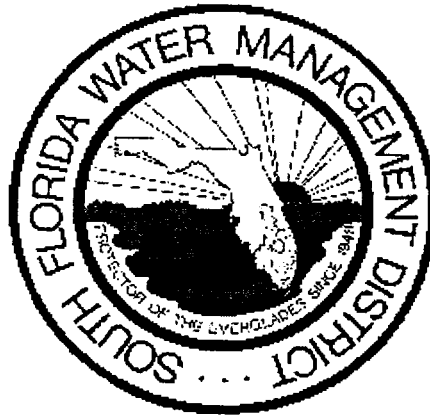


Quality Assessment Report for Water Quality Monitoring

October – December 2001



**Submitted to the
Technical Oversight Committee**

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Quality Assessment Report for Water Quality Monitoring October - December 2001

This report is an assessment of the SFWMD laboratory and field sampling in Total Phosphorus (TP) monitoring primarily for the following projects/stations during the last quarter of 2001.

- Conservation Area Inflow and Outflows (CAMB)
S12A, S12B, S12C S12D, S333
- Everglades National Park Inflow Monitoring (ENP)
S175, S176, S177, S18C, S332, S332D
- Everglades Protection Area (EVPA)
LOX3 to LOX16
- Non-Everglades Construction Project (NECP)
S334

The lists of qualified data (Table 3) and field sampling quality assessment (Table 4) also include information on stations other than those listed above or other projects since field QCs are collected for trips that include the samples for the stations of interest.

The South Florida Water Management District's Comprehensive Quality Assurance Plan (CQAP) requires analysis of laboratory quality control (QC) samples and the collection and analysis of field QC samples along with routine samples to assess the data quality. Included are the results from a split study with SFWMD and Florida Department of Environmental Protection (FDEP) laboratories for total phosphorus analysis to continually determine comparability of results.

Field Sampling Quality Assessment

Field QC measures consist of equipment blanks (EB), field blanks (FB), split samples (SS) and replicate samples (RS). Table 1 summarizes EB and FB recoveries for all projects and Table 2 summarizes field precision recoveries. Data not meeting the set criteria are flagged using FDEP data qualifier codes.

Field sampling precision was generally acceptable. In cases when the precision exceeded criteria, the affected sample was flagged. A comprehensive list of flagged data for all trips that include samples for CAMB, ENP, EVPA and NECP during this quarter is presented in Table 3.

Based on an audit conducted by District staff on 3/11/02 of Dade County Department of Environmental Resources Management (DERM) sampling team, sample collection procedures were generally acceptable and comply with SFWMD and DEP requirements. The following was a corrective action required of DERM, based on that audit: Use pH calibration standards at the right range. DERM was calibrating using pH7 and 10, while most of the field readings were below pH 7, and therefore, calibration should include pH4 buffer. The following was recommended to improve the integrity of collection: Dates when corrections were made should be indicated on the chain of custody sheet. The District is waiting for DERM's response on this audit report. This collection was for CAMB, ENP, NECP, and 8SQM projects.

Table 1. Field and Equipment Blank Recoveries

| Type of Blank | Project | # Blanks collected | % with value <0.004 | % with value 0.004-0.008 | % with value >0.008 | Action Taken |
|---------------|---------|--------------------|---------------------|--------------------------|---------------------|--------------|
| FB | CAMB | 444 | 99.3 | 0 | 0.7 | Data flagged |
| | ENP | 22 | 100 | 0 | 0 | N/A |
| | EVPA | 15 | 100 | 0 | 0 | N/A |
| | NECP | 2 | 100 | 0 | 0 | N/A |
| EB | CAMB | 327 | 98.2 | 0.9 | 0.9 | Data flagged |
| | ENP | 61 | 95.1 | 3.3 | 1.6 | Data flagged |
| | EVPA | 48 | 100 | 0 | 0 | N/A |
| | NECP | 3 | 100 | 0 | 0 | N/A |

Table 2. Field Precision Summary

| Project Code | Numbers of pairs | Mean % RPD | Comments |
|--------------|------------------|------------|--|
| CAMB | 77 | 10.09 | Precision exceeded criteria on the following dates: 10/2; 10/30; 11/6; 11/26; 12/11 & 12/12. Affected samples were flagged |
| ENP | 18 | 13.8 | Precision criteria were met. Those above criteria were all <PQL. |
| EVPA | 18 | 6.8 | Precision criteria were met. |
| NECP | 2 | 0 | Precision criteria were met. |

Notes

- 1) All TP analyses were conducted by SFWMD laboratory.
- 2) Field precision acceptance criteria: <15%. This criteria is applied only if values >PQL.
- 3) FB and EB acceptance criteria: Must be $\leq 2 \times \text{MDL}$.
- 4) Associated samples are flagged when concentrations are low enough as compared to blank values for possibility of contamination.

Table 3. List of Flagged Results

| Project | Date Collected | Station | Type | Flag Code | Comments |
|---------|----------------|----------|------|-----------|---------------------------------------|
| CAMB | 26-Nov-01 | S34 | SAMP | J3 | Failed field precision criteria |
| | 12-Dec-01 | S6 | RS | J3 | Failed field precision criteria |
| | 2-Oct-01 | C123SR84 | RS | J3 | Failed field precision criteria |
| | 30-Oct-01 | S150 | RS | J3 | Failed field precision criteria |
| | 11-Dec-01 | S150 | RS | J3 | Failed field precision criteria |
| | 6-Nov-01 | S5A | RS | J3 | Failed field precision criteria |
| | 24-Oct-01 | S6 | SAMP | J5 | Not flow proportional |
| | 23-Oct-01 | G123 | SAMP | V | Sample associated with positive blank |
| | 23-Oct-01 | S9 | SAMP | V | Sample associated with positive blank |
| | 27-Dec-01 | G123 | SAMP | V | Sample associated with positive blank |
| | 27-Dec-01 | S11C | SAMP | V | Sample associated with positive blank |
| | 11-Dec-01 | S9 | SAMP | V | Sample associated with positive blank |
| | 11-Dec-01 | S9 | SAMP | V | Sample associated with positive blank |
| | 11-Dec-01 | G123 | SAMP | V | Sample associated with positive blank |
| | 4-Dec-01 | S9 | SAMP | V | Sample associated with positive blank |
| | 4-Dec-01 | S151 | SAMP | V | Sample associated with positive blank |
| | 4-Dec-01 | S31 | SAMP | V | Sample associated with positive blank |
| | 23-Oct-01 | G123 | EB | V | EB>2xMDL |
| | 27-Dec-01 | G123 | FB | V | FB>2xMDL |
| | 27-Dec-01 | G123 | SS | V | Sample associated with positive blank |
| | 27-Dec-01 | G123 | RS | V | Sample associated with positive blank |
| | 11-Dec-01 | S9 | EB | V | EB>2xMDL |
| | 11-Dec-01 | S9 | SS | V | Sample associated with positive blank |
| | 11-Dec-01 | S9 | RS | V | Sample associated with positive blank |
| | 11-Dec-01 | S9 | FB | V | FB>2xMDL |
| | 11-Dec-01 | S150 | EB | V | EB>2xMDL |
| | 4-Dec-01 | G123 | FB | V | FB>2xMDL |
| | 4-Dec-01 | S31 | SS | V | Sample associated with positive blank |
| | 4-Dec-01 | S31 | RS | V | Sample associated with positive blank |
| ENP | 27-Dec-01 | S332DAS | SAMP | V | Sample associated with positive blank |
| | 27-Dec-01 | S332DAS | EB | V | EB>2xMDL |
| | 27-Dec-01 | S332DAS | SS | V | Sample associated with positive blank |

Laboratory Quality Control Assessment

Routine laboratory QC samples include QC checks, matrix spikes and precision checks.

The charts presented on the following pages show recoveries from various levels of QC samples for the TP analysis at SFWMD laboratory. Statistical evaluation of precision and matrix spikes recoveries is also included. Portion of or an entire analytical run is generally rejected if QC recoveries are outside the set limits. Data is flagged accordingly if any deficiency is noted after the samples have exceeded the required holding times.

Except for QC5, recoveries for the QC samples are generally within $\pm 10\%$ from the true value, which are acceptable. QC5, with a true value of 0.006 mg/L, is less than the practical quantitation limit. Although a wider performance range can be expected at this level, the recoveries are biased on the high end of the chart, 83.3 – 116.7% with a mean of 103.1%.

Organic check is a solution prepared from phytic acid, a stable form of organic phosphate. Recoveries for this check sample are between 96.7 – 101.9%, indicating that the digestion process was effective. The same material is used to do matrix spikes, the mean recovery for which was 102.6%.

The precision target for TP analysis during this period was 5.0% and as the report shows, mean %RPD was 1.02% and 0.76% for low and high level analyses, respectively. The maximum RPD during this period were 3.9% & 3.5% for low & high respectively.

Split and Round Robin Studies

To continually assess comparability of results, the District began splitting samples, collected from the Loxahatchee National Refuge site (EVPA Project), with the Florida Department of Environmental Protection's laboratory. This split study is conducted quarterly. The result of the split study is presented in Table 4 below:

Table 4. Results of TP split studies between SFWMD and FDEP laboratories, 12/3/01.

| Station | Sampling Date | Type | SFWMD | | FDEP | | Difference (SFWMD-FDEP) | RPD % | Comments |
|---------|---------------|------|-----------|----------|----------|----------|----------------------------|----------|----------|
| | | | Field # | TP, mg/L | Field # | TP, mg/L | | | |
| LOX6 | 12/3/01 | EB | P10071-1 | <0.004 | P10070-1 | <0.004 | 0.000 | 0.0 | |
| LOX6 | 12/3/01 | SS | P10071-2 | 0.006 | P10070-2 | 0.006 | 0.000 | 0.0 | |
| LOX7 | 12/3/01 | SS | P10071-6 | 0.007 | P10070-3 | 0.008 | -0.001 | 13.3 | |
| LOX8 | 12/3/01 | SS | P10071-7 | 0.008 | P10070-4 | 0.008 | 0.000 | 0.0 | |
| S5AD | 12/3/01 | FB | P10071-14 | <0.004 | P10070-5 | <0.004 | 0.000 | 0.0 | |
| S6D | 12/4/01 | SS | P10773-2 | 0.032 | P10070-6 | 0.036 | -0.004 | 11.8 | |
| LOX12 | 12/4/01 | SS | P10073-4 | 0.006 | P10070-7 | 0.007 | -0.001 | 15.4 | |
| LOX16 | 12/4/01 | SS | P10073-6 | 0.006 | P10070-8 | 0.007 | -0.001 | 15.4 | |

Both laboratories obtained acceptable blank (EB and FB) results. For S6D split, which is the only set of results > PQL, the RPD between the results is 11.8%.

A copy of Everglades Round Robin 10 results showing the District's laboratory performance, as compared with the other participating laboratories is also provided in this report. Also provided in this report is the result of District's own performance evaluation program (Table 5). This program is coordinated by the District's Quality Assurance Section. The District's laboratory also obtained excellent ratings in USGS Round Robin studies around this time period.

Table 5. Results of TP Performance Evaluation studies coordinated by SFWMD QA Section, 3/2001

| Lab | Blank | Known QC | Field Sample 1 | Field Sample 2 | Spiked Field Sample 1 | Spike Duplicate |
|-----------------|---------|--------------|----------------|----------------|-----------------------|-----------------|
| | <MDL | 0.050 | 0.021 | 0.046 | 0.069 | 0.066 |
| TVA Lab | <0.002 | 0.050 | 0.018 | 0.038 | 0.072 | 0.065 |
| SFWMD Lab | <0.004 | 0.047 | 0.022 | 0.046 | 0.069 | 0.069 |
| DERM Lab | <0.001 | 0.047 | 0.022 | 0.046 | 0.069 | 0.066 |
| PPB Lab | <0.004 | 0.050 | 0.021 | 0.050 | 0.070 | 0.070 |
| ELAB Lab | <0.004 | 0.046 | 0.018 | 0.043 | 0.066 | 0.065 |
| FDEP Lab | <0.004 | 0.048 | 0.023 | 0.051 | 0.070 | 0.073 |
| Sanders Lab | <0.010 | 0.144 | 0.135 | 0.164 | 0.179 | 0.182 |
| USGS Lab | 0.010 | 0.040 | 0.020 | 0.040 | 0.050 | 0.050 |
| USBio Lab | <0.0081 | 0.042 | 0.016 | 0.051 | 0.063 | 0.061 |
| Collier Cty Lab | <0.010 | 0.040 | 0.020 | 0.040 | 0.070 | 0.070 |
| Lee Cty Lab | <0.050 | 0.040 | <0.050 | <0.050 | 0.060 | 0.060 |
| FIU-SERP Lab | 0.010 | 0.050 | 0.030 | 0.050 | 0.080 | 0.070 |

Round Robin TP-10

Results

| Laboratory | SITE | | | | | | | | | | | | SPK1 | | | | | | U3 | | | | | | | | | | | | | |
|--|-------------|-------------|-------------|--------------|---------------|----------------|---------------|--------------|-------------|-------------|--------------|-------------|--------------|---------------|----------------|----------------|----------------|-------------|-------------|--------------|---------------|----------------|----------------|----------------|-------------|-------------|--------------|---------------|----------------|----------------|----------------|-------------|
| | F2 | | | | F4 | | | | S10C | | | | 0.021 | | | 0.020 | | | 0.021 | | | 0.0081 U | | | 0.0081 U | | | 0.0081 U | | | | |
| | 0.022 17 | 0.022 3 | 0.022 2 | 0.010 5 | 0.012 4 | 0.011 16 | 0.0081 U 7 | 0.043 15 | 0.043 8 | 0.043 13 | 0.021 6 | 0.021 18 | 0.021 12 | 0.0081 U 9 | 0.0081 U 11 | 0.0081 U 10 | 0.0081 U 14 | 0.021 12 | 0.020 18 | 0.021 12 | 0.0081 U 9 | 0.0081 U 11 | 0.0081 U 10 | 0.0081 U 14 | 0.021 12 | 0.020 18 | 0.021 12 | 0.0081 U 9 | 0.0081 U 11 | 0.0081 U 10 | 0.0081 U 14 | |
| US Biosystems, Inc. | 0.029 18 | 0.025 1 | 0.028 3 | 0.010 17 | 0.010 9 | 0.0091 4 | 0.0091 6 | 0.051 7 | 0.053 11 | 0.050 13 | 0.033 2 | 0.032 12 | 0.034 8 | 0.006 5 | 0.005 15 | 0.006 10 | 0.006 14 | 0.029 10 | 0.027 8 | 0.029 10 | 0.004 7 | 0.004 9 | 0.004 4 | 0.008 2 | 0.029 10 | 0.027 8 | 0.029 10 | 0.004 7 | 0.004 9 | 0.004 4 | 0.008 2 | |
| FL Dept. of Environmental Protection | 0.020 15 | 0.020 8 | 0.020 10 | 0.007 5 | 0.007 7 | 0.010 13 | 0.005 U 3 | 0.044 17 | 0.041 1 | 0.037 12 | 0.024 11 | 0.010 18 | 0.020 9 | 0.005 U 4 | 0.005 U 14 | 0.005 U 2 | 0.005 U 6 | 0.020 9 | 0.010 18 | 0.020 9 | 0.005 U 4 | 0.005 U 14 | 0.005 U 2 | 0.005 U 6 | 0.020 9 | 0.010 18 | 0.020 9 | 0.005 U 4 | 0.005 U 14 | 0.005 U 2 | 0.005 U 6 | |
| TestAmerica, Inc. | 0.017 10 | 0.027 15 | 0.022 13 | 0.008 14 | 0.008 6 | 0.006 16 | 0.008 3 | 0.044 18 | 0.042 8 | 0.038 17 | 0.026 12 | 0.023 11 | 0.029 1 | 0.004 7 | 0.004 9 | 0.004 4 | 0.008 2 | 0.029 10 | 0.023 11 | 0.029 1 | 0.004 7 | 0.004 9 | 0.004 4 | 0.008 2 | 0.029 10 | 0.023 11 | 0.029 1 | 0.004 7 | 0.004 9 | 0.004 4 | 0.008 2 | |
| IFAS Everglades Research & Education Center | 0.029 6 | 0.028 8 | 0.028 13 | 0.013 7 | 0.013 4 | 0.011 5 | 0.013 18 | 0.051 10 | 0.050 3 | 0.050 2 | 0.032 12 | 0.034 1 | 0.032 14 | 0.010 15 | 0.007 11 | 0.007 17 | 0.009 16 | 0.032 14 | 0.030 6 | 0.032 14 | 0.010 15 | 0.007 11 | 0.007 17 | 0.009 16 | 0.032 14 | 0.030 6 | 0.032 14 | 0.010 15 | 0.007 11 | 0.007 17 | 0.009 16 | |
| Meiro Dade County Environmental Resources Mgt. | 0.024 4 | 0.026 10 | 0.026 12 | 0.008 2 | 0.008 8 | 0.0040 U 15 | 0.0095 15 | 0.046 16 | 0.047 14 | 0.046 11 | 0.032 5 | 0.030 6 | 0.029 18 | 0.0040 U 3 | 0.0040 U 17 | 0.0040 U 7 | 0.0040 U 1 | 0.029 18 | 0.030 6 | 0.029 18 | 0.0040 U 3 | 0.0040 U 17 | 0.0040 U 7 | 0.0040 U 1 | 0.029 18 | 0.030 6 | 0.029 18 | 0.0040 U 3 | 0.0040 U 17 | 0.0040 U 7 | 0.0040 U 1 | |
| ELAB | 0.014 9 | 0.021 7 | 0.020 12 | 0.010 15 | 0.009 3 | 0.009 17 | 0.009 13 | 0.040 18 | 0.040 14 | 0.036 4 | 0.023 11 | 0.023 5 | 0.027 8 | 0.006 10 | 0.006 16 | 0.006 6 | 0.006 1 | 0.027 8 | 0.023 5 | 0.027 8 | 0.006 10 | 0.006 16 | 0.006 6 | 0.006 1 | 0.027 8 | 0.023 5 | 0.027 8 | 0.006 10 | 0.006 16 | 0.006 6 | 0.006 1 | |
| STL Miami, Inc. | 0.025 18 | 0.025 6 | 0.025 14 | 0.010 2 | 0.010 13 | 0.010 9 | 0.010 5 | 0.046 3 | 0.046 1 | 0.046 17 | 0.031 15 | 0.030 16 | 0.031 7 | 0.006 4 | 0.006 10 | 0.006 11 | 0.006 8 | 0.031 7 | 0.030 16 | 0.031 7 | 0.006 4 | 0.006 10 | 0.006 11 | 0.006 8 | 0.031 7 | 0.030 16 | 0.031 7 | 0.006 4 | 0.006 10 | 0.006 11 | 0.006 8 | |
| UF/IFAS-Wetlands Biogeochemistry Laboratory | 0.027 2 | 0.027 4 | 0.026 12 | 0.010 7 | 0.010 15 | 0.010 17 | 0.010 8 | 0.048 1 | 0.048 16 | 0.048 3 | 0.030 11 | 0.030 14 | 0.030 10 | 0.006 5 | 0.006 13 | 0.006 6 | 0.006 9 | 0.030 10 | 0.030 14 | 0.030 10 | 0.006 5 | 0.006 13 | 0.006 6 | 0.006 9 | 0.030 10 | 0.030 14 | 0.030 10 | 0.006 5 | 0.006 13 | 0.006 6 | 0.006 9 | |
| DB Environmental Laboratories, Inc. | 0.045 3 | 0.022 15 | 0.024 16 | 0.004 13 | 0.009 12 | 0.009 10 | 0.009 18 | 0.051 5 | 0.049 2 | 0.048 8 | 0.024 6 | 0.024 14 | 0.024 7 | 0.009 9 | 0.009 4 | 0.009 1 | 0.009 17 | 0.049 8 | 0.024 14 | 0.024 7 | 0.009 9 | 0.009 4 | 0.009 1 | 0.009 17 | 0.049 8 | 0.024 14 | 0.024 7 | 0.009 9 | 0.009 4 | 0.009 1 | 0.009 17 | |
| Everglades Laboratories, Inc. | 0.028 3 | 0.027 6 | 0.027 16 | 0.012 11 | 0.010 14 | 0.010 5 | 0.013 17 | 0.050 4 | 0.049 2 | 0.048 1 | 0.031 8 | 0.032 10 | 0.032 7 | 0.008 2 | 0.008 13 | 0.008 15 | 0.008 18 | 0.049 8 | 0.032 10 | 0.032 7 | 0.008 2 | 0.008 13 | 0.008 15 | 0.008 18 | 0.049 8 | 0.032 10 | 0.032 7 | 0.008 2 | 0.008 13 | 0.008 15 | 0.008 18 | |
| PPB Environmental Laboratories, Inc. | 0.028 3 | 0.030 9 | 0.026 13 | 0.015 18 | 0.011 7 | 0.010 4 | 0.010 14 | 0.049 5 | 0.049 15 | 0.049 1 | 0.030 17 | 0.030 12 | 0.029 8 | 0.007 1 | 0.007 6 | 0.007 3 | 0.007 11 | 0.049 1 | 0.030 17 | 0.030 12 | 0.007 1 | 0.007 6 | 0.007 3 | 0.007 11 | 0.049 1 | 0.030 17 | 0.030 12 | 0.007 1 | 0.007 6 | 0.007 3 | 0.007 11 | |
| Short Environmental Laboratories | 0.023 10 | 0.026 15 | 0.027 8 | 0.008 7 | 0.008 17 | 0.006 6 | 0.007 11 | 0.045 9 | 0.041 16 | 0.044 13 | 0.029 18 | 0.028 5 | 0.029 4 | 0.003 1 | 0.003 14 | 0.003 6 | 0.003 10 | 0.045 9 | 0.031 16 | 0.031 4 | 0.003 1 | 0.003 14 | 0.003 6 | 0.003 10 | 0.045 9 | 0.031 16 | 0.031 4 | 0.003 1 | 0.003 14 | 0.003 6 | 0.003 10 | |
| TVA Environmental Chemistry Laboratory | 0.029 6 | 0.029 17 | 0.029 13 | 0.015 3 | 0.015 5 | 0.015 10 | 0.015 18 | 0.050 12 | 0.050 8 | 0.050 9 | 0.031 14 | 0.031 11 | 0.031 15 | 0.011 7 | 0.011 1 | 0.011 16 | 0.011 2 | 0.050 9 | 0.031 14 | 0.031 11 | 0.011 7 | 0.011 1 | 0.011 16 | 0.011 2 | 0.050 9 | 0.031 14 | 0.031 11 | 0.011 7 | 0.011 1 | 0.011 16 | 0.011 2 | |
| U.S. Sugar Corp. - South Bay Laboratory | 0.013 9 | 0.025 6 | 0.0312 8 | 0.00827 2 | 0.00384 17 | 0.0135 13 | 0.0178 11 | 0.0459 15 | 0.0541 7 | 0.0490 3 | 0.0200 18 | 0.0276 1 | 0.0339 12 | 0.00254 16 | 0.00818 5 | 0.00731 14 | 0.00607 4 | 0.0490 3 | 0.0276 1 | 0.0339 12 | 0.00254 16 | 0.00818 5 | 0.00731 14 | 0.00607 4 | 0.0490 3 | 0.0276 1 | 0.0339 12 | 0.00254 16 | 0.00818 5 | 0.00731 14 | 0.00607 4 | |
| Harbor Branch Environmental Laboratory | 0.028 10 | 0.028 12 | 0.029 4 | 0.012 2 | 0.012 18 | 0.012 6 | 0.012 14 | 0.050 8 | 0.050 3 | 0.051 13 | 0.030 1 | 0.021 5 | 0.030 17 | 0.007 9 | 0.008 16 | 0.008 11 | 0.008 15 | 0.050 8 | 0.030 1 | 0.021 5 | 0.030 17 | 0.007 9 | 0.008 16 | 0.008 11 | 0.008 15 | 0.050 8 | 0.030 1 | 0.021 5 | 0.030 17 | 0.007 9 | 0.008 16 | 0.008 11 |
| U.S. Geological Survey | 0.031 4 | 0.031 7 | 0.032 13 | 0.016 16 | 0.016 15 | 0.016 5 | 0.016 9 | 0.052 11 | 0.052 1 | 0.052 8 | 0.036 14 | 0.035 6 | 0.036 18 | 0.012 17 | 0.012 2 | 0.012 10 | 0.012 3 | 0.052 11 | 0.035 6 | 0.036 18 | 0.012 17 | 0.012 2 | 0.012 10 | 0.012 3 | 0.052 11 | 0.035 6 | 0.036 18 | 0.012 17 | 0.012 2 | 0.012 10 | 0.012 3 | |
| Duke-School of the Environment | 0.039 8 | 0.031 9 | 0.027 5 | 0.015 1 | 0.020 10 | 0.013 18 | 0.016 7 | 0.037 3 | 0.046 15 | 0.047 6 | 0.021 4 | 0.019 2 | 0.019 11 | 0.019 13 | 0.020 14 | 0.028 17 | 0.018 12 | 0.037 3 | 0.046 15 | 0.047 6 | 0.021 4 | 0.019 2 | 0.019 11 | 0.019 11 | 0.020 14 | 0.028 17 | 0.020 14 | 0.028 17 | 0.020 14 | 0.028 17 | 0.018 12 | |
| STL Tallahassee South FL Water Mgt. District | 0.027 6 | 0.026 16 | 0.026 14 | 0.010 3 | 0.011 17 | 0.011 12 | 0.011 1 | 0.049 5 | 0.048 10 | 0.050 7 | 0.031 15 | 0.031 4 | 0.030 11 | 0.005 13 | 0.006 2 | 0.006 8 | 0.006 9 | 0.048 10 | 0.031 4 | 0.030 11 | 0.005 13 | 0.006 2 | 0.006 8 | 0.006 9 | 0.048 10 | 0.030 11 | 0.030 11 | 0.005 13 | 0.006 2 | 0.006 8 | 0.006 9 | |

Glossary

Equipment blank (EB). Analyte-free water that is processed on-site through all sampling equipment used in routine sample processing. EB values are indicative of effectiveness of decontamination process.

Field

blank (FB). Analyte-free water that is poured directly into the sample container on site during routine collection, preserved and kept open until sample collection is completed for the routine sample at that site. FB values are indicative of environmental contamination on site.

Split sample (SS). A second sample collected from the same sample obtained from the same sampling device. Results for SS are compared with routine sample results; agreement between these two results is mostly an indication of laboratory precision.

Replicate sample (RS). A second sample collected from the same source as the routine sample, using the same sampling equipment. RS data are compared to routine sample to evaluate sampling precision.

Precision. The agreement or closeness between two or more results and is an indication that the measurement system is operating consistently and is a quantifiable indication of variations introduced by the analytical system over a given time period.

Accuracy. The agreement between the actual obtained result and the expected result. QC check samples having known or "true" value are used to test for the accuracy of a measurement system.

Method Detection Limit (MDL). The smallest concentration of an analyte of interest that can be measured and reported with 99 percent confidence that the concentration is greater than zero. The MDL's are determined from the analysis of a sample in a given matrix, using accepted sampling and analytical preparation procedures, containing the analyte at a specified level. The MDL is determined by the protocol defined in section 40 CFR Part 136, Appendix B as established by the EPA.

Practical Quantitation Limit (PQL). The smallest concentration of an analyte of interest that can be quantitatively reported with a specific degree of confidence. Generally, the PQL is 12 times the standard deviation that is derived from the procedure used to determine the MDL, or can be assumed to be 4 times the MDL.

Relative Standard Deviation (RSD). A measurement of precision, used when comparing more than two results. It is calculated as: $\%RSD = [\text{Std. Deviation}/\text{Mean}] * 100$

Relative Percent Difference (RPD). A measure of precision, used when comparing two values. It is calculated as: $\%RPD = [\text{Value1} - \text{Value2}]/\text{Mean} * 100$.