

# PERFORMANCE EVALUATION



Scheduled Study

## WETT 31

WETT / DMRQA 31

14-Mar-2011 through 1-Jul-2011

**RT2179**

RTC Labcode

**VA01116**

US EPA Labcode

### Participating Laboratory:

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Thank you for participating in study WETT 31. Additional information about this study may be found online at [www.rt-corp.com/reporting](http://www.rt-corp.com/reporting). If it is your first time to our website give me a call and I will simplify the initial registration process. If you have any questions or comments about this study please contact me:

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This report shall not be reproduced except in full, without written approval of the laboratory. The data and results reported in this document are the property of the participating laboratory and are confidential.

Sincerely,

A handwritten signature in black ink, appearing to read 'J Jones', is shown on a light blue background.

Jennifer Jones  
Proficiency Testing Coordinator

Dataset

## Dataset 1

### Include in DMRQA Study

Evaluations from this dataset will be included in DMRQA 31.

### Accreditors

Evaluations of this dataset will be sent to the accreditor(s) listed below using your laboratory's labcode listed above each accrediting agency. If any of the information listed below is incorrect, please contact RTC immediately.

Accrediting Labcode **VA01116**

Commonwealth of Virginia DGS-DCLS

**470** Cathy Westerman  
 Program Manager  
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 UNITED STATES

RTC is accredited to perform PT programs for the scope of accreditation to ISO/IEC 17043 under ACLASS certificate AP-1469.

RTC is accredited by A2LA to perform PT programs for the scope of accreditation to ISO/IEC 17043 under A2LA certificate 2122.01.



**This report may contain data that are not covered by the A2LA accreditation. Refer to the footnote for each analyte regarding specific accreditation.**

### Test Code 13 / EPA Method 2000

Test Code 13 / EPA Method 2000 (DMRQA WET)

Analysis  
 EPA 2000.0

Method Number 9945647

	Result Units	Assigned Value	Accept. Window	Z	Evaluation
Fathead Minnow Acute MHSF 25° - LC50 <sup>1, 2, 3, 4</sup> 754 / WET-013 - Lot 018575 /Analysis Date: 4/14/11	17.7 %	19.2	7.08 to 31.4	-0.25	Acceptable
	<i>Evaluation Criteria - 5</i>		<i>Evaluation Parameter - deviations:2</i>		

### Test Code 15 / EPA Method 1000

Test Code 15 / EPA Method 1000 (DMRQA WET)

Analysis  
 EPA 1000

Method Number 10114600

	Result Units	Assigned Value	Accept. Window	Z	Evaluation
Fathead Minnow Chronic MHSF - Survival NOEC <sup>1</sup> 756 / WET-015 - Lot 018585 /Analysis Date: 3/24/11	25.0 %	25.0	12.5 to 50.0	0.00	Acceptable
	<i>Evaluation Criteria - 8</i>		<i>Evaluation Parameter - a:1, b:0, c:0, d:25</i>		
Fathead Minnow Chronic MHSF - Growth IC25 (ON) <sup>1, 2, 3, 4</sup> 808 / WET-015 - Lot 018585 /Analysis Date: 3/24/11	23.2 %	27.2	11.9 to 42.4	-0.52	Acceptable
	<i>Evaluation Criteria - 5</i>		<i>Evaluation Parameter - deviations:2</i>		
Fathead Minnow Chronic MHSF - Growth NOEC (ON) <sup>1, 2, 3, 4</sup> 810 / WET-015 - Lot 018585 /Analysis Date: 3/24/11	12.5 %	25.0	12.5 to 50.0	-1.00	Acceptable
	<i>Evaluation Criteria - 8</i>		<i>Evaluation Parameter - a:1, b:0, c:0, d:12.5</i>		

**Test Code 19 / EPA Method 2002**

Test Code 19 / EPA Method 2002 (DMRQA WET)

Analysis  
EPA 2002.0

Method Number 9954654

	Result Units	Assigned Value	Accept. Window	Z	Evaluation
Ceriodaphnia Acute MHSF 25° - LC50 <sup>1, 2, 3, 4</sup> 764 / WET-019 - Lot 018581 /Analysis Date: 4/14/11	14.0 %	27.5	3.06 to 52.0	-1.11	Acceptable
	<i>Evaluation Criteria - 5</i>				<i>Evaluation Parameter - deviations:2</i>

**Test Code 21 / EPA Method 1002**

Test Code 21 / EPA Method 1002 (DMRQA WET)

Analysis  
EPA 1002

Method Number 10115001

	Result Units	Assigned Value	Accept. Window	Z	Evaluation
Ceriodaphnia Chronic MHSF - Survival NOEC <sup>1, 2, 3, 4</sup> 766 / WET-021 - Lot 018590 /Analysis Date: 3/24/11	50.0 %	25.0	12.5 to 50.0	2.00	Acceptable
	<i>Evaluation Criteria - 8</i>				<i>Evaluation Parameter - a:1, b:0, c:0, d:12.5</i>
Ceriodaphnia Chronic MHSF - Reproduction IC25 <sup>1, 2, 3, 4</sup> 767 / WET-021 - Lot 018590 /Analysis Date: 3/24/11	27.4 %	18.0	5.15 to 30.8	1.47	Acceptable
	<i>Evaluation Criteria - 5</i>				<i>Evaluation Parameter - deviations:2</i>
Ceriodaphnia Chronic MHSF - Reproduction NOEC <sup>1, 2, 3, 4</sup> 768 / WET-021 - Lot 018590 /Analysis Date: 3/24/11	25.0 %	12.5	6.25 to 25	1.00	Acceptable
	<i>Evaluation Criteria - 8</i>				<i>Evaluation Parameter - a:1, b:0, c:0, d:12.5</i>

**Test Code 32 / EPA Method 2021**

Test Code 32 / EPA Method 2021 (DMRQA WET)

Analysis  
EPA 2021.0

Method Number 9954621

	Result Units	Assigned Value	Accept. Window	Z	Evaluation
Daphnia Magna Acute MHSF 25° - LC50 <sup>1, 2, 3, 4</sup> 788 / WET-032 - Lot 018579 /Analysis Date: 4/21/11	17.2 %	22.2	5.94 to 38.5	-0.61	Acceptable Voluntary
	<i>Evaluation Criteria - 5</i>				<i>Evaluation Parameter - deviations:2</i>

**Test Code 42 / EPA Method 2007**

Test Code 42 / EPA Method 2007 (DMRQA WET)

Analysis  
EPA 2007.0

Method Number 9954621

	Result Units	Assigned Value	Accept. Window	Z	Evaluation
Mysid Acute 40 F 25° - LC50 <sup>1, 2, 3, 4</sup> 798 / WET-042 - Lot 018576 /Analysis Date: 4/21/11	26.8 %	23.8	6.11 to 41.6	0.34	Acceptable
	<i>Evaluation Criteria - 5</i>				<i>Evaluation Parameter - deviations:2</i>

**Test Code 43 / EPA Method 1007**

Test Code 43 / EPA Method 1007 (DMRQA WET)

Analysis  
EPA 1007

Method Number 10116004

	Result Units	Assigned Value	Accept. Window	Z	Evaluation
Mysid Chronic 40 F Survival NOEC <sup>1, 2, 3, 4</sup> 799 / WET-043 - Lot 018584 /Analysis Date: 3/30/11	100 %	50.0	25 to 100	2.00	Acceptable
		<i>Evaluation Criteria - 8</i>			<i>Evaluation Parameter - a:1, b:0, c:0, d:25.0</i>
Mysid Chronic 40 F Growth IC25 (ON) <sup>1, 2, 3, 4</sup> 816 / WET-043 - Lot 018584 /Analysis Date: 3/30/11	>100 %	81.4	44.8 to >100		Acceptable
		<i>Evaluation Criteria - 5</i>			<i>Evaluation Parameter - deviations:2</i>
Mysid Chronic 40 F Growth NOEC (ON) <sup>1, 2, 3, 4</sup> 818 / WET-043 - Lot 018584 /Analysis Date: 3/30/11	100 %	50.0	25 to 100	2.00	Acceptable
		<i>Evaluation Criteria - 8</i>			<i>Evaluation Parameter - a:1, b:0, c:0, d:12.5</i>

**Test Code 46 / EPA Method 2004**

Test Code 46 / EPA Method 2004 (DMRQA WET)

Analysis  
EPA 2004.0

Method Number 9954621

	Result Units	Assigned Value	Accept. Window	Z	Evaluation
Sheepshead Minnow Acute 40 F 25° - LC50 <sup>1, 2, 3, 4</sup> 804 / WET-046 - Lot 018593 /Analysis Date: 3/31/11	28.7 %	28.0	4.05 to 51.9	0.06	Acceptable
		<i>Evaluation Criteria - 5</i>			<i>Evaluation Parameter - deviations:2</i>

**Test Code 47 / EPA Method 1004**

Test Code 47 / EPA Method 1004 (DMRQA WET)

Analysis  
EPA 1004

Method Number 10115409

	Result Units	Assigned Value	Accept. Window	Z	Evaluation
Sheepshead Minnow Chronic 40 F - Survival NOEC <sup>1, 4</sup> 805 / WET-047 - Lot 018583 /Analysis Date: 3/30/11	25.0 %	25.0	12.5 to 50.0	0.00	Acceptable
		<i>Evaluation Criteria - 8</i>			<i>Evaluation Parameter - a:1, b:0, c:0, d:12.5</i>
Sheepshead Minnow Chronic 40 F - Growth IC25 (ON) <sup>1, 2, 3, 4</sup> 820 / WET-047 - Lot 018583 /Analysis Date: 3/30/11	32.9 %	24.1	6.58 to 41.5	1.01	Acceptable
		<i>Evaluation Criteria - 5</i>			<i>Evaluation Parameter - deviations:2</i>
Sheepshead Minnow Chronic 40 F - Growth NOEC (ON) <sup>1, 2, 3, 4</sup> 822 / WET-047 - Lot 018583 /Analysis Date: 3/30/11	25.0 %	12.5	6.25 to 25.0	2.00	Acceptable
		<i>Evaluation Criteria - 8</i>			<i>Evaluation Parameter - a:1, b:0, c:0, d:12.5</i>

End of Dataset 1

## Sample Information

### Fathead Minnow Acute MHSF 25°C

WET-013 / Lot 018575

	Units	Gravimetric Value	Study Mean	Study Std. Dev.
Fathead Minnow Acute MHSF 25° - LC50 754 Test Code 13 / EPA Method 2000	%	19.5	19.2	6.08

### Fathead Minnow, 7Day, MHSF

WET-015 / Lot 018585

	Units	Gravimetric Value	Study Mean	Study Std. Dev.
Fathead Minnow Chronic MHSF - Survival NOEC 756 Test Code 15 / EPA Method 1000	%	25.0		
Fathead Minnow Chronic MHSF - Growth IC25 (ON) 808 Test Code 15 / EPA Method 1000	%	26.3	27.2	7.63
Fathead Minnow Chronic MHSF - Growth IC25 (SN) 809 Test Code 15 / EPA Method 1000	%	24.8	35.7	21.9
Fathead Minnow Chronic MHSF - Growth NOEC (ON) 810 Test Code 15 / EPA Method 1000	%	25.0	21.6	13.1
Fathead Minnow Chronic MHSF - Growth NOEC (SN) 811 Test Code 15 / EPA Method 1000	%	25.0	25.7	18.3

### Fathead Minnow, 7Day, MHSF

WET-015 / Lot 018585A

	Units	Gravimetric Value	Study Mean	Study Std. Dev.
Fathead Minnow Chronic MHSF - Survival NOEC 756 Test Code 15 / EPA Method 1000	%	50.0		
Fathead Minnow Chronic MHSF - Growth IC25 (ON) 808 Test Code 15 / EPA Method 1000	%	70.0	65.5	20.5
Fathead Minnow Chronic MHSF - Growth IC25 (SN) 809 Test Code 15 / EPA Method 1000	%	100		
Fathead Minnow Chronic MHSF - Growth NOEC (ON) 810 Test Code 15 / EPA Method 1000	%	50.0		
Fathead Minnow Chronic MHSF - Growth NOEC (SN) 811 Test Code 15 / EPA Method 1000	%	50.0		

### Ceriodaphnia Acute MHSF 25°C

WET-019 / Lot 018581

	Units	Gravimetric Value	Study Mean	Study Std. Dev.
Ceriodaphnia Acute MHSF 25° - LC50 764 Test Code 19 / EPA Method 2002	%	25.6	27.5	12.2

### Ceriodaphnia Chronic MHSF

WET-021 / Lot 018590

	Units	Gravimetric Value	Study Mean	Study Std. Dev.
Ceriodaphnia Chronic MHSF - Survival NOEC 766 Test Code 21 / EPA Method 1002	%	25.0		
Ceriodaphnia Chronic MHSF - Reproduction IC25 767 Test Code 21 / EPA Method 1002	%	20.1	18.0	6.41
Ceriodaphnia Chronic MHSF - Reproduction NOEC 768 Test Code 21 / EPA Method 1002	%	12.5		

### Daphnia Magna Acute MHSF 25°C

WET-032 / Lot 018579

	Units	Gravimetric Value	Study Mean	Study Std. Dev.
Daphnia Magna Acute MHSF 25° - LC50 788 Test Code 32 / EPA Method 2021	%	23.0	22.2	8.14

### Mysid Acute 40 Fathoms Seawater 25°C

WET-042 / Lot 018576

	Units	Gravimetric Value	Study Mean	Study Std. Dev.
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**Mysid Acute 40 Fathoms Seawater 25°C**

WET-042 / Lot 018576

(continued)

	Units	Gravimetric Value	Study Mean	Study Std. Dev.
Mysid Acute 40 F 25° - LC50 798 Test Code 42 / EPA Method 2007	%	22.2	23.8	8.86

**Mysid Chronic 40 Fathoms Seawater**

WET-043 / Lot 018584

	Units	Gravimetric Value	Study Mean	Study Std. Dev.
Mysid Chronic 40 F Survival NOEC 799 Test Code 43 / EPA Method 1007	%	50.0		
Mysid Chronic 40 F Growth IC25 (ON) 816 Test Code 43 / EPA Method 1007	%	81.4	81.4	18.3
Mysid Chronic 40 F Growth IC25 (SN) 817 Test Code 43 / EPA Method 1007	%	70.0		
Mysid Chronic 40 F Growth NOEC (ON) 818 Test Code 43 / EPA Method 1007	%	50.0		
Mysid Chronic 40 F Growth NOEC (SN) 819 Test Code 43 / EPA Method 1007	%	50.0		

**Sheepshead Minnow Acute 40 Fathoms Seawater 25°C**

WET-046 / Lot 018593

	Units	Gravimetric Value	Study Mean	Study Std. Dev.
Sheepshead Minnow Acute 40 F 25° - LC50 804 Test Code 46 / EPA Method 2004	%	27.9	28.0	12.0

**Sheepshead Minnow Chronic 40 Fathoms Seawater**

WET-047 / Lot 018583

	Units	Gravimetric Value	Study Mean	Study Std. Dev.
Sheepshead Minnow Chronic 40 F - Survival NOEC 805 Test Code 47 / EPA Method 1004	%	25.0	18.8	7.68
Sheepshead Minnow Chronic 40 F - Growth IC25 (ON) 820 Test Code 47 / EPA Method 1004	%	24.1	24.1	8.74
Sheepshead Minnow Chronic 40 F - Growth IC25 (SN) 821 Test Code 47 / EPA Method 1004	%	37.5		
Sheepshead Minnow Chronic 40 F - Growth NOEC (ON) 822 Test Code 47 / EPA Method 1004	%	12.5		
Sheepshead Minnow Chronic 40 F - Growth NOEC (SN) 823 Test Code 47 / EPA Method 1004	%	12.5		

## Definitions and Interpretation of Statistical Analysis:

**Assigned Value:** Value attributed to a particular quantity and accepted, sometimes by convention, as having an uncertainty appropriate for a given purpose. See ISO/IEC 17043 for additional information. In general the assigned value is the value used to assess proficiency and may or may not be the made to value (gravimetric value).

**Accept. Window:** The range of values that constitute acceptable performance for a laboratory participating in this PT study.

**Z:** A Z-Score tells how a single data point compares to normal data. A Z-Score says not only whether a point was above or below average, but how unusual the measurement is. Generally, a method result with a Z-Score less than |2| is considered to be in control, a Z-Score between |2| and |3| is considered 'Questionable', but still within control and a Z greater than |3| is considered not acceptable and the method is out of control. Calculated as **Z = (Reported Value - Assigned Value) / Proficiency Std. Dev.**

**Proficiency Std. Dev.:** Standard deviation calculated based on **Evaluation Criteria.**

**Study Mean:** Statistical study mean calculated using a robust statistical model (RTC employs the 'Biweight Program'). Robust statistical techniques to minimize the influence that extreme results can have on estimates of the mean and standard deviation. NOTE - These techniques assign less weight to extreme results, rather than eliminate them from a data set.

**Study Std. Dev.:** Standard deviation calculated from study data using robust statisticals (Biweight).

**Gravimetric Value:** The 'prepared to' value, determined by gravimetric means. The uncertainty associated to this value is standard uncertainty and based on RTC's gravimetric tolerances.

### Evaluation Criteria:

**1 - Regression Equation** - Acceptance windows based on TNI adopted equation of proficiency value +/- 3 proficiency standard deviations and check limits of proficiency value +/- 2 proficiency standard deviations. Proficiency value and proficiency standard deviation are calculated from gravimetric variables a, b, c, & d as proficiency value = a \* gravimetric + b and proficiency standard deviation = c \* gravimetric + d.

**2 - Study Robust Mean and c,d regression** - Acceptance windows based on TNI adopted equation of proficiency value +/- 3 proficiency standard deviations and check limits of proficiency value +/- 2 proficiency standard deviations. Proficiency value and proficiency standard deviation calculated from robust study mean and variables c & d as proficiency value = robust mean and proficiency standard deviation = c \* proficiency value + d.

**3 - Fixed Limits** - Acceptance windows based on span of gravimetric percentage from gravimetric as gravimetric +/- gravimetric \* percentage.

**4 - Adjustable Fixed Limits** - Acceptance windows base on a span of gravimetric percentage from gravimetric as gravimetric +/- gravimetric \* lowPercentage where gravimetric < break and gravimetric +/- gravimetric \* highPercentage where gravimetric >= break.

**5 - Study Statistics** - Acceptance windows based on a number of standard deviations span from the study mean as study mean +/- (deviations \* standard deviation).

**6 - Log Transform Statistics** - Acceptance windows based on lognormal distributed data. Acceptance windows = mean(lognormal) +/- span \* standard deviation(lognormal).

#### 7 - Reserved

**8 - Regression Equation 2SD** - Acceptance windows based on EPA equation of proficiency value +/- 2 proficiency standard deviations. Proficiency value and proficiency standard deviation are calculated from gravimetric variables a, b, c, & d as proficiency value = a \* gravimetric + b and proficiency standard deviation = c \* gravimetric + d. Generally reserved for drinking water studies.

**Proficiency Test Item Preparation, Homogeneity and Stability Assessment** - RTC uses proprietary and published methods for the manufacture, homogeneity and stability testing of proficiency test items. RTC's proficiency test materials meet requirements of

ISO Guide 34. For more information contact RTC. Additionally RTC complies with TNI Volume 3 'General Requirements for Environmental Proficiency Test Providers', EL-V3-2009, 2009 for all TNI Fields of Proficiency Testing analytes.


**Metrological Traceability** - All preparations are made using balances calibrated annually traceable to NIST standards. Where appropriate analytical measurements are traceable through an unbroken chain to NIST standards, or a Certified Reference Material manufactured under ISO Guide 34 in conjunction with ISO/IEC 17025.

**Statistical Analysis** - RTC uses robust statistics to calculate study means and standard deviations - Reference - Kafadar, K, *A Biweight Approach to the One-Sample Problem*, Journal of the American Statistical Association, Vol. 77, No. 378, June, 1982, pp. 416-424.

**Additional Information** - Go to [www.rt-corp.com/reporting](http://www.rt-corp.com/reporting) for additional information on summary statistics for specific methods, advice on the interpretation of the statistical analysis, and additional comments/recommendations. If you failed an analyte it may be required to perform a corrective action and/or retest. RTC recommends that you contact your accreditation body for specific instruction.

Program analyte accrediting footnotes

- <sup>1</sup> NELAC Compliant, covered by RTC's A2LA Provider of Proficiency Testing accreditation, Cert. 2122.01
- <sup>4</sup> ISO 17043 Accredited, covered by RTC's ACLASS Proficiency Testing Provider accreditation, Cert AP-1469
- <sup>5</sup> NELAC Experimental

Authorizing Officer:   
Patrick Brumfield, ASQ CQA  
QA Manager

Date: 7/22/2011