

# Recent Cases Involving the Use of Qualified Data for Compliance with the Settlement Agreement May 7, 2012

*Florida Department of Environmental Protection*

Presented May 30, 2012

Redistributed May 14, 2013

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## Introduction

The use of qualified data (data failing to meet the established quality assurance [QA] criteria) in compliance calculations for the Settlement Agreement is the responsibility of the Technical Oversight Committee (TOC). To be consistent with the Special Master's recommendation (January 4, 2011 report) calculation results with and without qualified data have been presented in the Quarterly Settlement Report to TOC since the Third Quarter (July – September 2011) Report. This brief document summarizes recent instances and impacts of the data on the compliance calculations. The TOC needs to decide whether to exclude qualified data or not based upon an evaluation of circumstances associated with each case.

After consideration of these instances, the TOC may elect to provide clarifications on the use and presentation of qualified data in the Settlement Agreement Quarterly Reports.

## Recent Cases of Qualified Data

### Case Number 1 – All Samples Collected on a Trip to Refuge Compliance Stations were Qualified

**Background:** The entire data sets taken on 12/13/2011 in the Refuge were qualified because total phosphorus (TP) was detected (0.060 milligrams per liter [mg/L] or 60 parts per billion [ppb]) in the Equipment Blank (EB). TP was not detected (less than Method Detection Limit of 0.002 mg/L) in the other quality control (QC) blank, Field-Cleaned Equipment Blank (FCEB).

**Qualified Compliance Data:** LOX3, 4, 5, 7, 8, 9, 10

**Impact:** One-half or 7 out of 14 marsh TP compliance data were qualified in this case. Therefore, only the remaining 7 TP data taken on 12/14/2012 were used to calculate the geometric mean used for the December 2011 TP compliance. The exclusion of these qualified data did not change the compliance status. The relevant values are shown below in Table 2 of the Settlement Agreement Report.

Table 2. Loxahatchee National Wildlife Refuge total phosphorus compliance tracking (from Settlement Agreement Report, Fourth Quarter, October – December 2011, February 13, 2012, Page 6).

Month	Geometric Mean TP Concentration (ppb)	Long-Term Level (ppb) Effective 12/31/2006	Average Stage <sup>a</sup> (ft NGVD 29)	Number of Samples
Dec-2011	6.2 (7.0*)	9.2	16.59 (16.59*)	7 (14*)

\* Including qualified data

**TOC Action Required:** Yes

**Recommendation:** Exclude qualified data from December 2011 compliance calculation.

## Case Number 2 – Project Manager Flag (PMF) Qualifier Removed after Investigation.

**Background:** All data for TP, chloride (Cl), and sulfate (SO<sub>4</sub>) taken on the 3/3/2011 trip for Refuge marsh sampling were qualified with a PMF qualifier because an EB was taken instead of a FCEB. The District's Field Sampling Quality Manual (FSQM) called for a FCEB because field equipment (syringe) was used for chloride and sulfate sampling. The syringe was not used for sampling TP.

**Qualified Compliance Data:** LOX7 and LOX8 TP data

**Impact:** On this date, 2 out of 8 marsh TP compliance data were qualified. Only the remaining 6 TP data taken on 3/2/2011 were used for calculating the March 2011 TP compliance geometric mean. However, justification for the PMF qualifiers was still being investigated at the time of the Settlement Agreement Report and the compliance result was presented with a caveat, described below.

*“TP data for LOX7 and LOX8 were qualified because the proper field sample collection procedure for quality control blanks was not followed (see page 5, table 5 of the Quality Assessment Report for Water Quality Monitoring, January – March 2011, published on May 12, 2011). If the qualified data for LOX7 and LOX8 were determined to be usable (subject to a “to be determined” data usability protocol), the March 2011 geometric mean TP concentration would be 8.1 ppb (as opposed to 6.8 ppb). Including the data does not cause the geometric mean TP concentration to exceed the long-term level of 13.9 ppb.” (From Settlement Agreement Report, First Quarter, January – March 2011, May 23, 2011, Page 3).*

Table 2 in the Settlement Agreement Report was presented with the qualified data in parentheses as shown below:

Table 2. Loxahatchee National Wildlife Refuge total phosphorus compliance tracking (from Settlement Agreement Report, First Quarter, January – March 2011, May 23, 2011, Page 6).

Month	Geometric Mean TP Concentration (ppb)	Long-Term Level (ppb) Effective 12/31/2006	Average Stage <sup>a</sup> (ft NGVD 29)	Number of Samples
Mar-2011	6.8 (8.1*)	13.9	15.81	6 (8*)

\*including the qualified data at LOX7 and LOX8.

**Resolution:** After an investigation, it was determined that the PMFs should be removed from the samples because the Equipment Blank for TP was satisfactory and field equipment was not used for TP samples. The report was revised accordingly as:

*“TP data for LOX7 and LOX8 for March 2011 were originally qualified because the proper field sample collection procedure for quality control blanks was thought not to have been followed (see page 5, Table 5 of the Quality Assessment Report for Water Quality Monitoring, January – March 2011, published on May 12, 2011). After an investigation, it was determined the proper field sample collection procedure was followed, and the validity of the data was confirmed. The March 2011 geometric mean TP concentration excluding the two data was 6.8 ppb. This value was revised to include LOX7 and LOX8 data. The revised geometric mean TP concentration for March 2011 was 8.1 ppb and did not exceed the long-term level of 13.9 ppb.” (From Settlement Agreement Report, First Quarter, January – March 2011, Revised July 15, 2011, Page 3).*

Table 2. Loxahatchee National Wildlife Refuge total phosphorus compliance tracking (from Settlement Agreement Report, First Quarter, January – March 2011, Revised July 15, 2011, Page 6).

Month	Geometric Mean TP Concentration (ppb)	Long-Term Level (ppb) Effective 12/31/2006	Average Stage <sup>a</sup> (ft NGVD 29)	Number of Samples
Mar-2011	8.1*	13.9	15.81	8*

\* Revised from the original May 23, 2011, report to reflect the removal of data qualifier for the March 3, 2011, sampling trip TP concentration data (LOX7 and LOX8).

The revised report was re-posted on the TOC web site with a note on the cover, below:

*March 2011 Refuge total phosphorus (TP) geometric mean concentration value was revised. See Appendix E: Document Revisions for specific revisions.*

**TOC Action Required:** No

**Recommendation:** No TOC action is required because data for compliance now contains no qualified data.

**Case Number 3 – One Site at Shark River Slough was Re-Sampled due to an Error in Preservation.**

**Background:** Traditionally, compliance sampling for all 5 structures for Shark River Slough (S12A, B, C, D, and S333), has been done in one day. On 12/06/12, it was discovered that the sample for S12D was not properly preserved. The site was then re-sampled following the re-sampling protocol approved by the TOC. This rare event was noted in the Settlement Agreement Report as follows:

*“The water sample taken at S12D on December 6, 2011, was not properly preserved, thus not analyzed. The site was re-sampled on December 8, 2011. Excluding the re-sampled datum in the calculation yields a 12-month flow-weighted mean TP concentration of 9.6 ppb for the 12-month period ending in December 2011.” (From Settlement Agreement Report, Fourth Quarter, October – December 2011, February 13, 2012, Page 7).*

Both calculation results, one including the re-sampled S12D datum and one excluding the datum, were presented in the Settlement Agreement Report (see below).

Table 3. Shark River Slough total phosphorus compliance tracking (from Settlement Agreement Report, Fourth Quarter, October – December 2011, February 13, 2012, Page 11).

12-Month Period	Total Flow (kac-ft)	Flow-Weighted Mean TP Concentration (ppb)	Long-Term Limit (ppb) Effective 12/31/2006	Percent of Sampling Events Greater than 10 ppb	
				Guideline	Observed
Jan 2011 - Dec 2011	463.0	9.5 (9.6*)	10.8	56.5	68.4 <sup>a</sup> (68.4 <sup>a,*</sup> )

\* Excluding the re-sampled datum (7 ppb) at S12D on December 8, 2011.

**TOC Action Required:** Yes

**Recommendation:** Include resampled result in sampling event and 12-month flow-weighted mean TP calculations.

**Case Number 4 – Qualified Data for Taylor Slough and Coastal Basins Water Year 2011 (October 2010 – September 2011) Compliance**

**Background:** There were 5 qualified TP data for the water year 2011 (WY2011) compliance period in Taylor Slough and Coastal Basins sampling. These grab data were qualified, following the appropriate standard procedures, because TP was detected in the EB for an automatic sampler (ACF) at the sites.

Date	S332DX	S18C
05/31/2011	15 (J)	11 (J)
07/11/2011	--	7 (J)
08/08/2011	7 (J)	4 (J)

**Impact:** The exclusion of these qualified data did not change the compliance status for WY2011. Both calculation results including and excluding the qualified data were presented in the Quarterly Settlement Report, in Table 4 below:

Table 4. Taylor Slough and Coastal Basins total phosphorus compliance tracking (from Settlement Agreement Reports, Third Quarter 2011 and Fourth Quarter 2011, Page 21).

12-Month Period	Total Flow (kac-ft)	Flow-Weighted Mean TP Concentration (ppb)	Long-Term Limit (ppb) <i>Effective 12/31/2006</i>	Percent of Sampling Events Greater than 10 ppb	
				Guideline	Observed
<i>Oct 2010 - Sep 2011</i>	<i>111.4</i>	<i>5.6 (5.5*)</i>	<i>11.0</i>	<i>53.1</i>	<i>9.4 (11.4*)</i>

\* Including qualified data.

**TOC Action Required:** Yes

**Recommendation:** Exclude qualified data in WY2011 and applicable 12-month flow-weighted mean TP calculations.

**Summary**

The case studies and recommended actions presented in this memo are summarized in the following table:

	Case Number 1	Case Number 2	Case Number 3	Case Number 4
<b>Dates</b>	12/13/2011	3/3/2011	12/8/2011	5/31-8/8/2011
<b>Description</b>	TP detected in EB	EB collected instead of FCEB	Resampling after preservation error	TP detected in EB
<b>Location</b>	Refuge	Refuge	Shark River Slough	Taylor Slough
<b>No. Samples Affected</b>	7	2	1	5
<b>Status</b>	No action taken	PMF qualifier removed	No action taken	No action taken
<b>TOC Action Required?</b>	Yes	No	Yes	Yes
<b>Recommendation</b>	Exclude qualified data from December 2011 compliance calculation	N/A	Include resampled result in sampling event and 12-month flow-weighted mean TP calculations	Exclude qualified data in WY2011 and applicable 12-month flow-weighted mean TP calculations

N/A – Not applicable; no TOC action is required.

Qualified Compliance TP Data and Associated QA Samples

PROJECT CODE	SAMPLE ID	STATION	MATRIX	COLLECT METHOD	SAMPLE TYPE	COLLECT DATE	TEST NAME	VALUE	MDL	UNITS	REMARK	FLAG
<b>Case 1. Entire One Day's Trip Samples Qualified</b>												
EVPA	P54147-14	LOX4	DI	G	FCEB	12/13/11	TPO4	<0.002	0.002	mg/L	U	
EVPA	P54147-1	LOX9	DI	G	EB	12/13/11	TPO4	0.060	0.002	mg/L	Detected	J9
EVPA	P54147-10	LOXA130	SW	G	SAMP	12/13/11	TPO4	0.010	0.002	mg/L		J9
EVPA	P54147-11	LOX4	SW	G	SAMP	12/13/11	TPO4	0.010	0.002	mg/L		J9
EVPA	P54147-12	LOXA140	SW	G	SAMP	12/13/11	TPO4	0.012	0.002	mg/L		J9
EVPA	P54147-13	LOXA101	SW	G	SAMP	12/13/11	TPO4	0.012	0.002	mg/L		J9
EVPA	P54147-4	LOX3	SW	G	SAMP	12/13/11	TPO4	0.007	0.002	mg/L		J9
EVPA	P54147-5	LOX5	SW	G	SAMP	12/13/11	TPO4	0.006	0.002	mg/L		J9
EVPA	P54147-6	LOX9	SW	G	SAMP	12/13/11	TPO4	0.008	0.002	mg/L		J9
EVPA	P54147-7	LOX10	SW	G	SAMP	12/13/11	TPO4	0.008	0.002	mg/L		J9
EVPA	P54147-8	LOX8	SW	G	SAMP	12/13/11	TPO4	0.009	0.002	mg/L		J9
EVPA	P54147-9	LOX7	SW	G	SAMP	12/13/11	TPO4	0.007	0.002	mg/L		J9
<b>Case 2. PMF Qualifier Removed after Investigation</b>												
EVPA	P51177-1	LOX8	DI	G	EB	03/03/11	TPO4	<0.002	0.002	mg/L	U	
EVPA	P51177-1	LOX8	DI	G	EB	03/03/11	CL	<0.1	0.1	mg/L	U	
EVPA	P51177-1	LOX8	DI	G	EB	03/03/11	SO4	<0.1	0.1	mg/L	U	
EVPA	P51177-8	LOX8	SW	G	SAMP	03/03/11	TPO4	0.015	0.002	mg/L	PMF removed	
EVPA	P51177-9	LOX7	SW	G	SAMP	03/03/11	TPO4	0.012	0.002	mg/L	PMF removed	
<b>Case 3. One Site at Shark River Slough Re-sampled</b>												
PIN	P53999-33	S12A	DI	G	FCEB	12/06/11	TPO4	<0.002	0.002	mg/L	U	
PIN	P53999-1	S12A	SW	G	SAMP	12/06/11	TPO4	0.016	0.002	mg/L		
PIN	P53999-10	S12B	SW	G	SAMP	12/06/11	TPO4	0.008	0.002	mg/L		
PIN	P53999-11	S12C	SW	G	SAMP	12/06/11	TPO4	0.004	0.002	mg/L		
PIN	P53999-13	S333	SW	G	SAMP	12/06/11	TPO4	0.008	0.002	mg/L		
PIN	P55135-1	S12D	DI	G	EB	12/08/11	TPO4	<0.002	0.002	mg/L	U	
PIN	P55135-2	S12D	SW	G	SAMP	12/08/11	TPO4	0.007	0.002	mg/L	Re-sampling	
<b>Case 4. Taylor Slough and Coastal Basins WY2011 Compliance Data</b>												
PIE	P51834-32	S18C	DI	ACF	EB	05/31/11	TPO4	0.004	0.002	mg/L	I, Detected	J9
PIE	P51834-15	S332DX	SW	G	SAMP	05/31/11	TPO4	0.015	0.002	mg/L		J9
PIE	P51834-26	S18C	SW	G	SAMP	05/31/11	TPO4	0.011	0.002	mg/L	Detected	J9
PIE	P51820-10	S177	DI	G	FCEB	07/11/11	TPO4	<0.002	0.002	mg/L	U	
PIE	P51820-1	S178	DI	G	EB	07/11/11	TPO4	<0.002	0.002	mg/L	U	
PIE	P51820-5	S18C	DI	ACF	EB	07/11/11	TPO4	0.002	0.002	mg/L	I, Detected	J9
PIE	P51820-4	S18C	SW	G	SAMP	07/11/11	TPO4	0.007	0.002	mg/L		J9
PIE	P52916-29	S177	DI	G	FCEB	08/08/11	TPO4	<0.002	0.002	mg/L	U	
PIE	P52916-31	S331-173	DI	ADT	FB	08/08/11	TPO4	<0.002	0.002	mg/L	U	
PIE	P52916-32	S18C	DI	ACF	EB	08/08/11	TPO4	0.002	0.002	mg/L	I, Detected	J9
PIE	P52916-15	S332DX	SW	G	SAMP	08/08/11	TPO4	0.007	0.002	mg/L		J
PIE	P52916-26	S18C	SW	G	SAMP	08/08/11	TPO4	0.004	0.002	mg/L		J