



PAT MCCRORY

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DONALD R. VAN DER VAART

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July 22, 2016

Mr. Jim Sumner  
Environmental Testing Solutions, Inc.  
P.O. Box 7565  
Asheville, NC 28802-7565

Dear Mr. Sumner,

Results of the 2016 Performance Evaluation toxicity test series have been reviewed by Aquatic Toxicology Branch staff. Our Branch was also a participant in the chronic and acute *Ceriodaphnia dubia* tests, acute *Pimephales promelas* test, and the pH, conductivity, and hardness analyses. Following the summary of overall results, test results generated by your laboratory are discussed.

***Ceriodaphnia dubia* chronic**

There were nine chronic *Ceriodaphnia* tests performed using Solution A. The mean IC25 was 3.65% with a standard deviation of 1.74 (Figure 1). All nine laboratories met minimum quality control criteria and reported results that were within the allowable two standard deviations from the mean IC25.

***Ceriodaphnia dubia* acute**

There were eight acute *Ceriodaphnia* tests conducted using Solution B following the methods described in *Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms*, (Fifth Edition), EPA-821-R-02-012, October 2002. The mean LC50 value was 7.95% with a standard deviation of 1.05 (Figure 2). All eight laboratories reported results that met minimum quality control criteria and were within two standard deviations of the mean LC50 value.

***Pimephales promelas* acute**

Eight laboratories conducted acute *Pimephales promelas* tests using Solution C following the methods described in *Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms* (Fifth Edition), EPA 821-R-02-012, October 2002. The mean LC50 value was 4.67% with a standard deviation of 0.86 (Figure 3). All eight laboratories reported results that met minimum quality control criteria and were within two standard deviations of the mean LC50 value.

## **pH**

There were nine pH results reported for each of Solutions D and E. The mean pH calculated for Solution D was 4.03 with a standard deviation of 0.07 (Figure 4). Eight laboratories reported results that were within two standard deviations of the mean pH. One laboratory reported a result that was slightly outside the allowable two standard deviations from the mean pH.

For Solution E, the mean pH was 7.41 with a standard deviation of 0.11 (Figure 5). All nine laboratories reported results that were within two standard deviations of the mean pH.

## **Conductivity**

There were nine conductivity results reported for each of Solutions F and G. The mean conductivity for Solution F was 649  $\mu\text{mhos/cm}$ , with a standard deviation of 14.3 (Figure 6). Eight laboratories reported results that were within two standard deviations of the mean conductivity. One laboratory reported a result that was slightly outside the allowable two standard deviations from the mean.

For Solution G the mean was 1585  $\mu\text{mhos/cm}$  with a standard deviation of 40.0 (Figure 7). Eight laboratories reported results that were within two standard deviations of the mean conductivity. One laboratory reported a result that was slightly outside the allowable two standard deviations from the mean conductivity value.

## **Hardness**

There were nine total hardness results reported for each of Solutions H and I. Mean total hardness for Solution H was 30 mg/L with a standard deviation of 3.1 (Figure 8). All nine laboratories reported results that were within two standard deviations of the mean hardness.

For Solution I, the mean was 54 mg/L with a standard deviation of 3.4 (Figure 9). Nine laboratories reported results that were within two standard deviations of the mean hardness.

**Individual Lab Discussion**  
**Environmental Testing Solutions, Inc.**

The results of the chronic and acute *Ceriodaphnia dubia*, acute *Pimephales promelas*, pH, conductivity, and hardness solution analyses test results have been reviewed and are enclosed. Environmental Testing Solutions, Inc.'s test results were all found to be within acceptable ranges.

Please refer to the following list to determine your respective Lab # for each enclosure.

Figure 1	<i>Ceriodaphnia</i> Chronic Solution A	Lab # 7
Figure 2	<i>Ceriodaphnia</i> Acute Solution B	Lab # 5
Figure 3	<i>Pimephales promelas</i> Acute Solution C	Lab # 7
Figures 4-9	pH, Conductivity, Hardness	Lab # 3

Thank you for your cooperation in this study. We appreciate your commitment to maintaining certification with the State of North Carolina. If you have any questions, please contact Carol Hollenkamp or me at (919) 743-8401.

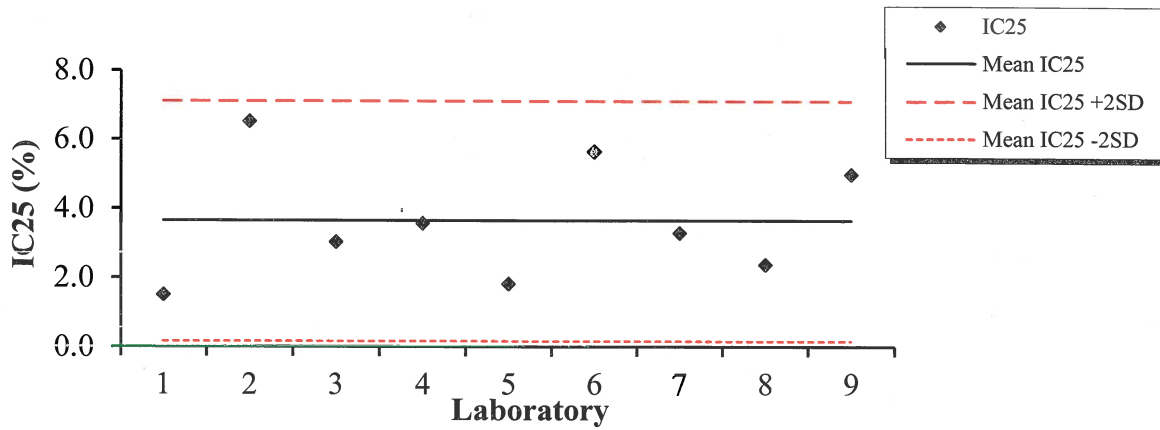
Sincerely,



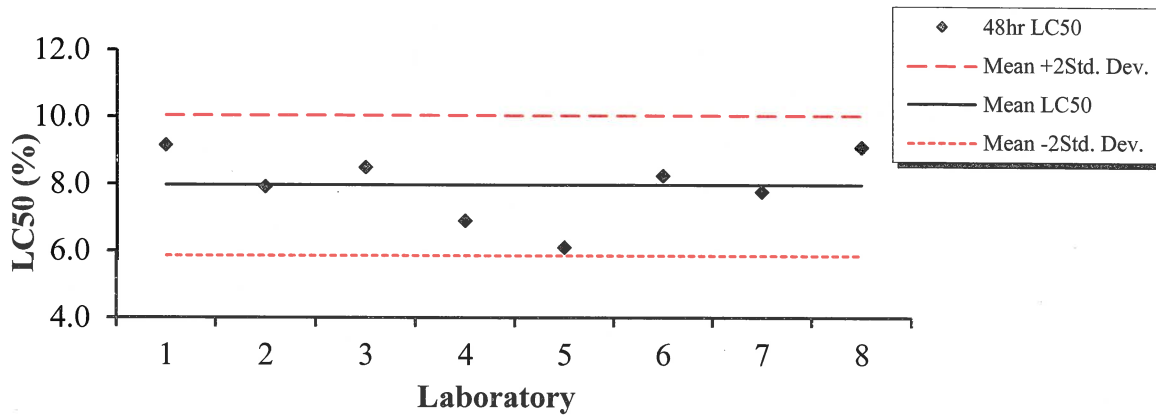
Cindy Moore, Supervisor  
Aquatic Toxicology Branch

Enclosures  
cc: Carol Hollenkamp

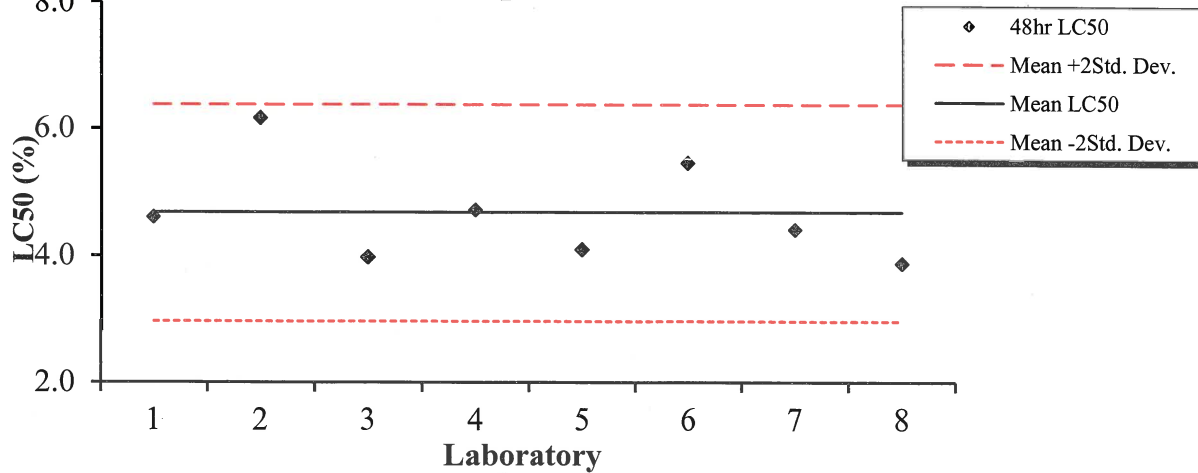
**Figure 1: 2016 Performance Evaluation  
Chronic *Ceriodaphnia dubia* IC25 Results Solution A**



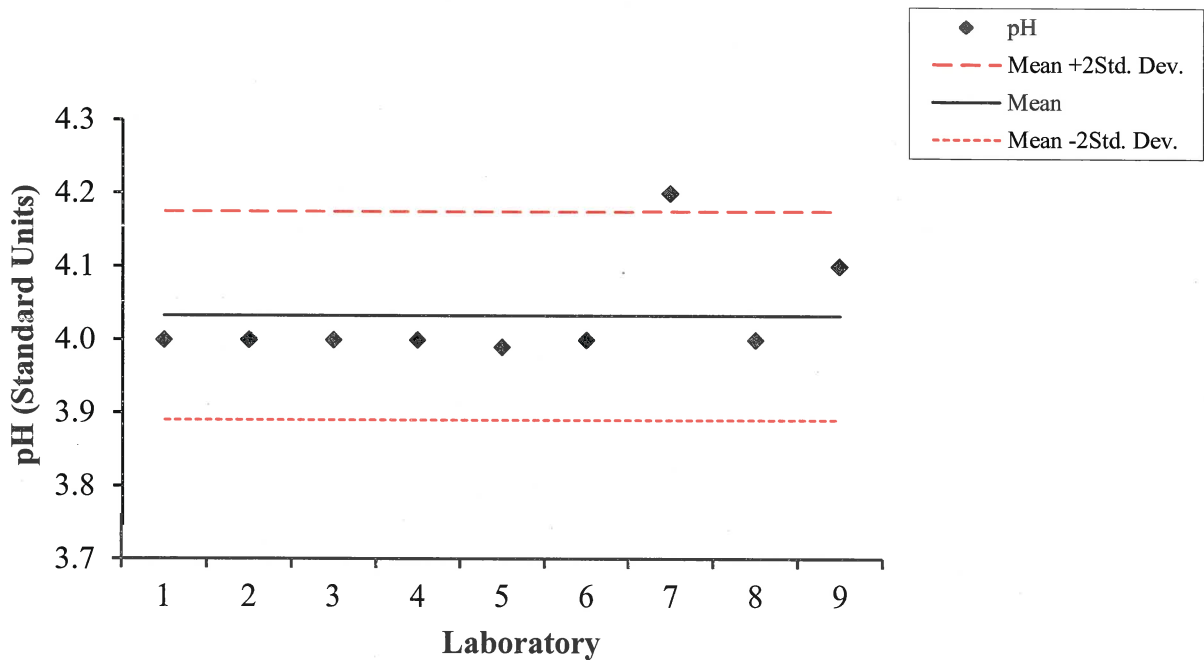
**Figure 2: 2016 Performance Evaluation  
Acute 48hr *Ceriodaphnia dubia* LC50 Results Solution B**



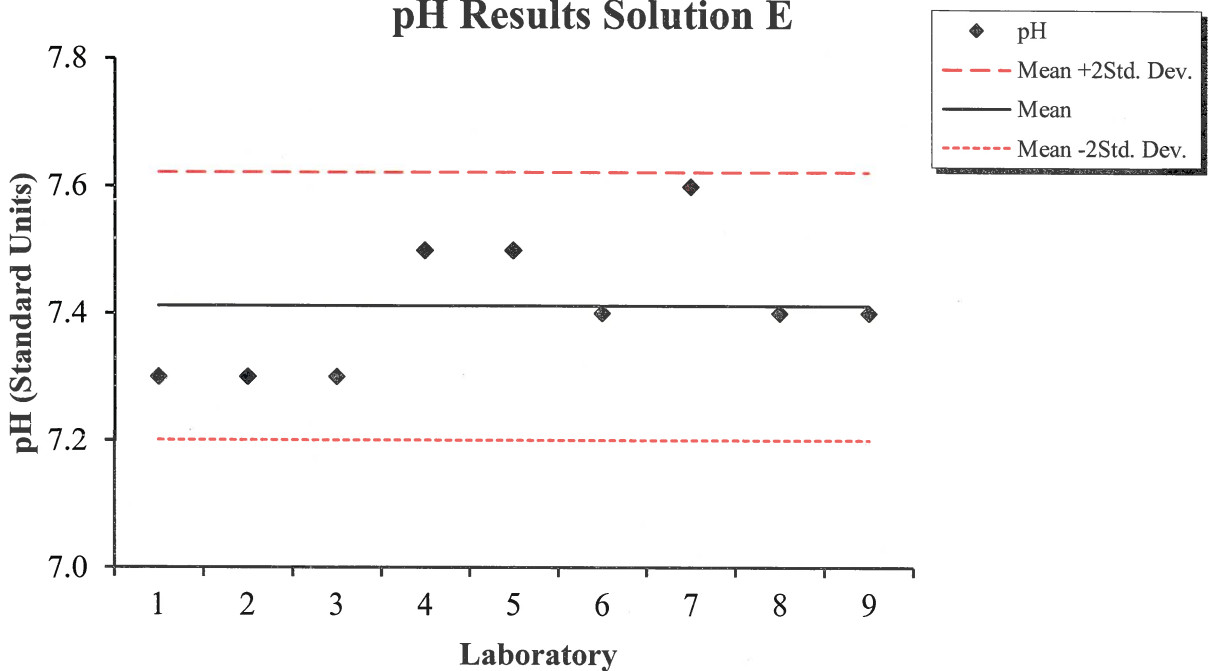
**Figure 3: 2016 Performance Evaluation  
Acute 48 hr *Pimephales promelas* LC50 Results Solution C**



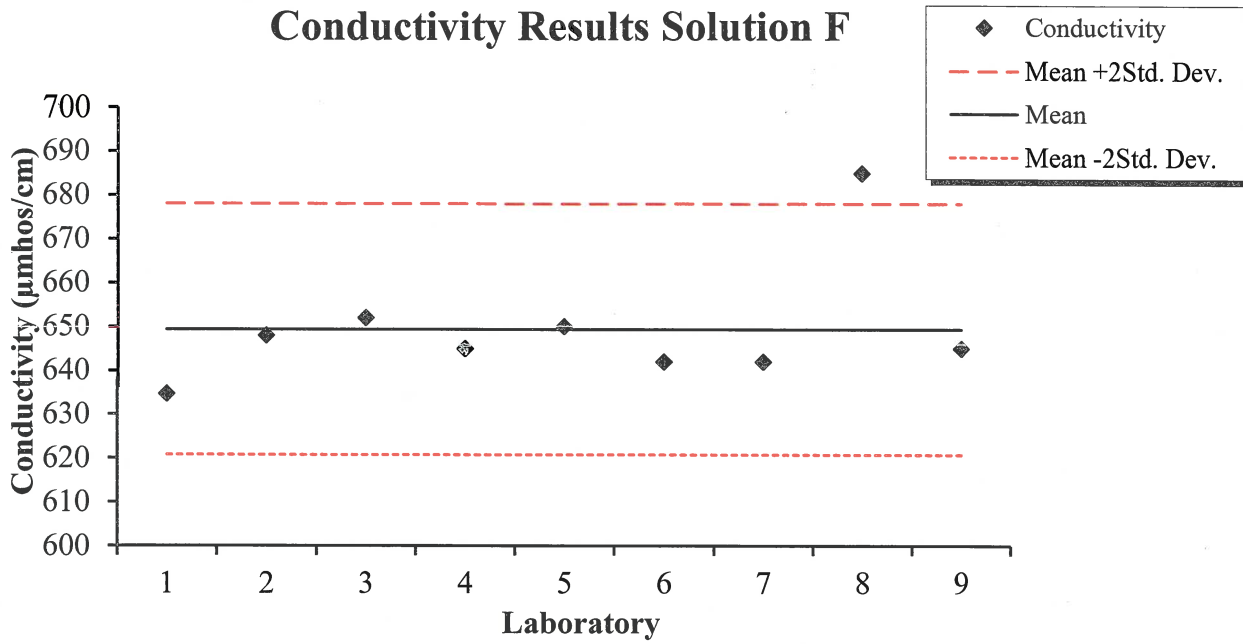
**Figure 4: 2016 Performance Evaluation  
pH Results Solution D**



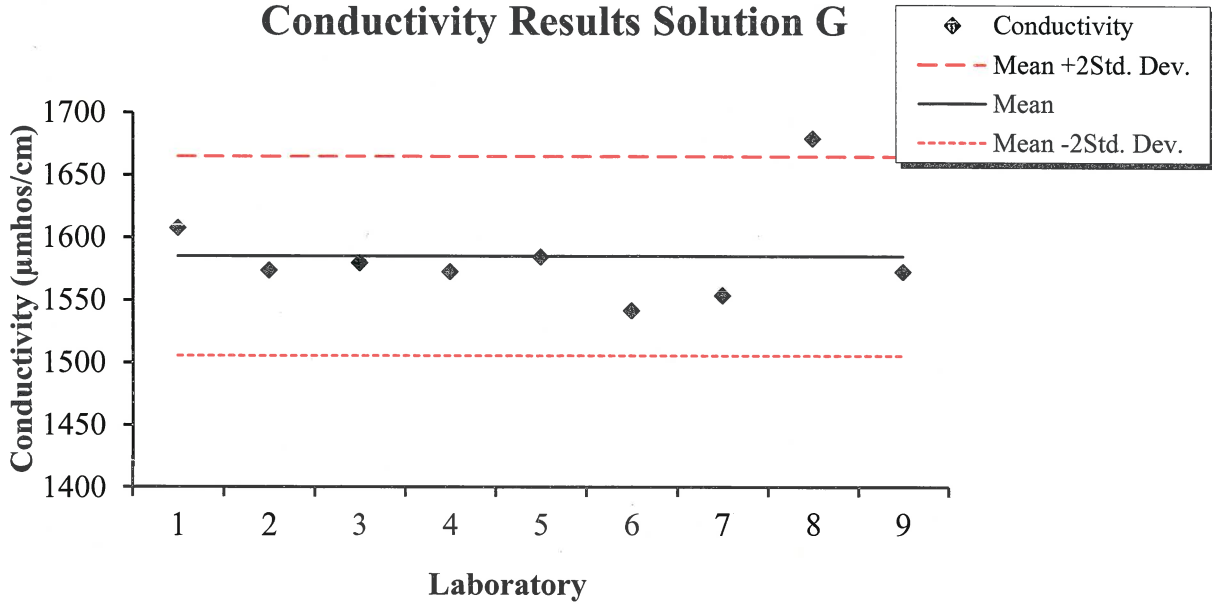
**Figure 5: 2016 Performance Evaluation  
pH Results Solution E**



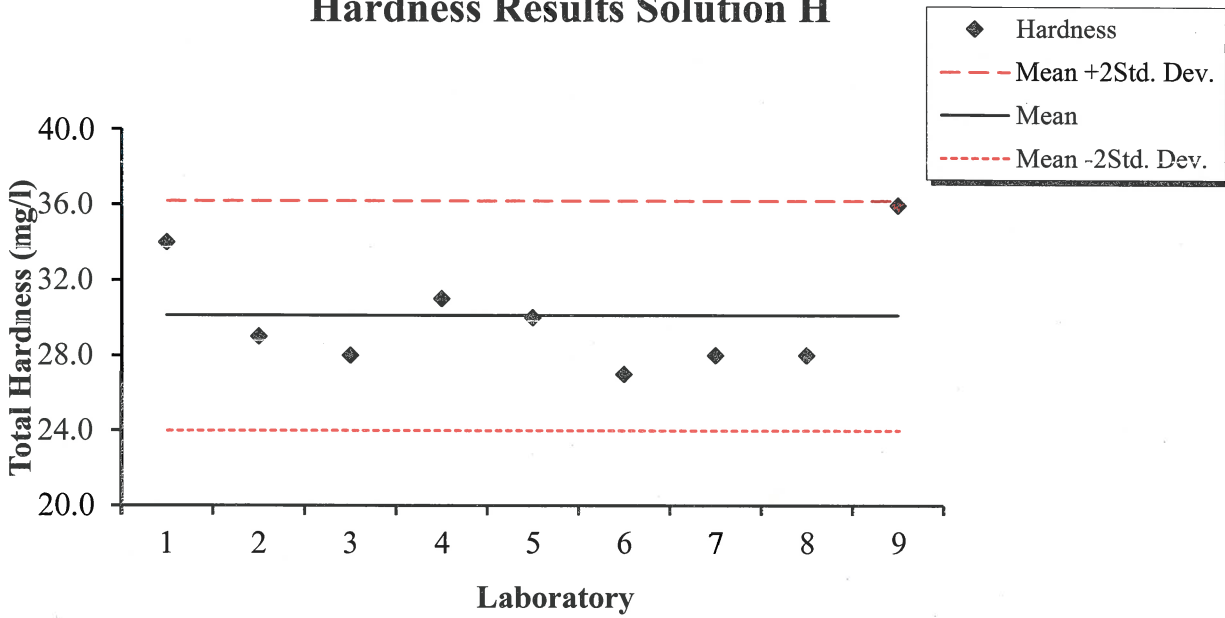
**Figure 6: 2016 Performance Evaluation  
Conductivity Results Solution F**



**Figure 7: 2016 Performance Evaluation  
Conductivity Results Solution G**



**Figure 8: 2016 Performance Evaluation  
Hardness Results Solution H**



**Figure 9: 2016 Performance Evaluation  
Hardness Results Solution I**

