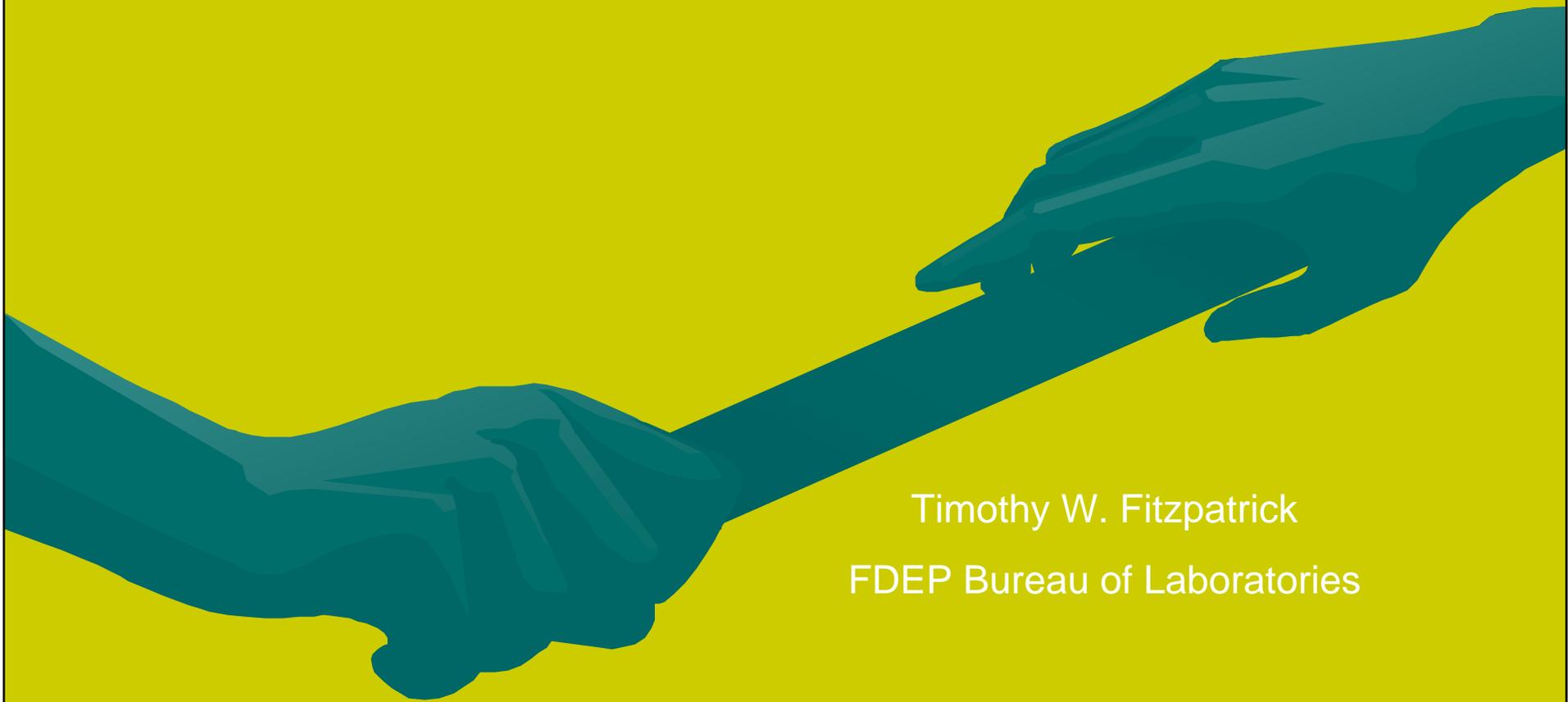


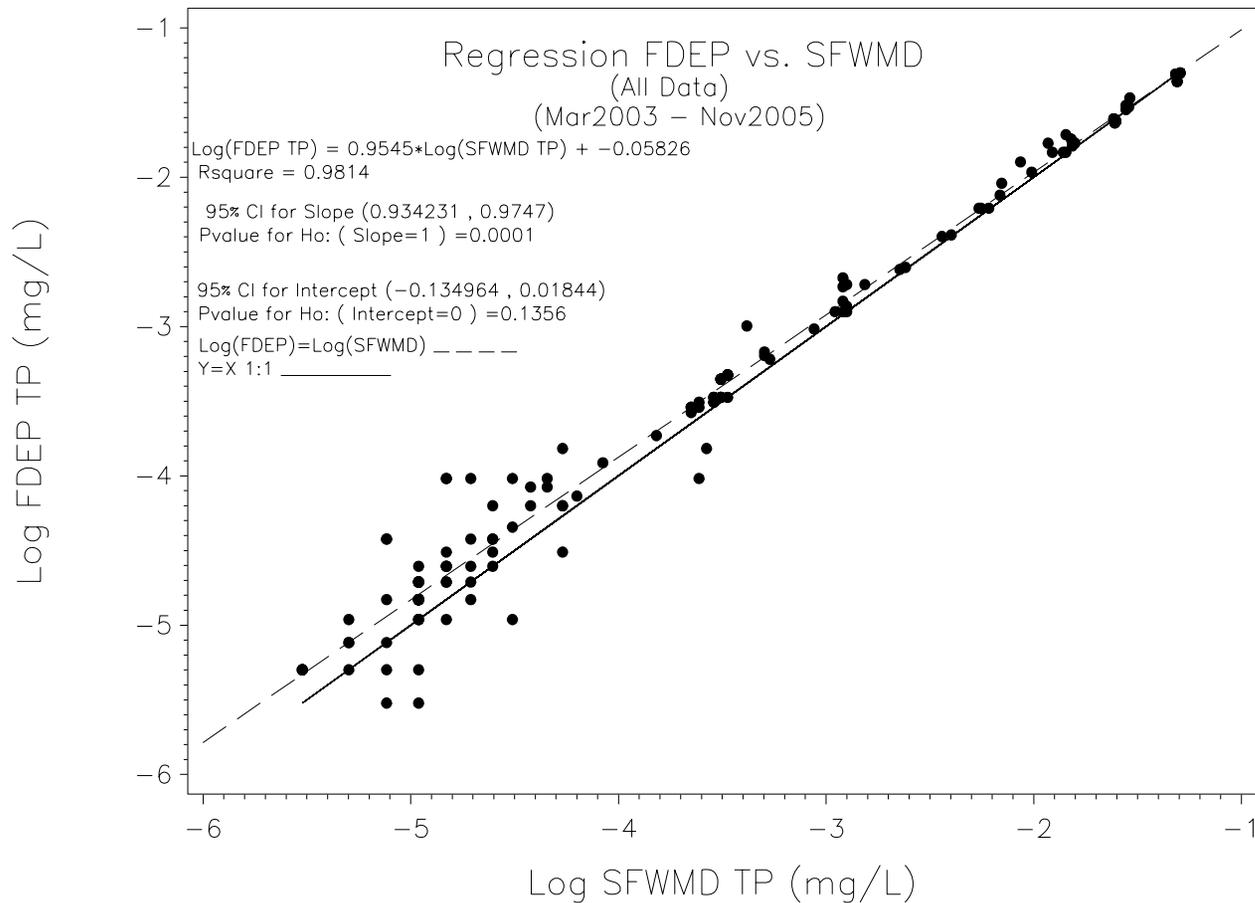


Total Phosphorus Analyses

Inter-laboratory Differences between SFWMD and FDEP?



Timothy W. Fitzpatrick
FDEP Bureau of Laboratories



Mean Difference Among Labs for All Data = 2.65 ppb (Median = 2 ppb)

Mean Difference for Data < 20 ppb = 1.64 ppb (Median = 1 ppb)

Mean Difference for Data >= 20 ppb = 3.35 ppb (Median = 2.5 ppb)

What Does It Mean?

- Virtually the same data set was evaluated last year by FSU Statistician;
- Only 12 new field samples and one ERR data set were added to the original data;
- Both laboratories have a history of excellent performance in proficiency studies;
- Given typical inter-laboratory variability observed, the agreement between labs is remarkable;

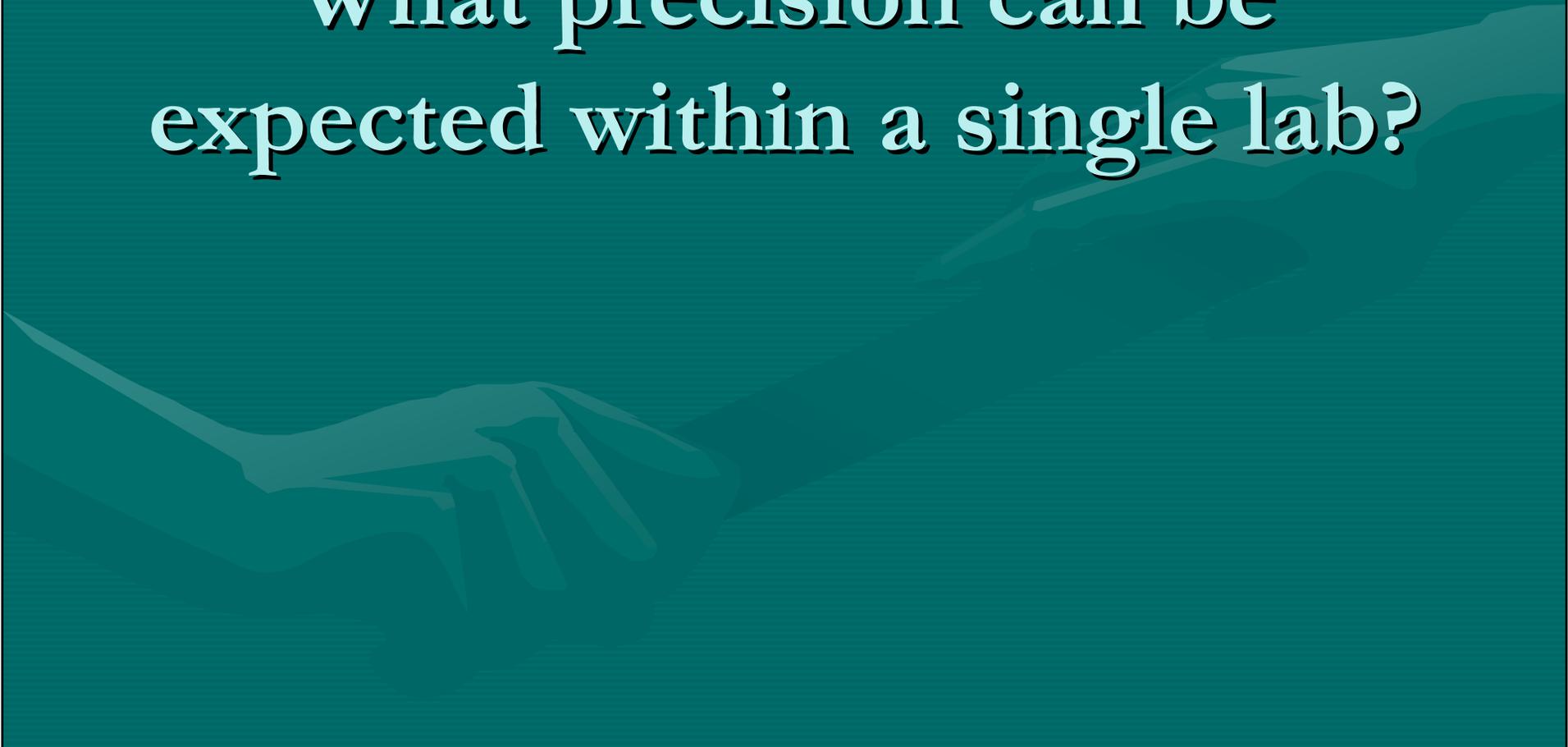
**Statistical Comparison of Total Phosphorus Data
From the FDEP and SFWMD Labs in the Period of 2000-2004**

Xu-Feng Niu
Professor in Statistics

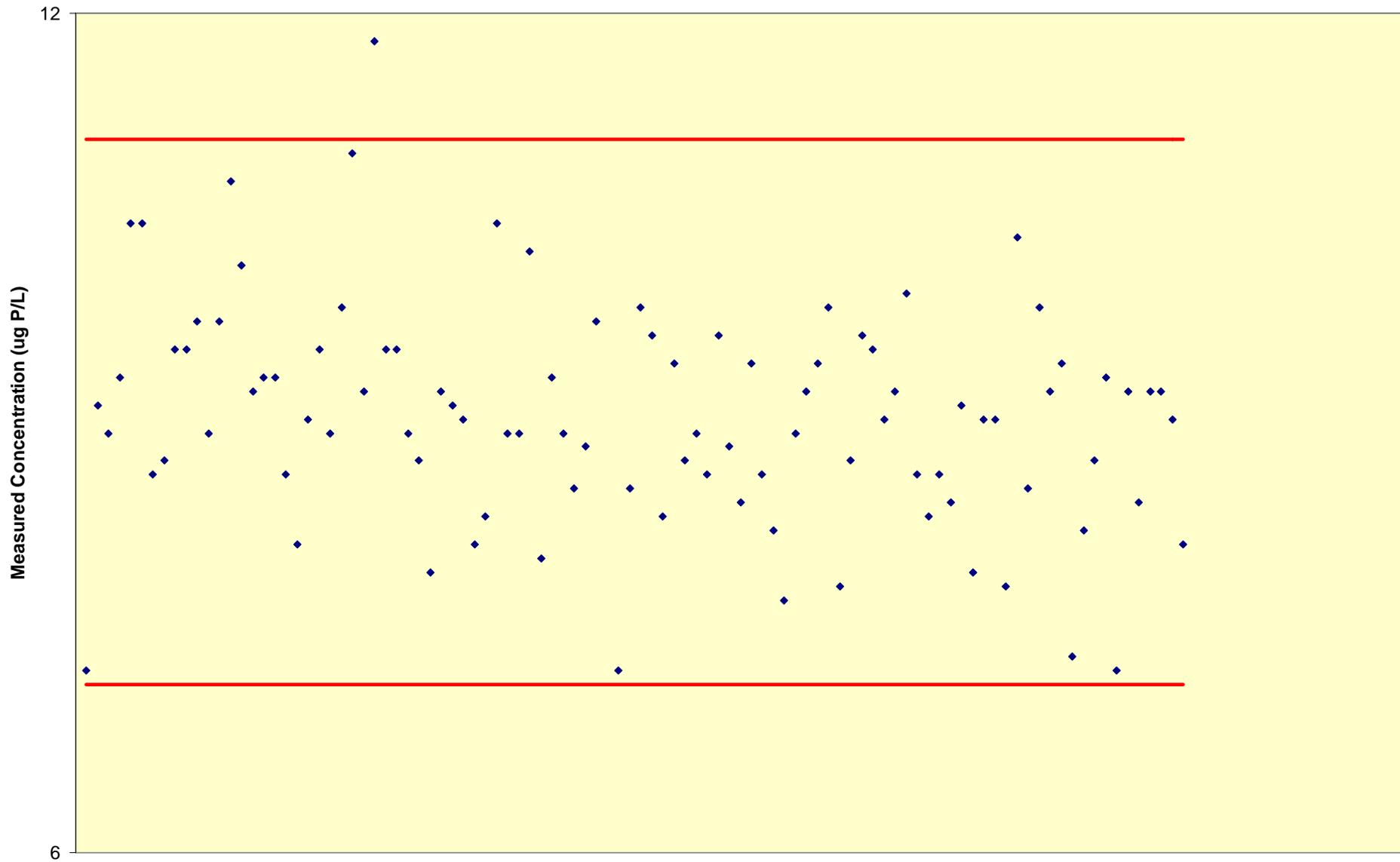
*Department of Statistics
Florida State University
Tallahassee, FL 32306
niu@stat.fsu.edu; (850)644-4008*

***Conclusions were, in general, there were no statistical differences
in the data produced by the two labs in the quantifiable region;***

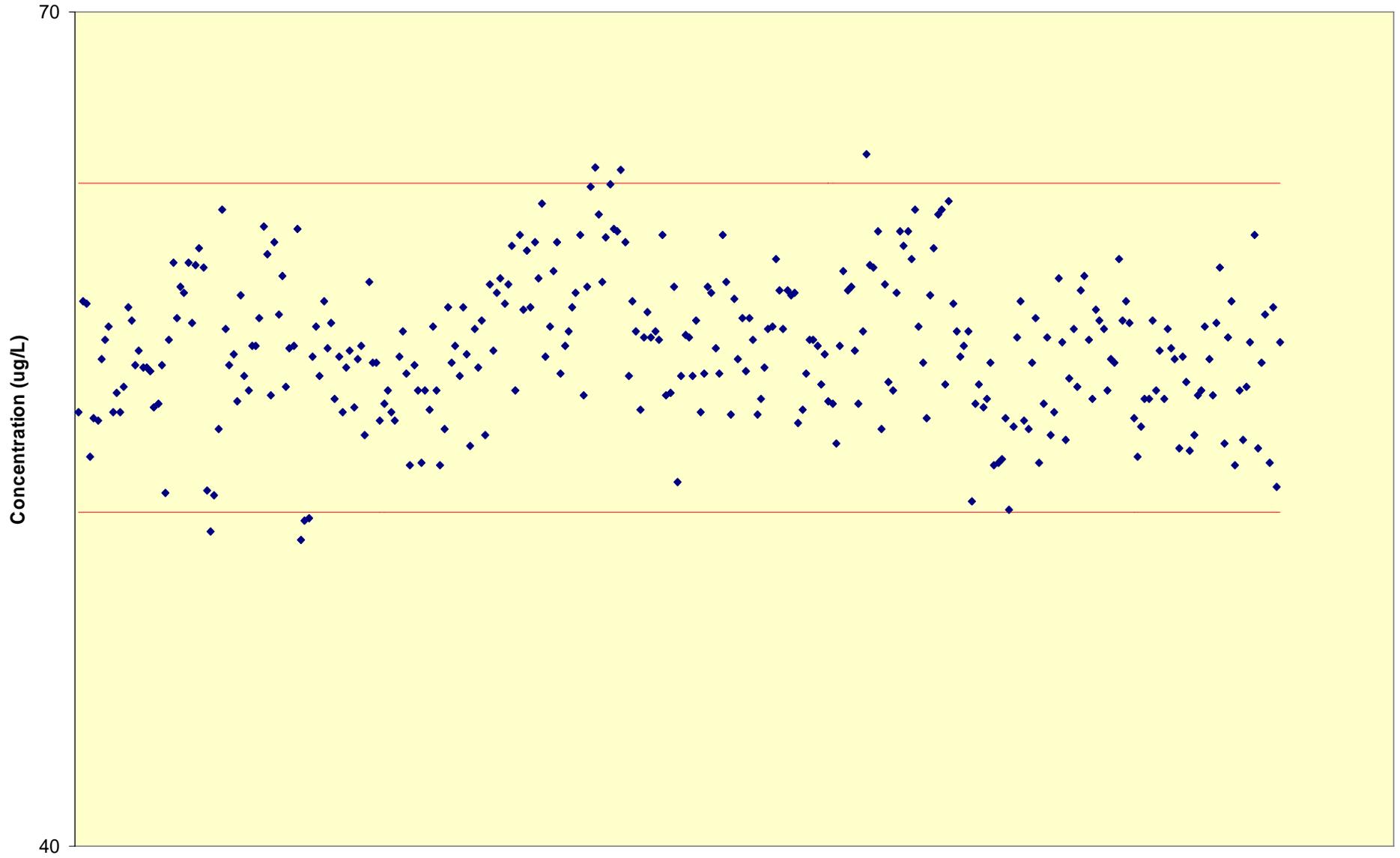
**What precision can be
expected within a single lab?**



Typical Measurement Scatter for 10 ug/L Total Phosphorus Laboratory Control Samples A One Year Record

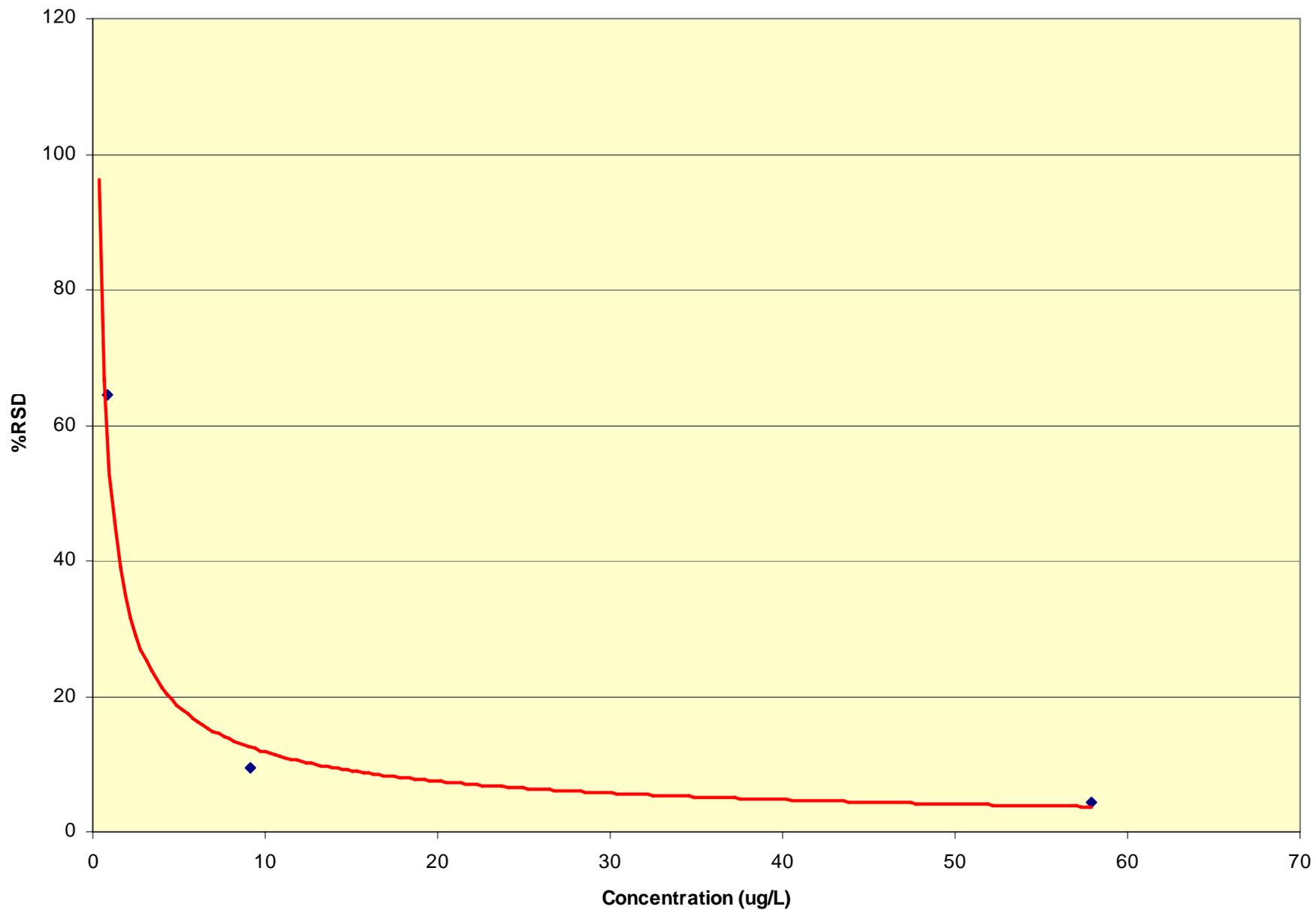


Typical Measurement Scatter for Mid-Range TP Laboratory Control Samples
A One Year Record

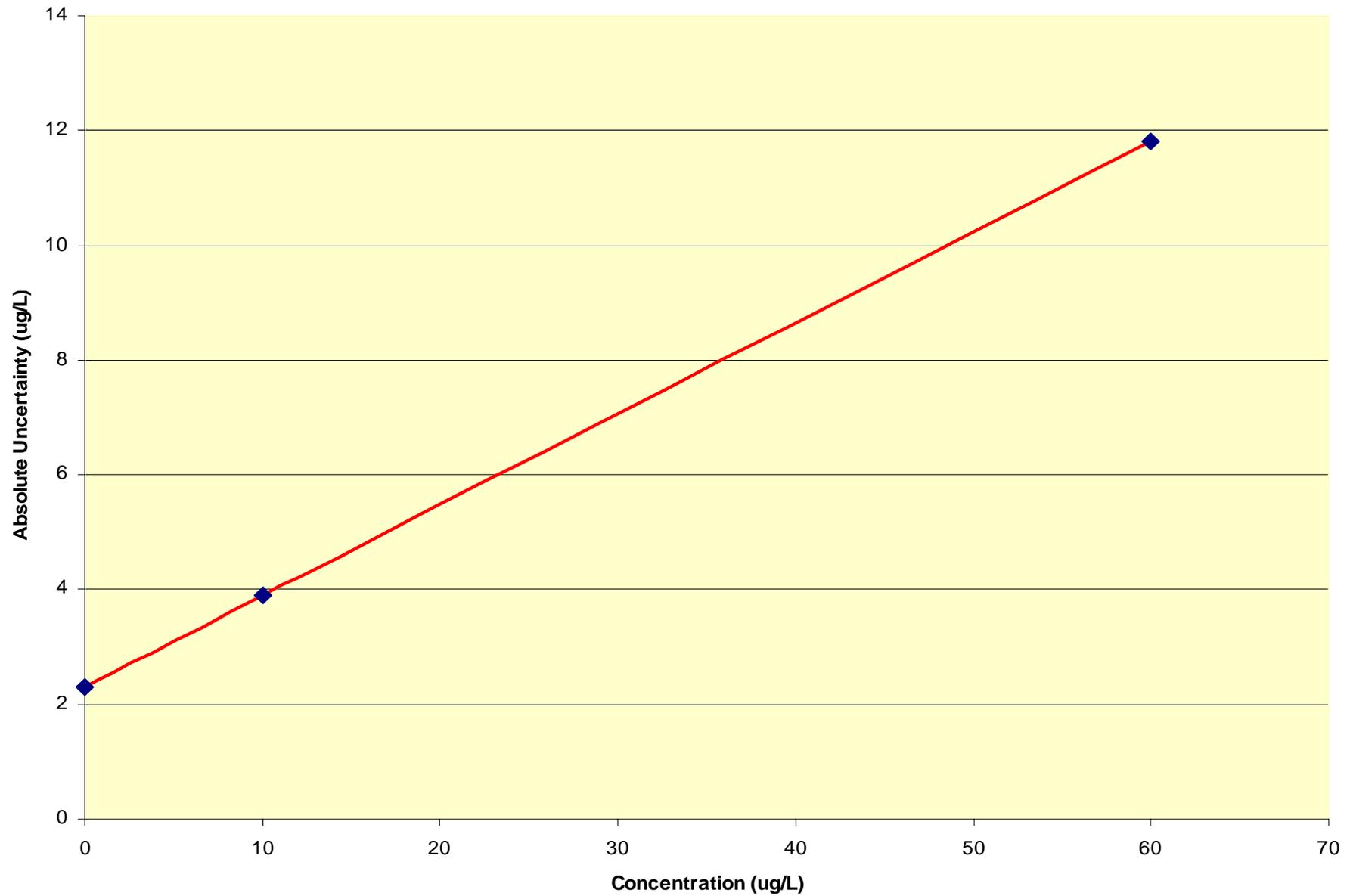


Relative Total Phosphorus Measurement Uncertainty as a Function of Concentration

A One Year Summary of LCS Data



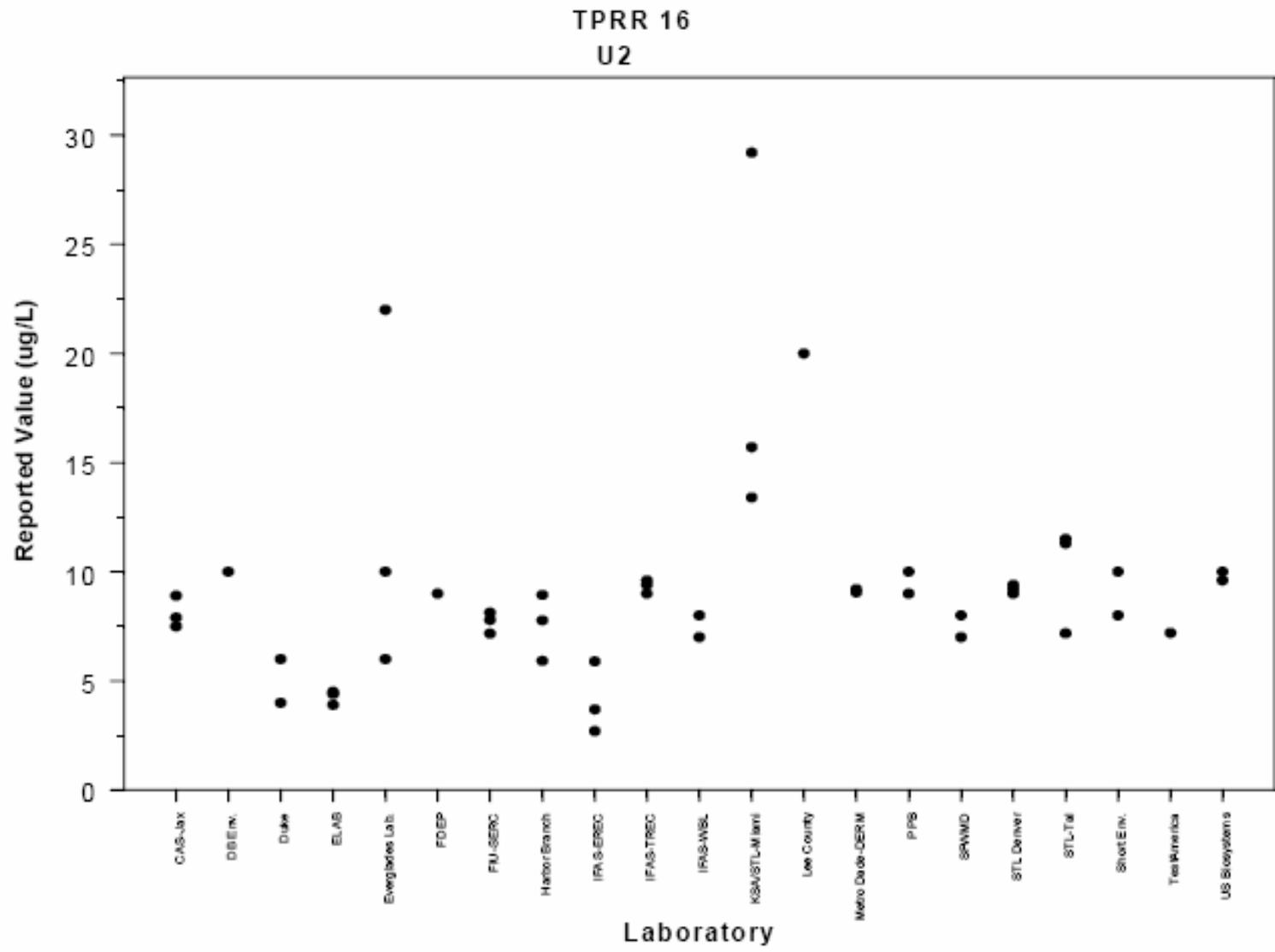
Absolute TP Measurement Uncertainty as a Function of Concentration
A One Year LCS Data Summary of 99% Control Limits



**What can be expected for
precision among labs?**

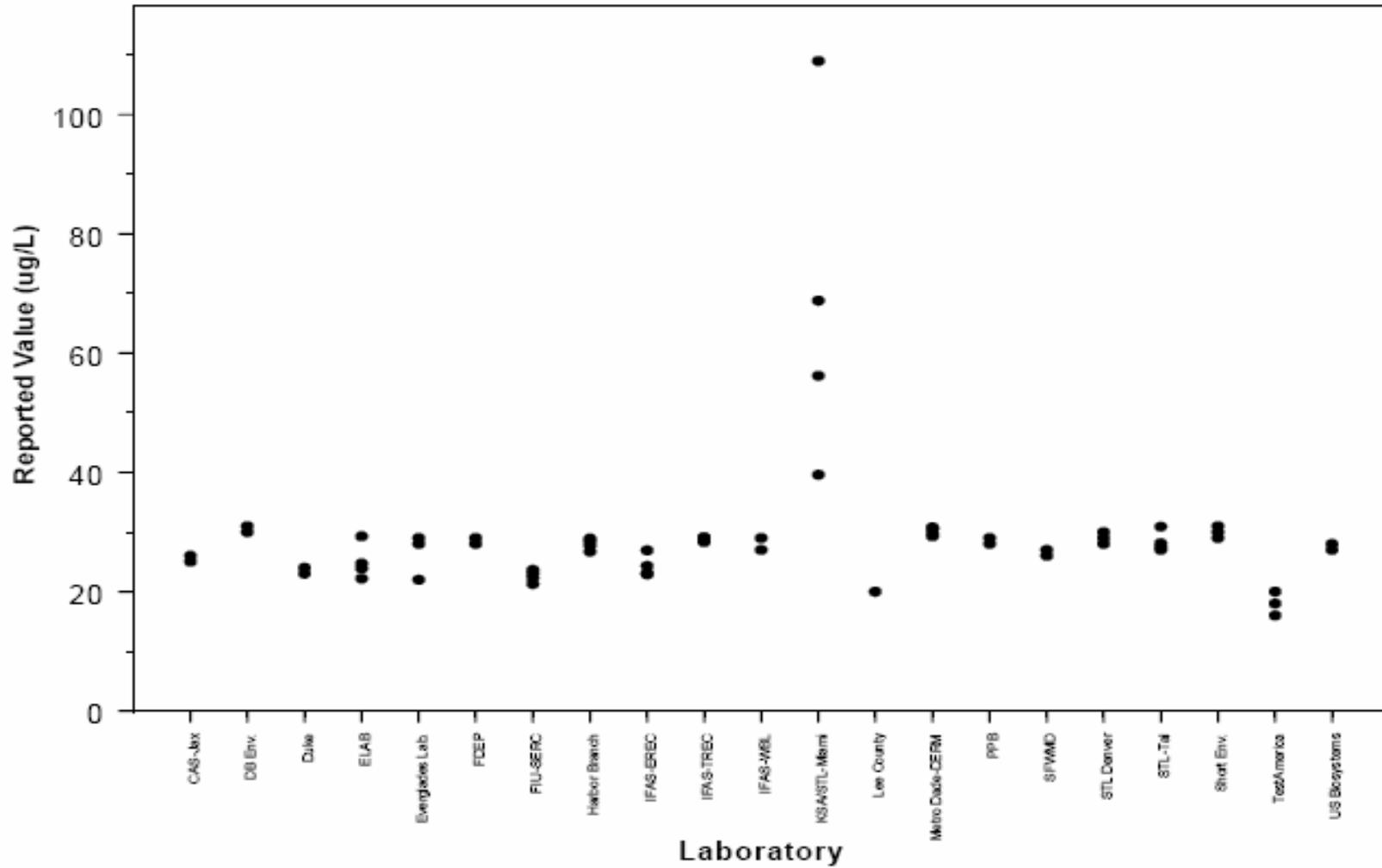


ERR 16 Results for Site U2
Consensus Mean 8.6 ug P/L

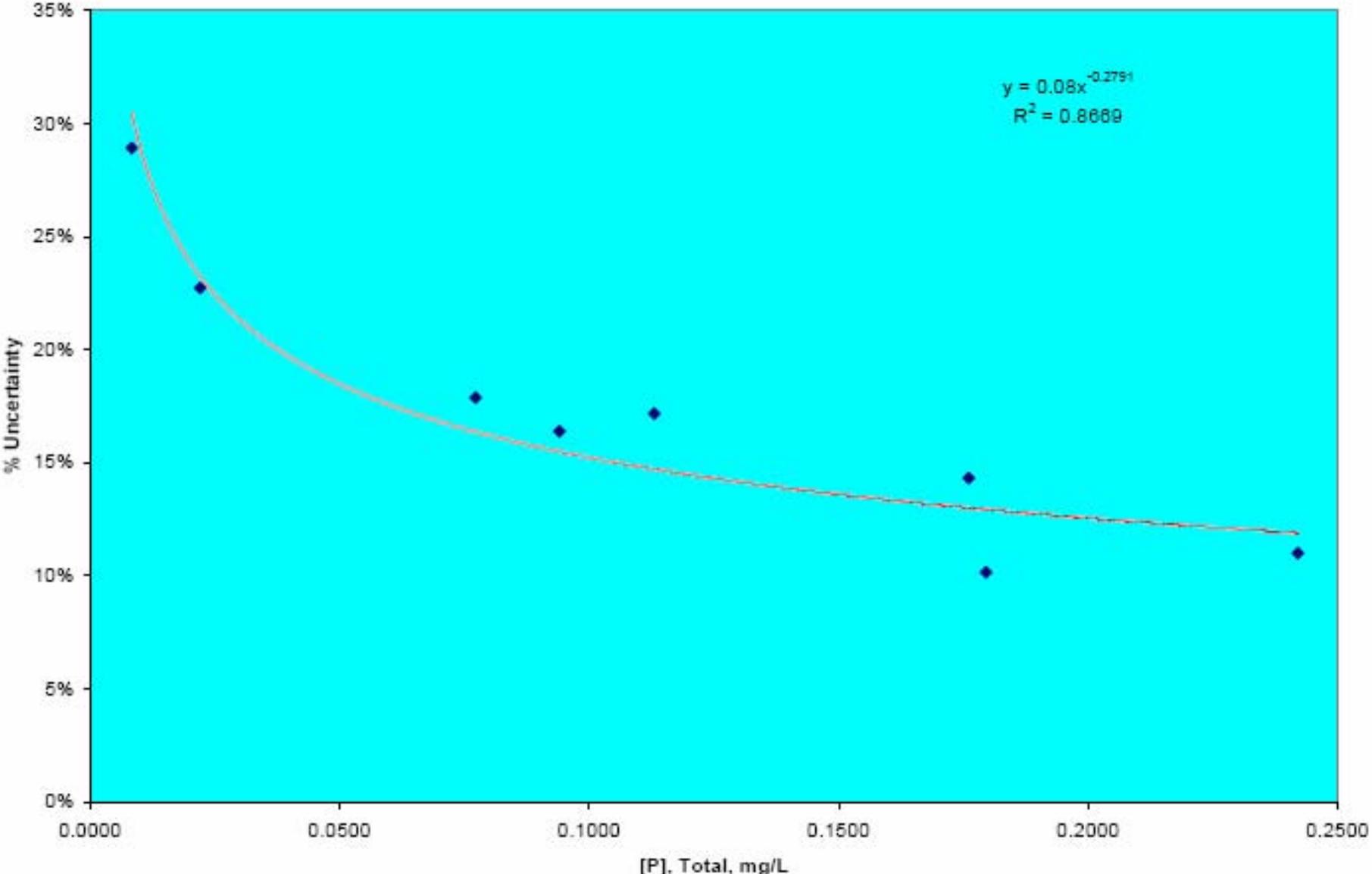


ERR 16 Site F1
Consensus Mean 28 ug P/L

TPRR 16
F1



Uncertainty Estimate Based on PT-87



Some Observations

- The small amount of 'new' data in the split study database does not influence the results of the last analysis of the split data set;
- The agreement between the FDEP and SFWMD splits appears remarkable given typical inter- and intra-laboratory variability;
- The ERRs demonstrate there is always some difference among well performing labs;
- While there appears to be a small (statistically insignificant) difference among the labs' results, the difference is smaller than the intra-lab variability and therefore insignificant from a practical standpoint;

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**Put that down you fool..!
It's a bone of contention!**

