December 2010

CENTRAL AND SOUTHERN FLORIDA PROJECT

COMPREHENSIVE EVERGLADES RESTORATION PLAN

COMPREHENSIVE EVERGLADES
RESTORATION PLAN

PROGRAM MANAGEMENT PLAN

CERP Monitoring Programs Quality Assurance and Quality Control

U.S. Army Corps of Engineers
Jacksonville District

South Florida Water Management District

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FOR THE QUALITY ASSURANCE OVERSIGHT TEAM:

4/27/11

DEBORAH SCERNO, PMP
USACE QAOT Co-Chair

Date

4/27/2011

MING CHEN, PhD
SFWMD QAOT Co-Chair

Date

FOR THE DESIGN COORDINATION TEAM:

5 MAY 2011

ERIC BUSH
Assistant Chief
Everglades Division
USACE

Date

4-28-2011

LARRY CARTER
Assistant Deputy Executive Director
Everglades Restoration & Capital Projects
SFWMD

Date

FOR THE SOUTH FLORIDA WATER MANAGEMENT DISTRICT:

4/29/11

KENNETH G. AMMON, P.E.
Deputy Executive Director
Everglades Restoration & Capital Projects
SFWMD

Date

FOR THE PROJECT REVIEW BOARD, U.S. ARMY CORPS OF ENGINEERS:

5/6/11

STUART J. APPELBAUM
Deputy Restoration Program Management
USACE

Date

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1.0 TABLE OF CONTENTS

1.1 List of Tables and Figures

1.2 List of Acronyms

A

B

C

C&SF	Central and Southern Florida Project
CERP	Comprehensive Everglades Restoration Plan
CESAJ	U.S. Army Corps of Engineers, Jacksonville District
CGM	CERP Guidance Memorandum
Corps	U.S. Army Corps of Engineers, Jacksonville District
COTR	Contracting Officer Technical Representative

D

DA	Department of the Army
DCT	Design Coordination Team

E

E&SF	Everglades and South Florida
EPJV	Everglades Partners Joint Venture

F

FAR	Federal Acquisition Regulation
FDEP	Florida Department of Environmental Protection
FY	Fiscal Year

G

H

I

IDM	Information and Data Management
IMC	Interagency Modeling Center

J

K

L

M

MAP	Monitoring Assessment Plan
MPMP	Master Program Management Plan

N

O

P

PDT	Project Delivery Team
PIR	Project Implementation Report
PLMP	Project Level Monitoring Plan
PM	Project Manager
PrMP	Program Management Plan

Q

QA/QC	Quality Assurance/ Quality Control
QAOT	Quality Assurance Oversight Team
QAR	Quality Assessment Report
QASR	Quality Assurance System Requirements Manual

R

RECOVER	REstoration COordination and VERification

S

SFER	South Florida Everglades Restoration
SFWMD	South Florida Water Management District
SOP	Standard Operating Procedure
SOW	Scope of Work

T

TMB	Technology Management Board Charter

U

US	United States
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U. S. Geological Survey

V

W

WBS	Work Breakdown Structure
WIK	Work-in-Kind
WRDA	Water Resources Development Act

X

Y

Z

1.3 List of Program Management Plan Preparers

TABLE 8-1: PROGRAM MANAGEMENT PLAN PREPARERS

Name	Agency	Title	Phone
Jennifer Auger	EPJV	Project Manager	904-232-1981
Ming Chen	SFWMD	Quality Assurance Administrator	561-682-6252
Tom Dreschel	SFWMD	Section Leader / Senior Environmental Scientist	561-644-7558
Lisa Gued	USACE	Chemist	904-232-1793
Katie Hallas	FDEP	Environmental Specialists III	850-2457688
Jeff Hendel	USEPA	Chemist	706-355-8839
Sue Kemp	USACE	Biologist	904-232-2017
Marie Lopez	USACE	Chemist	904-232-3484
Darlene Marley	SFWMD	Sr. Environmental Scientist – Data Steward	561-682-2430
Miles Meyers	USFWS	Interagency Liaison	904-232-1826
Sal Resurreccion	USACE	Environmental Engineer	904-232-1850
Deborah Scerno	USACE	Project Manager	904-232-2805
David Splichal	USACE	Chemist / Env. Support Liaison	402-697-2617
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2.0 PROGRAM INFORMATION

2.1 Program Background

As implementation of the Comprehensive Everglades Restoration Plan (CERP) moves forward, the need for a Quality Assurance and Quality Control (QA/QC) program to ensure the accuracy, precision, and reliability of CERP monitoring data has become evident. The purpose of the program is to accomplish the following:

- Ensure all CERP monitoring activities adhere to science-based QA/QC requirements to support project-level and system-wide assessments
- Ensure the consistency and comparability of data using standardized procedures, to the maximum extent practicable, across agencies or organizations and time

To fulfill the need for a QA/QC Program, the Quality Assurance Oversight Team (QAOT) was formed. The QA/QC Program is a system-wide program[8] of the CERP, designed to organize and provide the highest scientific and technical quality assurance and quality control in all CERP monitoring activities.

The purpose of this Program Management Plan (PrMP) is to provide a guide for QA/QC efforts that support the implementation of the CERP. This PrMP reflects the U. S. Army Corps of Engineers (USACE) and the South Florida Water Management District (SFWMD) strategy for providing support for implementation of the CERP monitoring and sampling QA/QC. This PrMP is an update of the previous version and is a continuous effort in 2011-2015.

The role of the QAOT, which oversees the CERP monitoring and sampling QA/QC, is to help ensure the accuracy, precision, and reliability of CERP monitoring and sampling data. While QAOT is an interdisciplinary, interagency body, responsibility for QAOT rests jointly with the USACE and the SFWMD, as the lead agencies. The QAOT is responsible for providing guidance on and evaluating the implementation of the CERP Quality Systems through the Quality Assurance System Requirements (QASR) Manual and guidance memoranda. This includes developing and providing guidance on procedures, QA/QC requirements and data validation for CERP monitoring activities. The team is the forum to develop consistency regarding data quality and QA/QC processes among the various entities involved with hydrological, meteorological, water quality and biological monitoring activities for CERP.

The QAOT reports to the Design Coordination Team (DCT); however, it provides effective feedback directly to Program Managers (including RECOVER) and

[8] CERP Master PMP (2000) defines program-level activities as "any work that spans multiple projects and system-wide issues".

Project Delivery Teams (PDTs) on QA/QC issues affecting their programs and projects. The QAOT is organizationally independent of programs and projects because of its QA oversight responsibility for monitoring efforts. Oversight of CERP QA monitoring activities requires the QAOT function at the CERP Program level. Although the QAOT work-effort spans the entire implementation period of the CERP monitoring activities, this management plan focuses, for budgetary purposes, on fiscal years 2011-2015.

The QAOT is a multi-agency team comprised of one representative from six standing member agencies. The lead agencies are the USACE and the SFWMD. Representatives from the following agencies are serving as standing members:

- Army Corps of Engineers, Jacksonville District (USACE)
- South Florida Water Management District (SFWMD)
- U.S. Environmental Protection Agency (USEPA)
- Florida Department of Environmental Protection (FDEP)
- U.S. Geological Survey (USGS)
- U.S. Fish and Wildlife Service (USFWS)

2.2 Authority/Authorization

The Water Resources Development Act (WRDA) 2000 (Public Law 106-541) approved the Comprehensive Everglades Restoration Plan as the framework and guide for modifications to the Central and Southern Florida (C&SF) Project to restore the South Florida ecosystem and to provide for other water-related needs of the region. The authority for the CERP is contained within WRDA 2000 in Section 601(b)(A), which states:

> *"(b) Comprehensive Everglades Restoration Plan Approval –*
> *(A) IN GENERAL. —Except as modified by this section, the Plan is approved as a framework for modifications and operational changes to the Central and Southern Florida Project that are needed to restore, preserve, and protect the South Florida ecosystem while providing for other water-related needs of the region, including water supply and flood protection. The Plan shall be implemented to ensure the protection of water quality in, the reduction of the loss of fresh water from, and the improvement of the environment of the South Florida ecosystem and to achieve and maintain the benefits to the natural system and human environment described in the Plan, and required pursuant to this section, for as long as the project is authorized."*

The federal authority for this program is contained in Section 601(d) of WRDA 2000, which states:

"(d) AUTHORIZATION OF FUTURE PROJECTS-
(1) IN GENERAL- Except for a project authorized by subsection (b) or (c), any project included in the Plan shall require a specific authorization by Congress.
(2) SUBMISSION OF REPORT- Before seeking congressional authorization for a project under paragraph (1), the Secretary shall submit to Congress--
(A) a description of the project; and
(B) a project implementation report for the project prepared in accordance with subsections (f) and (h)."[9]

2.3 Guidance & Standards

Initial CERP program guidance was published in August 2000 in the Master Program Management Plan (MPMP). The MPMP is regarded as the baseline program guidance document for the implementation of the CERP program. The QAOT uses CERP Guidance Memoranda, the QASR Manual, and Standard Operating Procedures (SOPs) to provide guidance and standards for CERP QA/QC.

2.3.1 CERP Guidance Memorandums

Since the initial authorization, the USACE and the SFWMD Program Managers have made decisions on a wide array of issues that directly affect their staff's execution of the program. The program managers translated their decisions into CERP Guidance Memoranda (CGM). The authority and mandates for Monitoring Program QA/QC activities originates from the enactment of CGM 041.00 originally signed by the DCT on November 19, 2003. The revision of this CGM, CGM 041.01, was approved in July 2010.

By signing CGM 041.00, the CERP Program Managers fulfilled the requirements on the Water Resources Development Act of 2000 (WRDA 2000) (PL 106- 541) enacted in December 2000. The executed CGM creating the Monitoring Program QA/QC therefore became part of the Design Agreement (USACE and SFWMD, 2000a) and the 2000 Master Program Management Plan (MPMP) between the Department of the Army and the SFWMD (USACE and SFWMD, 2000b).

The authority and mandates for Project-level Water Quality and Hydrometeorologic Monitoring and Assessment originates from the enactment of CGM 040.01 signed by the DCT on May 20, 2008. CGM 040.01 provides guidance on how to address and incorporate monitoring and assessment activities and costs in planning, design and implementation documents for

[9] The full text of WRDA 2000 Section 601 is available on www.evergladesplan.org

CERP projects. This guidance is provided to ensure consistency in addressing monitoring and assessment activities from project to project and to avoid having each PDT independently attempt to respond to monitoring issues. CGM 040.01 focuses on activities associated with observing and recording hydrologic, meteorological, hydraulic and water quality parameters.

The authority and mandates for Toxic Substances Screening Process for Mercury and Pesticides originates from the enactment of CGM 042.00 signed by DCT on September 17, 2005 and updated to CGM 42.01 in July 2010. CGM 042.01 provides guidance on screening for toxic substances, such as mercury and pesticides, in CERP projects. This guidance provides project managers and teams with a uniform scheme for screening projects for the likelihood of unacceptable impacts from toxic substances and detecting project-related impacts of toxic substances.

2.3.2 Quality Assurance System Requirements (QASR) Manual

The QASR manual serves as the basis of the QA program for all monitoring activities conducted during CERP implementation. All agencies involved in environmental data acquisition for CERP implementation are required to adhere to the provisions of the QASR. The QASR manual establishes minimum QA/QC requirements.

2.3.3 Standard Operating Procedures (SOPs)

Currently, the QAOT uses four SOPs to provide guidance and standards to CERP QA/QC. QAOT-SOP-001, SOP and Document Control Requirements, outlines the requirements for preparing SOPs used by the QAOT to conduct their activities and requirements for control of all documents. The requirements apply to all documents prepared by the QAOT.

QAOT-SOP-002, Activities and Responsibilities, outlines the Quality Assurance Management activities. It assigns active responsibility, assistance, oversight and guidance functions to the QA groups or individuals who are responsible for data quality decisions, implementation of QA/QC procedures and/or oversight of the QA process.

QAOT-SOP-003, Preparation of the Quality Assessment Report, outlines guidance for the preparation of the Quality Assessment Report (QAR). The QAR provides CERP management an assessment of the state of data quality for monitoring activities being conducted for CERP.

QAOT-SOP-004, Review of Project Monitoring Plans and Scopes of Work (SOW), establishes the procedures for the QAOT reviews of CERP Project Level

Monitoring Plans (PLMP) and all SOW arising from the PLMP. The QAOT reviews the PLMPs/SOW for compliance with the QASR manual.

2.4 Continued Coordination between Partner Agencies

In order to build upon the strong foundation of cooperation between the agencies regarding the QA/QC Program, the agencies have agreed to continue meeting with each other. The QAOT meets monthly via teleconference and in person three times a year.

2.5 Related Project/Programs

As the CERP monitoring and sampling QA/QC is implemented and becomes operational, it must be coordinated with a number of related project- and program-level activities, such as RECOVER, Information and Data Management, Interagency Modeling Center, and individual CERP projects. It is of utmost importance for the success of the CERP monitoring and sampling QA/QC that there are coordination and oversight activities between program-level QA/QC activities and QA/QC activities required for individual projects. All projects planned for CERP implementation will have specialized, sub-regional and project specific QA/QC activities that must be consistent with the overall CERP program-level QA/QC requirements.

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3.0 PROGRAM SCOPE

The QAOT shall successfully accomplish its mission at both the program and project level. At the program level, the QAOT will consider the regional and system-wide perspective as it evaluates and assesses the QA/QC practices. Concurrently, QA/QC requirements are applicable to all CERP projects and the QAOT oversees the application of the same QA/QC Program requirements to individual project-level activities within their authority.

The QAOT provides project and system-wide feedback to the DCT, through its program managers from the USACE and the SFWMD as well as the other standing members. The DCT, as the oversight body for CERP implementation, will oversee the QAOT and its products.

The QAOT will regularly provide support to programs, including RECOVER, concerning QA/QC aspects of programmatic monitoring, such as the MAP implementation. In addition, the QAOT will provide QA/QC guidance to PMs on a project-level basis.

Besides providing guidance, the other major duties of the QAOT are:

- Develop and implement data review criteria and quality assessment procedures, as this will help ensure data and formatting requirements are consistent and easily transferred for data storage and management.
- In cooperation with the Information and Data Management Program, standardize electronic data deliverables (such as ADaPT for chemistry data).
- Establish Standard Operating Procedures (SOPs) when they do not exist, especially for the sampling of biological and/or ecological indicators (such as those listed in Chapter 8 of the QASR).
- As requested or approved by DCT, oversee the approval process for alternative procedures for sampling and analysis as described in the QASR.
- Implement a QA audit program for CERP monitoring activities including laboratory, field and project audits.
- Oversee the laboratory and field comparison studies program to assess consistency and comparability among agencies involved in CERP monitoring activities to determine if data collected are reliable, defensible and comparable among various sources.
- Produce a QA report on CERP monitoring activities on a biennial basis, evaluating whether the QASR is being implemented by CERP projects and programs and/or their contractors.
- Review and provide guidance in the development of QA Project Plans for CERP projects and programs.

- Review program and project-level monitoring plans and scopes of work to ensure all required QA/QC protocols are addressed.
- Familiarize Project Delivery Teams (PDTs) and programs (such as RECOVER) with the requirements of the QASR.
- Provide guidance, if requested, for data quality objectives to PDTs and programs.
- Coordinate and/or facilitate relevant workshops, meetings and coordination activities, as these are important ways of providing venues for discussing modifications to the QA/QC Program.
- Prepare and Update the Program Management Plan.
- Provide a link between QAOT and DCT, to keep DCT apprised of QAOT activities.
- Ensure that QA/QC standards and guideline documents (e.g. QASR chapters, SOPs) in use are the most current and approved versions available.
- Prepare and update the QASR, this includes review of current criteria and procedures and the ability to revise criteria and procedures periodically or on an "as needed" basis.
- As mandated or requested by DCT, QAOT will participate in the development and/or update of CGMs related to QAOT activities.

3.1 Program Constraints & Assumptions

Constraints:

1. The QAOT does not have authority over agencies that do not receive funding from CERP or provide work-in-kind to the CERP.
2. Since the QAOT is comprised of some voluntary members (USEPA, FDEP, USGS and USFWS), the lead agencies (USACE and SFWMD) cannot guarantee active participation by all invited agencies.

Assumptions:

1. The focus of the QAOT will be to serve those projects and programs related to CERP.
2. The duration of the QAOT program will be the life of the CERP program.

3.2 Contracting Plan

Many of the tasks performed by the QAOT are performed by contractors. As a result, the contracting plan for this program is important as are the regulations and policies concerning contracting. Contract employees may be funded by either the SFWMD or the USACE.

Contract employees may only be assigned work covered under their contract. Changes to the contracts may be made by following the procedures prescribed by

each agency. Oversight of the contract personnel by the contracting agency is to be maintained at all times.

Federal oversight (USACE) is designated through Contracting Officer Technical Representative (COTR) assignments. The COTR is responsible for the determination that work is within scope, and consistent with the funding source. The COTR is required to avoid any actions that could be interpreted as Personal Services, per Federal Acquisition Regulation (FAR) section 37.

State oversight (SFWMD) is designated through the District's Procurement Manual. In addition, the contractor manager develops the scope of work, determines if the contractor stays within scope, and is responsible for ensuring the work is consistent with the funding source.

Contracted personnel work within the framework of the existing agreements and work orders. They are not empowered to negotiate with the CERP state or federal agency partners.

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4.0 RESPONSIBILITY MATRIX

The matrix below lists the WBS activities and identifies which agencies are the lead responsible party (L) and which agencies are reviewers or provide support to the lead agency (R).

TABLE 4-1: RESPONSIBILITY MATRIX

Activities	USACE	SFWMD	USEPA	FDEP	USGS	USFWS
Coordinate/Facilitate Relevant Workshop Meetings and Coordination Activities	L	R	R	R	R	R
Prepare and Update PrMP	L	R	R	R	R	R
Provide Link between QAOT and DCT	L	R				
QAOT Document Control	L	R	L	L	L	L
CERP QA/QC Report	R	L	R	R	R	R
Data Deliverables and Formatting	L	L	R	R	R	R
Coordination of New or Alternative Methods/Procedures	R	L	R	R	R	R
QASR Preparation and Updates	R	L	R	R	R	R
CGM Development and Updates	L	R	R	R	R	R
Review of Monitoring Plans and Scopes of Work	R	L	R	R	R	R
Field and Laboratory Comparability Studies	R	L	R	R	R	R
Training and Technical Support	L	L	R	R	R	R
QA Program Audits	R	L	R	R	R	R
Laboratory, Field and Project Audits						
Organic Laboratory Audits	L	R	R	R	R	R
Inorganic Laboratory Audits	R	L	R	R	R	R
Hydrometeorological Audits	R	L	R	R	R	R
Non-Biological Field Audits	R	L	R	R	R	R
Biological Field Audits	L	R	R	R	R	R

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5.0 PROGRAM CHANGES

5.1 List of PrMP Updates & Revisions

The PrMP is developed as a dynamic document that will require periodic updates to reflect progress, as well as revisions to denote major changes in the scope, schedule, costs and/or resource allocation of the project. During the project lifetime, the PrMP may be updated as needed, including during interim periods following the Change Control Procedures described in CERP Guidance Memorandum No. 007.00.

For this QAOT PrMP which covers FY 2011-2015, all sections of the PrMP have been reviewed and updated to reflect the current goals, objectives, constraints and assumptions. Below is a list of the major revisions:

- The QAOT PrMP was updated to follow the approved PrMP outline, which means that some information appears in a different section.
- The QAOT PrMP was updated to incorporate changes to CGM 041.01.
- The WBS has been revised to reflect current CGM 041.01 responsibilities.
- Several new sections have been added, including a responsibility matrix, constraints and assumptions, and contracting plan.

5.2 Changes in Program Schedule and Cost

This section tracks changes in the program scope, schedule, and cost.

5.2.1 Program Schedule

The entire work breakdown structure has been reviewed and updated to reflect the current CGM 041.01 responsibilities. The activities and budget are presented using the work breakdown structure.

5.2.2 Program Cost Estimate

As the Program has moved from the development stages to the review/maintenance stage the estimated overall program costs have gone down. If further development on issues or procedures is required, this may result in an increase in costs. The costs reflected in this estimate are for activities expected in the day to day running of the QAOT. The costs presented in this Program Management Plan are for fiscal years (FY) 2011 to 2015. (Note the fiscal year is from 1 Oct to 30 September, e.g. FY 2011 is 1 Oct 2010 to 30 September 2011.) Previous versions of this document have covered earlier fiscal years.

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6.0 FINANCIAL MANAGEMENT

Presented below is the total program cost summary, fully funded, for fiscal years 2011 to 2015. This only covers expected costs from the USACE and the SFWMD. The project budget was developed using the work breakdown structure and cost estimates for activities under that work breakdown structure. This estimate does not include any costs programs or projects may incur in the process of including QA/QC in their program and project monitoring plans. Costs may be incurred by the other participating agencies through their support and participation in the QAOT. Funding to the other participating agencies will not be provided by the QAOT since their participation is voluntary, (see section 3.1, Constraint #2).

It should be noted that costs estimates beyond fiscal year 2015 will be established in the next version of the Program Management Plan.

TABLE 6-1: FINANCIAL MANAGEMENT

Activity	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
QAOT Program Management	$ 43,800	$ 45,114	$ 46,467	$ 47,861	$ 49,297
QAOT Program Document Development, Review and Revision	$ 304,119	$ 313,243	$ 322,640	$ 332,319	$ 342,289
Support to CERP Projects and Programs	$ 680,641	$ 701,060	$ 722,092	$ 743,755	$ 766,067
Total	**$ 1,028,560**	**$ 1,059,417**	**$ 1,091,199**	**$ 1,123,935**	**$ 1,157,653**

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7.0 WORK BREAKDOWN STRUCTURE

A work breakdown structure represents the basic elements of a project that flows from the top element (CERP Monitoring Program QA/QC) through the QAOT team objectives and ultimately to work products. The underlying philosophy of a work breakdown structure is to identify the layer of division where work products are assigned and accountability can be expected with respect to milestones and budget.

The work breakdown structure is developed from the QA/QC program's scope, and leads to the development of a schedule, budget and task lists. The schedule and budget for the CERP Monitoring Program QA/QC is included in the IDM PrMP Appendices C and D. The cost estimate for the QAOT activities is included in IDM **Appendix E**. The program costs shown in the appendix are USACE and SFWMD only, and do not reflect the contributions made by other agencies through their representatives that support the QAOT. What follows in this section is a breakdown of QAOT tasks by major program areas.

The following work breakdown structure is grouped into three major categories:

- QAOT Program Management
- QAOT Program Document Development, Review and Revision
- Support to CERP Projects and Programs

These categories represent the management of the QAOT and the major objectives of the QAOT. All the activities of the QAOT are under one of these major categories.

7.1 QAOT Program Management

7.1.1 Coordinate and/or Facilitate Relevant Workshop Meetings and Coordination Activities

Workshops and meetings are important ways of providing venues for discussing modifications to the QA/QC Program, reviewing project-level QA/QC performance for system-wide QA/QC deficiencies, developing strategies for activities, coordinating with other CERP teams and familiarizing PDTs and programs with the requirements of the QASR. A contractor(s) may provide support, facilitation, coordination and documentation services for the workshops and meetings, as appropriate.

7.1.2 Prepare and Update the Program Management Plan

This activity includes the preparation and update, when necessary, of the program management plan for the CERP Monitoring Program QA/QC, the review necessary for plan approval, and agency involvement.

7.1.3 Provide a Link between QAOT and the Design Coordination Team

The USACE and the SFWMD QA/QC program managers of the CERP Monitoring Program QA/QC will keep the DCT apprised of QAOT activities. The QA/QC program managers will be responsible for communications to the DCT regarding: (a) QA/QC status and progress in project- and program-level data collection, (b) any technical or programmatic issues not resolved at the QAOT, (c) review of draft technical documents produced by QAOT, and (d) any matters brought before them that are more appropriately addressed by the DCT. A progress report will be prepared for the DCT that includes a summary of work completed during the reporting period, work planned for the next reporting period, potential or active issues and actions taken to resolve issues.

7.1.4 QAOT Document Control

The QAOT follows a document control strategy for QASR/guidance documents - ensuring that QA/QC documents in use are the most current and approved versions available. Document control activities will be coordinated with data management groups as needed. Documentum, the CERP document management system, will be used for all program documents.

7.2 QAOT Program Document Development, Review and Revision

7.2.1 CERP QAR

The QAOT will prepare a biennial QA/QC report on CERP monitoring activities. The report will be based upon the activities undertaken and reviewed by the QAOT during that reporting period. It will cover all areas under 7.2 and 7.3.

7.2.2 Data Deliverables and Formatting

QAOT will review QA/QC procedures followed by programs and projects for data deliverables and data formatting as described in the QASR. Focus will be on ensuring that the QA/QC information and the sample measurement are linked. The QAOT will encourage the use of electronic data deliverables that include QA/QC information whenever possible. This includes the use of ADAPT for laboratory data. This will help ensure data and formatting requirements are consistent and easily transferred for data storage and management.

7.2.3 Coordination of New or Alternative Methods or Procedures

The QAOT will coordinate or document SOPs for sampling methods that do not have established SOPs (in the QASR or with FDEP) and will include them in the QASR manual. In addition, the QAOT will coordinate the review and approval of new or alternative procedures or analyses not included in the QASR manual.

7.2.4 QASR Preparation and Updates

The QAOT will review current criteria and procedures specified in the QASR and revise where necessary. QAOT will seek continuous improvement of the QA/QC requirements to help ensure that CERP monitoring data is of known quality. The QAOT will issue notices to program and project PDTs whenever improvements to the QASR have been made and will present, discuss, and seek DCT approval of the QASR document.

7.2.5 CERP Guidance Memoranda Development and Updates

As mandated or requested, QAOT members will participate in the development of CERP guidance required for the implementation of CERP QA/QC protocols and procedures in support of the Comprehensive Plan. The QAOT may recommend changes/revisions to current CGMs and other documents as needed to help ensure consistency among CERP guidance documents that include QA/QC elements.

7.3 Support to CERP Projects and Programs

7.3.1 Review of Monitoring Plans and Scopes of Work

Assigned QA officers within the QAOT will review CERP Project Level Monitoring Plans (PLMP) and all SOW arising from the PLMP to determine if all the proper QA/QC elements are included in said plans. Reviews of MAP SOWs and/or work plans will also be accomplished. These reviews shall be in accordance with the current version of QAOT SOP-004. Results of the review are summarized on a checklist and provided to the document author. A letter will be sent to the author documenting the acceptability of the document or itemizing deficiencies. If necessary, the document author responds to the issues identified and revised the document to ensure that it meets the QASR requirements and resubmits to the QAOT for another review. The date, contents of the QAOT review comments and PDT responses shall be part of the QAOT record which shall be posted in Documentum.

7.3.2 Field and Laboratory Comparability Studies

The QAOT will conduct laboratory and field comparability studies as needed or when requested by the DCT. Historically everglades restoration has been using data collected by different agencies for planning, monitoring and evaluation purposes. The QAOT will conduct studies to compare different sampling methods to determine if data collected are reliable, defensible and comparable among various sources. The activities performed by the QAOT will be developed to address specific method and data comparability issues identified in CERP.

7.3.3 Training and Technical Support

The QAOT will develop and provide a list of available QA/QC-subject area trainings to CERP PMs, monitoring plan and scope of work authors, and others as appropriate. Training areas include, but are not limited to:

- Audit procedures
- QASR
- QA/QC Protocols
- QA/QC Reporting to QAOT

7.3.4 QA Program Audits

The QAOT Quality Assurance program audits may include but are not limited to an inventory of all sampling being performed by CERP Projects and programs, data management procedures being utilized, and historical data quality evaluations for specific CERP project or processes, especially in regards to conformance to criteria and procedures specified in the QASR. These audits could be performed by QAOT members or an independent contractor and will provide opportunity for comment and response from parties audited or affected by the audit. The goal behind these audits is to supply recommendations for continuous quality improvements. Each audit will culminate in a report outlining the findings, recommendations, and responses to the audit.

7.3.5 Laboratory, Field and Project Audits

The QAOT will engage in the assessment of laboratories providing, or who may potentially be providing, environmental analytical chemical testing services for CERP projects. The purpose of these assessments is to assess, at the bench-level, the proficiency that the laboratory has to perform chemical analysis and to ensure that the analytical chemistry laboratories meet the QA/QC requirements defined in the Environmental Protection Agency methods that are specified in project documents.

The assessment process consists of three components used to evaluate laboratory performance. These include: (1) remote desk assessment; (2) on-site assessment; and (3) performance evaluation samples. The remote desk assessment includes review of the laboratory's documentation (SOPs, laboratory quality management manual, control charts, method detection limit studies, standard data package, and previous performance evaluation sample results). The on-site assessment entails an in-depth review of analytical procedures used by the laboratory with emphasis on the review of data at the bench-level (including detailed discussion with the analyst). Performance evaluation samples may be sent to the laboratory for those methods specified for CERP projects. The laboratory results are compared to the sample provider's documented acceptance limits. Analytes

that are recovered outside acceptance limits are evaluated by the QAOT, discussed with the laboratory, and can be reviewed extensively during the on-site assessment with the intent to determine possible errors in the laboratory's procedures.

The laboratory is provided a written copy of the laboratory assessment report to ensure corrective actions to the documented findings are adopted or resolved. The report is also posted in Documentum, with significant findings summarized in the QAR. The desired outcome of the laboratory assessment process is to provide a means of improving inter-laboratory data comparability by ensuring the best possible laboratory practices are being used by all laboratories generating data for the CERP.

The QAOT will also engage in field audits and field observations. The field audits and/or field observations typically focus on: (1) verifying that field personnel adhere to project control documents (e.g., QASR, Work Plans and SOPs) during field operations; (2) providing third party independent assurance that field procedures, QA/QC protocols and field documentation are sufficient to produce data of satisfactory quality; and (3) providing a defense in the event that field procedures are called into question.

The audit should be conducted early on in the sampling program such that deficiencies noted during the audit can be addressed before the majority of field activities have been completed. A second audit should be performed as a follow-up to confirm that the recommended changes have been implemented. The assigned field auditor may use a project-specific field audit checklist developed from key information contained in project control documents. Completion of the extensive audit checklist during the audit focuses the auditor on evaluating each aspect of field activities being performed. Rather than examine field team performance after sampling, a field auditor can do so while the samples are being collected and can apply real-time corrective action as appropriate. As a result of the audits, improvements are often observed in the field procedures and consequently more reliable and representative field data is received.

7.3.6 Develop and Implement Data Review Criteria and Quality Assessment Procedures

Data validation and review criteria for data deliverables is an important part of the development of a SOW. This provides guidance and process for assuring properly validated data deliverables. During SOW development, if requested, the QAOT will assist the author of the SOW in identifying appropriate data validation and data review criteria. Where none exists the QAOT will work with scientific data discipline experts to establish and document acceptable data validation and data review criteria.

7.3.7 Review and Provide Guidance in the Development of QA/QC Procedures in Scopes of Work and Monitoring Plans

Traditionally the Quality Assurance Project Plan has contained the QA/QC information for the SOW or PLMP. Some agencies are moving away from a separate Quality Assurance Project Plan and including the QA/QC information in the SOW or PLMP itself. Regardless of the placement, it is critical for any environmental data operation to document how environmental data operations are planned, implemented, documented, and assessed during the life cycle of a program, project, or task. The ultimate success of an environmental program or project depends on the adequacy and sufficiency of the quality of the environmental data collected and used in decision-making. This may depend significantly on the adequacy of the QA/QC procedures and their effective implementation. Quality planning is an absolutely essential component of project management and the results of the planning process must be documented. This planning must include the "stakeholders" (i.e., the data users, data producers, decision makers, etc.) to ensure that all needs are defined adequately at the outset and that the planning for quality addresses the specific needs defined. More information is available through the USEPA at: http://www.epa.gov/irmpoli8/policies/2105P010.pdf.

The QAOT will review the QA/QC procedures during the PLMP review, SOW review or work plan review.

8.0 UNIQUE FACTORS

QAOT provides project and system-wide feedback to the DCT, through its program managers from the USACE and the SFWMD as well as the other standing members. The DCT, as the oversight body for CERP implementation, will oversee the QAOT and its products. Since QAOT's work is related to the management of data their financials are included under the IDM program, even though the QAOT operates under its own program management plan and independently writes and controls its own budget.

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