

Appendix 3A-6: Water Year 2010–2014 Annual Total Phosphorus Criteria Compliance Assessment

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This appendix presents the annual total phosphorous (TP) criteria compliance assessment for Water Years 2010–2014 (WY2010–WY2014) (May 1, 2009–April 20, 2014). **Table 1** highlights data from all individual impacted stations across the EPA relative to the 15 microgram ($\mu\text{g/L}$) annual limit. Long-term (i.e., five-year) geometric mean TP concentrations from individual impacted stations are summarized relative to the long-term limit of 10 $\mu\text{g/L}$ in **Table 2**. **Table 3** displays the annual TP criteria compliance for the five-year period within the Everglades Protection Area (EPA), which includes Arthur R. Marshall Loxahatchee National Wildlife Refuge [Refuge, also known as Water Conservation Area 1 (WCA-1)], Water Conservation Areas 2 and 3 (WCA-2 and WCA-3, respectively), and Everglades National Park (ENP or Park) (**Figure 1**). **Figure 2** depicts each area's network average geometric mean concentration from WY2005 to the current water year (WY2014) relative to the 11 $\mu\text{g/L}$ annual network limit, and the 10 $\mu\text{g/L}$ five-year, long-term network limit for TP. Annual geometric mean TP concentrations for the current water year (WY2014) is provided in **Figure 3** for each station within its respective area and network (impacted and unimpacted) relative to the 15 $\mu\text{g/L}$ annual limit (Note: Stations with insufficient data are identified with an asterisk).

Conclusions from these data include the following:

- A total of six impacted stations transitioned from impacted to unimpacted including two stations from the Refuge (LOXA130 and LOXA137), two from WCA-2 (CA224 and WCA2F4), and two from WCA-3 (CA314 and CA33).
- Of the 58 TP criterion monitoring network sites, 55 of these had sufficient data to be included in the TP criterion assessment.
- Unimpacted portions of each WCA passed all four parts of the compliance assessment, as expected. Therefore, these areas are in compliance with the 10 $\mu\text{g/L}$ criteria.
- Even though in recent years conditions within the impacted portions of the marsh have improved (**Figure 2**), impacted portions of each WCA failed one or more parts of the criterion assessment. Therefore, these areas exceeded the criteria, as expected.
- For informational purposes, assessment of the ENP stations relative to the TP rule criteria are included in **Table 3** and **Figures 4** and **5**. All stations in the ENP achieved the long-term criterion in every year, with an average geometric mean of 4 $\mu\text{g/L}$ across all stations.

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- The increased percent of sites meeting the 10 and 15 µg/L limits observed for WY2014 reflects the continued recovery from recent climatic extremes, improved treatment of the inflows, and overall improvement in phosphorus conditions within the interior marsh due to restoration activities.

ASSESSMENT OF IMPACTED TOTAL PHOSPHORUS RULE STATIONS WITHIN THE EVERGLADES PROTECTION AREA

According to Subparagraph 62-302.540(4)(d)2, Florida Administrative Code (F.A.C.), individual stations in networks shall be deemed to be unimpacted for purposes of determining compliance assessment with the TP rule if the five-year geometric mean is less than or equal to 10 µg/L TP and the annual geometric mean is less than or equal to 15 µg/L TP. Over the past several years, the EPA has experienced significant load reductions as well as decreasing interior concentrations due to upstream treatment and restoration efforts (Julian et al., 2014²). As a result, impacted stations have transitioned to unimpacted as defined by both long-term geometric mean and annual geometric mean TP. Consequently, these stations will now be assessed each year as part of the unimpacted network of sites.

Several impacted monitoring stations used for the TP rule assessment have consistently achieved an annual geometric mean concentration of 15 µg/L TP (**Table 1**). However, due to either data gaps or elevated concentrations, only a few have achieved the long-term (five-year) geometric mean concentration of 10 µg/L (**Table 2**). As a result of this assessment, several stations across three portions of the EPA have transitioned from impacted to unimpacted. These stations include LOXA130 and LOXA137 (Refuge); CA224 and WCA2F4 (WCA-2); and CA314 and CA33 (WCA-3). It is expected that future compliance assessments will be done with these stations evaluated as unimpacted individually and as part of the unimpacted network.

² Julian, P., G.G. Payne and S.K. Xue. 2014. Chapter 3A: Water Quality in the Everglades Protection Areas. In: *2014 South Florida Environmental Report – Volume I*, South Florida Water Management District, West Palm Beach, FL.

Table 1. Annual geometric mean total phosphorus (TP) concentrations (micrograms per liter, or $\mu\text{g/L}$) for individual impacted stations in the Everglades Protection Area (EPA) identified by the TP rule (Section 62-302.540, F.A.C.).

Area	Station	Water Year (May 1–April 30)									
		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Refuge	LOXA101	19	15		14	10	13	11		18	14
	LOXA105	38	15		15	11	12	13	17	17	17
	LOXA124	30	11		13	13	12	10	11	12	13
	LOXA130	27	15		11	10	10	10	13	9	8
	LOXA137	23	14		9	10	11	11	15	10	9
	LOXA140	18	12		8	8	11	9		10	8
	X1				47		34	27	38	27	26
	Z1				96	21	26	33	49	18	23
WCA-2	2AN1				20	14	22	17	14	15	16
	404Z1				27	18	21	21	15	33	25
	CA223				26		21	17		17	16
	CA224				8	6	7	6	7	6	6
	WCA2F1	72	48		34	24	23	19	23	31	23
	WCA2F3				19	11					
	WCA2F4	22	12	19	13	11	10	9	10	9	7
WCA-3	CA314				7	4	5	4	6	4	3
	CA324					11				10	
	CA33	15	10	18	14	8	9	8		9	7
	CA35	11	8		8	7		6			6
	CA36		29	30	36	23	24	22	31	32	13

- Blank cells indicate insufficient data to calculate annual geometric mean due to TP rule data screening or samples not being collected due to low water levels.
- Cells highlighted in green indicate that the annual geometric mean TP concentration for that station and year is $\leq 15 \mu\text{g/L}$.

Table 2. Long-term (five-year) geometric mean TP concentrations ($\mu\text{g/L}$) for impacted stations identified by the TP rule (Section 62-302.540, F.A.C.).

Area	Station	WY2005-2009	WY2006-2010	WY2007-2011	WY2008-2012	WY2009-2013	WY2010-2014
Refuge	LOXA101						
	LOXA105				13	14	15
	LOXA124				12	12	12
	LOXA130				11	10	10
	LOXA137				11	11	10
	LOXA140						
	X1						29
	Z1				35	26	27
WCA2	2AN1				17	16	17
	404Z1				20	21	22
	CA223						
	CA224				7	6	6
	WCA2F1				26	24	24
	WCA2F3						
	WCA2F4	14	13	12	11	10	9
WCA3	CA314				5	4	4
	CA324						
	CA33	12	11	10			
	CA35						
	CA36		27	25	25	25	23

* Blank cells indicate insufficient data to compute a long-term geometric mean (i.e., missing one or more years).

*Cells highlighted in green indicate that the long-term geometric mean TP concentration for that station and period is $\leq 10 \mu\text{g/L}$.

Table 3. Annual total phosphorus (TP) criteria compliance assessment in the EPA for the five-year period from WY2010–WY2014).

Area	Criterion Network	Water Year	Station	Sample Size (N)	Annual Site Geometric Mean (µg/L)	≤15 µg/L Pass/ Fail	Network Annual Average Geometric Mean (µg/L)	≤11 µg/L Pass/ Fail	Network Five-Year Average Geometric Mean (µg/L)	Network Five Year Average ≤10 µg/L Pass/ Fail	3 of 5 Year Network Average ≤ 10 µg/L
Refuge	Impacted	2010	LOXA101	11	13	Pass					
Refuge	Impacted	2010	LOXA105	11	12	Pass					
Refuge	Impacted	2010	LOXA124	11	12	Pass					
Refuge	Impacted	2010	LOXA130	11	10	Pass					
Refuge	Impacted	2010	LOXA137	11	11	Pass					
Refuge	Impacted	2010	LOXA140	11	11	Pass					
Refuge	Impacted	2010	X1	11	34	Fail					
Refuge	Impacted	2010	Z1	11	26	Fail					
Refuge	Impacted	2010	Annual Network Average				16	Fail			
Refuge	Impacted	2011	LOXA101	6	11	Pass					
Refuge	Impacted	2011	LOXA105	9	13	Pass					
Refuge	Impacted	2011	LOXA124	10	10	Pass					
Refuge	Impacted	2011	LOXA130	11	10	Pass					
Refuge	Impacted	2011	LOXA137	10	11	Pass					
Refuge	Impacted	2011	LOXA140	7	9	Pass					
Refuge	Impacted	2011	X1	11	27	Fail					
Refuge	Impacted	2011	Z1	12	33	Fail					
Refuge	Impacted	2011	Annual Network Average				15	Fail			
Refuge	Impacted	2012	LOXA101	4	N/A (14)	N/A					
Refuge	Impacted	2012	LOXA105	7	17	Fail					
Refuge	Impacted	2012	LOXA124	8	11	Pass					
Refuge	Impacted	2012	LOXA130	8	13	Pass					
Refuge	Impacted	2012	LOXA137	6	15	Pass					
Refuge	Impacted	2012	LOXA140	4	N/A (13)	N/A					
Refuge	Impacted	2012	X1	8	38	Fail					
Refuge	Impacted	2012	Z1	7	49	Fail					
Refuge	Impacted	2012	Annual Network Average				24	Fail			
Refuge	Impacted	2013	LOXA101	11	18	Fail					
Refuge	Impacted	2013	LOXA105	11	17	Fail					
Refuge	Impacted	2013	LOXA124	12	12	Pass					
Refuge	Impacted	2013	LOXA137	11	10	Pass					

Area	Criterion Network	Water Year	Station	Sample Size (N)	Annual Site Geometric Mean (µg/L)	≤15 µg/L Pass/ Fail	Network Annual Average Geometric Mean (µg/L)	≤11 µg/L Pass/ Fail	Network Five-Year Average Geometric Mean (µg/L)	Network Five Year Average ≤10 µg/L Pass/ Fail	3 of 5 Year Network Average ≤ 10 µg/L	
Refuge	Impacted	2013	LOXA140	12	10	Pass						
Refuge	Impacted	2013	X1	12	27	Fail						
Refuge	Impacted	2013	Z1	14	18	Fail						
Refuge	Impacted	2013	Annual Network Average					16	Fail			
Refuge	Impacted	2014	LOXA101	12	14	Pass						
Refuge	Impacted	2014	LOXA105	10	17	Fail						
Refuge	Impacted	2014	LOXA124	11	13	Pass						
Refuge	Impacted	2014	LOXA140	12	8	Pass						
Refuge	Impacted	2014	X1	10	26	Fail						
Refuge	Impacted	2014	Z1	11	23	Fail						
Refuge	Impacted	2014	Annual Network Average									
Refuge	Unimpacted	2010	LOX10	11	7	Pass						
Refuge	Unimpacted	2010	LOX11	11	6	Pass						
Refuge	Unimpacted	2010	LOX12	12	8	Pass						
Refuge	Unimpacted	2010	LOX13	11	6	Pass						
Refuge	Unimpacted	2010	LOX14	11	7	Pass						
Refuge	Unimpacted	2010	LOX15	11	7	Pass						
Refuge	Unimpacted	2010	LOX16	11	7	Pass						
Refuge	Unimpacted	2010	LOX3	9	8	Pass						
Refuge	Unimpacted	2010	LOX4	11	10	Pass						
Refuge	Unimpacted	2010	LOX5	9	8	Pass						
Refuge	Unimpacted	2010	LOX6	11	5	Pass						
Refuge	Unimpacted	2010	LOX7	11	8	Pass						
Refuge	Unimpacted	2010	LOX8	11	10	Pass						
Refuge	Unimpacted	2010	LOX9	11	7	Pass						
Refuge	Unimpacted	2010	LOXA108	11	8	Pass						
Refuge	Unimpacted	2010	X4	11	9	Pass						
Refuge	Unimpacted	2010	Annual Network Average									
Refuge	Unimpacted	2011	LOX10	8	6	Pass						
Refuge	Unimpacted	2011	LOX11	12	6	Pass						
Refuge	Unimpacted	2011	LOX12	12	6	Pass						
Refuge	Unimpacted	2011	LOX13	11	6	Pass						
Refuge	Unimpacted	2011	LOX14	12	6	Pass						
Refuge	Unimpacted	2011	LOX15	12	6	Pass						

Area	Criterion Network	Water Year	Station	Sample Size (N)	Annual Site Geometric Mean (µg/L)	≤15 µg/L Pass/ Fail	Network Annual Average Geometric Mean (µg/L)	≤11 µg/L Pass/ Fail	Network Five-Year Average Geometric Mean (µg/L)	Network Five Year Average ≤10 µg/L Pass/ Fail	3 of 5 Year Network Average ≤ 10 µg/L
Refuge	Unimpacted	2011	LOX16	12	7	Pass					
Refuge	Unimpacted	2011	LOX3	7	6	Pass					
Refuge	Unimpacted	2011	LOX4	8	10	Pass					
Refuge	Unimpacted	2011	LOX5	7	7	Pass					
Refuge	Unimpacted	2011	LOX6	10	6	Pass					
Refuge	Unimpacted	2011	LOX7	11	7	Pass					
Refuge	Unimpacted	2011	LOX8	12	9	Pass					
Refuge	Unimpacted	2011	LOX9	8	5	Pass					
Refuge	Unimpacted	2011	LOXA108	7	6	Pass					
Refuge	Unimpacted	2011	X4	11	10	Pass					
Refuge	Unimpacted	2011	Annual Network Average				7	Pass			
Refuge	Unimpacted	2012	LOX10	5	N/A (9)	N/A					
Refuge	Unimpacted	2012	LOX11	9	7	Pass					
Refuge	Unimpacted	2012	LOX12	10	8	Pass					
Refuge	Unimpacted	2012	LOX13	6	N/A (7)	N/A					
Refuge	Unimpacted	2012	LOX14	9	7	Pass					
Refuge	Unimpacted	2012	LOX15	10	7	Pass					
Refuge	Unimpacted	2012	LOX16	9	8	Pass					
Refuge	Unimpacted	2012	LOX3	2	N/A (6)	N/A					
Refuge	Unimpacted	2012	LOX4	8	12	Pass					
Refuge	Unimpacted	2012	LOX5	3	N/A (7)	N/A					
Refuge	Unimpacted	2012	LOX6	9	6	Pass					
Refuge	Unimpacted	2012	LOX7	9	8	Pass					
Refuge	Unimpacted	2012	LOX8	8	10	Pass					
Refuge	Unimpacted	2012	LOX9	5	N/A (7)	N/A					
Refuge	Unimpacted	2012	LOXA108	4	N/A (8)	N/A					
Refuge	Unimpacted	2012	X4	9	9	Pass					
Refuge	Unimpacted	2012	Annual Network Average				8	Pass			
Refuge	Unimpacted	2013	LOX10	11	8	Pass					
Refuge	Unimpacted	2013	LOX11	12	6	Pass					
Refuge	Unimpacted	2013	LOX12	12	6	Pass					
Refuge	Unimpacted	2013	LOX13	11	6	Pass					
Refuge	Unimpacted	2013	LOX14	12	5	Pass					
Refuge	Unimpacted	2013	LOX15	12	6	Pass					

Area	Criterion Network	Water Year	Station	Sample Size (N)	Annual Site Geometric Mean (µg/L)	≤15 µg/L Pass/ Fail	Network Annual Average Geometric Mean (µg/L)	≤11 µg/L Pass/ Fail	Network Five-Year Average Geometric Mean (µg/L)	Network Five Year Average ≤10 µg/L Pass/ Fail	3 of 5 Year Network Average ≤ 10 µg/L
Refuge	Unimpacted	2013	LOX16	12	6	Pass					
Refuge	Unimpacted	2013	LOX3	9	6	Pass					
Refuge	Unimpacted	2013	LOX4	12	8	Pass					
Refuge	Unimpacted	2013	LOX5	10	8	Pass					
Refuge	Unimpacted	2013	LOX6	12	5	Pass					
Refuge	Unimpacted	2013	LOX7	12	7	Pass					
Refuge	Unimpacted	2013	LOX8	12	8	Pass					
Refuge	Unimpacted	2013	LOX9	12	8	Pass					
Refuge	Unimpacted	2013	LOXA108	8	8	Pass					
Refuge	Unimpacted	2013	LOXA130	12	9	Pass					
Refuge	Unimpacted	2013	X4	12	8	Pass					
Refuge	Unimpacted	2013	Annual Network Average				7	Pass			
Refuge	Unimpacted	2014	LOX10	10	6	Pass					
Refuge	Unimpacted	2014	LOX11	11	5	Pass					
Refuge	Unimpacted	2014	LOX12	12	6	Pass					
Refuge	Unimpacted	2014	LOX13	12	7	Pass					
Refuge	Unimpacted	2014	LOX14	12	6	Pass					
Refuge	Unimpacted	2014	LOX15	12	6	Pass					
Refuge	Unimpacted	2014	LOX16	12	7	Pass					
Refuge	Unimpacted	2014	LOX3	7	7	Pass					
Refuge	Unimpacted	2014	LOX4	12	7	Pass					
Refuge	Unimpacted	2014	LOX5	9	5	Pass					
Refuge	Unimpacted	2014	LOX6	12	5	Pass					
Refuge	Unimpacted	2014	LOX7	12	6	Pass					
Refuge	Unimpacted	2014	LOX8	12	8	Pass					
Refuge	Unimpacted	2014	LOX9	12	6	Pass					
Refuge	Unimpacted	2014	LOXA108	7	8	Pass					
Refuge	Unimpacted	2014	LOXA130	12	8	Pass					
Refuge	Unimpacted	2014	LOXA137	12	9	Pass					
Refuge	Unimpacted	2014	X4	12	8	Pass					
Refuge	Unimpacted	2014	Annual Network Average				7	Pass	8	Pass	Pass
WCA2	Impacted	2010	2AN1	11	22	Fail					
WCA2	Impacted	2010	404Z1	10	21	Fail					
WCA2	Impacted	2010	CA223	8	21	Fail					

Area	Criterion Network	Water Year	Station	Sample Size (N)	Annual Site Geometric Mean (µg/L)	≤15 µg/L Pass/ Fail	Network Annual Average Geometric Mean (µg/L)	≤11 µg/L Pass/ Fail	Network Five-Year Average Geometric Mean (µg/L)	Network Five Year Average ≤10 µg/L Pass/ Fail	3 of 5 Year Network Average ≤ 10 µg/L					
WCA2	Impacted	2010	CA224	11	7	Pass										
WCA2	Impacted	2010	WCA2F1	11	23	Fail										
WCA2	Impacted	2010	WCA2F4	11	10	Pass										
WCA2	Impacted	2010	Annual Network Average					17	Fail							
WCA2	Impacted	2011	2AN1	7	17	Fail										
WCA2	Impacted	2011	404Z1	9	21	Fail										
WCA2	Impacted	2011	CA223	7	17	Fail										
WCA2	Impacted	2011	CA224	8	6	Pass										
WCA2	Impacted	2011	WCA2F1	10	19	Fail										
WCA2	Impacted	2011	WCA2F4	8	9	Pass										
WCA2	Impacted	2011	Annual Network Average										15	Fail		
WCA2	Impacted	2012	2AN1	10	14	Pass										
WCA2	Impacted	2012	404Z1	8	15	Pass										
WCA2	Impacted	2012	CA223	5	N/A (41)	N/A										
WCA2	Impacted	2012	WCA2F1	8	23	Fail										
WCA2	Impacted	2012	WCA2F4	10	10	Pass										
WCA2	Impacted	2012	Annual Network Average					16	Fail							
WCA2	Impacted	2013	2AN1	12	15	Pass										
WCA2	Impacted	2013	404Z1	7	33	Fail										
WCA2	Impacted	2013	CA223	11	17	Fail										
WCA2	Impacted	2013	WCA2F1	10	31	Fail										
WCA2	Impacted	2013	Annual Network Average										24	Fail		
WCA2	Impacted	2014	2AN1	12	16	Fail										
WCA2	Impacted	2014	404Z1	8	25	Fail										
WCA2	Impacted	2014	CA223	9	16	Fail										
WCA2	Impacted	2014	WCA2F1	9	23	Fail										
WCA2	Impacted	2014	Annual Network Average										20	Fail	20	Fail
WCA2	Unimpacted	2010	404C2	9	10	Pass										
WCA2	Unimpacted	2010	CA217	11	5	Pass										
WCA2	Unimpacted	2010	CA222	11	5	Pass										
WCA2	Unimpacted	2010	CA26	10	4	Pass										
WCA2	Unimpacted	2010	CA29	11	5	Pass										
WCA2	Unimpacted	2010	U1	11	6	Pass										
WCA2	Unimpacted	2010	U3	11	5	Pass										

Area	Criterion Network	Water Year	Station	Sample Size (N)	Annual Site Geometric Mean (µg/L)	≤15 µg/L Pass/ Fail	Network Annual Average Geometric Mean (µg/L)	≤11 µg/L Pass/ Fail	Network Five-Year Average Geometric Mean (µg/L)	Network Five Year Average ≤10 µg/L Pass/ Fail	3 of 5 Year Network Average ≤ 10 µg/L
WCA2	Unimpacted	2010	WCA2F5	11	5	Pass					
WCA2	Unimpacted	2010	Annual Network Average					5	Pass		
WCA2	Unimpacted	2011	404C2	4	N/A (7)	N/A					
WCA2	Unimpacted	2011	CA217	11	5	Pass					
WCA2	Unimpacted	2011	CA222	9	4	Pass					
WCA2	Unimpacted	2011	CA26	8	5	Pass					
WCA2	Unimpacted	2011	CA29	9	5	Pass					
WCA2	Unimpacted	2011	U1	11	5	Pass					
WCA2	Unimpacted	2011	U3	10	4	Pass					
WCA2	Unimpacted	2011	WCA2F5	9	5	Pass					
WCA2	Unimpacted	2011	Annual Network Average					5	Pass		
WCA2	Unimpacted	2012	404C2	8	7	Pass					
WCA2	Unimpacted	2012	CA217	9	5	Pass					
WCA2	Unimpacted	2012	CA222	8	4	Pass					
WCA2	Unimpacted	2012	CA224	8	7	Pass					
WCA2	Unimpacted	2012	CA26	9	4	Pass					
WCA2	Unimpacted	2012	CA29	10	5	Pass					
WCA2	Unimpacted	2012	U1	10	7	Pass					
WCA2	Unimpacted	2012	U3	9	5	Pass					
WCA2	Unimpacted	2012	WCA2F5	9	6	Pass					
WCA2	Unimpacted	2012	Annual Network Average					6	Pass		
WCA2	Unimpacted	2013	404C2	10	7	Pass					
WCA2	Unimpacted	2013	CA217	12	5	Pass					
WCA2	Unimpacted	2013	CA222	12	5	Pass					
WCA2	Unimpacted	2013	CA224	11	6	Pass					
WCA2	Unimpacted	2013	CA26	11	5	Pass					
WCA2	Unimpacted	2013	CA29	12	5	Pass					
WCA2	Unimpacted	2013	U1	11	6	Pass					
WCA2	Unimpacted	2013	U3	12	5	Pass					
WCA2	Unimpacted	2013	WCA2F4	10	9	Pass					
WCA2	Unimpacted	2013	WCA2F5	12	6	Pass					
WCA2	Unimpacted	2013	Annual Network Average					6	Pass		
WCA2	Unimpacted	2014	404C2	11	6	Pass					
WCA2	Unimpacted	2014	CA217	12	4	Pass					

Area	Criterion Network	Water Year	Station	Sample Size (N)	Annual Site Geometric Mean (µg/L)	≤15 µg/L Pass/ Fail	Network Annual Average Geometric Mean (µg/L)	≤11 µg/L Pass/ Fail	Network Five-Year Average Geometric Mean (µg/L)	Network Five Year Average ≤10 µg/L Pass/ Fail	3 of 5 Year Network Average ≤ 10 µg/L						
WCA2	Unimpacted	2014	CA222	12	5	Pass											
WCA2	Unimpacted	2014	CA224	12	6	Pass											
WCA2	Unimpacted	2014	CA26	12	4	Pass											
WCA2	Unimpacted	2014	CA29	12	4	Pass											
WCA2	Unimpacted	2014	U1	12	5	Pass											
WCA2	Unimpacted	2014	U3	12	5	Pass											
WCA2	Unimpacted	2014	WCA2F4	12	7	Pass											
WCA2	Unimpacted	2014	WCA2F5	12	6	Pass											
WCA2	Unimpacted	2014	Annual Network Average					5	Pass	6	Pass	Pass					
WCA3	Impacted	2010	CA314	12	5	Pass											
WCA3	Impacted	2010	CA324	5	N/A (13)	N/A											
WCA3	Impacted	2010	CA33	8	9	Pass											
WCA3	Impacted	2010	CA35	5	N/A (7)	N/A											
WCA3	Impacted	2010	CA36	8	24	Fail											
WCA3	Impacted	2010	Annual Network Average										12	Fail			
WCA3	Impacted	2011	CA314	10	4	Pass											
WCA3	Impacted	2011	CA324	4	N/A (10)	N/A											
WCA3	Impacted	2011	CA35	6	N/A (6)	N/A											
WCA3	Impacted	2011	CA36	9	22	Fail											
WCA3	Impacted	2011	Annual Network Average					13	Fail								
WCA3	Impacted	2012	CA324	5	N/A (10)	N/A											
WCA3	Impacted	2012	CA35	3	N/A (6)	N/A											
WCA3	Impacted	2012	CA36	6	31	Fail											
WCA3	Impacted	2012	Annual Network Average										31	Fail			
WCA3	Impacted	2013	CA324	6	10	Pass											
WCA3	Impacted	2013	CA35	2	N/A (6)	N/A											
WCA3	Impacted	2013	CA36	8	32	Fail											
WCA3	Impacted	2013	Annual Network Average										21	Fail			
WCA3	Impacted	2014	CA324	5	N/A (8)	N/A											
WCA3	Impacted	2014	CA35	6	6	Pass											
WCA3	Impacted	2014	CA36	7	13	Pass											
WCA3	Impacted	2014	Annual Network Average										10	Pass	15	Fail	Fail
WCA3	Unimpacted	2010	3ASMESO	11	4	Pass											
WCA3	Unimpacted	2010	CA311	10	4	Pass											

Area	Criterion Network	Water Year	Station	Sample Size (N)	Annual Site Geometric Mean (µg/L)	≤15 µg/L Pass/ Fail	Network Annual Average Geometric Mean (µg/L)	≤11 µg/L Pass/ Fail	Network Five-Year Average Geometric Mean (µg/L)	Network Five Year Average ≤10 µg/L Pass/ Fail	3 of 5 Year Network Average ≤ 10 µg/L
WCA3	Unimpacted	2010	CA315	10	4	Pass					
WCA3	Unimpacted	2010	CA316	10	6	Pass					
WCA3	Unimpacted	2010	CA319	11	5	Pass					
WCA3	Unimpacted	2010	CA32	11	5	Pass					
WCA3	Unimpacted	2010	CA325	11	5	Pass					
WCA3	Unimpacted	2010	CA34	10	7	Pass					
WCA3	Unimpacted	2010	CA38	9	4	Pass					
WCA3	Unimpacted	2010	CA39	11	5	Pass					
WCA3	Unimpacted	2010	CA3B1	10	3	Pass					
WCA3	Unimpacted	2010	CA3B2	11	4	Pass					
WCA3	Unimpacted	2010	S345B6	11	3	Pass					
WCA3	Unimpacted	2010	Annual Network Average				5	Pass			
WCA3	Unimpacted	2011	3ASMESO	9	4	Pass					
WCA3	Unimpacted	2011	CA311	10	4	Pass					
WCA3	Unimpacted	2011	CA315	11	4	Pass					
WCA3	Unimpacted	2011	CA316	10	6	Pass					
WCA3	Unimpacted	2011	CA319	10	4	Pass					
WCA3	Unimpacted	2011	CA32	7	5	Pass					
WCA3	Unimpacted	2011	CA325	6	N/A (5)	N/A					
WCA3	Unimpacted	2011	CA33	7	8	Pass					
WCA3	Unimpacted	2011	CA34	8	5	Pass					
WCA3	Unimpacted	2011	CA38	8	4	Pass					
WCA3	Unimpacted	2011	CA39	8	4	Pass					
WCA3	Unimpacted	2011	CA3B1	9	3	Pass					
WCA3	Unimpacted	2011	CA3B2	10	3	Pass					
WCA3	Unimpacted	2011	S345B6	10	3	Pass					
WCA3	Unimpacted	2011	Annual Network Average								
WCA3	Unimpacted	2012	3ASMESO	9	5	Pass					
WCA3	Unimpacted	2012	CA311	8	5	Pass					
WCA3	Unimpacted	2012	CA314	10	6	Pass					
WCA3	Unimpacted	2012	CA315	9	5	Pass					
WCA3	Unimpacted	2012	CA316	8	7	Pass					
WCA3	Unimpacted	2012	CA319	10	6	Pass					
WCA3	Unimpacted	2012	CA32	8	5	Pass					

Area	Criterion Network	Water Year	Station	Sample Size (N)	Annual Site Geometric Mean (µg/L)	≤15 µg/L Pass/ Fail	Network Annual Average Geometric Mean (µg/L)	≤11 µg/L Pass/ Fail	Network Five-Year Average Geometric Mean (µg/L)	Network Five Year Average ≤10 µg/L Pass/ Fail	3 of 5 Year Network Average ≤ 10 µg/L
WCA3	Unimpacted	2012	CA325	8	4	Pass					
WCA3	Unimpacted	2012	CA33	5	N/A (8)	N/A					
WCA3	Unimpacted	2012	CA34	7	6	Pass					
WCA3	Unimpacted	2012	CA38	6	4	Pass					
WCA3	Unimpacted	2012	CA39	10	6	Pass					
WCA3	Unimpacted	2012	CA3B1	7	3	Pass					
WCA3	Unimpacted	2012	CA3B2	8	8	Pass					
WCA3	Unimpacted	2012	S345B6	9	8	Pass					
WCA3	Unimpacted	2012	Annual Network Average					6	Pass		
WCA3	Unimpacted	2013	3ASMESO	12	4	Pass					
WCA3	Unimpacted	2013	CA311	12	4	Pass					
WCA3	Unimpacted	2013	CA314	12	4	Pass					
WCA3	Unimpacted	2013	CA315	12	4	Pass					
WCA3	Unimpacted	2013	CA316	12	6	Pass					
WCA3	Unimpacted	2013	CA319	12	5	Pass					
WCA3	Unimpacted	2013	CA32	9	5	Pass					
WCA3	Unimpacted	2013	CA325	9	5	Pass					
WCA3	Unimpacted	2013	CA33	8	9	Pass					
WCA3	Unimpacted	2013	CA34	10	7	Pass					
WCA3	Unimpacted	2013	CA38	10	4	Pass					
WCA3	Unimpacted	2013	CA39	12	5	Pass					
WCA3	Unimpacted	2013	CA3B1	12	3	Pass					
WCA3	Unimpacted	2013	CA3B2	11	6	Pass					
WCA3	Unimpacted	2013	S345B6	12	5	Pass					
WCA3	Unimpacted	2013	Annual Network Average								
WCA3	Unimpacted	2014	3ASMESO	11	3	Pass					
WCA3	Unimpacted	2014	CA311	12	4	Pass					
WCA3	Unimpacted	2014	CA314	11	3	Pass					
WCA3	Unimpacted	2014	CA315	12	3	Pass					
WCA3	Unimpacted	2014	CA316	12	6	Pass					
WCA3	Unimpacted	2014	CA319	11	4	Pass					
WCA3	Unimpacted	2014	CA32	8	5	Pass					
WCA3	Unimpacted	2014	CA325	8	3	Pass					
WCA3	Unimpacted	2014	CA33	7	7	Pass					

Area	Criterion Network	Water Year	Station	Sample Size (N)	Annual Site Geometric Mean (µg/L)	≤15 µg/L Pass/ Fail	Network Annual Average Geometric Mean (µg/L)	≤11 µg/L Pass/ Fail	Network Five-Year Average Geometric Mean (µg/L)	Network Five Year Average ≤10 µg/L Pass/ Fail	3 of 5 Year Network Average ≤ 10 µg/L				
WCA3	Unimpacted	2014	CA34	7	6	Pass									
WCA3	Unimpacted	2014	CA38	10	4	Pass									
WCA3	Unimpacted	2014	CA39	10	5	Pass									
WCA3	Unimpacted	2014	CA3B1	11	2	Pass									
WCA3	Unimpacted	2014	CA3B2	11	3	Pass									
WCA3	Unimpacted	2014	S345B6	11	3	Pass									
WCA3	Unimpacted	2014	Annual Network Average									4	Pass	6	Pass
ENP	N/A	2010	CR2	9	6	Pass									
ENP	N/A	2010	EP	11	2	Pass									
ENP	N/A	2010	G-3273	9	6	Pass									
ENP	N/A	2010	NE1	11	4	Pass									
ENP	N/A	2010	NP201	11	4	Pass									
ENP	N/A	2010	P33	11	6	Pass									
ENP	N/A	2010	P34	9	5	Pass									
ENP	N/A	2010	P37	8	2	Pass									
ENP	N/A	2010	RG1	9	12	Pass									
ENP	N/A	2010	SRS1C	10	4	Pass									
ENP	N/A	2010	SRS2	11	5	Pass									
ENP	N/A	2010	TSB	9	4	Pass									
ENP	N/A	2010	Annual Network Average									5	Pass		
ENP	N/A	2011	CR2	7	4	Pass									
ENP	N/A	2011	EP	9	2	Pass									
ENP	N/A	2011	G-3273	7	4	Pass									
ENP	N/A	2011	NE1	10	4	Pass									
ENP	N/A	2011	NP201	10	4	Pass									
ENP	N/A	2011	P33	10	6	Pass									
ENP	N/A	2011	P34	8	5	Pass									
ENP	N/A	2011	P37	8	3	Pass									
ENP	N/A	2011	RG1	8	8	Pass									
ENP	N/A	2011	SRS1C	6	5	Pass									
ENP	N/A	2011	SRS2	10	4	Pass									
ENP	N/A	2011	TSB	6	4	Pass									
ENP	N/A	2011	Annual Network Average									4	Pass		
ENP	N/A	2012	CR2	7	4	Pass									

Area	Criterion Network	Water Year	Station	Sample Size (N)	Annual Site Geometric Mean (µg/L)	≤15 µg/L Pass/ Fail	Network Annual Average Geometric Mean (µg/L)	≤11 µg/L Pass/ Fail	Network Five-Year Average Geometric Mean (µg/L)	Network Five Year Average ≤10 µg/L Pass/ Fail	3 of 5 Year Network Average ≤ 10 µg/L					
ENP	N/A	2012	EP	8	3	Pass										
ENP	N/A	2012	G-3273	4	N/A (5)	N/A										
ENP	N/A	2012	NE1	9	5	Pass										
ENP	N/A	2012	NP201	9	6	Pass										
ENP	N/A	2012	P33	10	5	Pass										
ENP	N/A	2012	P34	8	4	Pass										
ENP	N/A	2012	P37	6	2	Pass										
ENP	N/A	2012	RG1	6	6	Pass										
ENP	N/A	2012	SRS1C	6	7	Pass										
ENP	N/A	2012	SRS2	9	4	Pass										
ENP	N/A	2012	TSB	5	N/A (4)	N/A										
ENP	N/A	2012	Annual Network Average									5	Pass			
ENP	N/A	2013	CR2	9	3	Pass										
ENP	N/A	2013	EP	10	2	Pass										
ENP	N/A	2013	G-3273	8	3	Pass										
ENP	N/A	2013	NE1	12	4	Pass										
ENP	N/A	2013	NP201	12	3	Pass										
ENP	N/A	2013	P33	12	4	Pass										
ENP	N/A	2013	P34	11	4	Pass										
ENP	N/A	2013	P37	10	2	Pass										
ENP	N/A	2013	RG1	8	6	Pass										
ENP	N/A	2013	SRS1C	9	4	Pass										
ENP	N/A	2013	SRS2	11	4	Pass										
ENP	N/A	2013	TSB	8	3	Pass										
ENP	N/A	2013	Annual Network Average									4	Pass			
ENP	N/A	2014	CR2	9	4	Pass										
ENP	N/A	2014	EP	11	3	Pass										
ENP	N/A	2014	G-3273	9	3	Pass										
ENP	N/A	2014	NE1	11	4	Pass										
ENP	N/A	2014	NP201	11	3	Pass										
ENP	N/A	2014	P33	11	4	Pass										
ENP	N/A	2014	P34	10	3	Pass										
ENP	N/A	2014	P37	10	2	Pass										
ENP	N/A	2014	RG1	9	5	Pass										

Area	Criterion Network	Water Year	Station	Sample Size (N)	Annual Site Geometric Mean (µg/L)	≤15 µg/L Pass/Fail	Network Annual Average Geometric Mean (µg/L)	≤11 µg/L Pass/ Fail	Network Five-Year Average Geometric Mean (µg/L)	Network Five Year Average ≤10 µg/L Pass/ Fail	3 of 5 Year Network Average ≤ 10 µg/L
ENP	N/A	2014	SRS1B	10	6	Pass					
ENP	N/A	2014	SRS1C	11	5	Pass					
ENP	N/A	2014	SRS2	12	4	Pass					
ENP	N/A	2014	TSB	9	3	Pass					
ENP	N/A	2014	Annual Network Average								

µg/L – micrograms per liter

N/A – Not applicable

Refuge – Arthur R. Marshall Loxahatchee National Wildlife Refuge

WCA-2 – Water Conservation Area 2

WCA-3 – Water Conservation Area 3

ENP – Everglades National Park

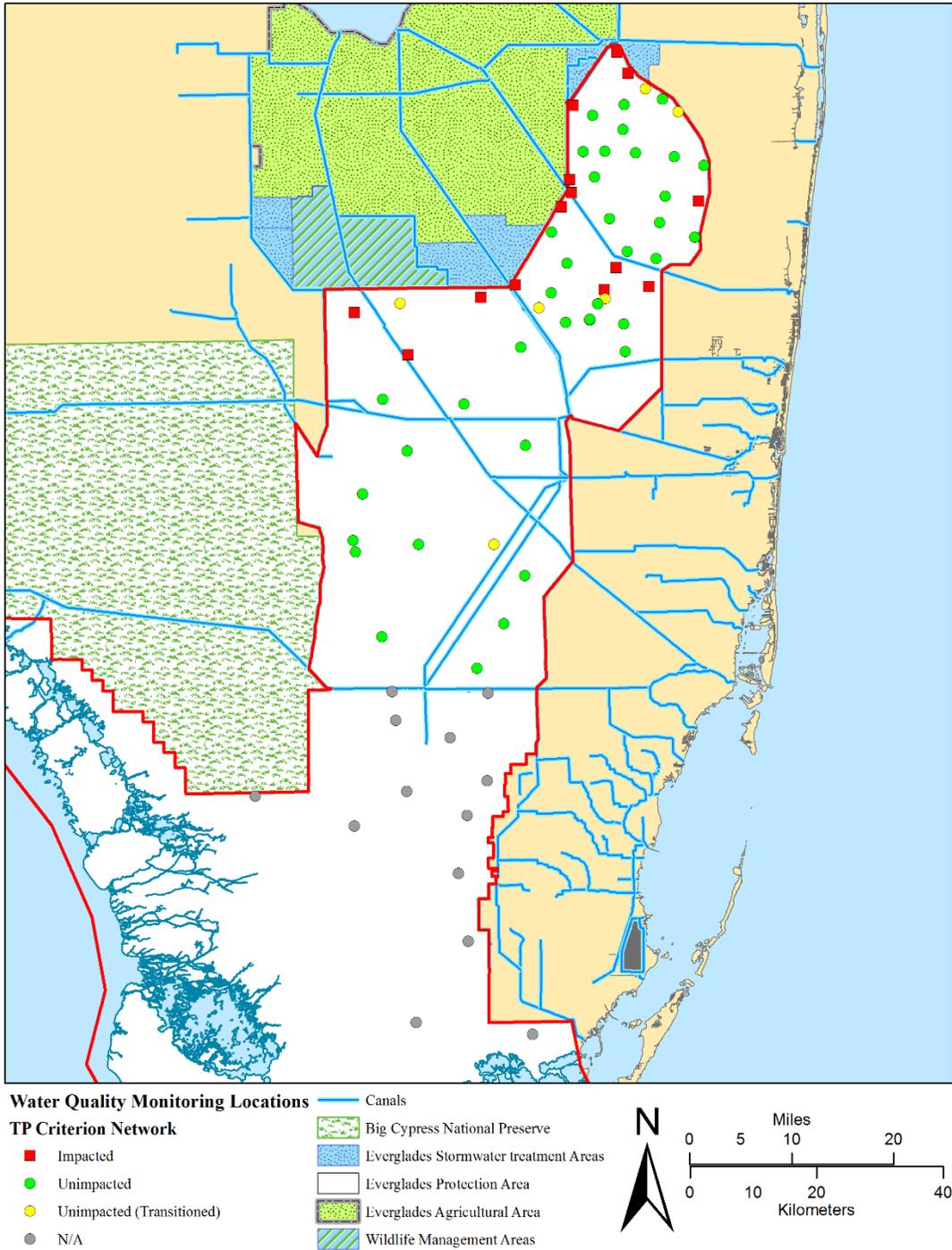


Figure 1. Location of total phosphorus (TP) rule monitoring stations in the Everglades Protection Area (EPA) and their respective classifications used in Water Years 2010–2014 (WY2010–WY2014) (May 1, 2009–April 30, 2014) evaluations. Stations previously deemed impacted and transitioned to unimpacted status are identified separately.

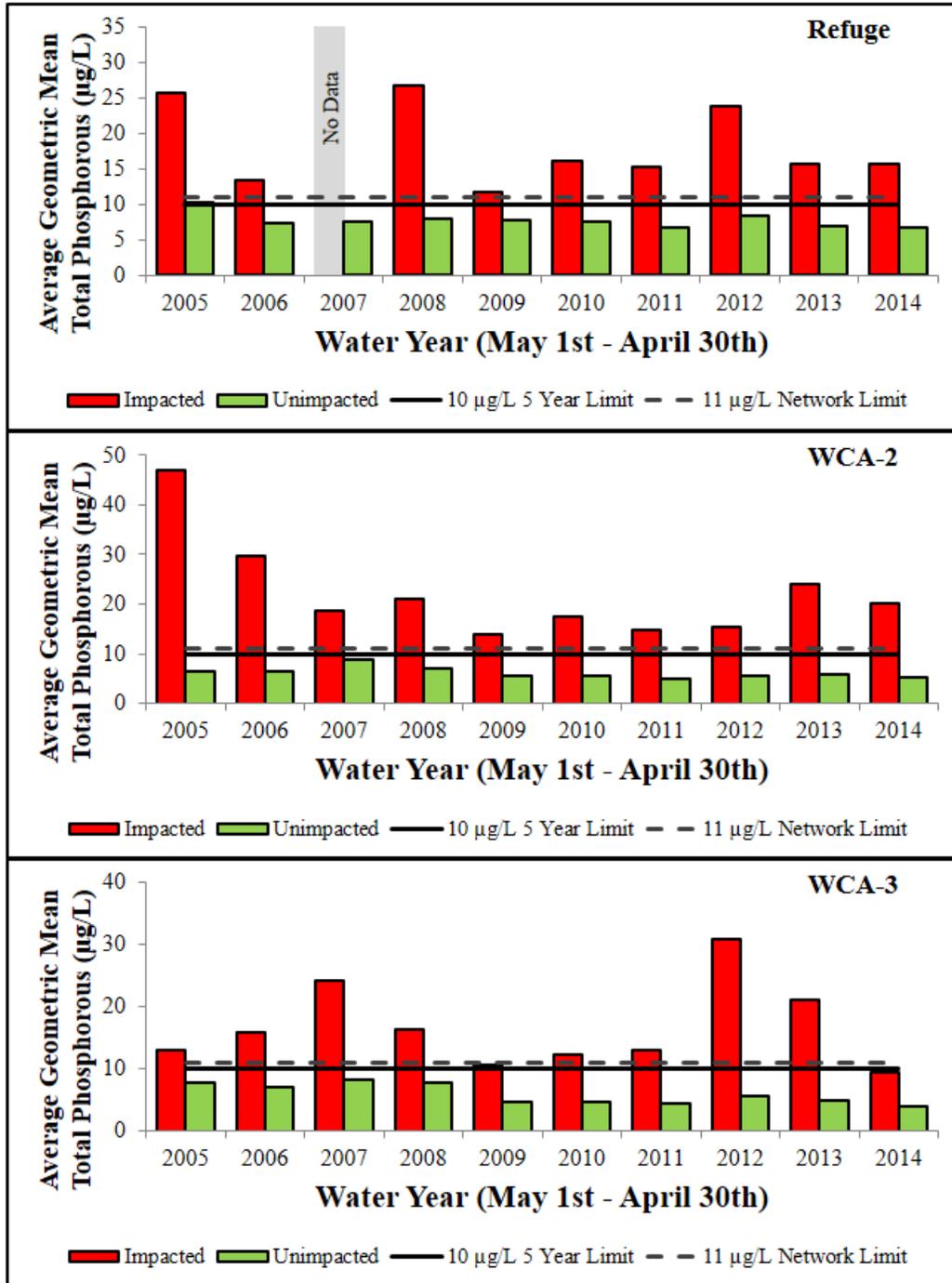


Figure 2. Network (impacted and unimpacted) trends for the Arthur R. Marshall Loxahatchee National Wildlife Refuge (Refuge), Water Conservation Area 2 (WCA-2), and Water Conservation Area 3 (WCA-3) from WY2005–WY2014 (May 1, 2004–April 30, 2014) relative to the 10 microgram per liter (µg/L) long-term (five-year) and the 11 µg/L annual network limits for TP. [*Note: Due to extreme weather events and drought conditions, a data gap exists for WY2007 within the Refuge.]

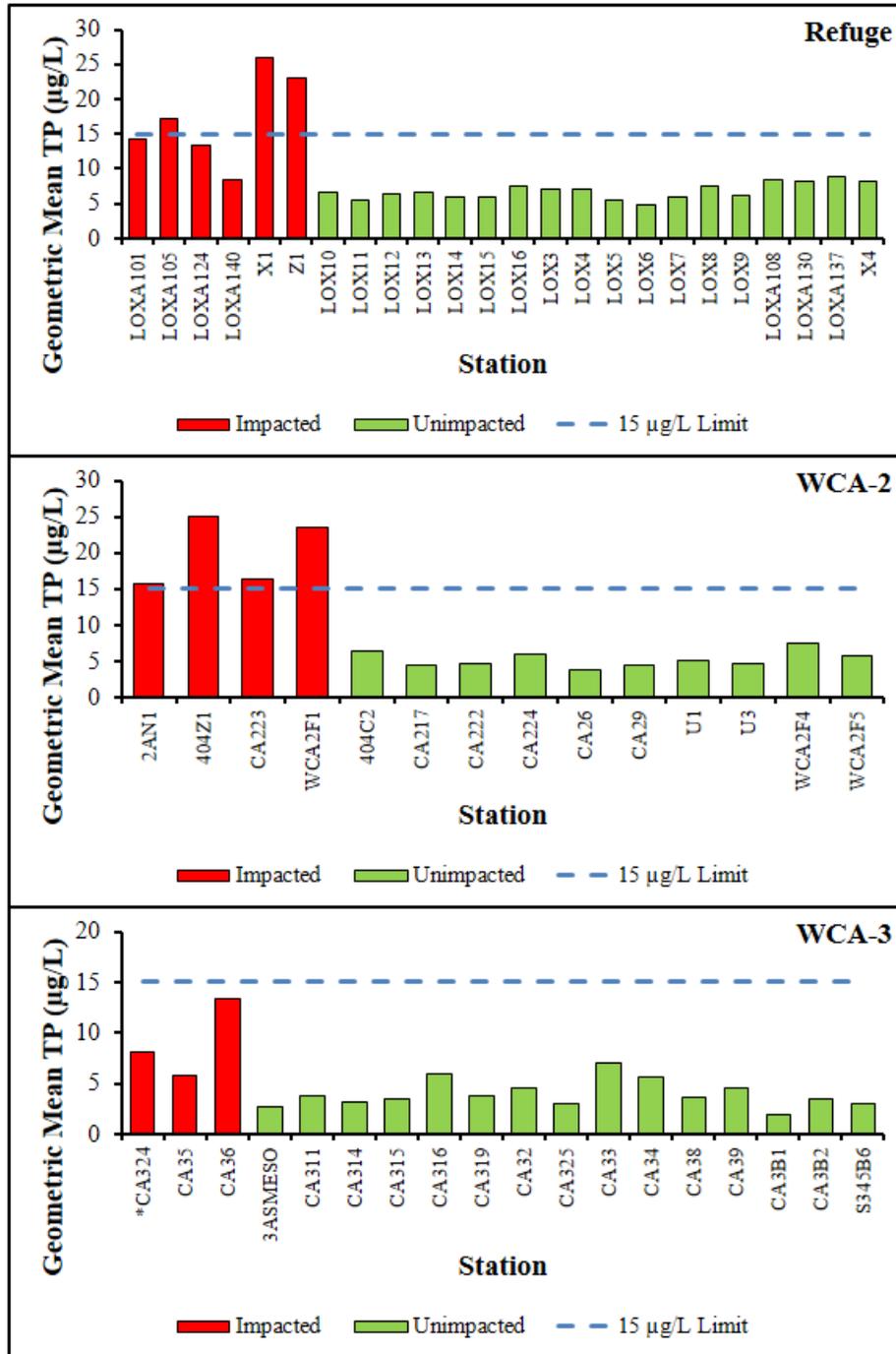


Figure 3. TP geometric mean concentration for each station during WY2014 (May 1, 2013–April 30, 2014) for the Refuge, WCA-2, and WCA-3 relative to the 15 µg/L annual limit. Stations with less than six samples are identified with an asterisk (*).

TOTAL PHOSPHORUS RULE ASSESSMENT – EVERGLADES NATIONAL PARK

As stated in Paragraph 62-302.540(4)(b), F.A.C., achievement of the phosphorus criteria shall be assessed for all water bodies in the EPA, which includes Everglades National Park (ENP or Park). However, Paragraph 62-302.540(4)(c), F.A.C., also states “Achievement of the phosphorus criterion in the Park shall be based on the methods as set forth in Appendix A of the Settlement Agreement³ unless the Settlement Agreement is rescinded or terminated. If the Settlement Agreement is no longer in force, achievement of the criterion shall be determined based on the method provided for the remaining EPA.” The Settlement Agreement remains in force and, therefore, data presented in this appendix for the ENP is for informational purposes only and **Figure 1** indicates that the TP rule status of stations within the ENP is not applicable for compliance purposes. Notably, based on soil TP concentrations and surface water TP concentrations since the inception of the monitoring network within the ENP, all stations have been categorized as unimpacted.

Stations within the ENP network achieved all aspects of the TP rule (**Table 1**) with a steadily declining network average geometric mean TP concentration since WY2005 (**Figure 4**). During WY2014, individual station annual geometric means ranged from 2 µg/L (P37) to 6 µg/L (SRS1B), with an overall average geometric mean of 4 µg/L (**Figure 5**). This very low average geometric mean P concentration reflects approximately one-half of the minimal flow-weighted mean concentration used to assess compliance under Appendix A.

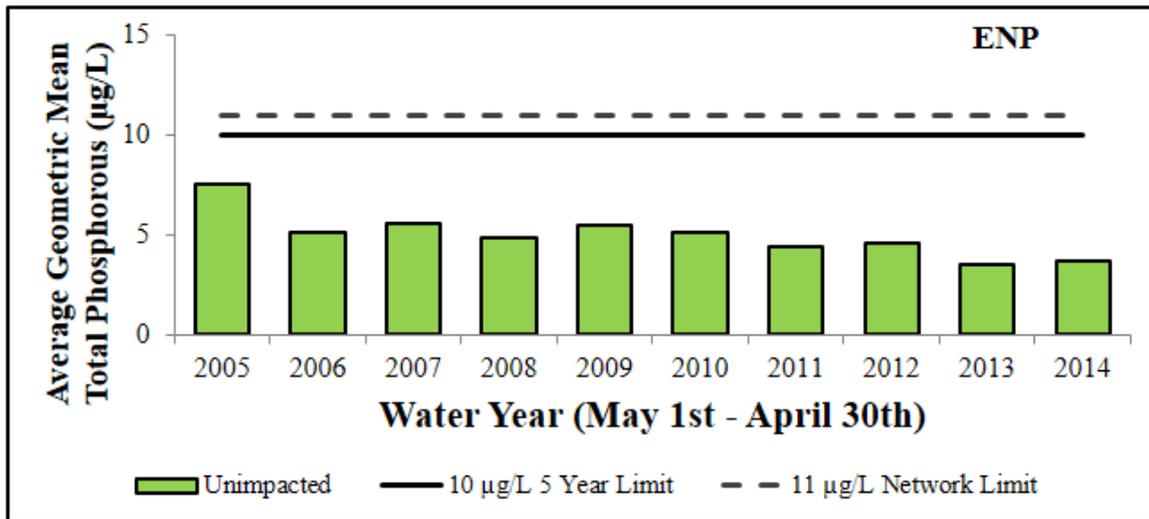


Figure 4. Network trends for the Everglades National Park (ENP or Park) from WY2005–WY2014 relative to the 10 µg/L long-term (five-year) and the 11 µg/L annual network limits for TP.

³ United States v. South Florida Water Management District. 1988. Case No. 88-1886-CIV-HOEVELER.

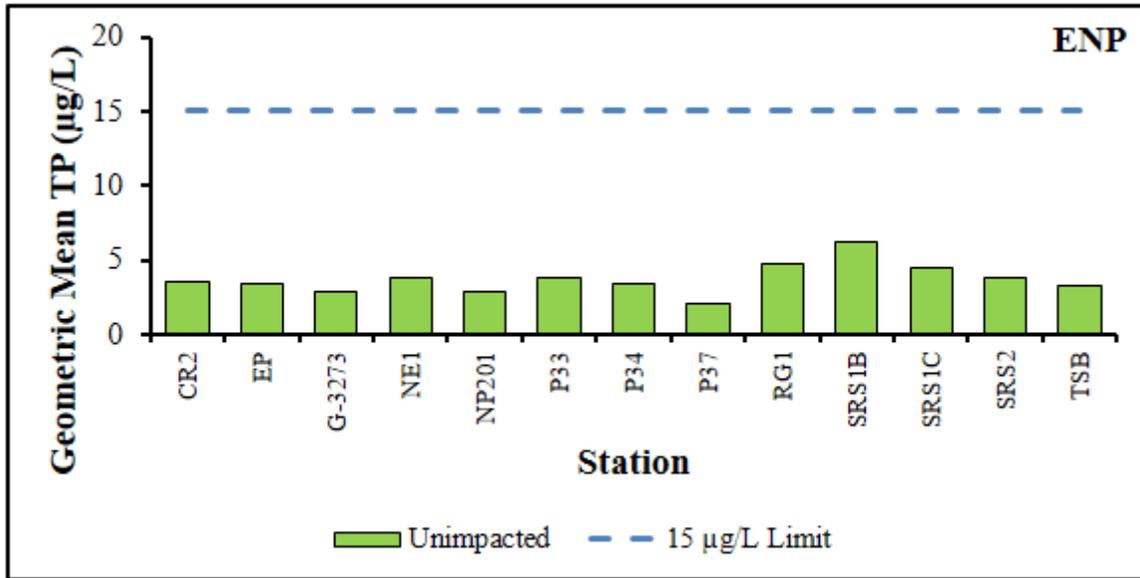


Figure 5. TP geometric mean concentration for each station during WY2014 for the ENP relative to the 15 µg/L annual station limit. Stations with less than six samples are identified with an asterisk (*).