Deliverables

There are no contract deliverables for this project.

6.2 Data and Record Storage

After the data validation process, all data and records are maintained so that end users can retrieve and review information relative to a sampling event. Field records are maintained in accordance with the *Archive Records Storage and Retention* SOP (SFWMD-FIELD-SOP-022). All analytical data and specified metadata are sent to the DBHYDRO database for long-term storage and retrieval.

The District shall maintain master copies of field and laboratory generated records. It is

the responsibility of the District to maintain both records of current and historical methodologies and operating procedures so that at any given time the conditions that were applied to a sampling event can be evaluated.

Field records storage protocols are outlined in the *Archive Records Storage and Retention* (SFWMD-FIELD-SOP-022). Corrections of field data or records must follow the applicable WQM *Correction of Field Records SOP* (SFWMD-FIELD-SOP-032) and the FSM. Corrections to data in DBHYDRO must follow *Data Investigations and Corrections* (SFWMD-DVS-SOP-010).

7.0 References

Abtew, Wossenu and Barbara Powell, 2004. Water Quality Sampling Schemes for Variable Flow Canals at Remote Sites. Journal of the American Water Resources Association (JAWRA) 40(5):1197-1204.

Agreement Between the South Florida Water Management District and the Seminole Tribe of Florida Providing for Water Quality, Water Supply and Flood Control Plans for the Big Cypress Seminole Indian Reservation and the Brighton Seminole Indian Reservation, Implementing Sections V.C. and VI.D. of the Water Rights Compact. January 17, 1996.

FDEP (Florida Department of Environmental Protection). Quality Assurance Rule, 62-160 Florida Administrative Code (F.A.C.). April 16, 2018.

SFWMD (South Florida Water Management District). *Archive Records Storage and Retention*, SFWMD-FIELD-SOP-022, Water Quality Monitoring Section.

SFWMD (South Florida Water Management District). *Chemistry Laboratory Quality Manual (CLQM)*, SFWMD-LAB-QM-2022-001 or most current effective version. Analytical Services Section.

SFWMD (South Florida Water Management District). *Correction of Field Records*, SFWMD-FIELD-SOP-032, Water Quality Monitoring Section.

SFWMD (South Florida Water Management District). *Data Investigations and Corrections*, SFWMD-DVS-SOP-010, Data Validation Services Unit.

SFWMD (South Florida Water Management District). *Field Sampling Manual (FSM)*, SFWMD-FIELD-FSM-001, Water Quality Monitoring Section.

SFWMD (South Florida Water Management District). *Field Quality Manual (QM)*, SFWMD-FIELD-QM-001, Water Quality Monitoring Section.

SFWMD (South Florida Water Management District). *Sampling Flow-Related Stations*, SFWMD-FIELD-SOP-027, Water Quality Monitoring Section.

SFWMD (South Florida Water Management District). *Station Registration*, SFWMD-FIELD-SOP-031, Water Quality Monitoring Section.

SFWMD (South Florida Water Management District). Water Conservation Area Material Budget (CAMB), SFWMD-FIELD-MP-064, Water Quality Monitoring Section

SFWMD (South Florida Water Management District). *Water Quality and Applied Sciences Bureaus Quality Management Plan (QMP)*, SFWMD-QS-QM-001. Applied Sciences and Water Quality Bureaus.

Water Rights Compact with Seminole Tribe. Fla. Stat. § 285.165. May 15, 1987.

8.0 Revisions and Modifications

Version	Date	Section	Notes
01	02/02/2008	Monitoring Locations	Monitoring station WFEED was relocated 150 feet downstream to WWEIR to capture the bedload transport over the weir (12/1997); WFEED continued until August 1997; Monitoring began at G357, G404, and G409 as they came online (06/2000); Monitoring terminated at USL3BRS after comparisons indicated that G409 sufficiently addressed the monitoring needs in this area (09/2000); S8 replaced G404 and G357; sampling at G404 and G357 terminated after determination that weekly grab samples at S8 were sufficiently representative 02/02/2008
02	05/15/2014	Monitoring Locations and Frequencies; 4.2; Table 1; References; Table 2	Discontinued sampling at G108; W-D1AB structure constructed upstream of G108 (diverts flow to PC17A; flow may occur infrequently (12/2009); No sampling at PC17A from 12/07/2010 to 02/08/2011; temporary land bridge in place upstream of the structure (12/2010-02/2011); Table 1 column heading modified from "Description" to "Description and Registered Project Name"/for clarity; some stations listed under CAMB (07/11/2011); NFEED no longer representative of conditions and replaced by existing stations PC17A and G108 (03/2004); Registered project names were added to Description column because some were registered under project CAMB (07/11/2011); Added the version preparation date of the FSQM (08/27/2012); Removed notes stating parameters (TDPO4 and OPO4) added BWF/M for Everglades Regulation until 9/30/11 from table (03/14/2013); Added Appendix 1 to match updated OMP Template (03/14/2013); Removed notes stating W/F = weekly during flow conditions as it was no longer part of the contents of the table (03/19/2013); Updated BW and Q parameters for L3BRS (05/29/2013); Grab sampling at G409 ended 11/3/09; reason not listed in OMP: L. Lindstrom requested and received permission from Seminole Tribe to take grab from L3BRS to help District comply w/ Settlement Agreement; the Tribe agreed 11/02/09 as long as the BW sampling parameters for G409 transferred to L3BRS
03	02/26/2015	5.2; Appendix 1; 4.2	Removed last sentence of second paragraph referring to creating a new station (W-DIAB_T) for samples collected downstream; added information about the creation of W-DIAB (02/26/2015); L3BRS was missing some parameter information (02/26/2015); Updated Figure 1 as STA5 and STA6 have expanded into one area
04	05/03/2022	All	Revised to match template formatting and updated boiler plate language (Template Version Date April 28, 2021); Moved the sentence "The previous versions of the document were dated: 08/25/1997, 02/01/2008, and 02/26/2015" to this table. Removed the majority of content related to project CAMB throughout document so that future CAMB project updates would be confined to the CAMB MP; the only references to project CAMB are a list in Section 2.1 of the CAMB stations that are collected on the CAMB/SEMI sampling trip and CAMB/SEMI trip station locations in Figure 1. Corrected date of 1996 Seminole Agreement in Section 2.2 Added citation for the 1996 Seminole Agreement and modified citation for the Water Rights Compact.

Appendix 1: Station Requirements by Mandate

Mandate	Station	Collection Method	Frequency	Parameters TESTS
Seminole Agreement	G409	Composite Flow Autosampler (ACF)	Weekly (W)	Total Phosphrus (TP)
	PC17A	In situ Grab	W	Dissolved Oxygen (DO), pH (PH) Specific conductance (SCOND), Temperature (TEMP)
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		Composite Time Autosampler (ACT)	W	TP
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		Grab		TP