Numeric Nutrient Criteria:

Lessons Learned From the First Two Years

Florida Chamber
Environmental Permitting Short Course
Orlando, FL
July 2016
...If the biology of the system is ok, then nutrients must not be causing a problem.
Floral Metrics

Nutrient Thresholds

Attains Nutrient Standard

Stream Condition Index

Attains Nutrient Standard
Floral Metrics

Nutrient Thresholds

Stream Condition Index

Does Not Attain

Does Not Attain
Floral Metrics

- Nutrient Thresholds
  - Does Not Attain
- Stream Condition Index
  - Attains Nutrient Standard
Nutrient Watershed Region | TN (mg/L) | TP (mg/L)
--- | --- | ---
Panhandle West | 0.67 | 0.06
Panhandle East | 1.03 | 0.18
North Central | 1.87 | 0.30
West Central | 1.65 | 0.49
Peninsula | 1.54 | 0.12
TMDL Program

WQBEL

TMDL

NPDES
Water Quality Based Effluent Limitations (WQBEL)

For existing discharges
  - Level I

- Evaluate Floral and Faunal Metrics in Receiving Water
- If Achieved – nutrients in discharge must not be a problem
- Permit Renewed with current permitted limits

Lessons Learned:
  - If discharge does not equal permit limits – expect permit limits to be lowered
  - Expect scrutiny of biological data
  - Get WQBEL analysis completed early
Water Quality Based Effluent Limitations (WQBEL)

> For new or expanded discharges
  - Level II

> Lessons Learned:
  - Mass Balance approach accepted – projected nutrients compared to surrogate system with healthy biology
  - Best Professional Judgement prevails
  - More difficult to identify a “stream” than expected
NPDES Permit Conditions

> NNC inserted upon permit renewal
> Permit limits for TN and TP
  – Expect limits as concentrations
  – Combination of AGM, monthly ave, and daily max
> Likely require biological monitoring at least twice during permit cycle
> Permit conditions will reflect WQBEL results
  – Loose ends inserted as permit conditions
> Permit conditions require Plan of Correction if biology fails
TMDL Program

- Groups 2 and 3 assessed for NNC so far

- ~40% of impairments are for nutrients

- Many of the stream impairments based on floral metrics
Horse Creek Impairment Listing

> Draft impairment listing based on two LVS results (2008 and 2013)

> Since 2008:
  - 24 LVS; 24 RPS; 44 SCI samples collected

> Listing did not reflect data
  - LVS not linked to nutrients
<table>
<thead>
<tr>
<th>Temporally Independent Sampling Periods</th>
<th>HCSW-3</th>
<th>HCSW-4/FDEP-HC at SR72</th>
<th>WBID 1787A</th>
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<tr>
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<td>Fail/Pass</td>
<td>Pass</td>
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<td>Mar 2014</td>
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<tr>
<td>Dec 2015/Mar 2016</td>
<td>Fail</td>
<td>Fail*</td>
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</tbody>
</table>

![Box plot](image)

- **logTN:** $F(1,27) = 0.0026, p = 0.9600$
- **logTPCalc:** $F(1,27) = 0.163, p = 0.6896$
Total Phosphorus

Mean Coefficient of Conservatism (C of C) and Percent FLEPPC are shown as data points in the graph. The x-axis represents Log10 TP-calc, and the y-axis represents CofC.

Total Nitrogen

Mean Coefficient of Conservatism (C of C) and Percent FLEPPC are shown as data points in the graph. The x-axis represents Log10 TN, and the y-axis represents CofC.
> NNC Implementation is complicated and confusing
> Begin WQBEL process early – prior to permit renewal
> Be proactive – engage in discussions over permit conditions
> Monitor impairment listings – get involved in data collection
> An ounce of prevention…