Water Quality Trends in South Dade

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South Dade Investigation Workshop
October 15, 2015
Florida’s surface water quality standards

- Published in Chapter 62-302 F.A.C. (based on federal Clean Water Act), and includes:
  - Classification: Class III
    - L-31N and C-111 Canals; Everglades National Park

- Outstanding Florida Water Designation (OFW)
  - Everglades National Park

- Criteria (water quality of concern):
  - Total Phosphorus, Mercury and Pesticides

Federal Settlement Agreement, Appendix A – Everglades National Park

- Discharge limit for Total Phosphorus
Surface Water Quality Standards for the L-31N and C-111 Canal System

Projects with State Water Quality Standards incorporated as conditions and associated monitoring locations:

- Non-Everglades Construction Project / SFWMD
  - S334, S331-173, S332D, S176, S177, S18C, S197

- C-111 Spreader Canal, Phase I (Western) Project / SFWMD
  - S200, S199

- Cape Sable Seaside Sparrow (CSSS) Emergency Order (EO) for the C-111 / USACE
  - S331-173, S332B, S332C, S332D

Settlement Agreement monitoring locations:

- Appendix A (Taylor Slough/Coastal Basin) S332D, S18C
Total Phosphorus (TP)

- Discharges into the EPA shall be deemed in compliance with state water quality standards upon a demonstration that:
  - Phosphorus levels in the discharges will be at or below the phosphorus criterion of 10 micrograms per liter (µg/L or ppb); or
  - Discharges will not cause or contribute to exceedances of the phosphorus criterion in the receiving waters

- Discharges into Everglades National Park must not result in a violation of the concentration limits established for the Park in Appendix A of the Settlement Agreement
  - Taylor Slough / Coastal Basin limit is 11 µg/L (ppb)

STATUS

Long-term trends of TP concentrations at canal monitoring locations range between

4 – 10 µg/L (ppb)

Long-term trends of TP in discharges to Taylor Slough / Coastal Basin ranges between

5 – 6 µg/L (ppb)
Total Phosphorus Trends: S334

Annual median TP vs. flow

TP Trend (2005-2014)

Monthly Flow (ac-ft x 10^6)

Monthly Median TP (ug/L or ppb)

Flow  Median TP  Period Median (10 ppb)  10th (7 ppb) and 90th (20 ppb) Percentiles
Total Phosphorus Trends: S331-173

Annual median TP vs. flow

TP Trend (2005-2014)
Total Phosphorus Trends: Central - S332B/C/D, S176

Annual median TP vs. flow

TP Trend (2005-2014)

- Flow
- Median TP
- Period Median (6 ppb)
- 10th (5 ppb) and 90th (10 ppb) Percentiles
Total Phosphorus Trends: S200, S199, S177

Annual median TP vs. flow

TP Trend (2005-2014)
Total Phosphorus Trends: S18C

Annual median TP vs. flow

TP Trend (2005-2014)
Total Phosphorus Trends: S197

Annual median TP vs. flow

Annual Flow (ac-ft X 10^3)

Years


TP Trend (2005-2014)

Monthly Flow (ac-ft X 10^3)


Monthly Events

Flow  Median TP  Period Median (4 ppb)  —  —  10th (3 ppb) and 90th (7 ppb) Percentiles
Total Phosphorus Spatial Trend (2005-2014)

View of South Florida showing regions: North, Central, and South. The map highlights various sites such as S336-334, S332B, S332C, S332D, S176, S200, S199, S177, S18C, and S197. A graph on the right shows the total phosphorus concentration (µg/L or ppb) against distance from S-334 structure (miles), with percentile markers and data points.
Total Phosphorus Trends: S332D, S18C

Settlement Agreement, Appendix A – Taylor Slough/Coastal Basins

- Long-term Limit of 11 µg/L or ppb (annually required)
- Long-term Target of 6 µg/L or ppb (goal only)

5 - 6 µg/L or ppb annually has been consistently achieved past 10 years
Surface Water Quality Standards for the L-31N and C-111 Canal System

Pesticides

- Evaluate potential impacts on aquatic life resulting from intermittent pesticide exposure (acute/chronic)
- Maximum observed concentration is compared to the criterion published under Section 304 (a) of the Clean Water Act (CWA), and Florida Class III numerical water quality standard

**STATUS**

*Pesticides are occasionally detected, but not at concentrations greater than their respective Class III criteria or toxicity limits*
Surface Water Quality Standards for the L-31N and C-111 Canal System

Total Mercury (THg)

- Evaluate impacts to piscivorous avian and mammalian wildlife

- Surface Water
  - THg criteria is 12 nanograms per liter (ng/L) Florida Class III numerical water quality standard

- Fish
  - Evaluate concentrations against the Southern Everglades 75th percentile concentration in milligrams per kilogram (mg/kg) for the period of record; and
  - USEPA Trophic Level III Fish protection criteria of 0.077 mg/kg

**STATUS**

*Total mercury in surface water has been well below the 12 ng/L criterion at canal monitoring sites*

*Total mercury levels in fish measured from monitoring sites have been well below the:*

- Southern Everglades 75th percentile concentration of 0.08 mg/kg (for the period of record up to 2012), and
- USEPA trophic level III fish protection criteria
Questions?
Total Phosphorus Spatial Trend (2010-2014)
Total Phosphorus Trends: S176

- Flow
- Median TP
- Period Median (7 ppb)
- 10th (5 ppb) and 90th (11 ppb) Percentiles
Total Phosphorus Trends: S332B
Total Phosphorus Trends: S332D

- Annual Flow (ac-ft x 10^3)
- Monthly Flow (ac-ft x 10^3)

- Median TP
- Period Median (6 ppb)
- 10th (5 ppb) and 90th (10 ppb) Percentiles

- Years: 1983 to 2013
- Months: 2005 to 2014
Total Phosphorus Trends: S12A

- Median TP
- Period Median (13 ppb)
- 10th (6 ppb) and 90th (43 ppb) Percentiles
Total Phosphorus Trends: S12B

Total Phosphorus Trends:

S12B

Flow
Median TP
Period Median (7 ppb)
10th (5 ppb) and 90th (16 ppb) Percentiles
Total Phosphorus Trends: S12C

- Flow
- Median TP
- Period Median (8 ppb)
- Dashed lines indicate 10th (5 ppb) and 90th (19 ppb) Percentiles
Total Phosphorus Trends:
S12D

Annual Flow (ac-ft x 10^8)

Monthly Flow (ac-ft x 10^9)

Years
0 200 400 600 800

Monthly Median (9 ppb) and 90th Percentiles

Flow
Median TP
Period Median (9 ppb)
10th (7 ppb) and 90th (15 ppb) Percentiles

Annual Median TP (µg/L or ppb)
0 20 40 60 80

Monthly Median TP (µg/L or ppb)
0 20 40 60 80


sfwmd.gov
Total Phosphorus Trends: S333

- **Years:** 1978 to 2014
- **Flow:**
  - **Annual Flow:** (ac-ft x 10^6)
  - **Monthly Flow:** (ac-ft x 10^6)

- **Median TP:**
  - **Annual Median TP:** (µg/L or ppb)
  - **Monthly Median TP:** (µg/L or ppb)

- **Graphs:**
  - **X-axis:** Years
  - **Y-axis:** Flow and Median TP

Legend:
- Flow
- Median TP
- Period Median (10 ppb)
- 10th (7 ppb) and 90th (22 ppb) Percentiles
C-111 Detention Areas: S-332B, S-332C, S-332D